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GROUNDWATER MANAGEMENT IN THE NORTH WEST

Efficiency Review and Business Plan

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GROUNDWATER MANAGEMENT IN THE NORTH WEST

EFFICIENCY REVIEW & BUSINESS PLAN

Table of Contents

Certificate in Management

GROUNDWATER MANAGEMENT IN THE NORTH WEST

EFFICIENCY REVIEW & BUSINESS PLAN

1. EXECUTIVE SUMMARY

Background

All aspects of groundwater management and protection in the North West Region are currently carried out by the Groundwater Section, which forms part of a small pool of regionally based staff providing Specialist Services to meet national, regional and area needs.

Objectives

The objectives of the report are to:

- assess the effectiveness of the Section in meeting organisational, customer and staff needs
- review the role of the Groundwater Section in terms of ongoing organisational change
- produce an business plan for years 1994-'96

Customer Satisfaction Survey

A survey carried out amongst the Section's main internal and external customers indicated that:

- overall, the Groundwater Section is providing a high standard of service to all its main customers, given the constraint of available staff resources.
- there is a need to improve speed of response on statutory consultations for planning liaison and abstraction licences
- regular liaison is required with area-based customers,
- external and national customers consider the North West Region's structure for groundwater management efficient and effective, compared with regions which operate with split groundwater quality/quantity or area/region responsibilities.

Inter-Regional Comparison

- the North West and Welsh regions have the fewest professional hydrogeologists (3). When taking account relative importance of groundwater, the North West comes out as the most 'cost effective'.

Resources/Workload

- 6% of the workload of the Section is related to national issues, 27% to regional and 67 % to the areas -17% North, 27% Central, 23% South, (by time), with the largest volume and complexity of area related workload concentrated in the South & Central part of the region.

- the efficiency and effectiveness of the Section relies upon the knowledge and experience of its professional and technical staff combined with the integrated management of all groundwater related matters

- attempting to split the Section into client/contractor, quality/quantity, region/area, policy/operation would compromise this efficiency and hence cost-effectiveness.

- there is an imbalance between overall workload (volume) and staff resources, as a result of loss of 0.5 FTE professional and 1 FTE technical staff.

- there is little scope to accommodate peaks in current workload.

- there is a medium-long term need for at least 1 graduate hydrogeologist to be recruited into the Section to provide ' continuity of service' and introduce 'new blood' and skills.

BUSINESS PLAN (objectives summary:)

Short Term

- to externalise routine hydrometric activities to areas or contractors and engage consultants to undertake self-contained projects, thereby enabling the Section to concentrate on its 'core business', in particular improving speed of response to statutory consultations.

- to prioritise workload and set team and individual objectives which focus on meeting statutory and corporate plan targets

- to restructure the Section to provide greater role clarity and focus for internal customers

Medium-Long Term

- to recruit a graduate hydrogeologist to provide 'continuity of service' and introduce skill deficiencies.

Ongoing

- to maintain the trust, motivation and morale of the team.
- to maintain and improve liaison with the areas

CONCLUSIONS

The overall conclusion which can be drawn from the Efficiency Review is that the Groundwater Section is doing a good job, cost effectively, and achieving a high standard of customer satisfaction, given the constraints on resources. This is attributable to the pooled skills, knowledge and experience of the team combined with a very high level of commitment and motivation of the individuals.

Therefore, there is no need or justification for major structural or operational changes.

RECOMMENDATIONS

It is recommended that the North West Region's Groundwater Section should remain as a regionally based specialist service provider to internal and external customers for all aspects of groundwater management and protection. *(a 'one-stop shop' for Groundwater)*

With the current drive to reduce numbers within the NRA, such a model could have wider application to other specialist service activities which are not cost-effective or do not make best use of available resources if area based (economy of scale and critical mass). This would compliment the Logical Process and is consistent with ensuring value for money.

2. INTRODUCTION

2.1 Background

All aspects of groundwater management and protection in the North West Region of the NRA are currently carried out by the Groundwater Section, which forms part of a regionally based pool of staff providing Specialist Services to meet national, regional and area needs.

2.2 Objectives

2.2.1 The objectives of this report are to:

- review the role of the Groundwater Section in terms of ongoing organisational change;
- assess the effectiveness of the Section in meeting organisational, customer and staff needs: and to
- produce an business plan for the years 1994-'96

2.2.3 These have been broken down into the following tasks; to:

- assess the effectiveness of the Section as a team
- identify internal and external factors which are likely to impact on the Section
- identify the Section's customers and assess effectiveness in meeting their needs
- compare inter-regional groundwater protection & management structures and resources
- assess the adequacy of resources to meet short/medium/long term goals
- identify areas for increased efficiency and improvements in working methods
- consider the need for change; options and cost benefits.
- review team and personal objectives
- review individual training/development needs
- prepare a business plan for 1994-95

2.2.3 This report compliments that prepared by the Specialist Services Manager (Groundwater Resources Study -draft, 15.8.94)[1].

2.3 Methodology

2.3.1 Information on other regional structures and customer satisfaction have been obtained by questionnaires and follow up interviews.

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1 *internal draft looking at Groundwater staffing resources -Ref. 1.*

2.3.2 Time Allocation and response tracking records have been used to assess section and individual workloads, and to identify relative demands and locations of internal customers (areas, region, national).

2.3.3 Staff views, job satisfaction and performance have been established from formal and informal feedback. This has been supplemented by questionnaires and personal knowledge.

3. WHERE ARE WE NOW ?

3.1 Where Do We Fit In?

Departmental Structure

3.1.1 The Groundwater Section is one of four Specialist Services teams within the regionally based Technical Services Department. The structural and line management relationships of the Technical Department, Specialist Services and Groundwater Section are shown as Figures 1 & 2.

3.1.2 Although the Groundwater Section does not have one 'senior' hydrogeological manager, this is a legacy of previous reorganisations. Prior to implementation of the Logical Process[2] in 1993, the Groundwater Resources Manager (Keith Seymour - *author of this report*) and Groundwater Systems Manager (Tony Peacock) reported to the present Water Resources Manager, a qualified hydrogeologist. The Specialist Services Manager (John Owen) does not have this technical/professional background. Therefore, the Groundwater Resources and Systems Managers fulfil both a technical/ professional and managerial role (see section 8. - Resources/Workload).

3.1.3 At present one of the Groundwater Assistant posts (formerly occupied by Philip Reynolds) is unfilled and frozen, with the likelihood that it will be lost from the structure under the nationally imposed job cutting programme[3].

3.2 What Do We Do & Why?

Role of Section

3.2.2 The key purpose/role of the Section is to provide an accessible and comprehensive, 'expert' groundwater management and protection service throughout the region (in particular to the newly strengthened areas), at national level and to other organisations and external customers.

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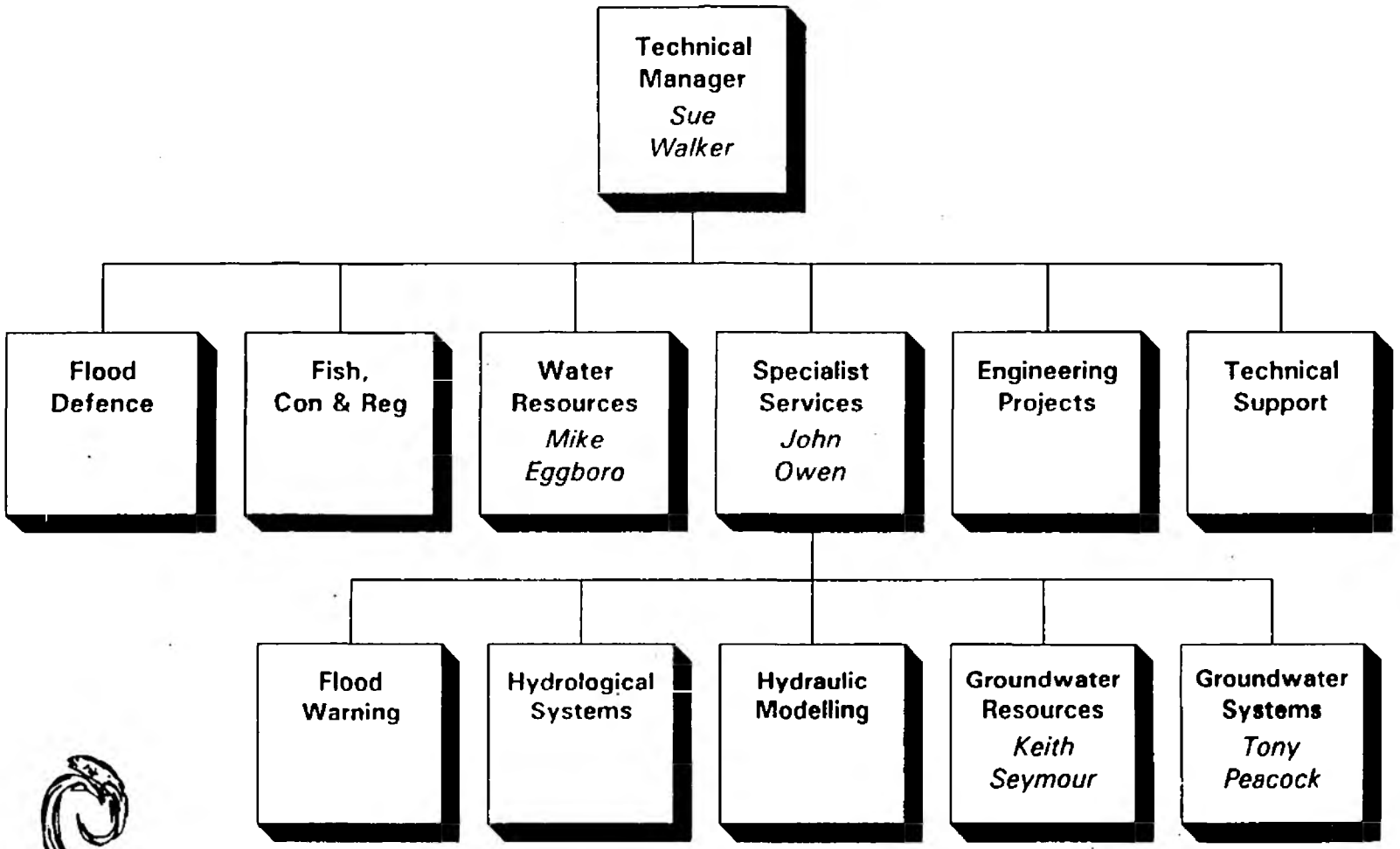
2 *i.e. move from a regionally-based functional management structure to an area-based multifunctional system aimed at providing a 'one-stop shop at the point of demand'.Areas are now responsible for 'day-to-day' operational activities, with the regional headquarters setting policy, monitoring performance and providing specialist support.*

3 *45 posts are required to be lost from the NW Region by March '95. This is being achieved by enhanced severance, termination of temporary staff contracts and freezing of unfilled vacancies from the structure.*

Groundwater Section

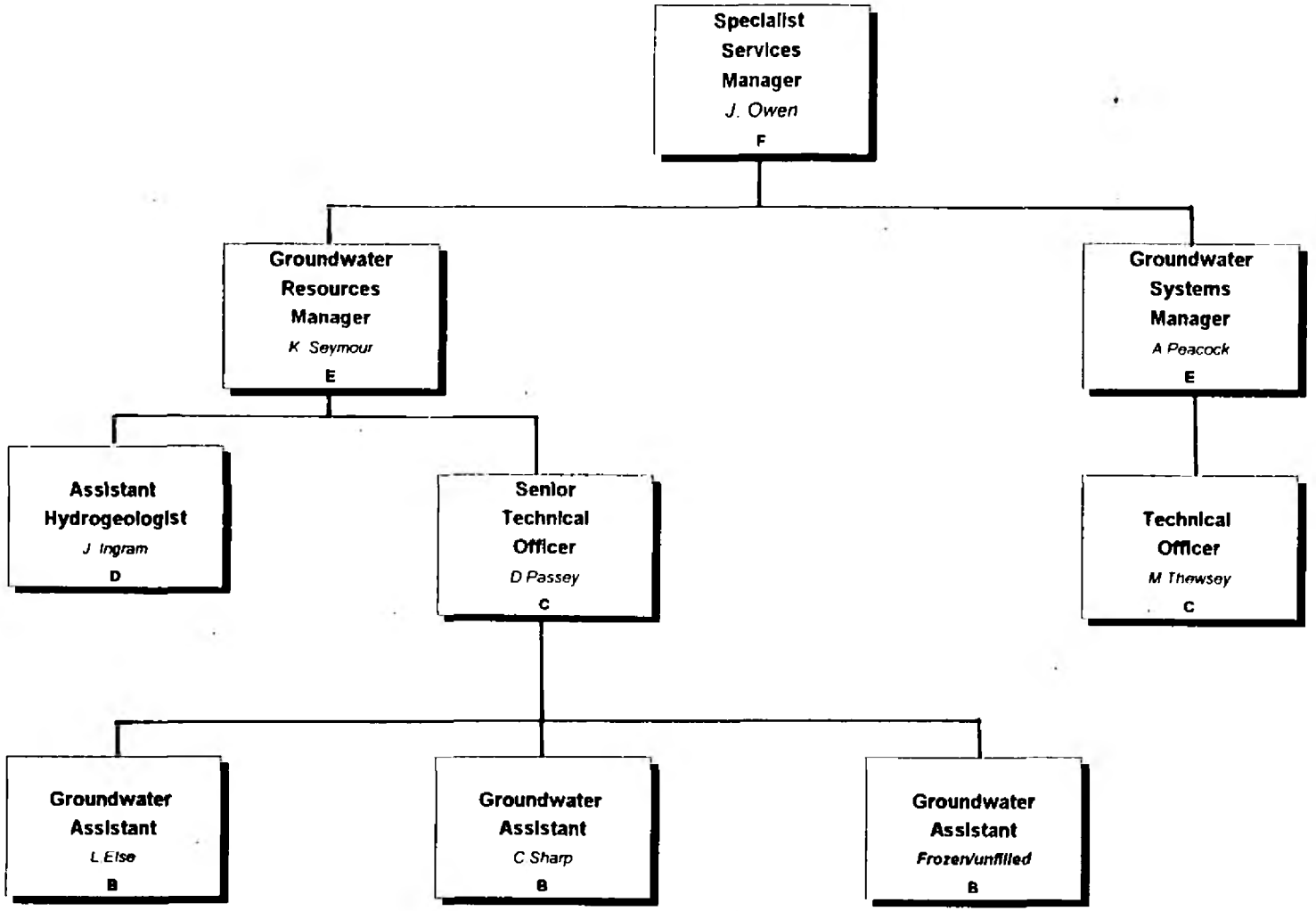
Who are we? Where do we fit in?



NRA

Figure 2.

Groundwater Section Structure



3.2.3 This can be related directly to the Authority's mission statement: "We will protect and improve the water environment by effective management of water resources and substantial reductions in pollution....In discharging our duties we will operate openly and balance the interests of all who benefit from and use ... groundwaters...". Furthermore, certain of our activities are linked to both national and regional corporate plan objectives for the coming year.

Key Activities & Tasks

3.2.4 The Groundwater Section's **key activities** are involved with fulfilling the Authority's statutory duties, as shown in Table 3.1.

Table 3.1

Key Activity	**Main Statutes**
abstraction licensing/consents	Water Resources Act, 1991
groundwater resource management	Water Resources Act, 1991
groundwater protection	Water Resources Act, 1991 Control of Pollution Act, 1974 Town & Country Planning Act, 1971
groundwater hydrometry	Water Resources Act, 1991

3.2.5 These activities can be divided into the following **main** tasks:

Routine:

- responding to statutory consultations
- processing & assessing borehole construction consents
- responding to enquiries/data requests (internal/external)
- groundwater monitoring network management
- groundwater database enhancement and management

Non-Routine:

- groundwater resource assessment (availability)
- capital project initiation & management

- contribution to national initiatives and R&D projects
- groundwater source protection zoning
- promotion/liaison

3.3 For Whom?

Who are our Customers?

3.3.1 These can be broken down into 'internal' and 'external' customers (Table 3.2). Where a service is provided to the areas' in a consultee or regulatory capacity, the 'end-users' are predominantly external agencies, industry or the public.

3.4 How Do We Perform as Team ?

Team Effectiveness

3.4.1 In considering the effectiveness of the Groundwater Section, it is appropriate to look at both the Groundwater Management and Groundwater Systems teams as a unit, since both work together and directly compliment each other. The (remaining) two Groundwater Assistants under the line management control of the Groundwater Resources Manager (Keith Seymour) also support the Groundwater Systems Manager (Tony Peacock) as required (a limited form of matrix management).

3.4.2 The two teams have worked closely together since the formation of the NRA in 1989. During this time the Section has been subject to a process of continual change, and has evolved to meet these challenges.

3.4.3 The Groundwater Section is highly motivated and enthusiastic, with each individual being aware of their roles and goals, and the value of their contribution to overall team objectives. There is a strong sub-culture within the Section which reflects that of the organisation (achievement-oriented) but is more focused on achieving its own 'vision' of groundwater protection and enhancement.

3.4.4 By necessity (limited staff resources, in particular professional hydrogeologists), tasks and associated responsibility have been delegated as far down the structure as possible, but with ultimate accountability retained by the Groundwater Resources and Systems Managers. Each team member has established areas of specialisation in meeting overall team objectives which match their skills, abilities, experience and personal interests; tasks are allocated accordingly.

Table 3.2 - Groundwater Section Customers

Customer	Product	End-User	Reason/Role
Internal			
Areas:	Hydrogeological comments on:		
Waste Regulation	)	WRA's, contractors	) statutory
Planning Liaison	) consultations/) applications)	Planning Authorities	) consultee)
Licensing	)	applicants	)) regulator
Pollution Control	- pollution incidents	polluters, public	)
Regional:			
Water Resources Manager	Project management Hydrogeological service	))))	))))
National:		) public, government	) advisory,
Groundwater Centre	Contract input, R&D, Regional information.	) farmers, industry,) public utilities))	))))
Head Office	Regional information	)	)
External			
Drilling Contractors	Groundwater Consents (issue/appraisal)	Clients/abstractors (industry, farmers, domestic users)	regulator
Consultants,	))	-as above	))
General public, Students, Government agencies	) Enquiries) Data requests)	)) as Customers)	) advisory))

3.4.5 The Section performs as a *work team,* and is essentially structured on a hierarchical basis.There is a high level of openness, trust and mutual respect; resulting in few communication barriers to resolving potential areas of conflict. Therefore, using Woods' [4] definition it is a *mature* team. According to Adair's[5] classification the Groundwater Section is the *performing* stage of development, and is probably considered by those involved to be approaching a 'superteam'. The rapid rate of external change has prevented progression into a *dorming* phase, although this risk is recognised, as is the need for effective networking with other teams and departments.

Team Roles

3.4.6 One of the main strengths of the team is the blend of characteristics and attributes of the individuals; all members are aware of each others strengths and weaknesses and compliment (support) each other. Table 3.3 summarises the results of an analysis of the roles played by the team (after Belbin[6] - questionnaires are contained in Appendix I). This indicates that there is an overall balance, confirming Belbin's assertion that 'nobody's perfect but a team can be'! It is significant that there is a predominance of Team Worker and Company Worker traits within the Section. This is considered to be beneficial since much of the work carried out by the team requires initiative, but also dedication and commitment. We do not need too many Shapers, Plants or Resource Investigators. A great deal of thought has gone in to selecting team members to ensure that the Section's objectives are achieved and that the team works harmoniously together.

3.4.7 In general there is a reasonable balance between achieving the task, building and maintaining the team and developing the individual (Adair - *Effective Teambuilding*), although there is scope to improve individual development. This is being addressed - see section 10.7 - Team Development Plan.

Team Performance

3.4.8 Team effectiveness has been assessed in terms of Woodcock's nine building blocks, as set out in '*Team Development Manual*'. The results of an assessment questionnaire are summarised in Table 3.3. The scores are arbitrary but indicative of relative strengths and weaknesses.

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4 *Woods --'The New Manager' - (Ref. 2).*

5 *Adair --- 'Effective Teambuilding' (Ref. 3.)*

6 *Belbin - (Ref. 4)*

Table 3.3 - Team Roles (Belbin Analysis)

Team Member	CW	CH	SH	PL	RI	ME	TW	CF	dominant role
K. Seymour *Groundwater Resources Manager*	14	13	4	3	3	13	18	3	TW/CW CH/ME
J.Ingram *Assistant Hydrogeologist*	18	6	4	4	4	6	11	4	CW/TW
D. Passey *Senior Technical Officer*	6	7	5	3	11	6	18	14	TW/CF
C.Sharp *Groundwater Assistant*	15	6	2	23	9	4	7	4	PL/CW
A. Peacock *Groundwater Systems Manager*	18	8	4	-	4	8	9	19	CF/CW
M. Thewsey *Technical Officer*	3	4	14	15	11	7	4	12	PL/SH/CF

CW - Company Worker
CH - Chairman
SH - Shaper
PL - Plant
RI - Resource Investigator
ME - Monitor/Evaluator
TW - Team Worker
CF - Completer/Finisher

3.4.9 In addition there is a need for greater **flexibility**, both in terms of managing externally induced change and in ability to stand in for each other in the event of absence or staff moves (ie short term and long term).

Personal Needs

3.4.10 Applying Maslow's criteria for personal development and job satisfaction:

- **basic physical need** - threatened job cuts and major structural reorganisation are of proposed changes in the way we operate resulting in potential loss of car user allowance is an issue of concern to team members and could cause hardship to certain lower graded staff.

- **security** - there is increasing anxiety amongst staff caused by the current

uncertainty over job security about job cuts and major change in preparation for ENVAGE & market testing. This is being addressed by ensuring that we are doing the right job (effectiveness) efficiently and also by widening the experience and range of skills of each team member, and reassuring staff of the value of their contribution to the organisation.

- **social contact** - this is not a problem within the team. The very nature of the role of our role involves close internal and external contacts.

- **respect** - team members receive regular informal feedback that their contributions are valued. This could be improved by more formal performance appraisal and feedback.

- **achievement** - although there is already a high degree of delegation, the completion of the proposed individual training/devlopment plans will permit increased individual responsibility and provide further challenges.

Table 3.3

Team Characteristics	Score
greatest **strengths**:	
• support & trust	0
• co-operation and conflict	0
intermediate characteristics:	
• sound working & decision making procedures	2 2
• openness and confrontation	3
• appropriate leadership !!	3
• sound intergroup relations	
greatest **weaknesses:**	
• regular review	4
• individual development	4
• clear objectives & goals	4

Motivation & Morale

3.4.11 Evidence of the high level of motivation and job satisfaction is reflected in anonymous responses by Groundwater staff to a survey prepared by the Specialist Services Manager into morale within the department.(Appendix II).

3.4.12 These show that despite having little confidence in their job security/prospects in the NRA (because of the threats of market testing, restructuring, Envage and dissatisfaction at the introduction of performance related pay) , they generally feel valued by colleagues and feel they are doing a worthwhile job.

4. WHERE ARE WE GOING?

4.1 External and Internal Environment

Before reviewing the current effectiveness of the Section further, it is necessary to be aware of the changing environment in which it is operating. There are a number of external factors which are in turn influencing the direction and speed of changes within the NRA. These can be summarised as ***(pestl)***:

- **Political and Legal**

  ENVAGE[7] and market testing are the most significant future changes which will impact directly on the Groundwater Section - our 'products', structure, location and customers.

- **Economic**

  Public sector cuts have resulted indirectly in a reduction in Groundwater staff (footnote 3). This is impairing our ability to satisfy customer expectations (standards of service). The introduction of performance related pay (PRP) is affecting morale.

- **Social conditions and trends**

  Increased public awareness and concern over environmental issues have helped raise the profile of groundwater pollution prevention - one of our key activities.

- **The physical environment**

  Movement of the majority of operational activities to the areas, whilst retaining the Groundwater Section as a regionally based Specialist Service, has altered the make-up and location of our 'customers' (Logical Process). It has increased the need for effective communication and active promotion. (N.B. draft proposals for ENVAGE consider merger and formation of 'super-regional'

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7 *the proposed 'environment agency', involving merger of the NRA, HMIP and Waste Regulation Authorities, due to be in place by 1996*

offices supporting areas[8])

4.2. Who are our Competitors?

4.2.1. Until recently the Groundwater Section had no real competition; our primary **business** being the provision of a regulatory and advisory service on a strict regional basis. This still remains to some degree our 'unique selling point'.

4.2.2 Formation of the 'Groundwater Centre' *[so called 'centre of excellence' based in the Severn Trent Region]*, combined with development of more multifunctional area staff could result in the services we currently provide being sought elsewhere.

4.2.3 Under the proposed Market Testing programme we will be in direct competition with external consultants.

4.2.4 At this stage it is difficult to predict the actual impact of ENVAGE on the Section. However, it is possible that existing Waste Regulation or HMIP staff could provide competition, or the size/nature of 'the market place' in which we operate could change.

4.2.5 Marginalisation and competition are new and very real threats. **Therefore a market-led approach needs to be adopted.**

4.3 SWOT Analysis

4.3.1 This needs to be considered both in terms of the individuals; their knowledge and skills, strength and weaknesses, and the effectiveness of the Section as a team.

4.3.2 The overall team attributes are:

STRENGTHS:

- **Qualifications**
  - B.Scs' in Geology (2), Engineering Geology (1)
  - M.Scs' in Hydrogeology, Mining Geology, Environmental Sciences
  - Chartered Geologists (3)

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[8] *'Options for the Geographical & Managerial Structure of the Proposed Environment Agency', - Touche Ross & Co. (June 1994) - Ref. 6.*

- **Knowledge**
  - working knowledge of the geology and hydrogeology of entire NW Region
  - specialist knowledge in engineering geology, geotechnics, geophysics, mining, landfill engineeering, geological mapping.
  - water resources management
  - computing & mathematical skills

- **Experience**
  - over 60 man years professional geological experience (in 3 staff) hydrometric field work experience

- **Information**
  - comprehensive geological and hydrogeological databases & records for entire region

- **Motivation of Staff**

WEAKNESSES:

- **Professional Back-Up**
  - lack of qualified staff to delegate 'specialist work' to (short term)
  - professional staff are age 40-50
  - no new blood being trained to take over (longer term)

- **Staffing Levels**
  - no flexibility to accommodate fluctuations in 'demand'
  - no thinking time (reactive management, not proactive)
  - at 'critical mass' level

- **Modelling Skills**
  - groundwater modelling skills not available 'in-house'

- **Remoteness from Customers**
  - mainly area customers *(see section 5&6)*

OPPORTUNITIES:

- **Envage** - effects uncertain
  (development/strengthing of regional groundwater specialists ?)

- **IBU?** - possible management buy out/negotiated take over

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THREATS:[9]

- **Logical Process**
  - move of groundwater activities to areas
  - area managers buying in groundwater services
  - strengthening Groundwater Centre
  - operational/policy i.e.area/region split

- **Manpower Cuts**
  - constraint on new recruitment
  - further pressure to reduce numbers
    (early retirement/not filling vacancies, no temporary staff)

- **Market Testing**
  - client/contractor split
  - contracting out of groundwater services

- **Envage**
  - effects uncertain
    (super regions, strengthened areas, 'industry facing teams'[10])

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9 *see secton 4.1 & 4.2*

10 *from Touche Ross report (ref 6)*

5. MEETING CUSTOMER NEEDS - PRINCIPLES

Importance of Marketing

5.1 If the Groundwater Section is to succeed, it is essential to assess our effectiveness not only as a work team, but almost more importantly in satisfying customer needs. This can be considered using the marketing concept of providing 'the 4 P's, i.e.

- the right **product,**
- at the right **price,**
- in the right **place,**
- supported by the right **promotion**

Product

Having defined our **product** as 'the application of hydrogeological expertise and local knowledge to groundwater protection and management in the North West', (see 3.2.2), identified our **customers,** (Table 2), it is necessary to ensure that we are successfully matching the product to the market, i.e. that we provide what the customers actually needs, not just what we think they want!.

Price

5.3 In the past our costs have been paid for out of the regional Water Resources budget. Market Testing, competition and the proposal to recharge area managers for our services mean that in the future we **must provide value for money** and adopt a **competitive** pricing strategy. If we are to consider setting up as an IBU, **price** will become a critical factor in our 'Marketing Mix'!

Place

5.4 This is particularly important in terms of servicing the areas. Speed of response combined with effective communication are essential factors - e.g. it is no use providing a 'perfect' technical response to a planning liaison consultation if it is delivered outside the statutory consultation period!

Promotion

5.5 Until recently, this has been informal and ad-hoc. Active promotion is now essential to raise awareness of the Section, in the areas as well as externally.See Business Plan - section 10.6.

6. CUSTOMER SATISFACTION SURVEY

6.1 Need

Informal feedback from day-to-day dealings with our **main** customers (internal & drilling contractors) suggested that the North West Groundwater Section is quite highly regarded. We have received some positive comments in the past. However, it was considered important to obtain more objective information on our customers perceptions of the standard of service we are providing. This has become particularly important following implementation of the Logical Process because of:

- increasing autonomy of the areas
- redefinition of region/area roles
- geographical remoteness of the Section from area-based customers
- reduced Groundwater staff resources,

6.2 Objectives

- to assess the effectiveness of North West Region's Groundwater Section in fulfilling customer expectations
- to compare 'standard of service ' provided to external customers with other regions which operate with fully integrated multi-functional area structures, and/or greater numbers of staff.
- to identify problems with and possible improvements to our service.

6.3 Methodology

6.3.1 Two questionnaires were prepared using similar formats, targeted at our main internal and external customers, i.e. those to whom the Section provides information /advice/service on a regular basis (Appendix IIIA), . The forms were designed to 'quantify' specific aspects of our performance and obtain an overall impression of the service provided.

6.3.2 One individual within the different functions in each of the three area's was asked to 'score ' our performance on a scale of 1-5 (excellent). In addition, external customers (drilling contractors with whom we deal in connection with Groundwater Investigation Consents) were asked to compare the North West Region's service with others they have experience of. Customers were asked to provide comment or suggestions for

improvement in service.

6.3.3 The format of the first draft of the internal questionnaire was trialed by the Northern Area Planning Liaison Officer. It proved to be suitable and so was then distributed to the other target customers without revision.

6.3.4 Examples of the internal and external questionnaires are contained in Appendix III. These were sent out under covering letter/memo in June '94. (Appendix III.A). In the case of slow returns, follow up telephone calls were made.

Table 3 - Target Groups

Customer	Location
Internal	
Planning Liaison Officers	) North Area, Carlisle
Waste Regulation Officers	) Central Area, Preston
Abstraction Licensing Officers	) South Area, Sale
Pollution Control Officers	) (- *home based*)
National Groundwater Centre	- Solihull (Severn-Trent Region)
External (drilling contractors)	
British Gypsum Ltd.	- Kirkby Thore, Cumbria
Dales Water Services Ltd.	- Ripon, North Yorkshire
J.P. Whitter (Water Well Engineer) Ltd.	- Wigan, Greater Manchester

6.4 Results

Presentation & Analysis

6.4.1 Completed questionnaires are contained in Appendix III.B. The results are summarised in Table 6.3. Area-based customers have been grouped by function. Average 'scores' were calculated for each aspect of our service, as well as overall for these groups[11]. Comparison of these averaged scores by areas and function is presented graphically as Figures 3 & 4.

[11] *using Lotus 123. spreadsheet*

Table 6.3 GROUNDWATER SECTION CUSTOMER SURVEY

Internal customers

Pollution Control

		North	Central	South	average
speed of response	speed	4	3	4	3 7
quality/level of detail of response	quality	5	4	5	4 7
ease of understanding	understanding	4	4	3	3 7
ease of access	access	3	3	2	2
helpfulness	helpfulness	5	4	5	4 7
experience/expertise	expertise	5	4	4	4 3
overall quality of service	overall	4	4	4	4

Planning Liaison

		North	Central	South	
speed of response	speed	3	3	3	3
quality/level of detail of response	quality	3	4	3	3.3
ease of understanding	understanding	4	5	3	4
ease of access	access	2	4	4	3 3
helpfulness	helpfulness	3	4	4	3.6
experience/expertise	expertise	4	5	4	4 3
overall quality of service	overall	3	4	3	3.3

Licensing

		North	Central	South	
speed of response	speed	3	3	2	2 7
quality/level of detail of response	quality	5	5	5	5
ease of understanding	understanding	5	4	4	4.3
ease of access	access	2	3	3	2.7
helpfulness	helpfulness	5	5	5	5
experience/expertise	expertise	5	5	5	5
overall quality of service	overall	5	4	4	4 3

Waste Regulation

		North	Central	South	
speed of response	speed	5	4	4	4.3
quality/level of detail of response	quality	5	5	5	5
ease of understanding	understanding	5	5	5	5
ease of access	access	5	4	5	4 7
helpfulness	helpfulness	5	5	5	5
experience/expertise	expertise	5	5	5	5
overall quality of service	overall	5	4	5	4 7

National Groundwater Centre

speed of response	speed		5		5
quality/level of detail of response	quality		5		5
ease of understanding	understanding		4		4
ease of access	access		4		4
helpfulness	helpfulness		5		5
experience/expertise	expertise		5		5
overall quality of service	overall		5		5
					4 7

External Customers

		British Gypsum	Dales Water	J.P. Whitter	
speed of response	speed	4	5	5	4 7
flexibility/practicality	flexibility	5	3	5	4 3
accessibility (region vs area)	access	5	4	5	4 7
helpfulness	helpfulness	5	4	5	4 7
experience/expertise	expertise	4	4	5	4 3
overall quality of service	overall	5	5	5	5

Findings

6.4.2 The average score for the 'overall quality of service' provided by the Groundwater Section, taking into account all of the customers questioned (sample size: 16) was 4.4. i.e. we are perceived as providing close to an 'excellent' service. This confirms the general impression previously gained in-house (section 6.1.1). However, this is not without qualification, and should not give rise to complacency.

6.4.3 A number issues were identified which require more detailed examination, and some which will require action to be taken. For most aspects of our service (quality, understanding, helpfulness, expertise and overall) we scored 4 or 5. Although an individual score of 3 (indicating 'average' performance), may be considered as a realistic standard of service to achieve, those scores at or below this benchmark are discussed below:

Speed of Response

6.4.4 This was identified as a concern for area-based Planning Liaison and Licensing officers, who are working within fixed statutory deadlines in which to process applications. The Groundwater Section is aware of the need to comply with agreed standards of service. This is largely a staff resourcing problem which has been exacerbated by the loss of one full time equivalent (FTE) from the Groundwater structure (section 3.1.3)

6.4.5 *Comment from Area Licensing, South - "our main concern is receipt of groundwater input into licence determination. Resource problems in Groundwater mean we fail to meet statutory ...targets. No problems in any other areas.".*

6.4.6 In addition to prioritisation of workload, other solutions to improve speed of response in these vital areas are set out in section 10.3 of the Business Plan.

6.4.7 It is worthy of note that Waste Regulation[12] and our external and national customers rated our speed of response very highly.

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12 *Until 1st September '94 Waste Regulation staff were regionally-based in same offices as Groundwater Section. Now moved to area offices under 'Logical Process'. Survey conducted whilst still at regional headquarters.*

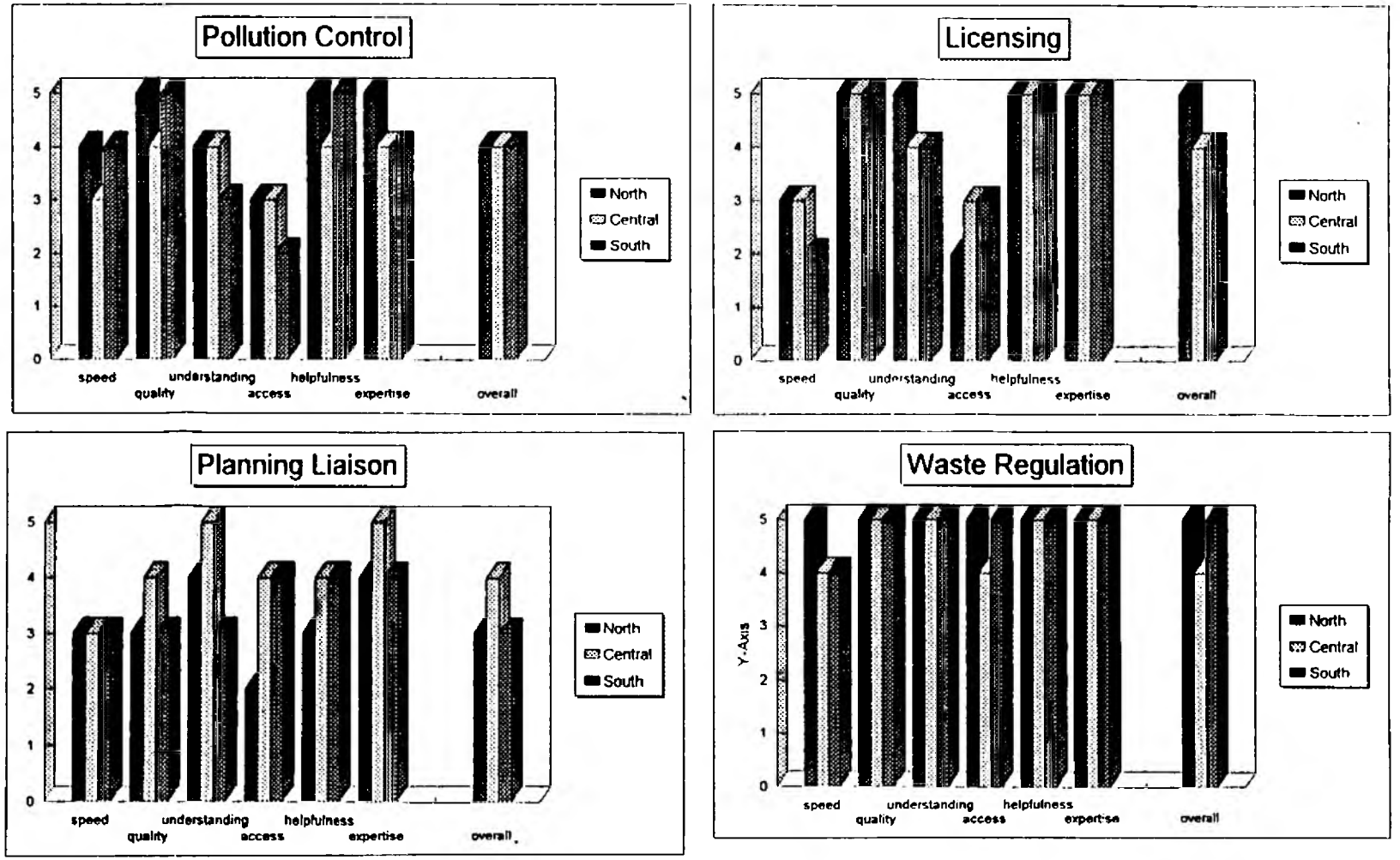
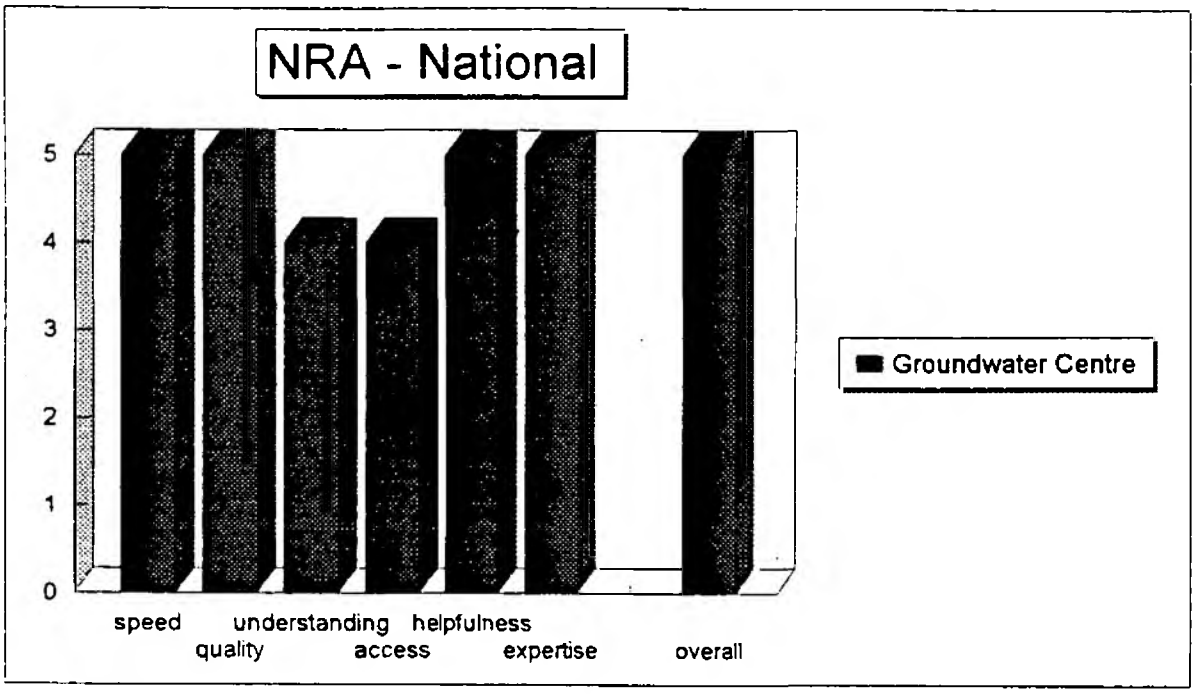


Figure 3. - Groundwater Cusomer Satisfaction Survey

Internal Customers



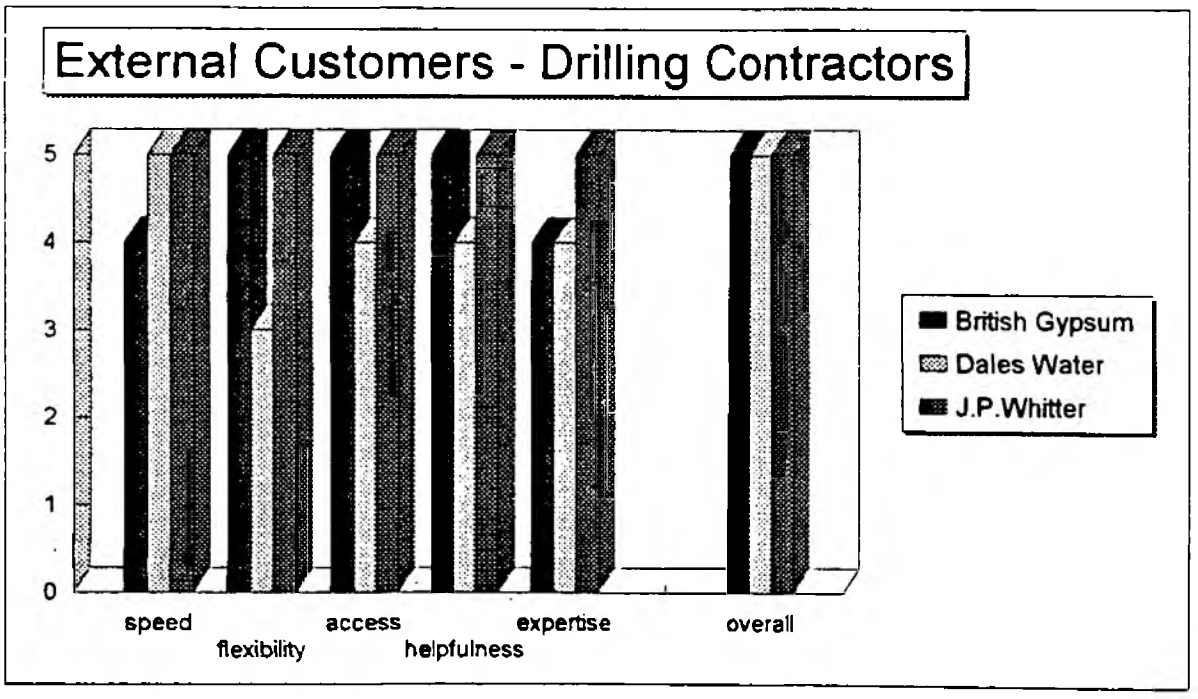


Figure 4. Groundwater Customer Satisfaction Survey

National & External Customers

Accessibility

6.4.8 Understandably, with the Groundwater Section servicing the areas remotely, certain area-based staff rated 'ease of access' as 2-3. Interestingly however, the South Area Pollution Control officer, who scored this aspect as 2, frequently visits the Groundwater Section seeking advice. There have been times when a Hydrogeologist has not been available. His comments illustrate that the problem is one of resources rather than location: *"occasional problems of availability. However, this could only be addressed by increased staff numbers."*. Furthermore, although the Pollution Control staff report to area managers, they are home-based, and so would receive little improvement in a Groundwater service even if we were located in area offices.

6.4.9 The North Area Licensing officer commented *"Sometimes not easy to contact especially first thing in the morning - we start at 8.00am and can often be leaving the office before RFH is open - would an answering machine help?"*. In fact the Groundwater Section is also usually manned from 8.00am. The problem was traced to a faulty telephone extension not ringing through!

6.4.10 It is recognised that the Goundwater Section needs to place increased emphasis on regular liaison (**promotion**) with the area staff now that **place** has become such an important part of the marketing mix for internal customers. This was highlighted by the comments from the North Area Pollution Control officer *"would appreciate updated Section structure to avoid getting the wrong contact. Recent groundwater protection training sums up the Section in that it is high on content, well delivered and relevant - would like to see staff more often in the areas e.g. in district meetings"* (see 5.1.5).

Inter-regional Comparison - National & External Customers

6.4.11 In addition to having to meet the needs of the areas, the Groundwater Section also interfaces with national and external customers. The concept of the Logical Process is to provide a local area focus for all 'operational' services i.e. a 'one-stop shop'. However, because of lack of Hydrogeologists the North West is one of the few regions not to devolve most groundwater related matters to separate areas (not enough to go round - critical mass). Furthermore certain regions have also split responsibility of groundwater quality and quantity management into Environmental Quality and Water Resources functions respectively.

6.4.12 In effect the North West Region's Groundwater Section provides a 'one-stop shop' for all groundwater related matters, internally and externally. Therefore,

the responses of our external customers is particularly relevant. The overall high scores indicate that our existing structure and staff are providing an effective and efficient service. These are typified by the following comments:

6.4.13 *"I count the North West's Groundwater Section as one of the easier regions to coordinate from the standpoint of a national centre. It is my observation that a contributory reason for this is the relative clarity of internal structure (1 regional centre, areas look to that unit for advice on groundwater matters) and I do not observe the obsessive resources/quality divisions which appears to be so schismatic in some other regions..You are strongly counselled not to make the results of this survey available to senior management; elsewhere there is a have the tendency at that level to 'mend' the unbroken" - National Groundwater Centre.*

6.4.14 *"I have marked high as in all honesty the standard of service provided by the Groundwater Section is excellent" - British Gypsum.* This company also had experience with Welsh Region.

6.4.15 In a follow-up telephone conversation with Dales Water Services, it was stated that the North West's Groundwater Section was the best to deal with in terms of speed and quality consistency of response, as well as experience of staff (compared with Severn-Trent and Northumbria-Yorkshire Regions). Movement of groundwater matters to the areas, on a multifunctional basis in the latter region, was stated to have resulted in a marked deterioration in the standard of service provided (speed, quality, consistency and expertise).

6.5 Conclusions

6.5.1 The results of the Customer Satisfaction Survey indicate that:

- overall, the Groundwater Section is providing a high standard of service to all its main customers, given the constraint of available staff resources.
- there is a need to improve speed of response on statutory consultations for planning liaison and abstraction licences **(action** -see section 10 & Appendix V).
- regular liaison needs to be maintained with all area-based customers, in particular Pollution Control staff **(action** - see section 10.7)
- clearer focus for points of contact/role clarity

- external and national customers consider the North West Region's structure for groundwater management efficient and effective, compared with regions which operate with split groundwater quality/quantity or area/region responsibilities.
- there would be little improvement in the standard of service to the areas even if there were adequate staff resources for the Groundwater Section were split into areas. Furthermore, this could result in a deterioration in service provision to external and national customers caused by a loss of central focus. experience and consistency.

6.6 Recommendation

It is recommended that the North West Region's Groundwater Section should remain as a regionally-based specialist service provider to internal and external customers for all aspects of groundwater management and protection.

6.7 Comments on Survey Method.

6.7.1 The survey has proved to be a worthwhile form of 'market research'. There were no adverse comments on the format of the questionnaires. There were delays in obtaining responses, although eventually 100% return rate was obtained following telephone chase up. These provided an opportunity to discuss the issues raised (e.g. section 6.4.3.12 above).

6.7.2 Improvements could have been made by stating a required return date on the covering memo/letter. The sample size of 13 was considered to be representative of the target group, by the nature of the 'market'. However, it is proposed that:

- the questionnaire is sent to **all** area based Pollution Control staff.
- the survey is repeated annually, to monitor effects of changes in systems and resources on the service provided.

7 INTER-REGIONAL COMPARISON

7.1 Need

There are marked inter-regional differences in way in which groundwater management and protection is carried out, and also the number and type of staff resources involved. This is partly historical, but may be related to the relative importance of groundwater in the regions. These differences have been compounded by implemenation of the 'Logical Process'. In order to assess the performance and efficiency of the North West Region's Groundwater Section, it is necessary to carry out a comparison with the other regions structures.

7.2 Objectives

- to establish numbers of hydrogeologists and technical support in other regions
- to develop an objective index for comparing resource variations
- to identify regional/area/functional responsibilities for groundwater related activities
- to indentify extent of use of consultants in other regions
- to assess relative efficiency/resource deficiencies of NW. Region
- to identify scope for improvements in NW Region practices/structure

7.3 Methodology

7.3.1 A questionnaire was sent to Level 3 managers/hydrogeologists in each region, under a covering memorandum.(Appendix IV.A). This requested details of structures, staff numbers, discipline and location, as well as the distribution of groundwater related activities (area/regions),. For ease of analysis, the latter were based on categories used for NW Groundwater Time Allocation recording (see section. 8.4.2).

7.3.2 Although questionnaires were distributed to the seven regions on 3.5.94 and responses requested for 20.5.94, only 3 were returned within the deadline. Two had not been returned by August, despite telephone reminders. One regional contact was interviewed by phone (South West)in order to complete the questionnaire. All late respondents apologised for delays, and attributed this to both high workload and/or uncertainty about their own regional structures/responsibilites resulting from Logical Process reorganisation.

7.4 Results

Presentation & Analysis

7.4.1 The completed questionniares are contained in Appendix IV.B. The regional variations in staff numbers and location (area/region) and functional splits are summarised in Table 7.1. The detailed breakdown into area/regional responsibility for individual tasks/activities is presented as Table 7.2).

7.4.2 Comparison of the total number of professional (graduate) hydrogeologists[13] by region is shown graphically as Figure 5A.

7.4.3 The above analysis does not take account of the relative importance of groundwater in each region. It is reasonable to expect those regions which have a high proportion of their area underlain by major groundwater resources, and /or a high dependency on groundwater supplies, to put have put greater emphasis on groundwater protection and management. Therefore, a more objective comparison of the level of staff resourcing is obtained by dividing the total quantity of groundwater abstracted per region [14] by the number of hydrogeologists employed. This gives an indicator of the relative volume of groundwater for which each hydrogeologist is 'responsible'. (Table 7.3) & Figure 5.B.

Findings

Numbers vs. Structure

7.4.4 It is evident from Figure 5. and Table 7.3 that Welsh and North West have the lowest number, (3). Significantly, both operate on a regional specialist service structure, with responsibility for all aspects of groundwater management and protection (Tables 7.1 & 7.2). The highest numbers of hydrogeologists are found in regions which have split groundwater quality and quantity into the Water Resources and Water Quality functions as well as into areas (operational matters) and regional headquarters (policy/project management), namely Thames (15), Southern (10) and Anglian (10). The exception to this model is Severn-Trent, which like NW and Welsh is totally regionally based, but employs 12 hydrogeologists (in addition to staff forming the National Groundwater Centre, also based in Solihull) .

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13 *with responsibility for groundwater management and/or protection*

14 *obtained from 'Digest of Environmental Protection and Water Statistics'-DoE, 1994*

Table 7.1 - Regional Hydrogeological Structures - Summary

Region	Regionally based (HO)		Area Based		number of areas	Regional Totals			Groundwater Abstracted Ml/d	Ml/d Groundwater abstracted per		REGION
	Hydrogeologists	Technical Support	Hydrogeologists	Technical Support		Hydrogeologists	Technical Support	Total		Hydrogeologists	Total Hyd. staff	
Anglian	4	2	6	5	3	10	5	15	956	96	64	Anglian
Severn Trent	12	3	0	0	4	12	3	15	1139	95	76	S-Trent
Southern	4	0	6	5	3	10	5	15	1230	123	82	Southern
South Western	6	2	0	0	4	6	2	8	679	113	85	S-West
Thames	9	2	6	3	3	15	5	20	1492	99	75	Thames
Welsh	3	1	0	0	3	3	1	4	244	81	61	Welsh
Yorks/Northumbrian	0	0	8	3	3	8	3	11	438	55	40	Yorks/North
North West	3	4	0	0	3	3	4	7	468	156	67	North West

Table 7.2 REGIONAL HYDROGEOLOGICAL STRUCTURES - ACTIVITY ANALYSIS

Region:	ANGLIAN			SEVERN TRENT			SOUTHERN			SOUTH WESTERN		
2 Staff Numbers	Region	Area		Region	Area		Region	Area		Region	Area	
2.1 Professional Hydrogeologists												
Number	4	[illegible]		12 (+2)	[illegible]		4	6		6	[illegible]	
Grade	[illegible]	[illegible]		[illegible]			[illegible]	[illegible]		7		
2.2 Technical Support												
Number	2	[illegible]					O	[illegible]		2		
Grade	[illegible]	[illegible]		[illegible]	[illegible]			4		7		
3 Activities/Responsibilities	Region	Area	Consultants	Region	Area	Consultants	Region	Area	Consultants	Region	Area	Consultants
3.1 Section 32 Consents												
a) issuing		H			O		O	H/O			O	
b) assessing/processing		H		H						H	O	
c) [illegible]		H								H	O	
3.2 Waste Regulation												
a) co-ordinating consultations		H		H				O		H		
b) groundwater comments		H		H			H			H		
3.3 Contaminated Land												
a) coordinating consultations		H/O			O			O			O	
b) groundwater comments		H/O		H			H			H	O	
3.4 Planning Liaison Consultations groundwater comments		H		H			H	O	C	H		
3.5 Discharges to [illegible] Notifications groundwater comments		O		H			H	O		H		
3.6 IPC Authorisations groundwater comments		H/O		H	O		H/O			H		
3.7 Catchment Management Plans groundwater input				H		C				H		
3.8 [illegible]	H			H			H	H/O		H		
3.9 Groundwater Modelling	H			H		C	H			H		
3.10 Groundwater Protection Policy												
a) [illegible] data acquisition	H		C	H		C	H			H		
b) catchment audits		O			O		H			not done		
3.11 Nitrate Sensitive Areas data acquisition & zone evaluation		H	C	H			not applicable			H		
3.12 R & D (Groundwater Related)			C	H			H			H		
3.13 Groundwater Related Enquiries - external		H/O		H	O		H			H		
3.14 Routine Groundwater Quality Sampling		O			O		not done				O	one off('89)
3.15 Geophysical Logging			C			C	not done			not done		
3.16 Routine Groundwater Level Monitoring												
a) manual dipping		O			O			O			O	
b) data logger installation		O			O			O			O	
interrogation		O			O			O			O	
data processing		O			O			O			O	
3.17 Groundwater Database Management		H/O	C	H			O	O			O	

Region:	THAMES			WELSH			YORKSHIRE/NORTHU			NORTH WEST		
2 Staff Numbers	Region	Area		Region	Area		Region	Area		Region	Area	
2.1 Professional Hydrogeologists												
Number	[illegible]	6		2			[illegible]	6		3	6	
Grade	[illegible]	[illegible]		[illegible]				[illegible]		[illegible]		
2.2 Technical Support												
Number	7	3		1			[illegible]	1		4	[illegible]	
Grade	[illegible]	4		4				4		[illegible]		
3 Activities/Responsibilities	Region	Area	Consultants	Region	Area	Consultants	Region	Area	Consultants	Region	Area	Consultants
3.1 Section 32 Consents												
a) issuing	H				O			H		H		
b) assessing/processing	H			H				H		H		
c) [illegible]	H				O			H/O		H		
3.2 Waste Regulation												
a) co-ordinating consultations		H			O			O			O	
b) groundwater comments		H		H				H		H		
3.3 Contaminated Land												
a) coordinating consultations		H			O			H/O			O	
b) groundwater comments		H		H				H		H		
3.4 Planning Liaison Consultations groundwater comments	H	H/O		H				H		H		
3.5 Discharges to [illegible] Notifications groundwater comments		H		H				H		H		
3.6 IPC Authorisations groundwater comments	H	H		H				H		H		
3.7 Catchment Management Plans groundwater input	H	H		H				H		H		
3.8 [illegible]	H			H				H		H		C
3.9 Groundwater Modelling	H			H				H				C
3.10 Groundwater Protection Policy												
a) [illegible] data acquisition	H			H				H	C	H		
b) catchment audits	H			H				H		not done		
3.11 Nitrate Sensitive Areas data acquisition & zone evaluation	H			H				H		H		
3.12 R & D (Groundwater Related)	H			H				H		H		
3.13 Groundwater Related Enquiries - external	H	H		H				H/O		H		
3.14 Routine Groundwater Quality Sampling		O			O			not done		H		
3.15 Geophysical Logging	H					C		H		not done		
3.16 Routine Groundwater Level Monitoring												
a) manual dipping	O				O			H/O			O	
b) data logger installation	O				O			H/O		H		
interrogation	O				O			O		H		
data processing	O				O			O		H		
3.17 Groundwater Database Management	H			H				H/O		H		

H = Hydrogeologist O = other.

Inter-Regional Groundwater Staff Comparison

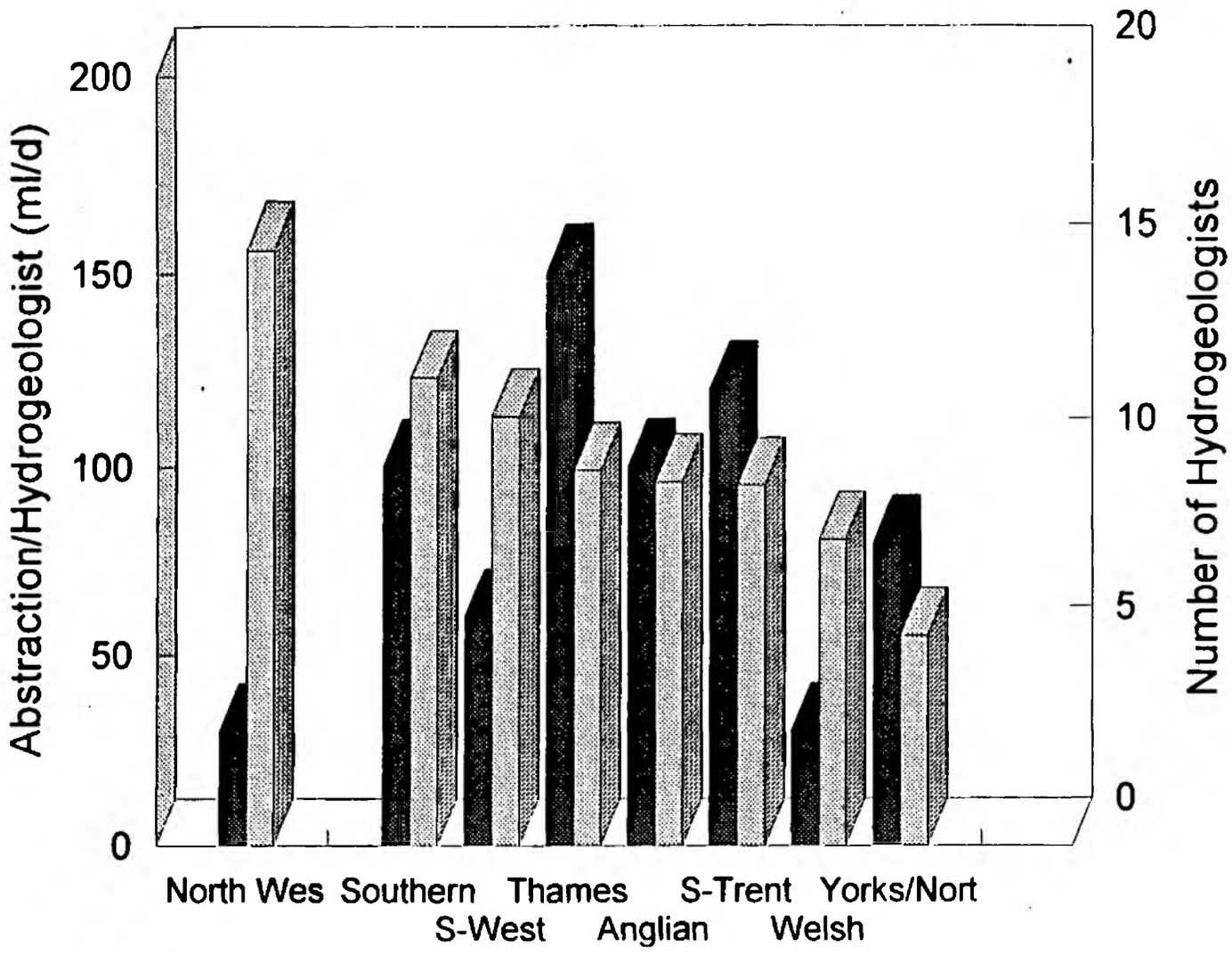

Figure 5.

Cost Effectiveness

7.4.5 Figure 5.B clearly shows that even when the index of 'groundwater abstracted per Hydrogeologist' is taken into account, the North West's Groundwater Section is the most 'efficient' in terms of professional hydrogeologists. When this is considered in conjunction with the results of the Customer Satisfaction Survey, it can be concluded that overall the Section is providing a cost effective service (doing the **right job** in the **right way** at the **right price**).

7.4.6 In terms of providing 'value for money' it is worthwhile to contrast the North West with Yorkshire/Northumbrian Region, which has taken the 'Logical Process' to its extreme by devolving all groundwater matters to the areas. There is a difference of the order of three in both actual numbers of hydrogeologists employed and the 'corrected' numbers taking into account groundwater abstractions. This is significant in that the geology and hydrogeology of the two regions are similar, as are the problems of contaminated land in urban areas and the large numbers of private water supplies in rural areas remote from mains water supplies. Again, the reported external customer responses (6.4.3.12) indicate the North West is meeting customer needs more effectively than Yorkshire/Northumbria.

Adequacy of Resources (Critical Mass)

7.4.7 Having established regional numbers, it is necessary to ask whether there are adequate staff resources to manage the workload to the standards required. The most tellling response was from Welsh Region, which like the North West only has 3 professional hydrogeologists. -*"I feel that your pro-forma should ask the question as to whether or not the region is operating above, below or at the critical resource mass. With this region I can safely say that we are below."- Wayne Davies (Principal Hydrogeologist)*

7.4.8 This is certainly also the case in the North West. The most effective model on which to operate (given the overriding objective of providing value for money rather than being multifunctional and area based), is considerd to be a pooled (regional) resource of experienced specialist staff able to react flexibly to a variable workload. However, it is recognised that there is a minimum number of staff below which it is difficult to operate effectively. The question of adequacy of resources and workload management is addressed in more detail in sections 8, 10.3 & Appendix V.

Activity Analysis

7.4.9 Given the current constraints on manpower, consideration must be given to prioritising work, as well as reviewing the nature and purpose of work which is carried out at regional/area level and that which is or can be externalised (the supplier/customer chain). Therefore, the survey results (Table **7.2**) have been used to identify those activities carried out by the North West's Groundwater Section at regional level which in different regions are supplied by other 'providers', or is simply not done at all. Those activities which lend themselves to adoption of a similar approach in the North West are summarised in Table 7.4 (this is pursued in section 10.3).

Table 7.4

Activity	Provider
Groundwater Modelling[15]	consultants
Groundwater Protection Zone data acquisition	consultants
Nitrate Sensitive Zone data acquisition	consultants
Routine Groundwater Quality Sampling	areas (others) /not done
Geophysical Logging	consultants/not done
Routine Groundwater Level Monitoring (data logging)	areas (others)

7.5 Conclusions

7.5.1 The results of the Regional Hydrogeological Structure survey indicate that:

- the North West and Welsh regions have the lowest number of professional hydrogeologists. These operate as a pooled, regionally based teams responsible for all aspects of groundwater resource management and protection.

15 *modelling is currently being carried out under contract in the NW in connection with the Fylde Aquifer/Wyre Catchment Water Resources Study.*

- the largest numbers of hydrogeologists occur in regions which have split groundwater matters into areas/region and Water Resources/Water Quality functions.

- when staff numbers are corrected to take account of groundwater use, the North West comes out as the most 'cost effective' region. This contrasts with Yorkshire/Northumbria, which operates totally on a multifunctional area basis (Logical Process).

- there is scope to externalise certain activities to areas or consultants

7.6 Comments on Survey Method

7.6.1 The survey method was generally effective in ascertaining variations in other regional structures. The slow speed of response is indicative of the pressure all Groundwater sections within the NRA are under; colleagues having to prioritise workload. It was also due in part to uncertainlty of role clarity, responsibilites and structures even within the same region. This is to a large degree attributable to the 'Logical Process'. It also illustrates the problems referred to by the Groundwater Centre (section 6.4.8) in getting coordinated responses on groundwater matters from regions that have split their groundwater activities.

7.6.2 The use of follow up telephone interviews (both specifically in connection with the survey and also during normal networking with colleagues from other regions) was useful in establishing the effectiveness of their structures. Significantly, without exception, all felt that the North West model of a regional specialist service dealing with all aspects of groundwater quantity and quality was to be recommended. The overall feeling from the 'sharp end' was that splitting groundwater management into Water Resources, Water Quality and/or area and region has been based on 'political' rather than sound technical or cost effective reasons.

7.6.3 The questionnaire could have been improved by asking the supplementary question about the perceived adequacy of staff resources, as suggested by the Welsh Region's respondent. This is likely to have become even more critical an issue since the survey was initiated, in view of the moritorium on recruitment and active cut-backs in staff numbers throughout all regions.

8. MATCHING RESOURCES TO WORKLOAD

8.1 Need

In order to maintain a high level of customer satisfaction whilst addressing longer term groundwater management issues it is essential to ensure that there are adequate resources available to match the workload. This is also important in terms of staff performance; having the right tools and knowledge to do the right job, to the right standard at the right time . Lack of resources or too much work will affect job satisfaction, motivation and ultimately the well being of the 'team' and individuals.

8.2 Objectives

8.2.1 The overall objective is to review the adequacy of resources to meet current and future demand. This breaks down into:

- defining the nature of the work - volume, type and origin
- identifying the overall number of staff available to meet the workload
- assessing the balance of knowledge and skill requirements
- identifying any excess or shortfall in resources vs. demand
- identifying resource needs (short & longer term)
- investigating options for change (solutions)

8.3 Resources

Defining Resources

8.3.1 Resources may be considered in terms of *people, information, capital equipment and materials*. Since the key role /purpose of the Groundwater Section is to provide an accessible and comprehensive, 'expert' groundwater service at area, regional and national level (section 3.2.2), the two most important resources are firstly **people** (the 'team') and secondly **information.** Equipment is used - for measuring and sampling groundwater, as well as for storing and processing of information. Materials are not relevant since the Section does not produce any 'hard products'.

8.3.2 In the context of this report, reference to resources relates to staff, unless otherwise stated.

The Right Number

8.3.3 It has been established that the North West has the (joint) lowest number of professional hydrogeologists of all NRA regions, and the second lowest number of total staff (professional and technical) involved in groundwater management (section 7). This is partly historical and was exacerbated by implementation of the Logical Process, when the Groundwater Section was transferred from under the line management of the current Water Resources Manager (Mike Eggboro), a qualified hydrogeologist (section 3.1.2). This equated to the loss of approximately 0.5 FTE (full time equivalent) professional staff, whilst increasing the demands on the Groundwater Resources and Groundwater Systems Managers' time in addressing the needs of customers, senior management and staff (i.e. combining management and professional roles).

8.3.4 By necessity a high degree of delegation is carried out to non-professional staff (see Figure 3.1). Therefore, the freezing/loss of one Groundwater Assistant post following the transfer of Philip Reynolds into Environmental Quality in March 1994, is having a real impact on the team. This has been compensated for, to a large degree, by the remaining staff working longer hours, partly as paid overtime (for staff below the overtime limit i.e. technical staff), but also by unpaid overtime outside the flexitime bandwidth. This requires the continued good will and commitment of the team members (see section 3.4).

8.3.5 Although temporary staff have been employed for specific project work for a 9 month period up to September 1994, the current embargo on recruitment is precluding reappointment of a successor. In any case, they were not deployed on day-to-day customer related tasks.

The Right Balance (Professional vs. Technical)

8.3.6 Since the formation of the NRA, the role of the Groundwater Section has changed from being a self-contained, totally regionally based Water Resources department into the provider of a specialist service, mainly to support areas (performing as a '*virtual area*'). Therefore, the balance in skill and qualification requirements of the Section needs to be reviewed in order to adapt our 'product' to meet the changing market.

8.3.7 With the current constraints on manpower it is necessary to optimise use of existing resources. However, even with adequate training of the technical support staff, there is a limit to the amount and type of work which can be delegated to non-professional hydrogeologists. This aspect is dealt with in section 10.7 - Team Development Plan.

8.4 Workload

Defining Workload

8.4.1 The Sections role, purpose and key activities are as set out in section 3.2 above. These are undertaken for a number of different customers (Table 3.2).

Measuring Workload

8.4.2 The workload of the Section is measured directly in three principal ways:

(i) **Time Allocation Sheets**

These record the time each team member spends on each activity. (An example form is attached as Figure 8.1) They are completed weekly by the individuals and input onto a Water Resources database developed in connection with the Hydrometric Efficiency Review. Time is allocated to the 'customer' i.e. area (defined as North, Central or South, if known), region or national. Work in connection with capital projects is logged and recharged to that project. The system has been operational for 12 months, although it has undergone several stages of development. Therefore, reliable records are only available from March '94.

(ii) **Internal Performance Tracking**

In-house systems are maintained for recording and tracking responses to area customers in connection with statutory consultations and notifications (see Table 3.2)

(iii) **External Performance Tracking**

Tracking systems have recently been established by the area based Authorisations Officers for monitoring regional and sectional performance in responding to statutory consultations. A system is also in place for recording speed of response to external data requests.

8.4.3 An indirect measure of workload is the number of hours worked by the Section, compared with the 'standard week' of 37 hours. The flex-time system records hours spent between 08.00 and 18.00. However, time outside this bandwidth is both unpaid and unrecorded. Excess time above 8 hours 'credit' is also lost at the end of each 4 week flex-cycle.

8.5.2 The numbers of 'routine' statutory consultations and data requests processed since January '94 have been used to assess the total number handled per year, and the distribution by area.(Table 8.2).

Table 8.1 Groundwater Section Activity Analysis (% individual times & total FTE)

Activity & Task	K.J. SEYMOUR	A.J. PEACOCK	J.A. INGRAM	D C PASSEY	M.D. THEWSEY	C.D. SHARP	L. ELSE	Average %	FTE
GROUNDWATER (NON HYDROMETRY)									
10 Licensing/consents	17.15	4.43	0.00	29.77	2.75	0.32	31.05	12.2	0.8
RESOURCE PROTECTION (KE10)									
20. Waste Regulation	13.48	11.93	0.35	0.00	0.52	14.85	0.20	6.7	0.5
30. Contaminated Land	2.78	0.54	0.00	0.50	0.34	0.00	0.00	0.6	0.04
40. Pollution Incidents	0.71	2.12	0.38	0.50	3.44	0.74	0.00	1.1	0.07
50. Planning Liason Consultations	5.28	0.91	7.97	0.00	3.00	27.83	21.57	10.2	0.7
60. Discharge Notifications	0.02	0.12	0.00	0.00	0.00	1.04	2.24	0.7	0.05
70. IPC Authorisations	1.72	0.57	0.00	0.00	5.50	0.00	0.12	1.2	0.1
80. Groundwater Protection Policy									
Policy development/zone definition:	0.00	2.00	0.01	2.44	1.00	0.00	0.00	1.1	0.08
Policy implementation:	0	0	0	0	0	0	0	0	0
90 Nitrate Vulnerable Areas	0.00	00.13	0.03	0.00	0.17	0.00	0.00	0.7	0.0
100. Response to national initiatives (misc)	1.11	3.28	17.72	7.50	4.12	0.00	0.00	4.0	0.3
110. Private water supply register	0.00	0.00	0.00	0.00	3.01	1.48	2.01	1	0.07
120 Alleviation of Low Flows	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.2	0.01
PLANNING & DEVELOPMENT									
130. Catchment Management Plans	1.97	0.58	0.00	0.00	0.00	0.00	0.00	0.3	0.02
140 Summary Groundwater Vulnerability Maps	1.03	1.58	0.00	0.00	0.00	0.00	0.00	0.4	0
RESOURCE PLANNING									
150 Resource/Demand Assessment	3.28	0.12	0.00	1.47	0.00	0.15	1.00	1	0.1
DATABASE MANAGEMENT& DEVELOPMENT									
160 Groundwater Computer System	0.00	2.01	0.00	0.21	0.00	10.40	1.97	2.2	0.2
170. Paper System	0.00	0.00	0.00	2.73	25.43	1.00	7.00	5.3	0.4
PROMOTION/ADVISORY									
180 presentations	7.45	2.35	0.00	0.00	0.43	0.00	0.31	1.5	0.1
190. consultations/enquiries									
191 internal	1.97	0.73	3.00	0.00	3.00	2.05	0.12	2	0.1
192 external	4.98	1.02	10.35	0.70	11.06	11.05	0.04	7.2	0.5
200. CAPITAL PROJECTS	13.73	1.02	44.30	0.00	15.72	1.12	0.00	10.0	0.7
210 Special Projects	0.00	0.00	3.71	0.45	15.20	0.12	0.00	2.8	0.2
HYDROMETRY									
250. Routine Groundwater Quality Sampling	0.00	0.10	0.00	0.06	0.00	3.03	0.00	1.7	0.1
260. Non-Routine Groundwater Sampling	0.00	0.00	0.01	0.04	0.00	0.00	0.10	0.1	0.1
270. Data Loggers (Obh Network)	0.00	0.02	0.00	36.03	0.00	7.00	2.00	6.7	0.5
280 Geophysical Logging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1	0.1
290 Observation Borehole Network	0.10	0.10	0.00	0.44	0.00	2.07	0.75	1.3	0.1
Borehole Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Borehole Maintenance	0.00	0.00	0.00	0.70	0.00	0.00	0.00	1.4	0.1
300 Quality Assurance	0.00	0.00	0.00	0.31	0.00	1.00	0.50	0.4	0.03
310 Data Management/Processing	0.13	0.00	0.00	0.02	2.15	0.15	0.00	1.3	0.1
Training	11.37	0.64	0.00	0.54	0.00	3.03	0.50	3.1	0.2
management	0.03	0.73	0.00	0.00	0.00	0.00	0.00	1.5	0.1
non-attributable time	36.01	15.02	13.02	29.07	31.07	18.43	29.10	24.4	1.7
Total (excluding non-attributable time)	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100	7

Workload by Activity

Groundwater Section

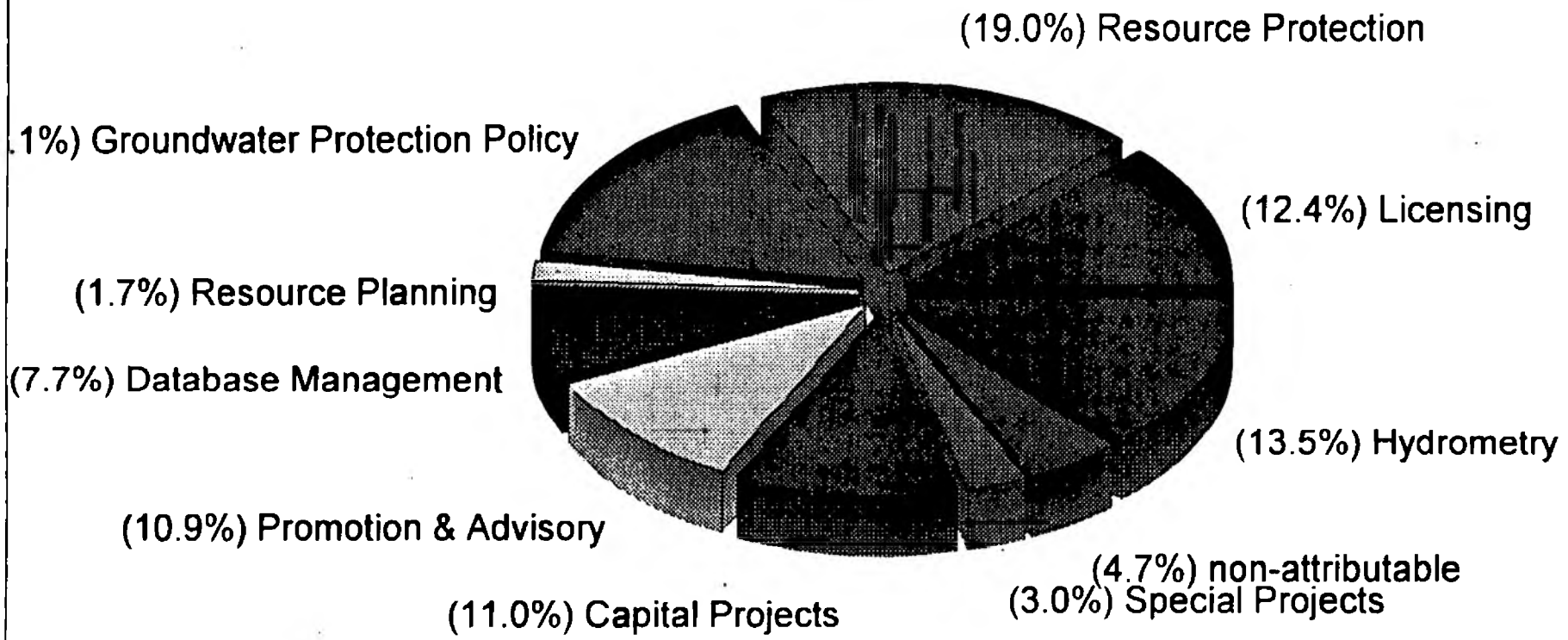

Figure 6.

Workload by 'Customer'

Groundwater Section

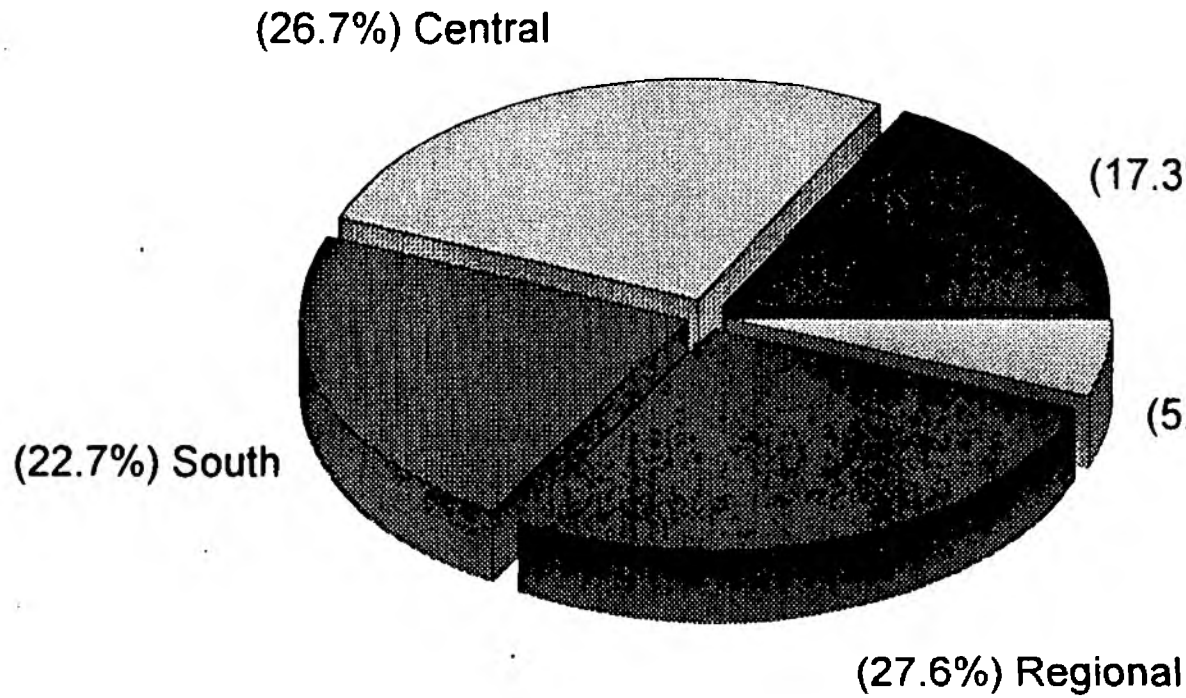

Figure 7.

8.4.4 An additional indicator of workload, or more specifically pressure, is the stress level of individuals. This has been assessed in a survey carried out by the Specialist Services Manager in August '94[16].

8.5 Results

Presentation & Analysis

8.5.1 Table 8.1 records the total time allocation by task/activity for each individual for the period March - September '94 . Figure 6. summarises the distribution of time by activity for the Section. The results have been used to identify the overall percentage time of the Section attributable to the different customers, as shown in shown in Figure 7.

Table 8.2

Consultation	Period	number processed	**North** number. (%)	**Central** number (%)	**South** number (%)	Total per annum
Plannings	July'94 Aug'94	154 177	59 (38)	16 (10)	79 (52)	2000
Consents	Jan-Aug'94	35	11 (31)	9 (26)	15 (43)	50
Licences	Jan-Aug'94	24	8 (33)	4 (17)	12– (50)	36
Waste Disposal & Contam. land	July- Aug.'94	31	2 (6)	14 (45)	15 (48)	180
IPC's	Jan-Aug'94	68	2 (5)	12 (21)	44 (76)	100
Discharge Notifications	Jan-sept'94	152	55 (36)	49 (32)	48 (32)	200
External Data Requests	Jan- July'94	167	n/a	n/a	n/a	300

16 *compiled by Dr J. Cozens, Dept of Psychology, University of Leeds*

8.5.2 The numbers of 'routine' statutory consultations and data requests processed since January '94 have been used to assess the total number handled per year, and the distribution by area.(Table 8.2).

8.5.3 The demands on staff resources to handle the current number of these consultations in terms of FTE's is presented in Table 8.3, using both consultation numbers and the Activity Analysis sheets.

Table 8.3 - Routine Consultations

Consultation	no. per annum (1994)	time per[17] application (hours)	total man-hours	main personnel input	FTE[18]
Planning Liaisons	2000	0.75	1500	Technical	0.7
Borehole Consents	50	24	1200	Technical	0.8
Abstraction Licences	36	10	360	Professional	
Waste Disposal/ Contaminated Land	180	0.75	135	Professional	0.54
IPC's	100	0.5	50	Professional	0.1
Discharge Notifications	200	0.5	100	Technical	0.05
Data Requests	300	0.5	150	Technical & Professional	0.5
		Total	3495hrs=	2.2 FTE	2.7 FTE

17 *assume applications/enquiries are straightforward, and only involve desk study. Planning applications, discharge notifications and data requests are vetted by technical staff against set criteria. Complex or contentious applications are referred to hydrogeologists for professional opinion/decision making. Field work and analysis of borehole consents and depends on complexity, and may significantly exceed the figures quoted. Therefore, the figures will underestimate the actual demand on staff time to deal with routine enquiries.*

18 *The data from the Activity Analysis Sheets (Table 8.1) is a more representative indicator of total time spent processing these applications/enquiries.*

Table 8.4 - Stress & Rewards Survey.

work pressure level	'pressure antidote' level	balance
10	19	unstressed
21	19	compensated
29	30	stressed
28	31	stressed
29	36	stressed
17	14	unstressed
22	28	stressed
20-29 pressured 30+ real problems	<20 - will help compensate pressure	

- for Groundwater Section (individuals anonymous)

8.6 *Findings*

8.6.1 A number of conclusions can be made regarding the origin and volume of work. These are discussed below:

Workload Origin

8.6.2. Approximately 67% of the workload of the Section is area- related; the majority of complex matters requiring significant inputs from professional hydrogeologists (i.e. waste disposal, contaminated land, and IPC Authorisations,) occur within the South and Central areas. This reflects the demand for groundwater and landfill capacity, as well as legacies of industrial development in urban areas (Preston, Merseyside and Greater Manchester).

8.6.3 Although 33-38% of planning consultations, discharge notifications and abstraction licences/consents originate in the North area, these tend to be more 'straightforward' than those in South, because of the small scale of developments, lower density of population and the predominantly rural setting and low demand for groundwater. Therefore, they tend to be quicker to process and/or require less professional input.

8.6.4 27% of the Section's time is spent on 'regional' matters. This includes capital project initiation and management, and data base management

(our basic 'tool'). The remaining 6% attributed to national level **excludes** groundwater protection activities (Protection Zone delineation) generated by the Groundwater Centre. This is recorded as a regional activity.

Workload Type/Categorisation

8.6.6 It is possible to break down the various activities into different categories e.g. quality/quantity, operation/policy, reactive/proactive, client/contractor, statutory/non statutory, hydrometry/non-hydrometry, routine/non routine. This is useful in terms of prioritising workload. However, in practice the Section operates very flexibly, with individuals having varying inputs into the different categories. This makes any attempt to make meaningful splits in the staff resources difficult, and potentially compromises the efficiency of the Section which is derived from its integration of all groundwater management and protection matters . This is illustrated by Table 8.1 and Figure 6.

Workload Volume

8.6.7 Tables 8.1 and 8.2 indicate the time spent (demand) on key activities. This does not reflect the need to input sufficient time to provide a quality output, and ultimately to ensure that the Authority is operating to its agreed service levels and/or complying with its statutory obligations/deadlines. As they relate to the Section, these are summarised below. The high staff time input is indicative of the efforts being made to meet team goals and objectives (section 10.3). The high stress levels in four out of the seven team members (Table 8.4) is also indicative of the pressures and high workload. Although the survey was anonymous, it is known that the high stress scores included the senior professional hydrogeologists, reflecting the conflicts of managing a large and variable workload with a scarce resource, i.e. continually fire fighting.

Skills Requirements

8.6.8 To optimise effective use of available resources, the Groundwater Assistants are used to act as 'filters' for handling 'routine' consultations and data processing, in addition to carrying other specialist work e.g. borehole network and archive management. In view of the large volume of relatively straightforward applications/enquiries (Table 8.2 & 8.3) which **need** to be vetted by the Section, the existing number of Groundwater Assistants is considered to be the minimum with which the

Section can continue to operate. This is also a function of the relatively 'mundane' nature of these activities. (see section 3.4 - Team Effectiveness). However, it is recognised that their lack of professional hydrogeological skills does constrain the ability to delegate certain tasks. There is limited scope for further delegation of tasks currently undertaken by hydrogeologists[19], partly because of the technical staffs' 'skill deficiencies, and partly because of their commitment to keeping up with the large influx of enquiries/consultations which are subject to tight turnround times/agreed standards of service (e.g. planning applications).

8.6.9 An additional hydrogeologist at graduate level would greatly enhance the performance of the Section and allow it to be more proactive. By necessity at present it is largely reacting to meeting short term customer demands. In the absence of the recruitment moritorium, the frozen Groundwater Assistant post would have been filled with a graduate hydrogeologist.

Future Needs (Succession Planning)

8.6.9 The above only considers management of the existing workload and meeting short term objectives. There is also a need to plan for the future. The 3 professional staff are aged 40-50, and between them have over 60 years profesional geological experience. To ensure continuity inproviding a high level expert service requires this acquired knowledge and experience to be 'passed on'. Therefore, recruitment of a graduate hydrogeologist is essential to meet this need. It would also provide an opportunity to introduce 'up to date' hydrogeological skills which are lacking in-house e.g. groundwater modelling.

8.7 Conclusions

The review of resources and workload indicates:

- 6% of the workload of the Section is related to national issues, 27% to regional and 67 % to the areas -17% North, 27% Central, 23% South, (by time)

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19 *with the exception of redeployment of the Senior Technical Officer (D. Passey) to process Groundwater Investigation Consents, when data logger work can be externalised - see Appendix F*

- the largest volume and complexity of workload is concentrated in the South & Central part of the region.

- the efficiency and effectiveness of the Section is derived partly from the integrated staff inputs into all groundwater related matters

- attempting to split the Section into client/contractor, quality/quantity, region/area, policy/operation would compromise this efficiency and hence cost-effectivenss.

- there is an imbalance between overall workload (volume) and staff resources,as a result of loss of 0.5 FTE professional and 1 FTE technical staff. This is being compensated for by high staff-time inputs, much of which is unpaid and unrecognised. The result is high stress levels, mainly amongst professional staff.

- optimum use is being made of technical staff, in terms of filtering 'straightforward' work, commensurate with their capabilities/knowledge/skills and workload. This is necessary to release professional hydrogeologists to concentrate on specialist/managerial tasks.

- there is little scope to accommodate peaks in current workload.

- the efficiency and effectiveness of the Section is largely dependent on the knowledge and experience of its senior staff (professional and technical)

- there is a medium-long term need for at least 1 graduate hydrogeologist to be recruited into the Section to:

  - provide ' continuity of service'
  - introduce 'new blood' and skills

9. DEVELOPMENT STRATEGY - VISION

WHERE ARE WE NOW? - summary

The Groundwater Efficiency Review has identified the following needs:

Short term:	to improve speed of response to statutory consultations to match resources to workload to focus on priority objectives
Medium Term:	to address shortfall of professional hydrogeological skills to prepare for change resulting from ENVAGE.
Long Term:	to ensure future strength and continuity of Section (succession planning)
Ongoing:	to maintain the motivation, trust and morale of staff to maintain close liaison with areas

WHERE DO WE WANT TO BE? - Vision:

The provider of a cost effective and efficient one-stop shop for all aspects of groundwater management and protection in the North West i.e. multi-functional (quality/quantity), which can adapt to meet the organisational challenges of ENVAGE..

The combined skills and strengths of the Groundwater Section are such that it has the potential to make a significant contribution to the new agency, in terms of water, land and waste matters.

HOW DO WE GET THERE?

This is set out as a short term **Business Plan** which forms the first stage of a medium-longer term strategy for acheiving the vision.

It is recognised that a high degree of flexibility and ongoing review will be required to produce a balanced proactive and reactive response to the merger of the NRA, HMIP and Waste Regulation functions.

10. BUSINESS PLAN

10.1 Scope & Assumptions

This Business Plan concentrates on meeting short term objectives i.e. for the period up to March '96, but also considers medium-longer terms needs.

It assumes that the results of the Groundwater Efficiency Review are implemented as recommended, and that resource availabilty and allocation is at present and remains within the control of the Groundwater Section managers.

10.2 Role, Goals & Objectives

General Principle

10.2.1 The strength of the Section lies in its ability to provide a cost effective specialist groundwater management and protection service, mainly to internal customers. This should be consolidated by externalising those activites which:

- are not of a regulatory or specialist hydrogeological nature
- are done more cost effectively elsewhere

and buying in skill shortages not available in--house

> Charles Handy - *'It is not sensible, after all, to pay premium rates and give premium conditions to people whose work is not essential to the organisation...All non-essential work, work which could be done by someone else, is sensibly contracted out to people who can make a speciality of it and who should , in theory be able to do it better for less cost.'*

10.2.2 The conflicting forces for change have been reviewed in section 4. Although there is a move towards separating the organisation on an area/region (operation/policy)basis, the need for regionally based specialists is recognised in the various options for change being considered for the Environment Agency (Ref. 6. *Touche Ross*)

Role

10.2.3 Therefore the **role** of the Section should be redefined as:

'the provider of specialist groundwater management and protection service for internal and external customers'

This is aimed at supporting the areas in carrying out their day to day 'operational' and regulatory duties, as well as providing an input into regional and national water resource issues; particularly in relation to Corporate Plan objectives and targets.

It requires the management of region-wide geological and hydrogeological data collection and information systems, and associated infrastructure..

Goals:

10.2.4 These are to:

- provide hydrogeological inputs into statutory consultations (area)
- manage groundwater investigation consent procedure (area/region)
- contribute to development and implementation of groundwater protection policy (national/region)
- carry out groundwater resource availability/low flow assessments (region)
- proactively prevent groundwater pollution by preparing strategic land use and development plans and guidance (region/external).
- manage regional groundwater monitoring programmes
- contribute to and implement national groundwater monitoring strategies (national/region)
- evaluate regional groundwater quality
- contribute to development of Catchment Management Plans (area)
- contribute to national R&D projects
- maintain and enhance the reputation of the Section, internally and externally

Objectives:

10.2.5 These goals will be achieved by meeting the following specific **team** objectives:

- to respond to statutory consultations (planning liaison, waste regulation) and abstraction licences within agreed response times (standards of service)-*ongoing*

- to manage and process groundwater investigation consents to national standards of service - *ongoing*

- to complete Groundwater Source Protection Zones data collection by March '95.

- to manage the Fylde Aquifer/Wyre Catchment Water Resources Study, to complete by October '95

- to prepare groundwater vulnerability maps/statements, as required by Planning Authorities - *ongoing*
- to develop a regional groundwater quality monitoring programme (in accordance with national protocols) by March '95
- to complete additional monitoring boreholes by March '95
- to complete a review of regional groundwater quality - report by March '95
- to maintain and update geological and hydrogeological databases.-*ongoing.*

10.2.6 These have been translated into **individual** objectives, which were originally agreed in January '94 and subsequently reviewed in August '94. (Appendix VI)

10.3 Workload Management & Priority Planning

Background

10.3.1 The imbalance in workload and staff resources is recognised as a major challenge imposed by the current constraint on appointing new staff, and the loss of one Groundwater Assistant post from the structure. The background to this is described in section 8. A detailed workload/resource analysis is contained in Appendix V and summarised below:

Need

10.3.2 To meet team and individual objectives and satisfy both short term (internal) customer needs and wider groundwater management responsibilities, it has been necessary tprioritise individual tasks, and identify more cost effective or politically expedient solutions.

Options

- recruit new staff **(presumption against)**
- stop doing certain activities)- prioritorisation
- reduce standard of service)
- externalise suitable activities - to areas/consultants/contractors
- develop more efficient systems

Table 10.1

Activity	Alternative Provider	Budget Cost[20]
1. Resource Management/Protection Projects		
a) Source Protection Zone data acquisition	consultants	£20K
b) Groundwater Resource/Demand Assessment	consultants	£95K
2. Hydrometry:		
a) routine quality sampling	areas/consultants	£75K[21]
b) routine data loggers	areas/consultants	£25K
c) geophysical logging	consultants	£95K[22]
d) borehole maintenance	contractors	£15K
		£325K

Evaluation

10.3.3 The evaluation of these against specified success criteria are set out in Appendix V, along with cost/benefit analyses.

Prioritorisation/Reduction in Standards of Service

10.3.4 From Appendix V it is evident that there is little scope to reduce current standards of service; all activities are carried out by the Section are defined as 'important/essential', and most are at or below an acceptable standard (level of detail or speed of response).

Externalisation

10.3.5 Two key work areas have been earmarked for externalisation during '94/'95 and '95/ '96.

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20 *budget costs are conservative in view of competitive nature of groundwater consultancy market (tenders submitted recently indicate bids at 50-75% of true/realistic cost).*

21 *reflects area of growth enhancement of current level of 'service'. Draft national strategy for groundwater quality assessment recommends 60% increase in monitoring in NW to bring it up to national 'norm'). Staff resources are not available within the Section to support enhanced standard, except in a project management capacity.*

22 *- as footnote 2.*

These are specific self contained groundwater protection/management projects and routine hydrometric activities (Table 10.1)

10.3.5.1 **Priority**

Externalising data loggers is seen as the highest priority of the hydrometric activities, since this will release 0.5 FTE of technical staff time, which is urgently required to improve speed of response on statutory consultations (Appendix V.9)

10.3.5.2 **Cost vs Benefit**

Organisational **benefits** of externalising routine hydrometric activities will be summarised as:

- consistent with Logical Process
- consistent with Hydrometric Efficiency Review
- allows Groundwater Section to concentrate on specialist role
- more efficient and effective use of staff resources
- reduced travel costs/'lost' travel time

Disbenefits are:

- increased project initiation and management time & cost
- reduced job satisfaction & job variety for individuals
- poorer quality control/ownership of data management
- **not necessarily more cost effective**[23]

Detailed cost benefit analyses are contained in Appendix V.

10.3.5.3 **Implementation**

Individuals have been tasked with responsibility for implementing the solutions (see personal objectives). All externalisation projects should be completed by December '95.

Systems Development

10.3.6 Significant efficiency savings and improvements in speed of response can be made by

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[23] *It should be noted that if it were not for political constraints on recruitment and Logical Process, the need for such an extensive externalisation programme would be reduced. Most of the activities could be carried out more* ***cost effectively*** *in-house with minimal additional staff resources (see section 10.??). This would also promote succession planning (section 8.5.9)*

developing new systems/working methods for processing planning liaison consultations and external enquiries/data requests. These are detailed in Appendix V.10 and will be implemented by March '95.

10.4 Organisational Structure

10.4.1 Assessment of the team composition has demonstrated that one of the strengths of the Section is derived from the blend of skills and attributes of individual team members, their commitment and motivation. This **added value should not be underestimated.** Therefore, it is inappropriate and indeed inadvisable to effect any major change to the overall team composition.

10.4.2 However, the preceding Groundwater Section Efficiency Review identified the following issues:

- the need for greater role clarity and focus for internal area-based customers (more clearly defined points of contact) - section 6.4.10.
- succession planning for professional hydrogeologists

Therefore, a two stage modification/enhancement of the structure of the Section is proposed. These are shown on Figures 8.A & 8.B.

Stage 1- Immediate/Short Term (minimal acceptable operational level)

Objective:

- to develop a more balanced team structure and clearer focus for customers

Key Elements:

- nominal split into

  '**Groundwater Resources**' team, primarily responsible for resource development & strategic planning and **management** of field monitoring network (infrastructure and data acquisition); and

  '**Groundwater Protection**' team primarily responsible for protection policy development and quality issues, along with archive management.

- change of job title from Groundwater Systems Manager to Groundwater Protection Manager

Figure 8. A **Stage 1. Proposed short term structure**

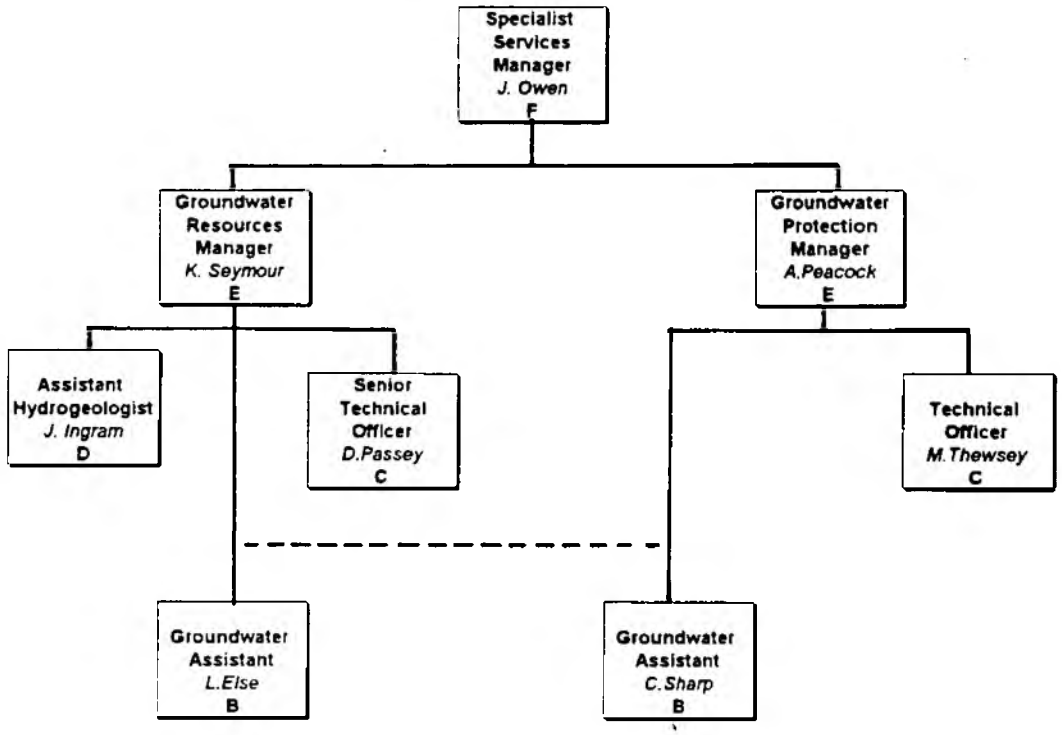
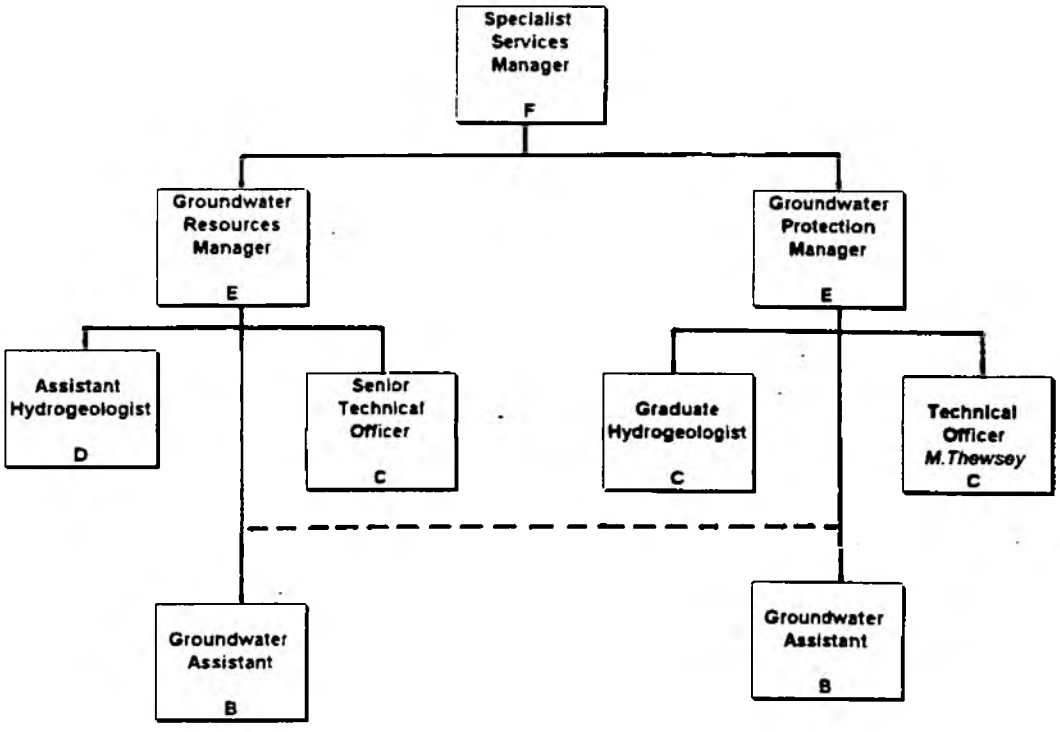


Figure 8.B. **Proposed Medium Term Structure**



- transfer of one Groundwater Assistant post (Charles Sharp) to under line management of Groundwater Protection Manager.

Note: In practice the integrated nature of working and shared responsibility for area/regional, reactive/proactive work will need to continue.

Cost Implications - no change

Constraints/Dependencies - none (other than agreement of line management/ individuals)

Stage 2 - Medium Term (Ideal/Optimum Operational Level)

Objectives:

- to introduce new blood/new skills
- to secure succession of professional hydrogeologists

Key Elements:

- create additional graduate hydrogeologist post in Groundwater Protection team (Grade C).
- required to have groundwater modelling skills
- would support both Groundwater Protection & Groundwater Resources Managers
- reduced dependency on external consultants

Note: in effect replacing lost/frozen Groundwater Assistant post with professional graduate i.e. no increase in staff compliment as of 1.2.94

Cost Implication - salary (£14,200) + overheads of Grade C - offset against savings of lost Groundwater Assistant post (Grade B - £13,500) & reduced need to contract out work.

Constraints/Dependencies:

- contrary to current regional manpower reduction targets (graduate needs to be recruited from outside)

- dependant on preliminary management structure for Environment Agency (staff numbers, area/region roles/responsibility- provisionally April '96)

10.6 Marketing Strategy

10.6.1 The principles and importance of marketing in the context of the Groundwater Section are set out in section 5 of the Efficiency Review. The provision of a 'quality service' that meets customers' needs is seen as being essential to ensure the continued success of the Section. This means providing

- the right information/product
- at the right time
- at the right 'price'
- supported by the right promotion.

10.6.2 The preceding sections of the Business Plan address the first three aspects, in particular focusing team efforts on improved speed of response and efficiency in delivering the required 'product' to area customers. The remaining key role is to **actively promote** the Section within the areas.

Point of Contact

10.6.3 Restructuring of the Section (10.5 above) is aimed at providing more clearly defined points of contact. When implemented, the new Organisational Structure Charts (Figures 10.1 & 10.2) and role & responsibility diagrams will be circulated to **all** relevant area staff.

Liaison

10.6.4 A series of seminars have already been given to the following area-based staff, on a functional basis:

- Pollution Control
- Licensing
- Waste Regulation

The purposes of these were to:

- raise awareness of the role and capability of the Groundwater Section
- explain **who** we are (structure/personnel), **what** we do, **how** and **why**
- improve communications and break down any barriers caused by remoteness
- identify their expectations and requirements of us.

The content and format of the seminars were tailored to meet the specific needs of the individual functions.

10.6.5 As a priority these will be extended to the Planning Liaison staff, who have only recently become area-based under the 'Logical Process', and many of whom are new appointees (i.e. unfamiliar with the role of the Groundwater Section).

10.6.6 Formal liaison meetings (quarterly) will held with the above internal customers, to give information, seek feedback and identify areas for improvement. It will be stressed that to enable the Groundwater Section to fulfil its specialist role, we in turn rely on area staff providing adequate information to provide our agreed 'quality service' i.e. the information management process is a two-way exchange.

10.6.7 The Customer Satisfaction Survey and informal feedback indicates that at 'officer level' i.e. the staff with whom we have regular contact, there is appreciation of the Section. However, their line managers, up to Area Manager level, need to be made aware of the contribution we are and can make to their operational activities. Therefore, it is also proposed that more general seminars are arranged over the next six months for area-based senior managers.

Monitoring Performance

10.6.8 The Customer Satisfaction Survey will be repeated annually to monitor the effectiveness of the proposed improvements. It will be extended to include all pollution control staff, and first line functional managers for the key area customers. This will be complemented by the formal liaison meetings with area-based staff.

10.7 Team Development Plan

As stated in section 3, the Groundwater Section works effectively as a team. However, the following development needs have been identified:

Team Development Needs:

- improved formal internal communications at Section level
- improved monitoring and feedback on individual performance
- increased focus on results output (meeting customer needs)
- development of wider organisational perspective
- increased flexibility (internal 'multi-skilling')
- maintain motivation & morale of staff

Individual Training/Development Needs:

Individual development needs and training plans are outlined in Appendix IV (based on interviews held with team members in Jan'94. These will be repeated in December

'94 and June'94 (and annually thereafter) in accordance with the national performance appraisal/PRP scheme..

Purpose:

- to appraise and give feedback on individual performance
- to review past and agree future personal objectives
- to identify concerns/aspirations
- to agree individual development and training needs
- to increase commitment & trust
- to reassure staff of their value to the team and organisation

Implementation (key elements):

- hold formal team meetings every two months (or more frequently if required).
- annual objective setting and regular review (see 10.2.6)
- increase internal flexibility of team by developing multi-skilling by mutual coaching (e.g. all staff can access and use groundwater level archive by Dec'94 - see individual objectives & development plans).
- inviting staff from other departments to work shadow our staff and encouraging reciprocal arrangements (also contributes to promotion element of marketing strategy).

Criteria for Success

The team development plan will have been successful when the Groundwater Section:

- **Section Goals and Objectives** - achieves objectives set out in section 10.2.5)
- **Team Performance** - increases internal flexibility & achieves agreed individual objectives on target
- **Team Relationships** - maintains openness, trust and mutual respect of team. Maintains morale and motivation of individuals.
- **Contribution to Individual Development** - extends skills to allow greater flexibility & responsibility (eg D. Passey processing basic licence applications using computer systems) and increases knowledge of role and operation of other departments.

- **Contribution to Wider Organisation** - provides area's with specialist groundwater service to meet their needs and expectations. Raises the profile and reputation of the Specialist Services Section in the area's and externally.

Monitoring & Evaluation of Success

- **Section Goals and Objectives** - measurable targets have been set for all individual objectives, which were agreed as being realistic and achievable at the time. Monitoring systems are either in place, or their development has been incorporated into individual objectives (e.g. C. Sharp:- to develop and implement internal tracking systems for planning liaison consultations by July '94). Performance against these objectives will be reviewed quarterly and assessed by formal appraisal annually in accordance with the national Performance Related Pay scheme currently being introduced (Oct. '94).

- **Team Performance** - with the proposed mutual coaching it is anticipated that by March '95 the Section will have enhanced its overall performance and flexibility by allowing more tasks to be shared and delegated to the most appropriate level. This will provide challenges and variety for junior staff and free senior staff for more complex tasks.

  Success will be reflected in achievement of individual and team objectives. Six monthly individual reviews will ensure individual and team objectives are/have been met, and work programmes will be updated as appropriate.

  In addition to meeting targets, the overall effectiveness of the team in terms of commitment and morale is reflected in the sickness/absence record and the amount of 'excess' (unpaid) time which is put in by staff outside the flexitime limits. These are some of the best in the region, indicating the 'success' of the team to date. It is the intention to maintain this level of job satisfaction and commitment. The Specialist Services Section staff morale questionnaire is planned to be repeated in June '95.

- **Team Relationships** - Although already good, team relationships should be strengthened and more sense of shared purpose and commitment by more regular team briefing and individual appraisal/feedback sessions.

- **Individual Development** - individual development plans have been completed and agreed. They will now be implemented and reviewed in December '94. The emphasis on mutual coaching and short term work shadowing will provide rapid, cost effective training and develop both the tutor and tutee.

The plans are intended to challenge the individual, increase skills and promote wider organisational awareness. This is necessary to provide the greatest security for both the team and individual members against the uncertainty and change which the organisation is undergoing.

- **Wider Organisation** - development of the team, as proposed, will meet the specified success criteria. This will be monitored by repeating the Customer Satisfaction Survey and informal feedback. from networking.

10.8 Financial Summary

Funding

10.8.1 Funding for the Groundwater Section is currently part of the region's Water Resources budget. This is derived solely from abstraction licence charges, set on a regional scale to ensure no surplus. In previous years there has always been an excess in the North West Water Resources budget, mainly resulting in savings from unfilled vacancies. It is anticipated that there will be nil growth in the '95/'96 budget allocation to the North West resulting from the current round of negotiation with the DoE.

10.8.2 It is proposed that in future years Specialist Services costs will be recharged to individual area/region customers. Conversely, services which are contracted in from areas, as well as other support services will be recharged to the Section. In anticipation of this and market testing, a precise system of staff time logging and allocation has been developed by the Groundwater Section time.(see section 8.4.2).

Budget/Costing

10.8.3 The revenue budget for the Groundwater Section (cost centres 21101/21102) covering the period of the Business Plan i.e. for the remainder of '94/'95 and for '95/'96 is shown in Table 10.2. This includes salaries, direct and indirect support overheads, travel and subsistence. It does not include the costs associated with proposed additional graduate hydrogeologist post (salary: £14,200 - see section 10.4, Stage 2.) since approval has yet to be sought. It is anticipated that this would not be sanctioned this financial year.

10.8.4 There is an overall 7.5% saving forecast for '95/'96, resulting primarily from loss of the Groundwater Assistant post

10.8.5 Approved and proposed capital and revenue project costs are contained in Table 10.3 (from Table 10.1 & Appendix V). These are funded from separate cost centres, by funds held/controlled at national level. Full Project Appraisal Board approval will be required for identified revenue projects >£10K. These have been incorporated into the North West Region's bid for revenue project funding for '95/'96.

Table 10.2 - Groundwater Section Budget ('94-'96)

Expense	1993/94	1994/95				1995/96		
Code Description	Actual	1st April Budget	Updated Budget	Actual to Sept 94	Probable Actual	Committed	Growth	Total
001 Salaries	169,155	169,145	169,145	81,197	168,475	154,692	2,595	157,287
096 Training - Fees	994	790	790	345	700	226	474	700
097 Training - Travel & Subs	432	338	338	61	338	338	118	456
111 Rent	1,049	2,286	2,288	303	2,000	2,288	712	3,000
131 Furniture & Fittings	373	500	500	493	500	500	0	500
132 Clothing & Uniforms	451	520	520	274	400	520	0	520
138 Equipment-Office	340	378	378	176	200	78	422	500
139 Equipment-Other	13,876	9,360	9,360	621	9,360	9,360	0	9,360
193 Readymix Concrete	8	0	0	0	0	0	0	0
210 Oth.Contracts Bldg/Mech	4	2,200	2,200	211	1,200	2,200	800	3,000
279 Misc.Hired Services	0	0	0	1,300	1,300	0	0	0
302 Own V & P	6,153	7,242	7,242	1,796	3,336	7,242	0	7,242
401 Car Allowances	15,079	17,501	17,501	7,559	13,879	13,399	223	13,622
420 Employees Travel & Subs.	2,062	2,600	2,600	536	1,000	1,520	0	1,520
441 Telephones / Telex	0	500	500	-20	0	0	0	0
450 Printing & Stationery	3,085	0	0	-776	600	0	500	500
458 Maps/Books/Periodicals etc	3,712	10,400	10,400	1,311	8,000	9,000	0	9,000
477 Public Rel-Oth. expenses	0	0	0	122	0	0	0	0
485 Legal Exps. - Other	0	3,000	3,000	0	1,500	3,000	0	3,000
494 Misc Professional Fees	382	0	0	575	0	0	0	0
499 Miscellaneous Expenses	1,014	1,370	1,370	163	500	1,370	0	1,370
608 R/Wks Salaries	-715	0	0	0	0	0	0	0
616 R/Wks Travel & Subs	-35	0	0	0	0	0	0	0
660 O & C-Sals-Civil Design	789	500	500	0	0	0	0	0
677 Capital Salaries DOE	-3,589	0	0	0	0	0	0	0
Total	214,619	228,632	228,632	96,247	213,288	205,733	5,844	211,577

10.9 Review

Ongoing review of the applicability and success of outlined Business Plan, Team Development Plan and overall development strategy will be required in response to changes in the external environment and internal organisational changes. The need for a flexible approach of Section and individuals and the ability to be able to adapt to change is recognised.

However, in view the positive, cost effective contribution which the Groundwater Section is making to the organisation, it is justifiable to strongly question the need and appropriateness of any proposed changes i.e. to ensure that they are necessary, and that real improvements will result.

Table 10.3

Project	probable actual expenditure		Status
	'94/'95	'95/'96	
capital:			
Fylde Groundwater Study	£30K	£40K	- approved: £95K ('94/'96)
revenue:			
Source Protection Zones	£8K	0	approved (£20K)
Routine Quality Sampling	0	£75K	))proposed -
Routine Data Loggers	0	£25K	)approval required)PM0 stage -
Geophysical Logging	0	£95K	)budget costings)only
Borehole Maintenance	0	£15K	)

11. SUMMARY

11.1 Customer Satisfaction Survey

- overall, the Groundwater Section is providing a high standard of service to all it's main customers, given the constraint of available staff resources.
- there is a need to improve speed of response on statutory consultations for planning liaison and abstraction licences
- regular liaison is required with area-based customers,
- external and national customers consider the North West Region's structure for groundwater management efficient and effective, compared with regions which operate with split groundwater quality/quantity or area/region responsibilities.

11.2 Inter-Regional Comparison

- the North West and Welsh regions have the fewest professional hydrogeologists (3). When taking account relative importance of groundwater, the North West comes out the most 'cost effective'.

11.3 Resources/Workload

- 6% of the workload of the Section is related to national issues, 27% to regional and 67 % to the areas -17% North, 27% Central, 23% South, (by time), with the largest volume and complexity of area related workload concentrated in the South/Central part of the region.
- the efficiency and effectiveness of the Section relies upon the knowledge and experience of its professional and technical staff combined with the integrated management of all groundwater related matters
- attempting to split the Section into client/contractor, quality/quantity, region/area, policy/operation would compromise this efficiency and hence cost-effectiveness.
- there is an imbalance between overall workload (volume) and staff resources, as a result of loss of 0.5 FTE professional and 1 FTE technical staff.
- there is little scope to accommodate peaks in current workload.

- there is a medium-long term need for at least 1 graduate hydrogeologist to be recruited into the Section to provide ' continuity of service' and introduce 'new blood' and skills.

11.4 Development Strategy & Business Plan

Objectives:

Short Term (Business Plan)

- to externalise routine hydrometric activities to areas or contractors and engage consultants to undertake self-contained projects, thereby enabling the Section to concentrate on its 'core business', in particular improving speed of response to statutory consultations.

- to prioritise workload and set team and individual objectives which focus on meeting statutory and corporate plan targets

- to restructure the Section to provide greater role clarity and focus for internal customers

Medium/long Term

- to recruit a graduate hydrogeologist to provide 'continuity of service' and redress skill deficiencies.

Ongoing

- to maintain the trust, motivation and morale of the team.
- to maintain and improve liaison with the areas

12 CONCLUSIONS

The overall conclusion which can be drawn from the Efficiency Review is that the Groundwater Section is doing a good job, cost effectively, and generally achieving a high standard of customer satisfaction, given the constraints on resources. This is attributable to the pooled skills, knowledge and experience of the team combined with a very high level of commitment and motivation of the individuals.

Therefore, there is no need or justification for major structural or operational changes. -***'if the machine ain't broke, don't try and mend it!'***

With the current drive to reduce numbers within the NRA, such a model could have wider application to other specialist service activities which are not cost-effective or do not make best use of available resources if area based (economy of scale and critical mass). This would compliment the Logical Process and is consistent with ensuring value for money.

13 RECOMMENDATIONS

It is recommended that the North West Region's Groundwater Section should remain as a regionally based specialist service provider to internal and external customers for all aspects of groundwater management and protection. *(a 'one-stop shop' for Groundwater)*

Keith J. Seymour
Groundwater Resources Manager
North West Region

4.11.94

REFERENCES:

1. Owen, J. (1994) -'Groundwater Section Resources Study'. NRA (NW) Internal Report

2. Woods, M. (1988) -'The New Manager'. Element Books

3. Adair, J.(1986) -'Effective Teambuilding'. Gower Publishing

4. Belbin, M. (1981) -'Management Teams'. Heinman Professional Publishing

5 Woodcock, M.(1982) -'Team Development Manual'. Gower Publising

6. Touche Ross (1994) -'Options for the Geographical & Managerial Structure of the Proposed Environment Agency:final report' (DoE)

APPENDICES:

Appendix I Teamwork Questionnaires

Appendix II Motivation & Morale Questionnaire

Appendix III Customer Satisfaction Survey Questionnaires

Appendix IV Inter-Regional Comparison Questionnaires

Appendix V Workload/Resource Analysis

Appendix VI Individual Objectives & Development Plans

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Appendix I- Teamwork Questionnaires

5.3 Nobody's perfect – but a team can be!

For each section distribute a total of ten points among the sentences which you think best describe your behaviour. These ten points can be distributed among several sentences, all the sentences, or perhaps all given to a single response. Enter the points you allocate in the boxes on the right of each sentence.

The Belbin self-perception inventory

I. What I believe I can contribute to a team:

(a) I think I can quickly see and take advantage of new opportunities. 2

(b) I can work well with a very wide range of people.

(c) Producing ideas is one of my natural assets. 2

(d) My ability rests in being able to draw people out whenever I detect they have something of value to contribute to group objectives.

(e) My capacity to follow through has much to do with my personal effectiveness.

(f) I am ready to face temporary unpopularity if it leads to worthwhile results in the end. 3

(g) I am quick to sense what is likely to work in a situation with which I am familiar. 1

(h) I can offer a reasoned case for alternative courses of action without introducing bias or prejudice. 2

II. If I have a possible shortcoming in teamwork, it could be that:

(a) I am not at ease unless meetings are well structured and controlled and generally well conducted.

(b) I am inclined to be too generous towards others who have a valid viewpoint that has not been given a proper airing.

(c) I have a tendency to talk a lot once the group gets on to new ideas. 2

(d) My objective outlook makes it difficult for me to join in readily and enthusiastically with colleagues.

(e) I am sometimes forceful and authoritarian if there is a need to get something done.

(f) I find it difficult to lead from the front, perhaps because I am over-responsive to group atmosphere.

(g) I am apt to get too caught up in ideas that occur to me and so lose track of what is happening. 3

(h) My colleagues tend to see me as worrying unnecessarily over detail and the possibility that things may go wrong. 5

III. When involved in a project with other people:

(a) I have an aptitude for influencing people without pressurizing them. 1

(b) My general vigilance prevents careless mistakes and omissions being made. 1

(c) I am ready to press for action to make sure that the meeting does not waste time or lose sight of the main objective.

(d) I can be counted on to contribute something original. 4

(e) I am always ready to back a good suggestion in the common interest. 3

(f) I am keen to look for the latest in new ideas and developments. 1

(g) I believe my capacity for cool judgement is appreciated by others.

(h) I can be relied upon to see that all essential work is organized.

IV. My characteristic approach to group work is that:

(a) I have a quiet interest in getting to know colleagues better. [ ]

(b) I am not reluctant to challenge the views of others or to hold a minority view myself. [3]

(c) I can usually find a line of argument to refute unsound propositions. [2]

(d) I think I have a talent for making things work once a plan has to be put into operation. [ ]

(e) I have a tendency to avoid the obvious and to come out with the unexpected. [3]

(f) I bring a touch of perfectionism to any team job I undertake. [ ]

(g) I am ready to make use of contacts outside the group itself. [2]

(h) While I am interested in all views, I have no hesitation in making up my mind once a decision has to be made. [ ]

V. I gain satisfaction in a job because:

(a) I enjoy analysing situations and weighing up all the possible choices. [3]

(b) I am interested in finding practical solutions to problems. [2]

(c) I like to feel I am fostering good working relationships. [ ]

(d) I can have a strong influence on decisions. [ ]

(e) I can meet people to agree on a necessary course of action. [2]

(f) I can get people to agree on a necessary course of action. [ ]

(g) I feel in my element where I can give a task my full attention. [ ]

(h) I like to find a field that stretches my imagination. [3]

VI. If I am suddenly given a difficult task with limited time and unfamiliar people:

(a) I would feel like retiring to a corner to devise a way out of the impasse before developing a line. [ ]

(b) I would be ready to work with the person who showed the most positive approach, however difficult he might be. [1]

(c) I would find some way of reducing the size of the task by establishing what different individuals might best contribute. [2]

(d) My natural sense of urgency would help to ensure that we did not fall behind schedule. [ ]

(e) I believe I would keep cool and maintain my capacity to think straight. [ ]

(f) I would retain a steadiness of purpose in spite of the pressures. [ ]

(g) I would be prepared to take a positive lead if I felt the group was making no progress. [5]

(h) I would open up discussions with a view to stimulating new thoughts and getting something moving. [2]

VII. With reference to the problem to which I am subject in working in groups:

(a) I am apt to show my impatience with those who are obstructing progress. [3]

(b) Others may criticise me for being too analytical and insufficiently intuitive. [ ]

(c) My desire to ensure that work is properly done can hold up proceedings. [6]

(d) I tend to get bored rather easily and rely on one or two stimulating members to spark me off. [ ]

(e) I find it difficult to get started unless the goals are clear. [ ]

(f) I am sometimes poor at explaining and clarifying complex points that occur to me. [ ]

(g) I am sometimes poor at demanding from others the things I cannot do myself. [1]

(h) I hesitate to get my points across when I run up against real opposition. [ ]

Points table for self-perception inventory

Now enter the points you allocated to each statement in each section in the table below. So, for section I, write the points you gave to statement (g) in the first column, under the heading 'company worker', those you gave to (d) under the heading 'Chairman' and so on. Then add up your totals score for each team type.

Section		CW		CH		SH		PL		RI		ME		TW		CF
I	g	1	d		f	3	c	2	a	2	h	2	b		e	
II	a		b		e		g	3	c	2	d		f		h	5
III	h		a	1	c		d	4	f	1	g		e	3	b	1
IV	d		h		b	3	e	3	g	2	c	2	a		f	
V	b	2	f		d		h	3	e	2	a	3	c		g	
VI	f		c	2	g	5	a		h	2	e		b	1	d	
VII	e		g	1	a	3	f		d		b		h		c	6
Total		3		4		14		15		11		7		4		12

Now note down:

- Your **dominant team type** (highest score). This will indicate how you can best make your mark in a team.

- **Other team types** (your next highest scores). This denotes the back–up team roles which you are able to take on if needed.

- Your two lowest scores. These imply possible areas of weakness. (But remember, you are not aiming to cover all team roles yourself. These are merely areas where you should ensure you are complemented by another team member.)

5.3 Nobody's perfect – but a team can be!

Tony

For each section distribute a total of ten points among the sentences which you think best describe your behaviour. These ten points can be distributed among several sentences, all the sentences, or perhaps all given to a single response. Enter the points you allocate in the boxes on the right of each sentence.

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(c) Producing ideas is one of my natural assets. [ ]

(d) My ability rests in being able to draw people out whenever I detect they have something of value to contribute to group objectives. [ ]

(e) My capacity to follow through has much to do with my personal effectiveness. [2]

(f) I am ready to face temporary unpopularity if it leads to worthwhile results in the end. [1]

(g) I am quick to sense what is likely to work in a situation with which I am familiar. [5]

(h) I can offer a reasoned case for alternative courses of action without introducing bias or prejudice. [2]

II. If I have a possible shortcoming in teamwork, it could be that:

(a) I am not at ease unless meetings are well structured and controlled and generally well conducted. [1]

(b) I am inclined to be too generous towards others who have a valid viewpoint that has not been given a proper airing. [2]

(c) I have a tendency to talk a lot once the group gets on to new ideas. [ ]

(d) My objective outlook makes it difficult for me to join in readily and enthusiastically with colleagues. [2]

(e) I am sometimes forceful and authoritarian if there is a need to get something done. [ ]

(f) I find it difficult to lead from the front, perhaps because I am over-responsive to group atmosphere. [5]

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(e) I believe I would keep cool and maintain my capacity to think straight. [ ]

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IV	d	3	h		b	1	e		g		c	1	a	1	f	4
V	b	2	f		d		h		e	1	a	1	c	1	g	5
VI	f	1	c	4	g	1	a		h	3	e		b		d	1
VII	e	3	g	2	a		f		d		b	2	h	1	c	2
Total		18		8		4		0		4		8		9		19

Now note down:

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- **Other team types** (your next highest scores). This denotes the back–up team roles which you are able to take on if needed.

- Your two lowest scores. These imply possible areas of weakness. (But remember, you are not aiming to cover all team roles yourself. These are merely areas where you should ensure you are complemented by another team member.)

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John.

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(e) My capacity to follow through has much to do with my personal effectiveness. [ ]

(f) I am ready to face temporary unpopularity if it leads to worthwhile results in the end. [ ]

(g) I am quick to sense what is likely to work in a situation with which I am familiar. [2]

(h) I can offer a reasoned case for alternative courses of action without introducing bias or prejudice. [2]

II. If I have a possible shortcoming in teamwork, it could be that:

(a) I am not at ease unless meetings are well structured and controlled and generally well conducted. [5]

(b) I am inclined to be too generous towards others who have a valid viewpoint that has not been given a proper airing. [ ]

(c) I have a tendency to talk a lot once the group gets on to new ideas. [ ]

(d) My objective outlook makes it difficult for me to join in readily and enthusiastically with colleagues. [ ]

(e) I am sometimes forceful and authoritarian if there is a need to get something done. [ ]

(f) I find it difficult to lead from the front, perhaps because I am over-responsive to group atmosphere. [5]

(g) I am apt to get too caught up in ideas that occur to me and so lose track of what is happening. [ ]

(h) My colleagues tend to see me as worrying unnecessarily over detail and the possibility that things may go wrong. [ ]

III. When involved in a project with other people:

(a) I have an aptitude for influencing people without pressurizing them. [1]

(b) My general vigilance prevents careless mistakes and omissions being made. [2]

(c) I am ready to press for action to make sure that the meeting does not waste time or lose sight of the main objective. [2]

(d) I can be counted on to contribute something original. [2]

(e) I am always ready to back a good suggestion in the common interest. [1]

(f) I am keen to look for the latest in new ideas and developments. [ ]

(g) I believe my capacity for cool judgement is appreciated by others. [ ]

(h) I can be relied upon to see that all essential work is organized. [2]

IV. My characteristic approach to group work is that:

(a) I have a quiet interest in getting to know colleagues better. [2]

(b) I am not reluctant to challenge the views of others or to hold a minority view myself. [2]

(c) I can usually find a line of argument to refute unsound propositions. [2]

(d) I think I have a talent for making things work once a plan has to be put into operation. [2]

(e) I have a tendency to avoid the obvious and to come out with the unexpected. [ ]

(f) I bring a touch of perfectionism to any team job I undertake. [ ]

(g) I am ready to make use of contacts outside the group itself. [ ]

(h) While I am interested in all views, I have no hesitation in making up my mind once a decision has to be made. [2]

V. I gain satisfaction in a job because:

(a) I enjoy analysing situations and weighing up all the possible choices. [2]

(b) I am interested in finding practical solutions to problems. [2]

(c) I like to feel I am fostering good working relationships. [2]

(d) I can have a strong influence on decisions. [ ]

(e) I can meet people to agree on a necessary course of action. [2]

(f) I can get people to agree on a necessary course of action. [ ]

(g) I feel in my element where I can give a task my full attention. [2]

(h) I like to find a field that stretches my imagination. [ ]

VI. If I am suddenly given a difficult task with limited time and unfamiliar people:

(a) I would feel like retiring to a corner to devise a way out of the impasse before developing a line. [ ]

(b) I would be ready to work with the person who showed the most positive approach, however difficult he might be. [ ]

(c) I would find some way of reducing the size of the task by establishing what different individuals might best contribute. [2]

(d) My natural sense of urgency would help to ensure that we did not fall behind schedule. [ ]

(e) I believe I would keep cool and maintain my capacity to think straight. [2]

(f) I would retain a steadiness of purpose in spite of the pressures. [2]

(g) I would be prepared to take a positive lead if I felt the group was making no progress. [2]

(h) I would open up discussions with a view to stimulating new thoughts and getting something moving. [2]

VII. With reference to the problem to which I am subject in working in groups:

(a) I am apt to show my impatience with those who are obstructing progress. ☐

(b) Others may criticise me for being too analytical and insufficiently intuitive. ☐

(c) My desire to ensure that work is properly done can hold up proceedings. ☐

(d) I tend to get bored rather easily and rely on one or two stimulating members to spark me off. ☐

(e) I find it difficult to get started unless the goals are clear. 5

(f) I am sometimes poor at explaining and clarifying complex points that occur to me. ☐

(g) I am sometimes poor at demanding from others the things I cannot do myself. 5

(h) I hesitate to get my points across when I run up against real opposition. ☐

Points table for self-perception inventory

Now enter the points you allocated to each statement in each section in the table below. So, for section I, write the points you gave to statement (g) in the first column, under the heading 'company worker', those you gave to (d) under the heading 'Chairman' and so on. Then add up your totals score for each team type.

Section		CW		CH		SH		PL		RI		ME		TW		CF
I	g	2	d	2	f		c	2	a		h	2	b	2	e	
II	a	5	b		e		g		c		d		f	5	h	
III	h	2	a		c	2	d	2	f		g		e	2	b	2
IV	d		h		b		e		g		c		a		f	
V	b	2	f		d		h		e	2	a	2	c	2	g	2
VI	f	2	c	2	g	2	a		h	2	e	2	b		d	
VII	e	5	g	2	a		f		d		b		h		c	
Total		15		6		4		4		4		6		11		4

Now note down:

- Your **dominant team type** (highest score). This will indicate how you can best make your mark in a team.

Completer Finisher

- **Other team types** (your next highest scores). This denotes the back–up team roles which you are able to take on if needed.

Team Worker

- Your two lowest scores. These imply possible areas of weakness. (But remember, you are not aiming to cover all team roles yourself. These are merely areas where you should ensure you are complemented by another team member.)

Shaper, Plant, RI, CF

5.3 Nobody's perfect – but a team can be!

Dave

For each section distribute a total of ten points among the sentences which you think best describe your behaviour. These ten points can be distributed among several sentences, all the sentences, or perhaps all given to a single response. Enter the points you allocate in the boxes on the right of each sentence.

The Belbin self-perception inventory

I. What I believe I can contribute to a team:

(a)	I think I can quickly see and take advantage of new opportunities.	1
(b)	I can work well with a very wide range of people.	5
(c)	Producing ideas is one of my natural assets.	
(d)	My ability rests in being able to draw people out whenever I detect they have something of value to contribute to group objectives.	
(e)	My capacity to follow through has much to do with my personal effectiveness.	
(f)	I am ready to face temporary unpopularity if it leads to worthwhile results in the end.	2
(g)	I am quick to sense what is likely to work in a situation with which I am familiar.	
(h)	I can offer a reasoned case for alternative courses of action without introducing bias or prejudice.	2

II. If I have a possible shortcoming in teamwork, it could be that:

(a)	I am not at ease unless meetings are well structured and controlled and generally well conducted.	
(b)	I am inclined to be too generous towards others who have a valid viewpoint that has not been given a proper airing.	3
(c)	I have a tendency to talk a lot once the group gets on to new ideas.	4
(d)	My objective outlook makes it difficult for me to join in readily and enthusiastically with colleagues.	
(e)	I am sometimes forceful and authoritarian if there is a need to get something done.	
(f)	I find it difficult to lead from the front, perhaps because I am over-responsive to group atmosphere.	2
(g)	I am apt to get too caught up in ideas that occur to me and so lose track of what is happening.	
(h)	My colleagues tend to see me as worrying unnecessarily over detail and the possibility that things may go wrong.	1

III. When involved in a project with other people:

(a)	I have an aptitude for influencing people without pressurizing them.	
(b)	My general vigilance prevents careless mistakes and omissions being made.	4
(c)	I am ready to press for action to make sure that the meeting does not waste time or lose sight of the main objective.	2
(d)	I can be counted on to contribute something original.	
(e)	I am always ready to back a good suggestion in the common interest.	2
(f)	I am keen to look for the latest in new ideas and developments.	
(g)	I believe my capacity for cool judgement is appreciated by others.	
(h)	I can be relied upon to see that all essential work is organized.	2

IV. My characteristic approach to group work is that:

(a) I have a quiet interest in getting to know colleagues better. [2]

(b) I am not reluctant to challenge the views of others or to hold a minority view myself. [1]

(c) I can usually find a line of argument to refute unsound propositions. [2]

(d) I think I have a talent for making things work once a plan has to be put into operation. [ ]

(e) I have a tendency to avoid the obvious and to come out with the unexpected. [ ]

(f) I bring a touch of perfectionism to any team job I undertake. [2]

(g) I am ready to make use of contacts outside the group itself. [1]

(h) While I am interested in all views, I have no hesitation in making up my mind once a decision has to be made. [2]

V. I gain satisfaction in a job because:

(a) I enjoy analysing situations and weighing up all the possible choices. [2]

(b) I am interested in finding practical solutions to problems. [2]

(c) I like to feel I am fostering good working relationships. [4]

(d) I can have a strong influence on decisions. [ ]

(e) I can meet people to agree on a necessary course of action. [2]

(f) I can get people to agree on a necessary course of action. [ ]

(g) I feel in my element where I can give a task my full attention. [ ]

(h) I like to find a field that stretches my imagination. [ ]

VI. If I am suddenly given a difficult task with limited time and unfamiliar people:

(a) I would feel like retiring to a corner to devise a way out of the impasse before developing a line. [ ]

(b) I would be ready to work with the person who showed the most positive approach, however difficult he might be. [3]

(c) I would find some way of reducing the size of the task by establishing what different individuals might best contribute. [1]

(d) My natural sense of urgency would help to ensure that we did not fall behind schedule. [3]

(e) I believe I would keep cool and maintain my capacity to think straight. [ ]

(f) I would retain a steadiness of purpose in spite of the pressures. [ ]

(g) I would be prepared to take a positive lead if I felt the group was making no progress. [ ]

(h) I would open up discussions with a view to stimulating new thoughts and getting something moving. [3]

VII. With reference to the problem to which I am subject in working in groups:

(a) I am apt to show my impatience with those who are obstructing progress. ☐

(b) Others may criticise me for being too analytical and insufficiently intuitive. ☐

(c) My desire to ensure that work is properly done can hold up proceedings. 4

(d) I tend to get bored rather easily and rely on one or two stimulating members to spark me off. ☐

(e) I find it difficult to get started unless the goals are clear. 2

(f) I am sometimes poor at explaining and clarifying complex points that occur to me. 3

(g) I am sometimes poor at demanding from others the things I cannot do myself. 1

(h) I hesitate to get my points across when I run up against real opposition. ☐

Points table for self-perception inventory

Now enter the points you allocated to each statement in each section in the table below. So, for section I, write the points you gave to statement (g) in the first column, under the heading 'company worker', those you gave to (d) under the heading 'Chairman' and so on. Then add up your totals score for each team type.

Section		CW		CH		SH		PL		RI		ME		TW		CF
I	g		d		f		c		a		h		b		e	
II	a		b		e		g		c		d		f		h	
III	h		a		c		d		f		g		e		b	
IV	d		h		b		e		g		c		a		f	
V	b		f		d		h		e		a		c		g	
VI	f		c		g		a		h		e		b		d	
VII	e		g		a		f		d		b		h		c	
Total																

Now note down:

- Your **dominant team type** (highest score). This will indicate how you can best make your mark in a team.

- **Other team types** (your next highest scores). This denotes the back–up team roles which you are able to take on if needed.

- Your two lowest scores. These imply possible areas of weakness. (But remember, you are not aiming to cover all team roles yourself. These are merely areas where you should ensure you are complemented by another team member.)

5.3 Nobody's perfect – but a team can be!

Charlie

For each section distribute a total of ten points among the sentences which you think best describe your behaviour. These ten points can be distributed among several sentences, all the sentences, or perhaps all given to a single response. Enter the points you allocate in the boxes on the right of each sentence.

The Belbin self-perception inventory

I. What I believe I can contribute to a team:

(a) I think I can quickly see and take advantage of new opportunities. [ ]

(b) I can work well with a very wide range of people. [ ]

(c) Producing ideas is one of my natural assets. [5]

(d) My ability rests in being able to draw people out whenever I detect they have something of value to contribute to group objectives. [ ]

(e) My capacity to follow through has much to do with my personal effectiveness. [ ]

(f) I am ready to face temporary unpopularity if it leads to worthwhile results in the end. [ ]

(g) I am quick to sense what is likely to work in a situation with which I am familiar. [ ]

(h) I can offer a reasoned case for alternative courses of action without introducing bias or prejudice. [2]

II. If I have a possible shortcoming in teamwork, it could be that:

(a) I am not at ease unless meetings are well structured and controlled and generally well conducted. [5]

(b) I am inclined to be too generous towards others who have a valid viewpoint that has not been given a proper airing. [ ]

(c) I have a tendency to talk a lot once the group gets on to new ideas. [ ]

(d) My objective outlook makes it difficult for me to join in readily and enthusiastically with colleagues. [ ]

(e) I am sometimes forceful and authoritarian if there is a need to get something done. [ ]

(f) I find it difficult to lead from the front, perhaps because I am over-responsive to group atmosphere. [ ]

(g) I am apt to get too caught up in ideas that occur to me and so lose track of what is happening. [5]

(h) My colleagues tend to see me as worrying unnecessarily over detail and the possibility that things may go wrong. [ ]

III. When involved in a project with other people:

(a) I have an aptitude for influencing people without pressurizing them. [1]

(b) My general vigilance prevents careless mistakes and omissions being made. [2]

(c) I am ready to press for action to make sure that the meeting does not waste time or lose sight of the main objective. [ ]

(d) I can be counted on to contribute something original. [3]

(e) I am always ready to back a good suggestion in the common interest. [1]

(f) I am keen to look for the latest in new ideas and developments. [3]

(g) I believe my capacity for cool judgement is appreciated by others. [ ]

(h) I can be relied upon to see that all essential work is organized. [ ]

IV. My characteristic approach to group work is that:

(a) I have a quiet interest in getting to know colleagues better. [1]

(b) I am not reluctant to challenge the views of others or to hold a minority view myself. [2]

(c) I can usually find a line of argument to refute unsound propositions. [2]

(d) I think I have a talent for making things work once a plan has to be put into operation. [1]

(e) I have a tendency to avoid the obvious and to come out with the unexpected. [1]

(f) I bring a touch of perfectionism to any team job I undertake. [1]

(g) I am ready to make use of contacts outside the group itself. [1]

(h) While I am interested in all views, I have no hesitation in making up my mind once a decision has to be made. [1]

V. I gain satisfaction in a job because:

(a) I enjoy analysing situations and weighing up all the possible choices. [ ]

(b) I am interested in finding practical solutions to problems. [3]

(c) I like to feel I am fostering good working relationships. [2]

(d) I can have a strong influence on decisions. [ ]

(e) I can meet people to agree on a necessary course of action. [1]

(f) I can get people to agree on a necessary course of action. [ ]

(g) I feel in my element where I can give a task my full attention. [1]

(h) I like to find a field that stretches my imagination. [3]

VI. If I am suddenly given a difficult task with limited time and unfamiliar people:

(a) I would feel like retiring to a corner to devise a way out of the impasse before developing a line. [1]

(b) I would be ready to work with the person who showed the most positive approach, however difficult he might be. [2]

(c) I would find some way of reducing the size of the task by establishing what different individuals might best contribute. [3]

(d) My natural sense of urgency would help to ensure that we did not fall behind schedule. [ ]

(e) I believe I would keep cool and maintain my capacity to think straight. [ ]

(f) I would retain a steadiness of purpose in spite of the pressures. [ ]

(g) I would be prepared to take a positive lead if I felt the group was making no progress. [ ]

(h) I would open up discussions with a view to stimulating new thoughts and getting something moving. [4]

VII. With reference to the problem to which I am subject in working in groups:

(a) I am apt to show my impatience with those who are obstructing progress. ☐

(b) Others may criticise me for being too analytical and insufficiently intuitive. ☐

(c) My desire to ensure that work is properly done can hold up proceedings. ☐

(d) I tend to get bored rather easily and rely on one or two stimulating members to spark me off. ☐

(e) I find it difficult to get started unless the goals are clear. 3

(f) I am sometimes poor at explaining and clarifying complex points that occur to me. 5

(g) I am sometimes poor at demanding from others the things I cannot do myself. 1

(h) I hesitate to get my points across when I run up against real opposition. 1

Points table for self-perception inventory

Now enter the points you allocated to each statement in each section in the table below. So, for section I, write the points you gave to statement (g) in the first column, under the heading 'company worker', those you gave to (d) under the heading 'Chairman' and so on. Then add up your totals score for each team type.

Section		CW		CH		SH		PL		RI		ME		TW		CF
I	g	3	d		f		c	5	a		h	2	b		e	
II	a	5	b		e		g	5	c		d		f		h	
III	h		a	1	c		d	3	f	3	g		e	1	b	2
IV	d	1	h	1	b	2	e	1	g	1	c	2	a	1	f	1
V	b	3	f		d		h	3	e	1	a		c	2	g	1
VI	f		c	3	g		a	1	h	4	e		b	2	d	
VII	e	3	g	1	a		f	5	d		b		h	1	c	
Total		5		6		2		23		9		4		7		4

Now note down:

- Your **dominant team type** (highest score). This will indicate how you can best make your mark in a team.

PL

- **Other team types** (your next highest scores). This denotes the back-up team roles which you are able to take on if needed.

CW

- Your two lowest scores. These imply possible areas of weakness. (But remember, you are not aiming to cover all team roles yourself. These are merely areas where you should ensure you are complemented by another team member.)

ME CF

5.3 Nobody's perfect – but a team can be!

For each section distribute a total of ten points among the sentences which you think best describe your behaviour. These ten points can be distributed among several sentences, all the sentences, or perhaps all given to a single response. Enter the points you allocate in the boxes on the right of each sentence.

The Belbin self-perception inventory

I. What I believe I can contribute to a team:

(a) I think I can quickly see and take advantage of new opportunities. [ ]

(b) I can work well with a very wide range of people. [6]

(c) Producing ideas is one of my natural assets. [ ]

(d) My ability rests in being able to draw people out whenever I detect they have something of value to contribute to group objectives. [ ]

(e) My capacity to follow through has much to do with my personal effectiveness. [2]

(f) I am ready to face temporary unpopularity if it leads to worthwhile results in the end. [ ]

(g) I am quick to sense what is likely to work in a situation with which I am familiar. [2]

(h) I can offer a reasoned case for alternative courses of action without introducing bias or prejudice. [ ]

II. If I have a possible shortcoming in teamwork, it could be that:

(a) I am not at ease unless meetings are well structured and controlled and generally well conducted. [ ]

(b) I am inclined to be too generous towards others who have a valid viewpoint that has not been given a proper airing. [ ]

(c) I have a tendency to talk a lot once the group gets on to new ideas. [ ]

(d) My objective outlook makes it difficult for me to join in readily and enthusiastically with colleagues. [ ]

(e) I am sometimes forceful and authoritarian if there is a need to get something done. [7]

(f) I find it difficult to lead from the front, perhaps because I am over-responsive to group atmosphere. [3]

(g) I am apt to get too caught up in ideas that occur to me and so lose track of what is happening. [ ]

(h) My colleagues tend to see me as worrying unnecessarily over detail and the possibility that things may go wrong. [ ]

III. When involved in a project with other people:

(a) I have an aptitude for influencing people without pressurizing them. [ ]

(b) My general vigilance prevents careless mistakes and omissions being made. [1]

(c) I am ready to press for action to make sure that the meeting does not waste time or lose sight of the main objective. [ ]

(d) I can be counted on to contribute something original. [ ]

(e) I am always ready to back a good suggestion in the common interest. [3]

(f) I am keen to look for the latest in new ideas and developments. [ ]

(g) I believe my capacity for cool judgement is appreciated by others. [ ]

(h) I can be relied upon to see that all essential work is organized. [6]

IV. My characteristic approach to group work is that:

(a) I have a quiet interest in getting to know colleagues better. ☐

(b) I am not reluctant to challenge the views of others or to hold a minority view myself. ☐

(c) I can usually find a line of argument to refute unsound propositions. ☐

(d) I think I have a talent for making things work once a plan has to be put into operation. 7

(e) I have a tendency to avoid the obvious and to come out with the unexpected. ☐

(f) I bring a touch of perfectionism to any team job I undertake. 3

(g) I am ready to make use of contacts outside the group itself. ☐

(h) While I am interested in all views, I have no hesitation in making up my mind once a decision has to be made. ☐

V. I gain satisfaction in a job because:

(a) I enjoy analysing situations and weighing up all the possible choices. ☐

(b) I am interested in finding practical solutions to problems. ☐

(c) I like to feel I am fostering good working relationships. 6

(d) I can have a strong influence on decisions. ☐

(e) I can meet people to agree on a necessary course of action. ☐

(f) I can get people to agree on a necessary course of action. ☐

(g) I feel in my element where I can give a task my full attention. 4

(h) I like to find a field that stretches my imagination. ☐

VI. If I am suddenly given a difficult task with limited time and unfamiliar people:

(a) I would feel like retiring to a corner to devise a way out of the impasse before developing a line. 7

(b) I would be ready to work with the person who showed the most positive approach, however difficult he might be. ☐

(c) I would find some way of reducing the size of the task by establishing what different individuals might best contribute. ☐

(d) My natural sense of urgency would help to ensure that we did not fall behind schedule. ☐

(e) I believe I would keep cool and maintain my capacity to think straight. ☐

(f) I would retain a steadiness of purpose in spite of the pressures. 3

(g) I would be prepared to take a positive lead if I felt the group was making no progress. ☐

(h) I would open up discussions with a view to stimulating new thoughts and getting something moving. ☐

VII. With reference to the problem to which I am subject in working in groups:

(a) I am apt to show my impatience with those who are obstructing progress. ☐

(b) Others may criticise me for being too analytical and insufficiently intuitive. ☐

(c) My desire to ensure that work is properly done can hold up proceedings. ☐

(d) I tend to get bored rather easily and rely on one or two stimulating members to spark me off. 3

(e) I find it difficult to get started unless the goals are clear. ☐

(f) I am sometimes poor at explaining and clarifying complex points that occur to me. 3

(g) I am sometimes poor at demanding from others the things I cannot do myself. ☐

(h) I hesitate to get my points across when I run up against real opposition. 4

Points table for self-perception inventory

Now enter the points you allocated to each statement in each section in the table below. So, for section I, write the points you gave to statement (g) in the first column, under the heading 'company worker', those you gave to (d) under the heading 'Chairman' and so on. Then add up your totals score for each team type.

Section		CW		CH		SH		PL		RI		ME		TW		CF
I	g	2	d		f		c		a		h		b	6	e	2
II	a		b		e	7	g		c		d		f	3	h	
III	h	6	a		c		d		f		g		e	3	b	1
IV	d	7	h		b		e		g		c		a		f	3
V	b		f		d		h		e		a		c	6	g	4
VI	f	3	c		g		a	7	h		e		b		d	
VII	e		g		a		f	3	d	3	b		h	4	c	
Total		18				7		10		3				22		10

Now note down:

- Your **dominant team type** (highest score). This will indicate how you can best make your mark in a team.

- **Other team types** (your next highest scores). This denotes the back–up team roles which you are able to take on if needed.

- Your two lowest scores. These imply possible areas of weakness. (But remember, you are not aiming to cover all team roles yourself. These are merely areas where you should ensure you are complemented by another team member.)

Appendix II- Motivation & Morale Questionnaire

Three

I feel my work is valued by line management.	(YY)	Y	N	NN
I feel my work is valued by my colleagues.	(YY)	Y	N	NN
I am well informed of things going on which might effect me.	YY	(Y)	N	NN
I feel secure in my current job.	YY	Y	N	(NN)
I feel secure as an NRA employee.	YY	Y	N	(NN)
I am confident that however things change I will find employment.	YY	Y	N	(NN)
Much of my job is interesting/fun.	YY	(Y)	N	NN
My job is rewarding.	YY	(Y)	N	NN
The future is exciting.	YY	(Y)	N	NN
I can influence my line manager in decisions that effect my work.	YY	(Y)	N	NN
I would like more responsibility in my job.	YY	(Y)	N	NN
I know how well I am doing my job.	YY	(Y)	N	NN
I am adequately financially rewarded.	YY	(Y)	N	NN
I have a good working environment.	YY	(Y)	N	NN
I have adequate 'tools' to do the job.	YY	(Y)	N	NN
I receive appropriate training within reasonable timescale.	YY	Y	N	NN
I am making a worthwhile contribution to the NRA.	(YY)	Y	N	NN
I would like more responsibility.	YY	(Y)	N	NN
I frequently perform tasks which stretch		(Y)		
I have good prospects for promotion.	YY	Y	(N)	NN
I have good prospects of getting work experience in new fields.	YY	Y	(N)	NN
If offered a comparable job in another organisation I may leave.	YY	Y	(N)	NN
I feel a sense of loyalty to the NRA.	YY	(Y)	N	NN
All things considered I am satisfied with my job.	YY	(Y)	N	NN

Two

I feel my work is valued by line management.	YY	Y	N	NN
I feel my work is valued by my colleagues.	YY	Y	N	NN
I am well informed of things going on which might effect me.	YY	Y	N	NN
I feel secure in my current job.	YY	Y	N	NN
I feel secure as an NRA employee.	YY	Y	N	NN
I am confident that however things change I will find employment.	YY	Y	N	NN
Much of my job is interesting/fun.	YY	Y	N	NN
My job is rewarding.	YY	Y	N	NN
The future is exciting.	YY	Y	N	NN
I can influence my line manager in decisions that effect my work.	YY	Y	N	NN
I would like more responsibility in my job.	YY	Y	N	NN
I know how well I am doing my job	YY	Y	N	NN
I am adequately financially rewarded.	YY	Y	N	NN
I have a good working environment.	YY	Y	N	NN
I have adequate 'tools' to do the job.	YY	Y	N	NN
I receive appropriate training within a reasonable timescale.	YY	Y	N	NN
I am making a worthwhile contribution to the NRA.	YY	Y	N	NN
I would like more responsibility.	YY	Y	N	NN
I frequently perform tasks which stretch me.	YY	Y	N	NN
I have good prospects for promotion.	YY	Y	N	NN
I have good prospects of getting work experience in new fields.	YY	Y	N	NN
If offered a comparable job in another organisation I may leave.	YY	Y	N	NN
I feel a sense of loyalty to the NRA.	YY	Y	N	NN
All things considered I am satisfied with my job.	YY	Y	N	NN

Twelve

I feel my work is valued by line management.	(YY)	Y	N	NN
I feel my work is valued by my colleagues.	(YY)	Y	N	NN
I am well informed of things going on which might effect me.	YY	(Y)	N	NN
I feel secure in my current job.	YY	Y	N	(NN)
I feel secure as an NRA employee.	YY	Y	N	(NN)
I am confident that however things change I will find employment.	YY	Y	(N)	NN
Much of my job is interesting/fun.	YY	Y	(N)	NN
My job is rewarding.	YY	(Y)	N	NN
The future is exciting.	YY	Y	(N)	NN
I can influence my line manager in decisions that effect my work.	YY	(Y)	N	NN
I would like more responsibility in my job.	YY	(Y)	N	NN
I know how well I am doing my job.	(YY)	Y	N	NN
I am adequately financially rewarded.	YY	(Y)	N	NN
I have a good working environment.	YY	(Y)	N	NN
I have adequate 'tools' to do the job.	YY	(Y)	N	NN
I receive appropriate training within a reasonable timescale.	YY	Y	(N)	NN
I am making a worthwhile contribution to the NRA.	YY	(Y)	N	NN
I would like more responsibility.	YY	(Y)	N	NN
I frequently perform tasks which stretch me.	YY	Y	(N)	NN
I have good prospects for promotion.	YY	Y	(N)	NN
I have good prospects of getting work experience in new fields.	YY	Y	(N)	NN
If offered a comparable job in another organisation I may leave.	(YY)	Y	N	NN
I feel a sense of loyalty to the NRA.	YY	Y	N	(NN)
All things considered I am satisfied with my job.	YY	(Y)	N	NN

Twenty

I feel my work is valued by line management.	(YY)	Y	N	NN
I feel my work is valued by my colleagues.	(YY)	Y	N	NN
I am well informed of things going on which might effect me.	YY	(Y)	N	NN
I feel secure in my current job.	YY	Y	(N)	NN
I feel secure as an NRA employee.	YY	Y	N	(NN)
I am confident that however things change I will find employment.	YY	Y	(N)	NN
Much of my job is interesting/fun.	YY	(Y)	N	NN
My job is rewarding.	YY	(Y)	N	NN
The future is exciting.	YY	Y	(N)	NN
I can influence my line manager in decisions that effect my work.	YY	(Y)	N	NN
I would like more responsibility in my job.	YY	(Y)	N	NN
I know how well I am doing my job.	YY	(Y)	N	NN
I am adequately financially rewarded.	YY	(Y)	N	NN
I have a good working environment.	(YY)	Y	N	NN
I have adequate 'tools' to do the job.	YY	(Y)	N	NN
I receive appropriate training within a reasonable timescale.	YY	Y	(N)	NN
I am making a worthwhile contribution to the NRA.	YY	(Y)	N	NN
I would like more responsibility.	YY	(Y)	N	NN
I frequently perform tasks which stretch me.	YY	Y	(N)	NN
I have good prospects for promotion.	YY	Y	(N)	NN
I have good prospects of getting work experience in new fields.	YY	(Y)	N	NN
If offered a comparable job in another organisation I may leave.	YY	Y	(N)	NN
I feel a sense of loyalty to the NRA.	YY	(Y)	N	NN
All things considered I am satisfied with my job.	YY	(Y)	N	NN

Twenty one

I feel my work is valued by line management.	YY	(Y)	N	NN
I feel my work is valued by my colleagues.	YY	(Y)	N	NN
I am well informed of things going on which might effect me.	YY	(Y)	N	NN
I feel secure in my current job.	YY	Y	(N)	NN
I feel secure as an NRA employee.	YY	Y	(N)	NN
I am confident that however things change I will find employment.	YY	Y	(N)	NN
Much of my job is interesting/fun.	YY	(Y)	N	NN
My job is rewarding.	YY	(Y)	N	NN
The future is exciting.	YY	(Y)	N	NN
I can influence my line manager in decisions that effect my work.	YY	(Y)	N	NN
I would like more responsibility in my job.	YY	(Y)	N	NN
I know how well I am doing my job.	YY	(Y)	N	NN
I am adequately financially rewarded.	YY	Y	N	NN
I have a good working environment.	YY	(Y)	N	NN
I have adequate 'tools' to do the job.	YY	(Y)	N	NN
I receive appropriate training within a reasonable timescale.	YY	Y	(N)	NN
I am making a worthwhile contribution to the NRA.	YY	(Y)	N	NN
I would like more responsibility.	YY	(Y)	N	NN
I frequently perform tasks which stretch me.	YY	Y	(N)	NN
I have good prospects for promotion.	YY	Y	(N)	NN
I have good prospects of getting work experience in new fields.	YY	Y	(N)	NN
If offered a comparable job in another organisation I may leave.	YY	Y	(N)	NN
I feel a sense of loyalty to the NRA.	YY	(Y)	N	NN
All things considered I am satisfied with my job.	YY	(Y)	N	NN

I feel my work is valued by line management.	(YY)	Y	N	NN
I feel my work is valued by my colleagues.	(YY)	Y	N	NN
I am well informed of things going on which might effect me.	YY	(Y)	N	NN
I feel secure in my current job.	YY	(Y)	N	NN
I feel secure as an NRA employee.	YY	(Y)	N	NN
I am confident that however things change I will find employment.	YY	(Y)	N	NN
Much of my job is interesting/fun.	(YY)	Y	N	NN
My job is rewarding.	(YY)	Y	N	NN
The future is exciting.	YY	(Y)	N	NN
I can influence my line manager in decisions that effect my work.	YY	(Y)	N	NN
I would like more responsibility in my job.	YY	Y	(N)	NN
I know how well I am doing my job.	(YY)	Y	N	NN
I am adequately financially rewarded.	YY	(Y)	N	NN
I have a good working environment.	(YY)	Y	N	NN
I have adequate 'tools' to do the job.	YY	Y	(N)	NN
I receive appropriate training within a reasonable timescale.	YY	(Y)	N	NN
I am making a worthwhile contribution to the NRA.	(YY)	Y	N	NN
I would like more responsibility.	YY	Y	N	NN
I frequently perform tasks which stretch me.	YY	(Y)	N	NN
I have good prospects for promotion.	YY	(Y)	N	NN
I have good prospects of getting work experience in new fields.	YY	Y	(N)	NN
If offered a comparable job in another organisation I may leave.	YY	Y	(N)	NN
I feel a sense of loyalty to the NRA.	(YY)	Y	N	NN
All things considered I am satisfied with my job.	YY	(Y)	N	NN

Appendix III - Customer Satisfaction Survey Questionnaires

MEMORANDUM

from: Keith Seymour, Groundwater Resources Manager (RFH)

to: Anne Horsefield, Planning Liaison Officer, Southern Area.

date: 22 June 1994

GROUNDWATER SECTION 'CUSTOMER' SURVEY

I am currently carrying out a survey to assess the views of internal 'customers' of the Groundwater Section, i.e. those sections with which we interact and provide advice to or act as consultee.

This is in connection with a project I am doing as part of a Certificate in Management. However, the information will also be useful in identifiying how well we are meeting the needs of the areas

I have selected representives of those functions in each of the areas with whom we have regular contact. Therefore, I would be grateful if you could complete the attached questionnaire and return it to me as soon as possible. You can be as honest as you like - our shoulders are broad enough! (I hope).

If you would like a chat before filling it in, please give me a ring (Ext. 2533) Any comments on the format of the questionnaire are also welcomed.

Many thanks for your time and cooperation.

Keith

National Rivers Authority (North West Region)

Groundwater Section

GROUNDWATER INVESTIGATION COSENTS
EXTERNAL CUSTOMER SATISFACTION SURVEY

Contractor: C. T. MULRYAN
BRITISH GYPSUM LIMITED
KIRKBY THORE
PENRITH

---

1. Which other NRA region's have you had dealings with in the past 12 months?

Anglian | Northumrian/Yorkshire | Severn Trent

Southern | South Western | Thames | Welsh ✓

For the **North West Region,** please circle most appropriate score, from **5 - excellent** to **1 - poor**, for standard of service provided by **Groundwater Section** in connection with Groundwater Investigation Consents:

2.	Speed of response:	5	(4)	3	2	1
3.	Flexibility/practicality of approach:	(5)	4	3	2	1
4.	Convenience/accessibility of staff for discussion/advice (regionally vs. area based):	(5)	4	3	2	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff (legal & technical):	5	(4)	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (compared with other regions):	(5)	4	3	2	1

8. Any other comments/areas for improvements:
I have marked high as in all honesty the standard of service provided by the Groundwater Section is excellent

Thank you for completing this questionnaire - please return to Keith Seymour. NRA (NW)

National Rivers Authority (North West Region)

Groundwater Section

GROUNDWATER INVESTIGATION COSENTS
EXTERNAL CUSTOMER SATISFACTION SURVEY

Contractor: J P. WHITTER (WATER WELL ENGINEERS) LTD

---

1. Which other NRA region's have you had dealings with in the past 12 months?

Anglian | Northumrian | Yorkshire | Severn Trent

Southern | South Western | Thames | Welsh

For the **North West Region,** please circle most appropriate score, from 5 - **excellent** to **1 - poor**, for standard of service provided by **Groundwater Section** in connection with Groundwater Investigation Consents

2.	Speed of response:	(5)	4	3	2	1
3.	Flexibility/practicality of approach	(5)	4	3	2	1
4.	Convenience/accessibility of staff for discussion/advice (regionally vs. area based):	(5)	4	3	2	1
5.	Helpfulness of Groundwater staff :	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff (legal & technical):	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (compared with other regions):	(5)	4	3	2	1

8. Any other comments/areas for improvements:

Thank you for completing this questionnaire - please return to Keith Seymour. NRA (NW)

National Rivers Authority (North West Region)

Groundwater Section

GROUNDWATER INVESTIGATION COSENTS
EXTERNAL CUSTOMER SATISFACTION SURVEY

Contractor:

DALES WATER SERVICES LTD.

---

1. Which other NRA region's have you had dealings with in the past 12 months?

Anglian	Northumrian/Yorkshire		Severn Trent
Southern	South Western	Thames	Welsh

For the **North West Region,** please circle most appropriate score, from **5 - excellent** to **1 - poor**, for standard of service provided by **Groundwater Section** in connection with Groundwater Investigation Consents:

2.	Speed of response:	5	4	3	2	1
3.	Flexibility/practicality of approach:	5	4	3	2	1
4.	Convenience/accessibility of staff for discussion/advice (regionally vs. area based):	5	4	3	2	1
5.	Helpfulness of Groundwater staff:	5	4	3	2	1
6.	Experience/expertise of Groundwater staff (legal & technical):	5	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (compared with other regions):	5	4	3	2	1

8. Any other comments/areas for improvements:

Thank you for completing this questionnaire - please return to Keith Seymour. NRA (NW)

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: National Groundwater Centre

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the North West Region Groundwater Section in terms of :

1.	Speed of response:	(5)	4	3	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	5	(4)	3	2	1
4.	Ease of access/availability of NW Groundwater staff (regional vs. area based): NOT TESTED	5	(4)	3	2	1
5.	Helpfulness of NW Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of NW Groundwater staff: (technical/regional perspective/local knowledge)	(5)	4	3	2	1
7.	Overall 'quality of service' provided by NW Groundwater Section (accepting constraints on staff resources)	(5)	4	3	2	1

8. Any other comments/areas for improvements: I COUNT NW'S GW SECTION AS ONE OF THE FABLE NATIONAL TO COORDINATE FROM THE STANDPOINT OF A NATIONAL IMAGE. IT IS MY OBSERVATION THAT A CONTRIBUTORY REASON FOR THIS IS THE RELATIVE CLARITY OF INTERNAL STRUCTURE (1 REGIONAL CHIEF, AREAS LOOK TO THAT UNIT FOR ADVICE ON GW MATTERS) AND I ALSO DO NOT OBSERVE THE OBSERVATIVE RELATIONSHIP/QUALITY DIVISION WHICH APPEARS TO BE SO SCHISMATIC IN SOME OTHER REGIONS

Thank you for completing this questionnaire.

Please return to Keith Seymour, NW Region, at Richard Fairclough House, Warrington

YOU ARE STRONGLY ENCOURAGED NOT TO MAKE THE RESULTS OF THIS SURVEY AVAILABLE TO SENIOR MANAGEMENT; ELSEWHERE THERE IS A STRONGLY AS THAT LEVEL TO 'MIND THE UNBROKEN

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Pollution Control **Area:** North

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of :

1.	Speed of response:	5	(4)	3	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	5	(4)	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	(3)	2	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements:

Would appreciate updated section structure to avoid getting this wrong context. Great pollution training sums up the section in that it was high on content, well delivered & relevant.

Would like to see staff more often in the areas e.g. district meetings

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Pollution Control **Area:** CENTRAL

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of :

1.	Speed of response:	5	4	(3)	2	1
2.	Quality/level of detail of response	5	(4)	3	2	1
3.	Ease of understanding of response:	5	(4)	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	(3)	2	1
5.	Helpfulness of Groundwater staff:	5	(4)	3	2	1
6.	Experience/expertise of Groundwater staff:	5	(4)	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements:

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Pollution Control **Area:** South.

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of :

1.	Speed of response:	5	(4)	3	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	5	4	(3)	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	3	(2)	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	5	(4)	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements:

OCCASIONAL PROBLEMS WITH AVAILABILITY OF STAFF FOR ADVICE HOWEVER THIS COULD STILL BE ASSOCIATED WITH REDUCTIONS IN STAFF NUMBERS

2. 3 & 5 4.

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Planning Liaison **Area:** CENTRAL

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	4	(3)	2	1
2.	Quality/level of detail of response:	5	(4)	3	2	1
3.	Ease of understanding of response:	(5)	4	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	(4)	3	2	1
5.	Helpfulness of Groundwater staff:	5	(4)	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements:

Thank you for completing this questionnaire.- please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

NRA
21 JUN 1994
FILE ON

GROUNDWATER SECTION
INTERNAL CUSTOMER SATISFACTION SURVEY

Function: PLANNING **Area:** NORTH

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for standard of service:

1.	Speed of written responses:	5	4	(3)	2	1
2.	Quality/level of detail of written responses:	5	4	(3)	2	1
3.	Ease of understanding of written responses:	5	(4)	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	3	(2)	1
5.	Helpfulness of Groundwater staff:	5	4	(3)	2	1
6.	Experience/expertise of Groundwater staff:	5	(4)	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	4	(3)	2	1

8. Any other comments/areas for improvements: I wish you didn't need grid references to comment as some of my councils haven't plotted the applications when I visit and this causes delays

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: **LICENSING** **Area:** North.

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	4	(3)	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	(5)	4	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	3	(2)	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	(5)	4	3	2	1

8. Any other comments/areas for improvements:

Sometimes v. easy to contact especially first thing in the morning - we start at 8 ocan + e can often be leaving the office before RFH is "open". Would an answering machine help??

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Planning Liaison **Area:** South.

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	4	(3)	2	1
2.	Quality/level of detail of response:	5	4	(3)	2	1
3.	Ease of understanding of response:	5	4	(3)	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	(4)	3	2	1
5.	Helpfulness of Groundwater staff:	5	(4)	3	2	1
6.	Experience/expertise of Groundwater staff:	5	(4)	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	4	(3)	2	1

8. Any other comments/areas for improvements:

There has been an improvement lately in the speed & responses, particularly where more detailed comments are required. May I request that if plans are not received for new consultations within, say, 4 days of computer entry date, that these are queried either by phone or E-mail so that final comments can be entered on the system.

It is also appreciated that your Section, like others, is probably suffering from lack of resources!

Thank you for completing this questionnaire.- please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: **LICENSING** **Area:** South

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	4	3	(2)	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response	5	(4)	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	(3)	2	1
5.	Helpfulness of Groundwater staff	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements: Our main concern is the receipt of groundwater input into the (in groundwater) licence determination process. Resource problems often mean we fail to meet our statutory 3 month determination of new applications. No problems in any other areas.

Paul Crane

24.6.94

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: LICENSING **Area:** central.

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	4	(3)	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	5	(4)	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	4	(3)	2	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements:

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Waste Regulation **Area:** NORTH

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	(5)	4	3	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	(5)	4	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	(5)	4	3	2	1
5.	Helpfulness of Groundwater staff	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	(5)	4	3	2	1

8. Any other comments/areas for improvements: Free beverages should be more widely available.

[illegible] [illegible] plans & x-sections have been excellent to interpret geology (from a geologist's point of view)

It is important to keep lines of communication/liaison between Depts.

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

[illegible] [illegible] upon the high standard of service provided by GW [illegible] my work would suffer if there was a deterioration in the standard

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Waste Regulation **Area:** Central.

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	(4)	3	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	(5)	4	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	5	(4)	3	2	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	5	(4)	3	2	1

8. Any other comments/areas for improvements:

occasionally it is necessary to chase for a response but on these occasions it tends to be done reasonably. I suspect problems will only occur when waste licences are pending in the future. At this time the level of resource will probably become more significant.

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

National Rivers Authority (North West Region)

Specialist Services

GROUNDWATER SECTION
INTERNAL CUSTOMER SURVEY

Function: Waste Regulation **Area:** South.

Please circle score as appropriate from **5 - excellent** to **1 - poor**, for the standard of service currently provided by the Groundwater Section in terms of:

1.	Speed of response:	5	(4)	3	2	1
2.	Quality/level of detail of response:	(5)	4	3	2	1
3.	Ease of understanding of response:	(5)	4	3	2	1
4.	Ease of access/availability of Groundwater staff for discussion/advice:	(5)	4	3	2	1
5.	Helpfulness of Groundwater staff:	(5)	4	3	2	1
6.	Experience/expertise of Groundwater staff:	(5)	4	3	2	1
7.	Overall 'quality of service' provided by Groundwater Section (accepting constraints on staff resources)	(5)	4	3	2	1

8. Any other comments/areas for improvements:

The only area for improvement would be increased staff resources, as far as I can see. The ease of understanding of the response from Groundwater relies on any prior knowledge and understanding but where this is lacking anyone in Groundwater will always spend time explaining things from a very basic level.

Thank you for completing this questionnaire - please return to Keith Seymour at RFH

Appendix IV - Inter-Regional Comparison Questionnaires

Hydrogeological Contacts

Region	Contact	Office
Yorkshire/Northumbria	John Aldrick	(Leeds)
Severn-Trent	Bob Harris	(Solihull)
Anglian	Dave Burgess	
Thames	Mike Owen	
Southern	Dick Flavin	
South Western	Peter Lucy	(Exeter)
Welsh	Wayne Davies	(Cardiff)

MEMORANDUM

To: **Dick Flavin,** Southern Region (Worthing)

From: **Keith Seymour,** North West Region
(Richard Fairclough House)

Our Ref: WR11/1/KJS

Date: 3 May 1994

REGIONAL HYDROGEOLOGICAL STRUCTURES

As you may be aware, in the North West our Groundwater Section is regionally based, and provides a full 'hydrogeological service' to our three areas. This is done with 'limited' staff resources, and indeed we have had to suffer the loss of a post when a technical assistant transferred to EQ.

It will help Tony and I to argue for more resources if we can compare our staff numbers and structures with other regions.

If you are like us, you are probably inundated with requests for information (internal and external). However, I would appreciate it if you could complete and return the attached questionnaire. If you would prefer just to have a chat, please give me a ring - internal number: (721) 2533.

I look forward to hearing from you. I need to get a report together by 20th May at the latest.

Many thanks and best wishes.

Keith Seymour

Groundwater Resources Manager

REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- ANGLIAN

a) Area/Regional responsibilities (briefly describe)

Hydrogeological Service split at Region and Area between Water Resources/Water Quality. Regional work is supervision/undertaking of projects on Resource Assessment/Modelling/ALFS/Hydrometric undertakings/GPZ's etc. Area is 'operational' including Groundwater licensing/Groundwater Protection Policy Enforcement/consultations

b) Number of Areas: 3

2. Staff Numbers

2.1 Professional Hydrogeologists:

	Region	Areas
a) Number	4	6
b) Grades	(10–6)	(6–7)

2.2 Technical Support:

	Region	Areas
a) Number	2	5
b) Grades	5/4	(3/5)

3. Activities/Responsibilities (Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 Section 32 Consents / Licensing Tech. Determination			
a) Issuing		H	
b) Assessment/processing		H	
c) Supervision/auditing		H.	
3.2 Waste Regulation			
a) Co-ordinating consultations		H	
b) Groundwater comments		H	
3.3 Contaminated Land			
a) Co-ordinating consultations		H/C	
b) Groundwater comments		H/C.	

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	Planning Liaison Consultations (Groundwater comments)		H	
3.5	Discharges to U/G Strata Notifications (Groundwater comments)		O	
3.6	IPC Authorisations (Groundwater comments)		O/H	
3.7	Catchment Management Plans (Groundwater input)			
3.8	Groundwater Resource Assessments	H		H
3.9	Groundwater Modelling	H		H.
3.10	Groundwater Protection Policy			
	a) GPZ data aquisition & zone evaluation	H		H/O
	b) Catchment audits		H/O	
3.11	Nitrate Sensitive Areas (NSA data aquisition & zone evaluation)		H	H
3.12	R&D (Groundwater related)			H
3.13	Groundwater Related Enquiries - external (public/students/consultants)		H/O	
3.14	Routine Groundwater Quality Sampling		O	
3.15	Geophysical Logging			H
3.16	Routine Groundwater Level Monitoring			
	a) Manual dipping		O	
	b) Data logger - installation		O	
	- interrogation		O	
	- data processing		O	
3.17	Groundwater Database Management		H/O	H.

Generally Consultants are now used if we can define a project and justify it. Consultants have been used in the past for 'core' licencing work.

- Please return to:

Keith Seymour.
North West Region.
Richard Fairclough House.
Warrington - Tel. 721 2533.

REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- SEVERN TRENT

a) Area/Regional responsibilities (briefly describe)

All groundwater technical work is carried out regionally. Area deal with day to day issues where they can; otherwise referred to Region. Regional role to draw together policy/manage Regional projects, technical input to S32(3), planning & co-ordinate waste management licensing.

b) Number of Areas: 4

2. Staff Numbers

	Region	Areas
2.1 Professional Hydrogeologists:		
a) Number	12(+2)	0
b) Grades	4 to 11	

(+2 are Nat. Groundwater Centre)

2.2 Technical Support:		
a) Number	3	
b) Grades	1 to 2	

3. Activities/Responsibilities (Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 Section 32 Consents			
a) Issuing		✓ O (water resources area staff)	
b) Assessment/processing	✓ H		
c) Supervision/auditing			
3.2 Waste Regulation			
a) Co-ordinating consultations	✓ H		
b) Groundwater comments	✓ H		
3.3 Contaminated Land			
a) Co-ordinating consultations		✓ O (planners)	
b) Groundwater comments	✓ H		

(Hay F)

Regional Manager (3rd Tier - Grade 11)
Senior Hydrogeologists (3) Grade 9/10 (E)
Hydrogeologists (2) Grade 6/7 (D)
Assistant Hydrogeologists (6) Grade 3/4/5 (C).

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	**Planning Liaison Consultations** (Groundwater comments)	✓ H		
3.5	**Discharges to U/G Strata Notifications** (Groundwater comments)	✓ H		
3.6	**IPC Authorisations** (Groundwater comments)	✓ H	✓ Poll Control	
3.7	**Catchment Management Plans** (Groundwater input)	✓ H		
3.8	**Groundwater Resource Assessments**	✓ H		
3.9	**Groundwater Modelling**	✓ H		✓
3.10	**Groundwater Protection Policy** a) GPZ data aquisition & zone evaluation	✓ H		✓ Data aqui.
	b) Catchment audits		✓ Poll control	
3.11	**Nitrate Sensitive Areas** (NSA data aquisition & zone evaluation)	✓ H		✓
3.12	**R&D (Groundwater related)**	✓ H		
3.13	**Groundwater Related Enquiries - external** (public/students/consultants)	✓ H	✓ O where can be answered from data/info we supplying.	
3.14	**Routine Groundwater Quality Sampling**		✓ Poll control	
3.15	**Geophysical Logging**			✓ we have a term contract
3.16	**Routine Groundwater Level Monitoring** a) Manual dipping		✓ Hydrometric staff (at prac	
	b) Data logger - installation		✓ .	
	- interrogation		✓ .	
	- data processing		✓ .	
3.17	**Groundwater Database Management**	✓ H		

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North West Region.
Richard Fairclough House.
Warrington - tel. 721 2533.

REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- SOUTHERN

a) Area/Regional responsibilities (briefly describe)

The RHQ my groundwater protection unit deal with County Matter PAs & landfill WRA Licensing + Section H (GPP) activities. We reply through Planning liaison or WQ officers in Areas. HQ Resources team being built up now to 3 mainly to sort out protection zones & modelling. Each Area has at least 1 hydrogeologist / hydrologist. Kent has 4 (!) all for Resources quantity work only

b) Number of Areas: 3

2. Staff Numbers

2.1 Professional Hydrogeologists:

	Resources work	Region (GPP work)	Areas (Resources work)	
a) Number	3	4	6	
b) Grades	9, 7, 6.	10, +3 × 4-7	11, 2 × 8, 3	× 4-7

2.2 Technical Support:

	Region	Areas
a) Number	None	c 5 (multifunctional!)
b) Grades		4

3. Activities/Responsibilities

(Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 Section 32 Consents			
a) Issuing			
b) Assessment/processing			
c) Supervision/auditing	1 (O)	4 (H,O)	
3.2 Waste Regulation			
a) Co-ordinating consultations	[illegible]	6(O)	
b) Groundwater comments	4 H		
3.3 Contaminated Land			
a) Co-ordinating consultations		3 (O)	
b) Groundwater comments	4 H		

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultant
3.4	**Planning Liaison Consultations** (Groundwater comments)	4 H	O	O
3.5	**Discharges to U/G Strata Notifications** (Groundwater comments)	4 H	6 (O)	
3.6	**IPC Authorisations** (Groundwater comments)	10 4H middle	✓	✓
3.7	**Catchment Management Plans** (Groundwater input)	?		
3.8	**Groundwater Resource Assessments**	2 H	2H 2O	
3.9	**Groundwater Modelling**	2 H	✓	
3.10	**Groundwater Protection Policy** a) GPZ data aquisition & zone evaluation	just approval 3 H	✓	
	b) Catchment audits	3 H		
3.11	**Nitrate Sensitive Areas** (NSA data aquisition & zone evaluation)	None in Southern Region		
3.12	**R&D (Groundwater related)**	1 H		
3.13	**Groundwater Related Enquiries - external** (public/students/consultants)	4 H	numerous (O)	
3.14	**Routine Groundwater Quality Sampling**	none done		
3.15	**Geophysical Logging**	"		
3.16	**Routine Groundwater Level Monitoring** a) Manual dipping	details not known	(O)	
	b) Data logger - installation		(O)	
	- interrogation			
	- data processing			
3.17	**Groundwater Database Management**	"	2 (O) 3 (O)	

- Please return to

Keith Seymour

North West Region

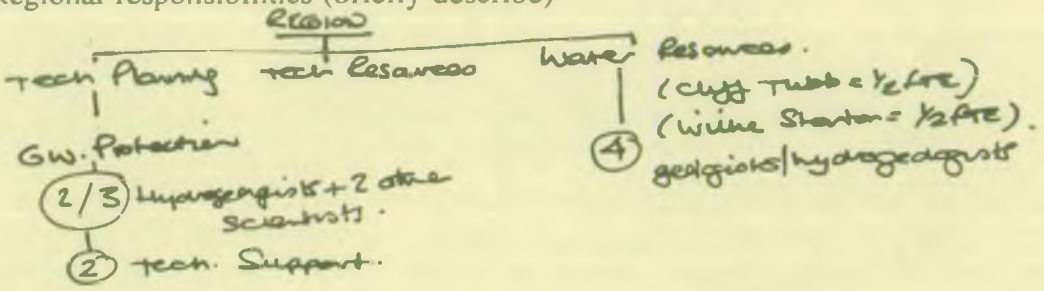
Richard Fairclough House

REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- South West

a) Area/Regional responsibilities (briefly describe)



b) Number of Areas

4

2. Staff Numbers

	Region	Areas (non-hydrogeologists)
2.1 Professional Hydrogeologists:		
a) Number	6+3	0
b) Grades		
2.2 Technical Support:		
a) Number	2	0
b) Grades		

3. Activities/Responsibilities (Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 Section 32 Consents			
a) Issuing		O	
b) Assessment/processing (Large Strategic apps.)	H	O (Small scale apps.)	
c) Supervision/auditing (Large Strategic apps.)	H	O (Small scale apps.)	
3.2 Waste Regulation			
a) Co-ordinating consultations	H		
b) Groundwater comments	H		
3.3 Contaminated Land			
a) Co-ordinating consultations		O	
b) Groundwater comments	H	O	

Support areas

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	**Planning Liaison Consultations** (Groundwater comments)	H		
3.5	**Discharges to U/G Strata Notifications** (Groundwater comments)		O	
3.6	**IPC Authorisations** (Groundwater comments)	H		
3.7	**Catchment Management Plans** (Groundwater input)	H		
3.8	**Groundwater Resource Assessments**	H		
3.9	**Groundwater Modelling**	H		
3.10	**Groundwater Protection Policy**			
	a) GPZ data aquisition & zone evaluation	H		
	b) Catchment audits	—	—	—
3.11	**Nitrate Sensitive Areas** (NSA data aquisition & zone evaluation)	H		
3.12	**R&D (Groundwater related)**	H		
3.13	**Groundwater Related Enquiries - external** (public/students/consultants)	H		
3.14	**Routine Groundwater Quality Sampling**		O	✓ (Completed) one-off base line
3.15	**Geophysical Logging**	—	—	—
3.16	**Routine Groundwater Level Monitoring**			
	a) Manual dipping		O	
	b) Data logger - installation		O	
	- interrogation		O	
	- data processing		O	
3.17	**Groundwater Database Management**		O	

Note:- new structure (merged SW/wessex).·.
roles uncertain & not yet clearly defined.

(INTERVIEW BY PHONE
PM/KJS. 22.8.94)

- Please return to:.

Keith Seymour.
North West Region.
Richard Fairclough House.
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REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- THAMES.

a) Area/Regional responsibilities (briefly describe)

* Groundwater Quality: Areas deal with operational matters (eg waste management licences, planning + development matters, discharge consents). Region deals with policy + strategic matters "Regional" issues (NSAs, [illegible], input to vulnerability maps, GPZs, R+D) groundwater quality monitoring, technical support.

b) Number of Areas: 3

2. Staff Numbers

2.1 Professional Hydrogeologists:
(include Environmental Scientists)

	Region	Areas
a) Number	5	6
b) Grades	10, 8, 8, 6, 4	8, 8, 8, 6, 6, 6

2.2 Technical Support:

	Region	Areas
a) Number	0	3 × 0.25
b) Grades		4

} also help Region

3. Activities/Responsibilities (Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 Section 32 Consents			
a) Issuing	H		
b) Assessment processing	H		
c) Supervision auditing	H		
3.2 Waste Regulation			
a) Co-ordinating consultations		H	
b) Groundwater comments		H	
3.3 Contaminated Land			
a) Co-ordinating consultations		H	
b) Groundwater comments		H	

* Keith

This is a brief description. Since the Groundwater Quality Section was split to fit in with reorganisation I have generally tried to reflect the split of responsibilities between Area + Region. If you want further details call me on [illegible] 52604. Ian [illegible]

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	**Planning Liaison Consultations** (Groundwater comments)		H O	
3.5	**Discharges to U/G Strata Notifications** (Groundwater comments)		H	
3.6	**IPC Authorisations** (Groundwater comments)	(H)	H	
3.7	**Catchment Management Plans** (Groundwater input)	H	H	
3.8	**Groundwater Resource Assessments**			
3.9	**Groundwater Modelling**			
3.10	**Groundwater Protection Policy** a) GPZ data aquisition & zone evaluation	H		
	b) Catchment audits	H		
3.11	**Nitrate Sensitive Areas** (NSA data aquisition & zone evaluation)	H		
3.12	**R&D (Groundwater related)**	H		
3.13	**Groundwater Related Enquiries - external** (public/students/consultants)	H	H	
3.14	**Routine Groundwater Quality Sampling**		O	
3.15	**Geophysical Logging**			
3.16	**Routine Groundwater Level Monitoring** a) Manual dipping			
	b) Data logger - installation			
	- interrogation			
	- data processing			
3.17	**Groundwater Database Management**	H		

- Please return to:

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North West Region.
Richard Fairclough House.
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REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- THAMES.

a) Area/Regional responsibilities (briefly describe)

GROUNDWATER RESOURCES AND LICENSING HYDROLOGY GROUP. - ALL ASPECTS OF NRA HYDROLOGY EXCEPT GW QUALITY PROTECTION - (SEE SEPARATE SHEET) - CARRIED OUT BY SEPARATE GROUP OF 11 STAFF.

b) Number of Areas: 3

2. Staff Numbers

		Region	Areas
2.1	**Professional Hydrogeologists:**		
	a) Number	4	
	b) Grades	10, 8, 7, 6	
2.2	**Technical Support:**		
	a) Number	2	
	b) Grades	6, 4	

3. Activities/Responsibilities (Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.1	**Section 32 Consents**			
	a) Issuing	H		
	b) Assessment/processing	H		
	c) Supervision/auditing	H		
3.2	**Waste Regulation**			
	a) Co-ordinating consultations			
	b) Groundwater comments			
3.3	**Contaminated Land**			
	a) Co-ordinating consultations			
	b) Groundwater comments			

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	**Planning Liaison Consultations** (Groundwater comments)	H		
3.5	**Discharges to U/G Strata Notifications** (Groundwater comments)			
3.6	**IPC Authorisations** (Groundwater comments)			
3.7	**Catchment Management Plans** (Groundwater input)	H		
3.8	**Groundwater Resource Assessments**	H		
3.9	**Groundwater Modelling**	H		
3.10	**Groundwater Protection Policy**			
	a) GPZ data aquisition & zone evaluation	H		
	b) Catchment audits	H		
3.11	**Nitrate Sensitive Areas** (NSA data aquisition & zone evaluation)			
3.12	**R&D (Groundwater related)**	H		
3.13	**Groundwater Related Enquiries - external** (public/students/consultants)	H		
3.14	**Routine Groundwater Quality Sampling**			
3.15	**Geophysical Logging**	H		
3.16	**Routine Groundwater Level Monitoring**			
	a) Manual dipping			
	b) Data logger - installation			
	- interrogation			
	- data processing			
3.17	**Groundwater Database Management**			

CARRIED OUT BY HYDROMETRIC SERVICES - HYDROGEOLOGISTS AND TECHNICIANS

- Please return to:

Keith Seymour.
North West Region.
Richard Fairclough House.
Warrington - Tel. 721 2533.

REGIONAL HYDROGEOLOGICAL STRUCTURES

1. Structure

REGION:- WELSH.

a) Area/Regional responsibilities (briefly describe)

In Welsh Region there are a small number of hydrogeologists regionally based who provide a service to the areas. I would stress that we are not adequately resourced to provide the level of service required. I feel that your programme should ask the question as to whether or not the Region is operating above, below or at the critical resource mass. Within this region I can safely say that we are below

b) Number of Areas: 3

2. Staff Numbers

	Region	Areas
2.1 Professional Hydrogeologists:		
a) Number	3 No	
b) Grades	1(9) 2(6-7)	
2.2 Technical Support:		
a) Number	1 No	
b) Grades	H	

3. Activities/Responsibilities (Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 Section 32 Consents			
a) Issuing		O	
b) Assessment/processing	H		
c) Supervision/auditing		O	
3.2 Waste Regulation			
a) Co-ordinating consultations		O	
b) Groundwater comments	H		
3.3 Contaminated Land			
a) Co-ordinating consultations		O	
b) Groundwater comments	H		

3. Activities/Responsibilities (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	Planning Liaison Consultations (Groundwater comments)	H		
3.5	Discharges to U/G Strata Notifications (Groundwater comments)	H		
3.6	IPC Authorisations (Groundwater comments)	H		
3.7	Catchment Management Plans (Groundwater input)	H		
3.8	Groundwater Resource Assessments	H		
3.9	Groundwater Modelling	H		
3.10	Groundwater Protection Policy			
	a) GPZ data aquisition & zone evaluation	H + O (TECH SUPPORT)		
	b) Catchment audits	H		
3.11	Nitrate Sensitive Areas (NSA data aquisition & zone evaluation)	H + O (TECH SUPPORT)		
3.12	R&D (Groundwater related)	H		
3.13	Groundwater Related Enquiries - external (public/students/consultants)	H + O (TECH SUPPORT)		
3.14	Routine Groundwater Quality Sampling		O	
3.15	Geophysical Logging			✓
3.16	Routine Groundwater Level Monitoring			
	a) Manual dipping	TECH SUPPORT	O	
	b) Data logger - installation	" "	O	
	- interrogation	" "	O	
	- data processing	" "	O	
3.17	Groundwater Database Management	TECH SUPPORT		

In setting up a new monitoring station regional staff undertake these tasks for a limited period (6-12 months) before handing over to the area.

- Please return to:

Keith Seymour.
North West Region.

REGIONAL HYDROGEOLOGICAL STRUCTURES

1. **Structure**

REGION:- YORKSHIRE/ NORTHUMBRIA.

a) Area/Regional responsibilities (briefly describe)

All hydrogeology at Area level.

Northumbria 2 Hydro.
Dales: 2½/3 Hydro.

b) Number of Areas

3.

Northumbria
Dales. - Tees/Swale/Ure/Nidd/Derwent.
S. Yorks. Aire/Don/Hull.

2. **Staff Numbers**

	Region	Areas
2.1 **Professional Hydrogeologists:**		S. Yorks.
a) Number	0	3. + Waste/Disposal offr.
b) Grades		5-6. 8
2.2 **Technical Support:**		
a) Number		1
b) Grades		6

3. **Activities/Responsibilities** (Please tick location & code: H - hydrogeologists, O - others)

	Region	Areas	Consultants
3.1 **Section 32 Consents**			
a) Issuing	X	H	
b) Assessment/processing	X	H	
c) Supervision/auditing	X	O/H	
3.2 **Waste Regulation**			
a) Co-ordinating consultations	Y	WD offr.	
b) Groundwater comments	✓	H	
3.3 **Contaminated Land**			
a) Co-ordinating consultations	✓	H or WD offr.	
b) Groundwater comments	✓	H	

not done in region at all.

Keith. Sorry about the delay.

Everything hydrogeological is now done in areas. - Unfortunately different areas to the ones we previously used. - which is causing difficulty. A high proportion of new staff also. - so a steep learning curve for them.

Regards John.

3. **Activities/Responsibilities** (cont.)(Please tick location & code: H - hydrogeologists, O - others)

		Region	Areas	Consultants
3.4	**Planning Liaison Consultations** (Groundwater comments)	✓	✓ H	
3.5	**Discharges to U/G Strata Notifications** (Groundwater comments)	✓	✓ H	
3.6	**IPC Authorisations** (Groundwater comments)	✓	✓ H	
3.7	**Catchment Management Plans** (Groundwater input)	✓	✓ H	
3.8	**Groundwater Resource Assessments**	✓	✓ H	
3.9	**Groundwater Modelling**	✓	✓ H	
3.10	**Groundwater Protection Policy**			
	a) GPZ data aquisition & zone evaluation	✓	✓ H	✓
	b) Catchment audits	✓	✓ H	
3.11	**Nitrate Sensitive Areas** (NSA data aquisition & zone evaluation)	✓	✓ H	
3.12	**R&D (Groundwater related)**	✓	✓ H	
3.13	**Groundwater Related Enquiries - external** (public/students/consultants)	✓	✓ H some O	
3.14	**Routine Groundwater Quality Sampling**	✓		
3.15	**Geophysical Logging**	✓	✓ H	
3.16	**Routine Groundwater Level Monitoring**			
	a) Manual dipping	✓	✓ O some H.	
	b) Data logger - installation	✓	✓ O & H.	
	- interrogation	✓ field data sonic.		
	- data processing		✓	
3.17	**Groundwater Database Management**		✓ H and O.	

1

- Please return to:

Keith Seymour.
North West Region.
Richard Fairclough House.
Warrington - tel. 721 2533.

Appendix V - Workload/Resource Analysis

APPENDIX V

WORKLOAD/RESOURCE ANALYSIS
(Priority Planning & Evaluation)

V.1 Need:

At present there is a shortfall in staff resources to meet all of the conflicting demands placed upon the Section (see section 8).. This is likely to become an increasing management challenge with the pressure to reduce staff numbers in the run up to Envage.

V.2 Objective:

to identify how to achieve an acceptable balance between available resources and workload.

V.3 Options:

Five main options have been considered to redress the workload/resources imbalance:

(i) externalise suitable activities from Groundwater Section
- to areas
- to consultants/contractors)

(ii) recruit new staff (temporary/permanent)
(iii) stop doing certain activities
(iv) reduce standard of service/quality of output
(v) develop more efficient systems

V.4 Methodology:

(i) identify all tasks and activities currently carried out by the Groundwater Section
(ii) identify purpose and customer for each activity
(iii) rate activities in terms of:

Priority

5 -statutory requirements (short term)
4 -corporate plan/national requirements
3 -essential support activities to Priority 1 & 2 activities
2 -important
1 -marginal importance

Urgency

5 -short term statutory deadlines
4 -short term, fixed duration
3 -medium term, fixed duration
2 -medium term, ongoing
1 -long term or ongoing

Current Standard of Service

5 -above desired level
4 -at desired level
3 -between desirable & minimum acceptable level
2 -minimum acceptable level
1 -below minimum acceptable level

(iv) assess current staff time involvement (individuals & as FTE's)

(v) identify activities which do not **need** to or can not be carried out in-house, and where appropriate identify alternative providers (see Table 7.4 - Inter-Regional comparison) and/or other options

(vi) set criteria for success/selection of options

(vii) assess cost benefits of options & establish preferred solutions.

V.5 Prioritorisation:

V.5.1 The current situation is summarised in Table V.1. It is concluded that:

- no activities are carried out which are unnecessary/of marginal importance; all are important, either in their own right (Priority 2) or essential to meeting statutory or corporate plan objectives (3-5). Arguably, the least important are external data requests and presentations.

- responses to statutory consultations are the highest priority (5) and most urgent (5). The size of this workload is currently 2-3 FTE (see Table 8.3).

- this reactive work is in addition to meeting short-medium term corporate plan objectives or providing inputs to national initiatives. There is little opportunity to be proactive.

- no activities are carried out to a standard above a 'desired' level (5); most are at or below the minimum acceptable standard (1-2), either in terms of speed of response or 'quality' of input/depth of consideration (thinking time)[1]. This is as perceived internally.

V.5.2. Potential alternative providers for specific activities are summarised in Table V.2.

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[1] *This may seem at odds with the Customer Satisfaction Service results, but most respondents recognised constraint of staff resources on speed of response.*

TABLE V.1 Groundwater Section Activity Analysis & Prioritorisation

ACTIVITY/TASK	purpose	customer	priority	urgency	current SoS	time FTE	staff involved	alternative provider
GROUNDWATER (NON HYDROMETRY)								
10 Licensing/consents	statutory	areas/ext.	5	5	2	0.8	KJS,DCP,LE	none
RESOURCE PROTECTION (KE10)								
20 Waste Regulation	statutory	areas/ext.	5	5	3	0.5	KJS,AJP	none
30 Contaminated Land	gw prot.	areas/ext.	4	4	2	0.04	KJS,AJP	none
40 Pollution Incidents	gw prot.	areas/ext.	4	4	2	0.07	KJS,AJP,MDT	none
50 Planning Liason Consultations	statutory	areas/ext.	5	5	2	0.7	CDS,LE,MDT	none
60 Discharge Notifications	statutory	external	5	5	3	0.03	LE	none
70 IPC Authorisations	non-stat	external	2	4	3	0.1	KJS,AJP	none
80 Groundwater Protection Policy	gw prot.	region						none
Policy development/zone definition:			4	3	2	0.05	AJP,MDT	consultants
Policy implementation:			2	1	1	0		PCO's
90 Nitrate Vulnerable Areas	statutory	region	4	4	2	0.5	AJP,MDT	consultants
100 Response to national initiatives (misc)	R & D	national	4	4	2	0.3	All	none
110 Private water supply register	support	regional	3	1	2	0.07	LE,CDS	none
120 Alleviation of Low Flows	corp plan	national	4	3	2	0.01	KJS,AJP	none
PLANNING & DEVELOPMENT								
130 Catchment Management Plans	corp. plan	national	4	4	4	0.02	KJS,AJP	none
140 Summary Groundwater Vulnerability Maps	gw prot'n	external	2	4	1	0	KJS	none
RESOURCE PLANNING								
150 Resource/Demand Assessment	gen. duty	regional	2	3	2	0.1	KJS	consultants
DATABASE MANAGEMENT & DEVELOPMENT								
160 Groundwater Computer System	support	regional	3	2	4	0.2	AJP, CDS	WAMAMS
170 Paper System	support	regional	3	2	4	0.5	MDT,LE	none
PROMOTION/ADVISORY								
180 presentations	marketing	areas/ext.	2	3	2	0.1	KJS,AJP	none
190 consultations/enquiries								
191 internal	marketing	areas	3	4	4	0.1	ALL	none
192 external	duty	external	2	4	2	0.5	CDS,JAI,KJS	none
200 CAPITAL PROJECTS	corp. plan	nat./region	4	4	3	0.7	KJS,AJP,JAI	
210 Special Projects	gen. duty	misc	2	3	3	0.2	KJS,AJP,MDT	none
HYDROMETRY								
250 Routine Groundwater Quality Sampling	gen duty	nat, region	2	2	2	0.1	JAI,LE,CDS	consultants/area
260 Non-Routine Groundwater Sampling	gen duty	region	3	4	3	0.1	All	none?
270 Data Loggers (Gbh Network)	gen duty	region	3	2	4	0.5	DCP	consultants/areas
280 Geophysical Logging	gen duty	region	2	1	1	0.1	MDT	consultants
290 Observation Borehole Network						0.1		
Borehole Construction	gen duty	region	3	3	4	0	JAI	none?
Borehole Maintenance	gen duty	region	3	1	1	0.1	DCP	contractors/areas
300 Quality Assurance	support	region	3	2	4	0.03	DCP	none
310 Data Management/Processing	support	region	3	2	4	0.1	CDS,DCP	none?

PRIORITY	classification
5	statutory requirement (short term)
4	national/corporate plan requirement
3	essential support activity to Priority 5 & 4 Activities
2	important
1	marginal importance

URGENCY	classification
5	short term statutory deadlines
4	short term fixed duration
3	medium term fixed duration
2	medium term ongoing
1	long term or ongoing

CURRENT SoS	classification
5	above desirable level
4	desirable level
3	between desirable & min. acceptable
2	min. acceptable
1	below minimum acceptable

Table V.2

Activity	Time[2] Input (FTE)	Alternative Provider	Cost[3]
Groundwater Protection Policy & Nitrate Vulnerable Zones:			
- data aquisition for Source Protecion Zones	0.08	consultants	£20K
- policy implimentation (catchment audit etc.)	0	PCO's	0
Groundwater Resource/Demand Assessment	0.1	consultants	£95K
Hydrometry			
- routine groundwater quality sampling	0.1	areas/**consultants**	£75K
- data loggers	0.5	areas/**consultants**	£25K
- geophysical logging	0.1	consultants	£95K
- borehole maintenance	0.1	contractors	£15k

V.6 Criteria for Success/Selection

The acceptability each of management options V.3 (i)-(iv) for carrying out these activities needs to be assessed in terms of satifying the following criteria/constraints:

- no increase in staff - *(DoE NRA policy)*
- compliance with national Hydrometric Efficiency Review Recommendations[4] (draft, October 1994)
- resources/skills not available in-house
- significant release of staff time
- minimal project management costs, bureaucracy & time
- development opportunities for team (learning new skills)
- long-term security/continuity of Section

V.7 Evaluation

Evaluation of each activity is summarised in Tables V.3 A-G. The preferred solutions (and budget costs) have been incorporated in Table V.2

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2 *time input based on period Mar-Sept '94. Does not reflect demand if certain projects were in progress/done at desired or even minimum level*

3 *costs relate to preferred alternative provider* ***(bolden) - budget figures only - see individual Evaluation tables*** *(V.3A-G)*

4 *requires up to 10% of field data capture to be externalised by March '96.*

Table V.3A **GROUNDWATER PROTECTION POLICY - PROTECTION ZONE DATA AQUISITION**

Priority & Urgency: corporate plan objective to be completed by March '96

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	consultants	permanent	temporary		
no new staff	not applicable (skills not available in areas)	✓	×	×	not possible- essential for source protection zone definition (corporate plan objective)	possible, but staff resources still not available if other priorities are to be addressed (1st zoning exercise >1.5 FTE professional & technical staff in '93-'94)
complies with Hydromentic Efficiency Review		n/a	n/a	n/a		
skills/resources not in house		✓	✓	n/a		
significant release of staff time		✓	✓	✓		
minimal management cost/time		✓	✓	✓		
team development (short term)		✓	n/a	n/a		
long term security/continuity		×	✓	×		

PREFERRED SOLUTION: - contract out to specialist consultants (**only** solution in view of constraint on **any** recruitment)
Implications/Actions: - identify as revenue project for '94-'95, contract preparation/supervision (AJP)
Cost - £20 K

Table V.3B **GROUNDWATER PROTECTION POLICY IMPLIMENTATION (Catchment Audit)**

Priority: ongoing need for proactive & reactive responses in areas to threats to groundwater quality, pollution incidents etc

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	consultants	permanent	temporary		
no new staff	✓		×	×		
complies with Hydromentic Efficiency Review	n/a		n/a	n/a	corporate plan objective & general duty	present involvement is to provide advice/assistance to PCO's
skills/resources not in house	✓	not practicable	✓	not applicable (ongoing activity)	(at present Pollution Control Officers relied upon to report issues to Groundwater Section)	(this is dependant on staff availability, but must not be reduced below present level)
significant release of staff time	✓		✓			
minimal management cost/time	✓		✓			
team development (short term)	✓		✓			
long term security/continuity	n/a		✓			

PREFERRED SOLUTION: - to use area-based Pollution Control staff as 'eyes & ears', and Groundwater Section to provide specialist input

Implications/Actions: - follow up to Groundwater Protection Policy training (Feb '94) & regular liaison with areas (KJS/AJP)

Cost: - no increase above existing revenue expenditure (salaries)

Table V.3C **GROUNDWATER RESOURCE ASSESSMENT/DEMAND**

Priority: corporate plan & general duty (Fylde Aquifer: '94-'95, ongoing programme of aquifer units to be investigated)

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	consultants	permanent	temporary		
no new staff	not applicable (skills not available)	✓	×	×	✓	✓
complies with Hydromentic Efficiency Review		n/a	n/a	n/a	n/a	n/a
skills/resources not in house		✓	✓	✓	n/a	n/a
significant release of staff time		✓	✓	✓	✓×	×
minimal management cost/time		×	✓×	✓×	n/a	n/a
team development (short term)		✓	✓	✓	×	×
long term security/continuity		×	✓	×	×	×

PREFERRED SOLUTION: - contract out to specialist consultants e.g. Fylde Study (**only** solution in view of constraint on **any** recruitment.)
- preferred solution to secure future development of Section would be to recruit professional hydrogeologist

Implications/Actions: - full capital project management procedures if contracted out, e.g. Fylde Aquifer Water Resources Study (KJS)

Cost: - £95 K (approved for Fylde Study : '94/95)

Table V.3D **ROUTINE GROUNDWATER QUALITY SAMPLING**

Priority: - ongoing activity (general duty to monitor groundwater quality).
- new national sampling protocol specifies number of sites & frequency of sampling (NW below minimum standard)

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	consultants	permanent	temporary		
no new staff	✓	✓	×			
complies with Hydromentic Efficiency Review	×	✓	×	not applicable (ongoing activity)	not acceptable (general. duty & national monitoring protocol)	not acceptable national monitoring protocol requires increase in number of sites & frequency of sampling)
skills/resources not in house	×	×	×			
significant release of staff time	✓	✓	✓			
minimal management cost/time	✓	✓×	✓			
team development (short term)	✓	✓	×			
long term security/continuity	×	×	✓			

PREFERRED SOLUTION: - externalise to consultants (significant workload increase if recommendations of national protocol are adopted)
Implications/Actions: - identify as revenue project, agreement of area staff/unions/management if contracting out is to be investigated.
Cost: - £75K (**see PM0 for Justification).** Cost Benefit Analysis still required.

Table V.3E **ROUTINE WATER LEVEL MONITORING (DATA LOGGERS)**

Priority: Urgent need to externalise - ongoing activity (general duty to underpin regional groundwater resource management)

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	consultants	permanent	temporary		
no new staff	✓	✓	×			
complies with Hydromentic Efficiency Review	×	✓	×	not applicable	not acceptable	not acceptable
skills/resources not in house	×	×	×	(ongoing activity)	data loggers required on network - (national monitoring protocol)	national monitoring protocol requires increase in number of sites & frequency of logging)
significant release of staff time	✓	✓	✓			
minimal management cost/time	✓	✓	✓			
team development (short term)	✓	✓	×			
long term security/continuity	×	×	✓			

PREFERRED SOLUTION: - externalise to areas or consultants (workload set to increase if recommendations of national protocol are adopted)

Implications/Actions: - agreement of area hydrometric staff/unions/management if contracting out is to be investigated.

Cost: - £ 25K if contracted out. - **see PM0 & Cost Benefit Analysis**

Table V.3F **OBSERVATION BOREHOLE GEOPHYSICAL LOGGING**

Priority: important to increase understanding of NW groundwater resources. Required to comply with national groundwater monitoring protocol. Currently not being done (lack of staff resources) - should be ongoing activity

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	consultants	permanent	temporary		
no new staff		✓	×	×		
complies with Hydromentic Efficiency Review	not applicable	✓	×	×	current situation	n/a
skills/resources not in house	(requires specialist knowledge & equipment)	×	×	×	(new logging vehicle @ £150K not being utilised)	
significant release of staff time		✓	✓	✓		
minimal management cost/time		✓	×	×		
team development (short term)		×	×	×		
long term security/continuity		×	✓	×		

PREFERRED SOLUTION: - externalise to consultants (preferred solution would be in-house staff, if permitted)
Implications/Actions: - identify as revenue project. contract preparation (JAI)
Cost: - £ 95K, including specialist sampling - **see PM0**

Table V.3G **OBSERVATION BOREHOLE MAINTENANCE**

Priority: - required to maintain assets in safe & usable condition (ongoing, done at/below minimum standard due to higher priorities)

Criteria for Success	Externalise		Recruit Staff		Don't Do	Reduce quality/ SoS
	areas	contractors	permanent	temporary		
no new staff	✓	✓	×			
complies with Hydromentic Efficiency Review	×	✓	×	not applicable (ongoing activity)	not acceptable (replacement cost of each borehole £10-15K- more cost effective to carry out maintenance as required)	currently at /below minimum level. (as for 'Don't Do)
skills/resources not in house	×	×	×			
significant release of staff time	✓	✓	✓			
minimal management cost/time	✓	✓	✓			
team development (short term)	×	✓	✓			
long term security/continuity	×	×	×			

PREFERRED SOLUTION: - let term contract to specialist contractor
Implications/Actions: - identify as revenue project, prepare specification & manage contract (DCP)
Cost: - £ 15K per annum - **see PM0 for Justification**

V.8 Approval/ Justifaction/Cost Benefits - General

For most activities there is only one alternative provider. Where additional expenditure will be incurred outside the Section's normal revenue allocation and contracting out of activities is involved, preliminary applications (PM0's) have been made for incorporation into the '94/'95 capital and revenue programmes. Subject to outline DoE approval of the regional Water Resources budget, detailed costings, justification and cost benefit analysis will be carried out.

V.9 Externalisation of Routine Hydrometric Activities

Need

V.9.1 The carrying out of field work in connection with **routine** hydrometry tasks (groundwater quality sampling and level measurement) does not fit comfortably within the role of the Section as the provider of a specialist hydrogeological service. Furthermore, routine datalogger work, currently carried out by D.C. Passey is the most time consuming activity which lends itself to externalisation (Table V.2). If this were acheived it would release 0.5 FTE, which is required urgently to address poor speed of response in processing Groundwater Investigation Consents/licences (current standard of service =2). This was identified as a deficiency by the Customer Satisfaction Survey (section 6)

V.3.2 Therefore, this is a high priority which must be addressed immediately. Accordingly, a more detailed assessment of the implimentation of this change is given below:

Cost Benefit Analysis

V.3.3 This is shown in TableV.4. The following assumptiona have been made:

- staff rates include accommodation and mileage on-costs (based on individual costing)
- work in areas would be carried out 50% by Hydrometric Managers & 50% by Hydrometric Information Officers
- contractor rates are all inclusive
- existing stocks of equipment held in-house are used
- data transfer systems are as existing
- excludes data processing/uploading

V.3.4 Both externalisation options could involve additional cost, although if contracted out it would be stipuated that any systems adopted were compatible with the existing database.

V.3.5 The estimated net costs of externalisation are:

Areas	£14,328 - year 1	£12,984 - year 2 on
Contractors	£17,920 - year 1	£16,576 - year 2 on

(Assuming no saving on Groundwater staff costs since it is being redeployed)

Table V.4 Cost Benefit Analysis: Routine Data Logger installation/interrogation/maintenance

Option	Cost	Benefits	Constraints/Disbenefits
Retain in-house (status quo)	0.5 man-year (800 hr) @ £16.00/hr [D.C.Passey incl. salary+ o/heads+travel] = **£12,800**	- in-house skills/experience - job variety	- staff needed for 'core business'activities - excess workload - inconsistant with Logical Process & Hydrometric Efficiency Review
Externalise to area hydrometric staff	0.5 man year @ £15.51/hr [50/50 AIHO & manager incl salary+ o/heads+travel] = **£12,408**	- releases 0.5 FTE in Groundwater Section (**£12,800**) for core business	- requires staff training (assume 0.15 FTE in Year 1 i.e. **£1,920** & 0.05 FTE i.e **£576** thereafter) - assumes areas can absorb extra workload - inconsistant with Hydrometric Efficiency Review
Contract out	800 hours @ £20.00hr [budget figure only, assumed incl. salary+o/heads+travel] = **£16,000**	- releases 0.5 FTE in Groundwater Section (**£12,800**) for core business - consisant with Hydrometric Efficiency Review	- requires contract preparation & management (assume 0.15 FTE in Year 1 -**£1,920** & 0.05 FTE-**£576** thereafter)

Resistance to Change

V3.6 The choice of whether to contract out data logging will be influenced mainly by the areas - whether they are willing and able to take on the additional workload. The proposed change will impact on team members, as well as other departments. It is anticipated that there could be potential resistance, which will need to be carefully managed to ensure success.

V.3.7 The following **force field analysis** (*after Lerwin*) assesses the pressures for and against the change. It is evident that the driving forces outweigh the resisting forces, demonstrating that this is a **necessary** change.

DRIVING FORCES	CHANGE	RESISTING FORCES
job cuts (loss of post) →		staff resistance (loss of job variety) (loss of mileage) ←
Hydrometric Efficiency Review →	externalise	time to organise change ←
internal & external pressure to contract out work /move to areas →	routine groundwater level	need to develop data transfer systems ←
increased work load →	monitoring (data loggers)	*[if contracted out:]* time to prepare contract ←
need to meet area customer requirements →		union/staff concern re. job security ←

V.4 Systems Development

V.4.1 In addition to externalising routine hydrometry and certain non-routine 'self contained' projects, thereby releasing staff resources to deal with proactive work and high priority consultations, the efficiency and speed of response of the Section can be increased by implementing a number of improvements to current procedures and data handling systems. These are summarised below:

Planning Liaison Consultations:

- development of a GIS (geographical information system) to plot locations of groundwater supplies/high risk locations (ongoing - see PM1 Project Justification/Cost Benefit Analysis);
- to be used in conjunction with lists of specific catagories of planning development activities on which Groundwater Section needs to be consulted, enabling area Planning Liaison Officersto act as first line filters. This requires training of Planning Liaison staff (AJP & KJS).
- use Groundwater Assistants as second line filters, only referring large scale/complex applications to hydrogeologists (LE & CDS)
- increased use of 'standard' responses, entered directly by alpha code onto *ORACLE* electronic mail system to areas and/or applied directly by Planning Liaison staff (JAI to draft)
- development of in-house tracking system to record speed of response & compliance with agreed SoS - 50% in 7 working days. (CDS to develop & implement).
- incorporating agreed SoS into individual and team objectives, subject to quarterly review (tied to PRP).

External Enquiries/Data Requests

- development of ' standard response' statement explaining what data can and will be provided, and at what cost (via Admin Support)
- use of pro-forma reply to enquiries on local application of Groundwater Protection Policy (AJP/JAI)
- incorporating agreed SoS into individual and team objectives, **but** making data requests lower priority than other more important activities (see Table V.1).

Enclosures: PM0's for externalisation of Groundwater Activites
PM1 for Planning Liaison Visitor System Groundwater Response Filter

Ref. Lerwin - Managing Change (Force Field Analysis)

SUMMARY APPRAISAL FORM PM1

Project Reference: **Function:** Technical **Region/H.O. Dept.:** North West	**Prepared by:** J.M.Knowles **Date:** 4-3-94

Title of Project

LCUS GROUNDWATER RESOURCES REVIEW			
Proposed Total Cost	£95k	**Start Year**	1994/1995

Description of Problem, Need or Opportunity

Abstraction from groundwater forms an integral part of the LCUS water supply scheme and has been used since the 1970's. Major tests were carried out in 1972-74 to determine abstraction licence and conditions. Since then there has been considerable change in environmental perception regarding the impact of such schemes. Current abstraction rates have led to low flow problems and with the national water resources strategy suggesting additional abstraction (up to licence limits) there is concern that the current problems in dry periods could be exacerbated.

Objectives

To determine the maximum yield of LCUS on the basis of acceptable environmental impact and hence determine whether there is any spare capacity for supply to compensate for loss of Vyrnwy supplies.

To determine the interaction of groundwater/surface water to enable conditions for sustainable operation of the resource with minimum environmental impact to be achieved.

To develop a consistent future management policy for the Fylde aquifer resources.

Products

Collection and review of data.

Development and supply of groundwater model including surface water interaction assessment and results from a number of abstraction scenarios. (including model implementation and training)

Justification/Benefits/Consequences of Doing Nothing

Current regimes and rates of abstraction from groundwater are causing low flow problems and risk of drying up of areas of ecological interest in dry weather. There is risk of further and irrevocable damage to the environment if abstractions are increased to meet national WR strategy requirements even within the current licence conditions. The current embargo on further development of groundwater in the Fylde area will continue.

Preferred Option (giving reasons where it is not the lowest cost option)

Option 1.

Key Target Dates

	Planning/SoD Approval		Running Project
Start	March 94		May 94
End	April 94		March 95
Other Key Dates [e.g. completion of stage/products]	1. Interim report on data review and concepts of model - July 94 2. Report on model,validation and initial scenario results - December 94 3.		

Planned Expenditure

	1993/1994 Year 1 £'000		1994/1995 Year 2 £'000		Beyond 199 /199 £'000		Total £'000
Planning	0.5						0.5
Running the Project: NRA Costs	0.5		4				4.5
Contractors	-		90				90
Implementation	-						
TOTAL	1		94				95
Capital							
Revenue	1		94				95

Risks, Constraints, Dependencies

There may be some problems with data availability or incompleteness, the provision of which requires cooperation of NWW Ltd. Model validation may require extra data collection.

Proposed Responsibilities

Project Manager	K.J.Seymour
Project Board Membership	J.M.Knowles H.A.Smithers M.D.Eggboro

Budget Manager Approval		Date	

PAB Approval		Date	

SUMMARY APPRAISAL FORM

PM0

Project Reference:
Function: Technical Services
Region/H.O. Dept.: Specialist Services

Prepared by: K.J. Seymour
Date: 1.9.94

Title of Project

Routine Groundwater Quality Sampling Contract			
Proposed Total Cost	£75k	**Start Year**	1995/1996

Description of Problem, Need or Opportunity

To comply with the national groundwater quality sampling protocol, the region is required to sample key monitoring boreholes on a six monthly basis. The specified number of sites is sites approximately twice the number currently sampled in-house. With the reduction in staff resources it is proposed to externalise this increased routine workload

Objectives

To contract out routine groundwater quality sampling. to comply with national protocols, whilst releasing in-house staff to concerntrate on specialist work.

Products

600 groundwater quality samples per annumedidcated pumping sets

Justification/Benefits/Consequences of Doing Nothing

At present we are unable to carry out quality monitoring in compliance with national protocol (number of samples/sites).

Summary of Options Considered: Estimated Costs and Benefits - (Preferred Options First)

Option Description	Cost				Benefits			Net
	Cap (£k)	Rev. (£k)	Total (£k)		Value (£k)	NPV (£k)		NPV (£k)

Preferred Option (giving reasons where it is not the lowest cost option)

Key Target Dates

	Planning/SoD Approval	Running Project
Start	March '95	
End	ongoing	
Other Key Dates [e.g. completion of stage/products]	1. 2. 3.	

Planned Expenditure

	1993/1994 Year 1 £'000		1994/1995 Year 2 £'000		Beyond 199 /199 £'000		Total £'000
Planning							
Running the Project:							
NRA Costs							
Contractors							
Implementation							
TOTAL							
Capital							
Revenue							

Risks, Constraints, Dependencies

Proposed Responsibilities

Project Manager	John Ingram
Project Board Membership	Keith Seymour Tony Peacock John Owen

Budget Manager Approval		**Date**	

PAB Approval		**Date**	

SUMMARY APPRAISAL FORM (revenue) PM0

Project Reference: **Function:** Technical Services **Region/H.O. Dept.:** Specialist Services	**Prepared by:** K.J.Seymour **Date:** 19.9.94

Title of Project

Routine Groundwater Level Monitoring (Data Logger) Contract			
Proposed Total Cost	£50K	**Start Year**	1995/1996

Description of Problem, Need or Opportunity

With the loss of one FTE from the Groundwater Section structure combined with the need for for Section to concentrate on meeting internal customer needs (statutory consultations), it is proposed to externalise routine monitoring of groundwater levels in the Regions Observation Borehole Network where these are measured using data loggers

Objectives

To contract out the maintenance, installation and interrogation of data loggers on the observation borehole network

Products

approx 70 continuous annual records (data loggers downloaded 4 times per annum)

Justification/Benefits/Consequences of Doing Nothing

releases Groundwater staff to concentrate on 'added value' inputs to area, regional & national activities (essential to meet standards of service)

Summary of Options Considered: Estimated Costs and Benefits - (Preferred Options First)

Option Description	Cost				Benefits			Net
	Cap (£k)	Rev. (£k)	Total (£k)		Value (£k)	NPV (£k)		NPV (£k)
		50	50					

Preferred Option (giving reasons where it is not the lowest cost option)

Key Target Dates

	Planning/SoD Approval		Running Project
Start	Dec94		March 95
End	March 95		ongoing
Other Key Dates [e.g. completion of stage/products]	1. 2. 3.		

Planned Expenditure

	1994/1995 Year 1 £'000		1995/1996 Year 2 £'000		Beyond 1995/1996 £'000		Total £'000
Planning							
Running the Project:							
NRA Costs							
Contractors							
Implementation							
TOTAL							
Capital							
Revenue	50		50		50		

Risks, Constraints, Dependencies

subject to area hydrometric staff being unable to take on additional data logger work

Proposed Responsibilities

Project Manager	D.C. Passey
Project Board Membership	K.J. Seymour J Adams A.J. Peacock

Budget Manager Approval		**Date**	

PAB Approval		**Date**	

SUMMARY APPRAISAL FORM (revenue) PM0

Project Reference: **Function:** Technical Services **Region/H.O. Dept.:** Specialist Services	**Prepared by:** K.J.Seymour **Date:** 19.9.94

Title of Project

Borehole Maintenance Contract			
Proposed Total Cost	£20K	**Start Year**	1995/1996

Description of Problem, Need or Opportunity

With the loss of one FTE from the Groundwater Section structure combined with the need for for Section to concentrate on meeting internal customer needs (statutory consultations), it is proposed to externalise maintenance of the Regions Observation Borehole Network

Objectives

To contract out maintenance of the observation borehole network (approx. 400 sites)

Products

maintaining/improving the condition/security of the existing network

Justification/Benefits/Consequences of Doing Nothing

releases Groundwater staff to concentrate on 'added value' inputs to area, regional & national activities (essential to meet standards of service)

Summary of Options Considered: Estimated Costs and Benefits - (Preferred Options First)

Option Description	Cost				Benefits			Net
	Cap (£k)	Rev. (£k)	Total (£k)		Value (£k)	NPV (£k)		NPV (£k)
		20	20					

Preferred Option (giving reasons where it is not the lowest cost option)

Key Target Dates

	Planning/SoD Approval		Running Project
Start	Dec94		March 95
End	March 95		ongoing
Other Key Dates [e.g. completion of stage/products]	1. 2. 3.		

Planned Expenditure

	1994/1995 Year 1 £'000		1995/1996 Year 2 £'000		Beyond 1995/1996 £'000		Total £'000
Planning							
Running the Project:							
NRA Costs							
Contractors							
Implementation							
TOTAL							
Capital							
Revenue	20		20		20		

Risks, Constraints, Dependencies

Proposed Responsibilities

Project Manager	D.C. Passey
Project Board Membership	K.J. Seymour J Adams A.J. Peacock

Budget Manager Approval		**Date**	

PAB Approval		**Date**	

SUMMARY APPRAISAL FORM

PMO

Project Reference: Function: WATER RESOURCES Region/H.O. Dept.: NW REGION / RFH.	Prepared by: J A INGRAM Date: 24-8-94

Title of Project

OBSERVATION BOREHOLE GEOPHYSICAL LOGGING & SAMPLING			
Proposed Total Cost	£ 95 K.	Start Year	1995/1996

Description of Problem, Need or Opportunity

The National Groundwater Monitoring Protocol (R+D 120) recommends that Observation Boreholes should be geophysically logged to establish structural details and identify inflow zones. It also recommends that the boreholes should be purged by pumping prior to sampling to remove the stagnant water.

Objectives

To geophysically log and sample the Network of Observation Boreholes (To be carried out in a Phased Programme)

Products

(1) Geophysical logs of the boreholes
(2) Water samples to be taken for analysis by the NRA lab, following purge pumping.

Justification/Benefits/Consequences of Doing Nothing

At present we are unable to carry out the recommended geophysical logging and sampling of our Observation Network (consisting of approx. 350 boreholes). Although we have the geophysical logging equipment (and will shortly also have pumping equipment) we do not have sufficient staff to carry out the work.

Summary of Options Considered : Estimated Costs and Benefits - (Preferred Options First)

Option Description	Costs Cap. (£k)	Costs Rev. (£k)	Costs Total NPV (£k)	Benefits Value (£k)	Benefits NPV (£k)	Net NPV (£k)
1						
2						
3						
4						
5						
6						

Preferred Option (giving reasons where it is not the lowest cost option)

The options are either to employ additional staff or to put the work out to Contract. The Consultants employed to carry out the work would be able to use our equipment.

Key Target Dates

	Planning/SoD Approval	Running Project
Start		
End		

Other Key Dates [e.g. completion of stage/products]	

Planned Expenditure

	199 /199 Year 1 £'000	-	199 /199 Year 2 £'000		Beyond 199 /199 £'000		Total £'000
Planning							
Running the Project:							
NRA Costs							
Contractors							
Implementation							
TOTAL							
Capital							
Revenue							

Risks, Constraints, Dependencies

Proposed Responsibilities

Project Manager	J. A. INGRAM
Project Board Membership	J. M. OWEN A. J. PEACOCK K. J. SEYMOUR

PAB/Budget Manager Approval		Date	

Appendix VI - Personal Objectives & Development Plans

National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: M D Thewsey **Period:** 1994/95

Department: Technical **Job Title:** Groundwater Technical Officer

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1	Co-ordinate and process consultations to achieve the following turnround for 50% of all initial and straightforward responses: Planning Liaison Consultations 7 working days External Data Requests 10 working days	Compliance record	from July 94
2	Abstraction and preparation of data for protection zoning of further sources: (Phase I ~ 15 sites)	Completion	March 95
3	Provide 1:25,000 scale composite Map Overlay and reference system for all 10Km grid tiles currently containing designated source protection zones.	Completion of 37 tiles	end January 94
4	Maintain and update Ordnance Survey master mapsets at 1:50,000: 1:25,000 and 1:10,000 Scale: Review and order within 14 days of receipt of publication listings.	Compliance and completion 9 reviews	March 95
5	Maintain and update Geological Mapsets and memoirs at all scales. Review and order within 14 days of receipt of publication listings.	Compliance and completion 4 reviews	March 95
6	Complete the capital programme to establish a working geophysical logging system installed in replacement mobile unit.	Completion	March 95
7	Supervise and liaise with contractor engaged in Phase II of the South Lancashire coalfield Investigation (Programme to be arranged)	Compliance with requirements of programme	Circa Dec 94 (TBA)
8	Thematic Mapping Steering Group - Attend min 75% of meetings and respond to consultation requests within 14 days	Compliance record	from July 94

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National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: M D Thewsey **Period:** 1994/95

Department: Technical **Job Title:** Groundwater Technical Officer

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1	Co-ordinate and process consultations to achieve the following turnround for 50% of all initial and straightforward responses: Planning Liaison Consultations 7 working days External Data Requests 10 working days	Compliance record	from July 94
2	Abstraction and preparation of data for protection zoning of further sources: (Phase I ~ 15 sites)	Completion	March 95
3	Provide 1:25,000 scale composite Map Overlay and reference system for all 10Km grid tiles currently containing designated source protection zones.	Completion of 37 tiles	end January 94
4	Maintain and update Ordnance Survey master mapsets at 1:50,000: 1:25,000 and 1:10,000 Scale: Review and order within 14 days of receipt of publication listings.	Compliance and completion 9 reviews	March 95
5	Maintain and update Geological Mapsets and memoirs at all scales. Review and order within 14 days of receipt of publication listings.	Compliance and completion 4 reviews	March 95
6	Complete the capital programme to establish a working geophysical logging system installed in replacement mobile unit.	Completion	March 95
7	Supervise and liaise with contractor engaged in Phase II of the South Lancashire coalfield Investigation (Programme to be arranged)	Compliance with requirements of programme	Circa Dec 94 (TBA)
8	Thematic Mapping Steering Group - Attend min 75% of meetings and respond to consultation requests within 14 days	Compliance record	from July 94

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National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: **John Ingram** **Period:** **June 94 - June 95**

Department: **Specialist Services** **Job Title:** **Assistant Hydrogeologist**

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1	To complete Sankey Valley Phase II investigation in terms of :		
	(i) incorporation of Sankey Sugar Abh into Obh network	Completion	March '95
	(ii) purchase portable pump sampling equipment	Purchase	March '95
2	To complete Liverpool/Birkenhead Obh Contract.	Completion	March '95
3	To define extent of regional groundwater quality monitoring network	Report	March '95
4	To develop regional groundwater quality monitoring protocol and reporting documentation	Report	March '95
5	To complete initial survey of quality monitoring network	Report	March '95
6	To prepare interim report on groundwater quality distribution across region	Report	June '95
7	To complete review of standard planning liaison responses	Schedule	August '94

National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: John Ingram **Period:** June 94 - June 95

Department: Specialist Services **Job Title:** Assistant Hydrogeologist

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1	To complete Sankey Valley Phase II investigation in terms of :		
	(i) incorporation of Sankey Sugar Abh into Obh network	Completion	March '95
	(ii) purchase portable pump sampling equipment	Purchase	March '95
2	To complete Liverpool/Birkenhead Obh Contract.	Completion	March '95
3	To define extent of regional groundwater quality monitoring network	Report	March '95
4	To develop regional groundwater quality monitoring protocol and reporting documentation	Report	March '95
5	To complete initial survey of quality monitoring network	Report	March '95
6	To prepare interim report on groundwater quality distribution across region	Report	June '95
7	To complete review of standard planning liaison responses	Schedule	August '94

National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: Charlie Sharp **Period:** June 94 - June 95

Department: Specialist Services **Job Title:** Groundwater Assistant

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1.	To co-ordinate and process consultations to achieve a specified turnround for initial and/or straightforward responses for 50% of applications:		
	planning liaison consultations: 7 working days	Compliance record	from Sept. 94
	external data request: 10 working days	Compliance record	ongoing
2.	to develop and implement an internal tracking system for planning liaison consultations.	Documentation	July 94
3.	to provide monthly water situation reports before end of each month.	W S Report	ongoing
4.	complete final sweep of private water supply for Pendle and Oldham Districts.	Computer & paper databases current.	end Sept. 94
5.	to update LCUS groundwater abstraction records from 1984 todate.	Computer records current	end Aug 94
6.	to coach colleagues on Level archive system operation.	System operation (colleagues)	end Sept 94
7.	to input quarterly with field data onto computer archive within one month of receipt.	Archive current	ongoing

National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: Charlie Sharp **Period:** June 94 - June 95

Department: Specialist Services **Job Title:** Groundwater Assistant

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1.	To co-ordinate and process consultations to achieve a specified turnround for initial and/or straightforward responses for 50% of applications:		
	planning liaison consultations: 7 working days	Compliance record	from Sept. 94
	external data request: 10 working days	Compliance record	ongoing
2.	to develop and implement an internal tracking system for planning liaison consultations.	Documentation	July 94
3.	to provide monthly water situation reports before end of each month.	W S Report	ongoing
4.	complete final sweep of private water supply for Pendle and Oldham Districts.	Computer & paper databases current.	end Sept. 94
5.	to update LCUS groundwater abstraction records from 1984 todate.	Computer records current	end Aug 94
6.	to coach colleagues on Level archive system operation.	System operation (colleagues)	end Sept 94
7.	to input quarterly with field data onto computer archive within one month of receipt.	Archive current	ongoing

National Rivers Authority (North West Region)

PERFORMANCE OBJECTIVES

Name: Lilian Else **Period:** June 94 - June 95

Department: Specialist Services **Job Title:** Groundwater Assistant

	OBJECTIVES/TASKS	ACHIEVEMENT MEASURE	TARGET DATE
1.	To co-ordinate and process statutory consultations to achieve a specified turnround for initial and/or straightforward responses for 50% of applications:		
	planning liaison consultations: 7 working days	Compliance record	from Sept. 94
	discharge notifications: 7 working days	Compliance record	ongoing
2.	to process Section 32 Consents to meet nationally agreed Standards of Service for 80% of applications	Compliance record	ongoing
3.	to implement an internal monitoring/audit system for pumping test/licence application progress	Compliance records	ongoing
4.	to review progress of private water supply register	Report	Sept. 94
5.	to maintain paper well record system	System current	ongoing
6.	to be able to carry out data logger uploading/downloading procedures	System operation	March

GROUNDWATER MANAGEMENT TEAM
INDIVIDUAL ASSESSMENT/DEVELOPMENT NEEDS

Interview Summary 5.1.94

JOHN INGRAM - ASSISTANT HYDROGEOLOGIST

Current Tasks:

* borehole contract management
* groundwater quality network development
* hydrogeological consultations (misc)

AGREED OBJECTIVES:

1. **Sankey Valley Drilling Contract**

   to manage and supervise Sankey Valley drilling contract (site supervision assistance from PJR).

   - by end March '94

2. **Liverpool/Birkenhead Obh Contract**

   to identify & secure sites and prepare & let contract **- by end March '94**

   to start site work **- April '94**

   to complete contract - (provisionally) **August '94**

3. **Membil Site (Sankey Valley) SI**

   to assist Project Manager prepare & supervise investigation contract.

   - April '94 on

4. **Groundwater Quality Monitoring Network**

4.1 to evaluate & purchase portable pump sampling equipment

- by end March '94

4.2 to define extent of regional quality monitoring network - number & location of sites, frequency & scope of monitoring, to comply with national strategy

- by end April '94

4.3 to develop regional sampling protocol/specification and prepare initial survey & routine monitoring report documentation.

- by end April '94

4.4 to prepare interim report on regional groundwater quality, including maps of distribution in region

- by end Dec '94

4.5 to investigate feasibility/acceptability of externalising/ handing over to areas **routine** groundwater sampling, in consultation with KJS. (Efficiency Review).

- by March '95

5. **Groundwater Consultations**

to provide hydrogeological advice on area/external/statutory consultations & enquiries, as required.

- ongoing

6. **Groundwater Vulnerability Maps**

to coordinate preparation of groundwater vulnerability maps/ statements for strategic planning purposes.

(provisional project)

7. **Groundwater Quality Archive**

to coach in-house staff on use of groundwater quality archive (header records & retreivals).

- by end February '94

NOTE:

These are in addition to responding to other enquiries, data requests etc, as required by line manager.

TRAINING/DEVELOPMENT NEEDS:

1. **Increased Flexibility**
(Knowledge of Internal Systems)

* water level archive (input/retreival/presentation)
* data logger installation/interrogation
* pumping test software packages (existing & new)
* water quality processing/presentation packages (new)
* statutory consultation procedures, incl.licensing, S.32 Consents & waste disposal

- coaching by CDS/DCP/KJS.

2. **Computer Skills**

- in-house coaching/practical use (see 1 above)
- internal training courses:
  * MS Word
  * Harvard Graphics

3. **Wider Organisational Experience**

work shadow - **pollution control & hydrometry**

..... 13/1/94....
K.J. Seymour
Groundwater Resources Manager

..... 13/1/94
J.A. Ingram
Assistant Hydrogeologist

GROUNDWATER MANAGEMENT TEAM
INDIVIDUAL ASSESSMENT/DEVELOPMENT NEEDS

Interview Summary 5.1.94

LILIAN ELSE - GROUNDWATER ASSISTANT

Current Tasks:

* planning liason consultations
* borehole consent applications
* discharge consent applications
* private water supply records
* groundwater quality sampling

AGREED OBJECTIVES:

1. **Section 32 Consents**

to adapt new standard documentation for use on Groundwater PC's, implement use and set up monitoring procedures to meet agreed standards of service, in consultation with KJS & DCP.

- by end Jan '94

2. **Private Water Supply Register**

review progress and agree further action for next stage of register compilation, in consultation with KJS/CDS/PJR.

- by end April '94

3. **Planning Liason Consultations**

3.1 to continue to coordinate and process planning consultations within agreed standards of service (7 day turn round), with appropriate level of response.

- ongoing

3.2 to assist PJR in implementation of planning liason training

- by end March'94

4. **Groundwater Quality Sampling Network**

to assist in establishing Sampling Network, by arranging access, inspecting, sampling and recording specified details of sites identified by and in accordance with protocols prepared by JAI.

- ongoing

7. **Database Management**

to carry out data input & retreival (levels/quality) under guidance from CDS/JAI.

- ongoing

NOTE:

These are in addition to responding to other enquiries, data requests etc, as required by line manager.

TRAINING/DEVELOPMENT NEEDS:

1. **Increased Flexibility**
   (Knowledge of Internal Systems)

   * data loggers (field and office procedures)
   * water level archive (input/retreival/presentation)
   * water quality archive (retreival)

   - coaching by DCP/CDS/JAI.

2. **Hydrogeological Skills**

   WTi training course ER 5-'Borehole Construction & Monitoring'

3. **Wider Organisational Experience**

   work shadow - **licensing** (eg 1 day per week for 1 month)

NOTE:

Lilian is currently studying for an 'A' Level in Environmental Studies (NRA funded)

K.J. Seymour 13.1.94
K.J. Seymour
Groundwater Resources Manager

L. Else 13.1.94
L. Else
Groundwater Assistant

GROUNDWATER MANAGEMENT TEAM
INDIVIDUAL ASSESSMENT/DEVELOPMENT NEEDS

Interview Summary 5.1.94

DAVID PASSEY - SENIOR TECHNICAL OFFICER

Current Tasks:

* data logger system management
* observation borehole network management
* borehole maintenance
* pumping test audit/data processing

AGREED OBJECTIVES:

1. Section 32 Consents

1.1 to develop and implement a monitoring system for pumping test consent/licence application progress, in conjunction with KJS & LE.

- by end March '94

1.2 to undertake analysis and reporting of 'simple' licence application, under supervision by KJS

- start March '94 (ongoing)

1.3 to audit pumping tests in accordance with new national procedures.

- ongoing

2. Confined Spaces

2.1 to coach in-house staff in confined spaces dipping practice.

- by end March '94

2.2 to coach area field staff in confined space dipping practice and hand over to areas.

- by end June '94

3. Data Loggers

3.1 to write specfication for data logger installation, interrogation and quality control procedures.

- by end March '94

3.2 to coach in-house staff groundwater in data logger procedures

- by end April '94

3.3 to investigate feasibility/acceptability of handing over to areas, in consultation with KJS & JA. (Efficiency review).

- by end Dec'94

4. **Borehole Network Review**

to complete review of groundwater hydrometric network in terms of data logger installation and distribution, in conjunction with KJS.

- by end June '94

5. **Equipment Purchase**

to indentify section's equipment needs, seek financial approval, order and ensure receipt of all ordered equipment, within current financial year.

- by end March '94

NOTE:

These are in addition to responding to other enquiries, data requests etc, as required by line manager.

TRAINING/DEVELOPMENT NEEDS:

1. **Increased Flexibility**
(Knowledge of Internal Systems)

* water level archive (input/retreival/presentation)
* water quality archive (retreival)
* consent procedure (administration/reporting)

- coaching by CDS/JAI/KJS.

2. **Increased Computer Skills/Confidence**

- in-house coaching/practical use (see 1 above)

- internal training courses

3. **Wider Organisational Experience**

work shadow - **area licensing** (central)

K.J. Seymour ..... 13/1/94....
K.J. Seymour
Groundwater Resources Manager

D.C. Passey ..... 3·2·94.
D.C. Passey
Senior Technical Officer

GROUNDWATER MANAGEMENT TEAM
INDIVIDUAL ASSESSMENT/DEVELOPMENT NEEDS

Interview Summary 5.1.94

CHARLES SHARP - GROUNDWATER ASSISTANT

Current Tasks:

* planning liason consultations
* discharge consent applications
* private water supply records
* groundwater quality sampling
* groundwater levels - monitoring & situation reports
* data logger installation & interrogation
* water level archive management (data input & retreival
* computer systems development & trouble shooting
* data manipulation

AGREED OBJECTIVES:

1. **Contaminated Land Register**

to amend contaminated land register program to record status of groundwater pollution risk, in consultation with JAI, TLW and PJR.

- by end Jan '94

2. **Groundwater Level Archive Training**

to coach collegues on use of level archive system operation (input/retreival)

- by end Feb '94

3. **Private Water Supply Register**

complete 'first sweep' survey of private water supplies for Oldham & Pendle districts and make out white cards.

- by end March '94

4. **Groundwater Level Situation Reports**

4.1 to develop statistical approach to analysing and reporting water level trends.

- by end April'94

4.2 to provide monthly water situation reports to within agreed meet deadlines.

- ongoing

5. **Planning Liason Consultations**

to continue to process planning consultations within agreed standards of service (7 day turn round), with appropriate level of response.

- ongoing

6. **Groundwater Quality Sampling Network**

to assist in establishing Sampling Network, by arranging access, inspecting, sampling and recording specified details of sites identified by and in accordance with protocols prepared by JAI.

- ongoing

7. **Database Management**

to carry out data input, retreival, manipulation, for processing/presentation (levels/quality) and provide system support & trouble shooting, as directed by AJP.

- ongoing

NOTE:

These are in addition to responding to other enquiries, data requests etc, as required by line manager.

TRAINING/DEVELOPMENT NEEDS:

1. **Increased Flexibility (Knowledge of Internal Systems)**

increase familiarity of groundwater quality archive and data data logger system - coaching by DCP & JAI.

2. **Hydrogeological Skills**

WTi training course ER 9 -'Introduction to Groundwater Management'

3. **Computing Skills**

3.1 Advanced Lotus training course

3.2 Programming - possible work shadow with IS? (this is not essential for current job, but would be of interest and useful for development purposes)

4. **Wider Organisational Experience**

work shadow - **hydrometry, hydrology & area planning liason**

NOTE:

Charles is currently studying for an BSc degree in Mathematics (OU distance learning -self funded).

K.J. Seymour ..... 13/1/94.....
K.J. Seymour
Groundwater Resources Manager

C.D.Sharp..... 13/1/94.....
C.D. Sharp
Groundwater Assistant

NRA

National Rivers Authority
North West Region

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