



NRA

*National Rivers Authority
Severn-Trent Region*

Trent Licensing Policy Review

Executive Summary Report



May 1992

WS/Atkins



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TRENT LICENSING POLICY REVIEW

Executive Summary Report



INTRODUCTION

WS Atkins were appointed by NRA-ST in September 1991 to carry out a review of the policy for considering and granting licences to abstract water from the River Trent. This Executive Summary Report presents the main findings.

Abstractors taking water from surface and groundwaters were first required to obtain a licence through the Water Resources Act of 1963. Those who had statutory powers or who could demonstrate that they had been abstracting water over the previous 5 years were automatically entitled to a licence to continue to do so indefinitely. These 'Licences of Right' exert the first claim over any water available in the river, and the statutory authority, now the NRA, is obliged to ensure that no future licences may derogate from these and other licences subsequently granted. In addition, the NRA has a statutory duty to protect and, where possible, enhance the environment.

One of the primary reasons for commissioning the study was the increasing interest being placed in the Trent as a potential source of public water supply. Indeed, during the course of the study a number of new proposals emerged, emphasising the important role that the Trent could play in the future.

The increasing water resource interest in the river reflects the significant improvement in water quality that has occurred since the mid 1960s, and the continuing rise in per capita water consumption. However, any further abstraction must take account of the existing uses, particularly the power generation industry and navigation, and the importance of the Trent as a coarse fishery and recreational resource.

The following bodies were met, or contacted, during the course of the study:-

- NRA - Severn Trent Region
- NRA - Anglian Region
- PowerGen
- National Power
- British Waterways
- Severn-Trent Water
- Anglian Water
- South Staffordshire Water
- Keadby Power Ltd
- Nottinghamshire County Council
- National Sports Council

THE TRENT CATCHMENT

The River Trent drains the Midlands region of England and has a catchment area of nearly 10,500km², containing a population of over 5.5 million people. The river has five major tributaries as can be seen on Figure 1. The Dove and the Derwent rise in the Peak District; the Tame drains the industrial West Midlands; the Soar drains the agricultural and urban areas of Leicestershire; and the Idle joins the Trent in its lower reaches. The annual effective rainfall (total rainfall less evaporation) varies from over 1000mm in the headwaters of the Derwent to as little as 100mm in the lower reaches, with the majority of the catchment having less than 300mm.



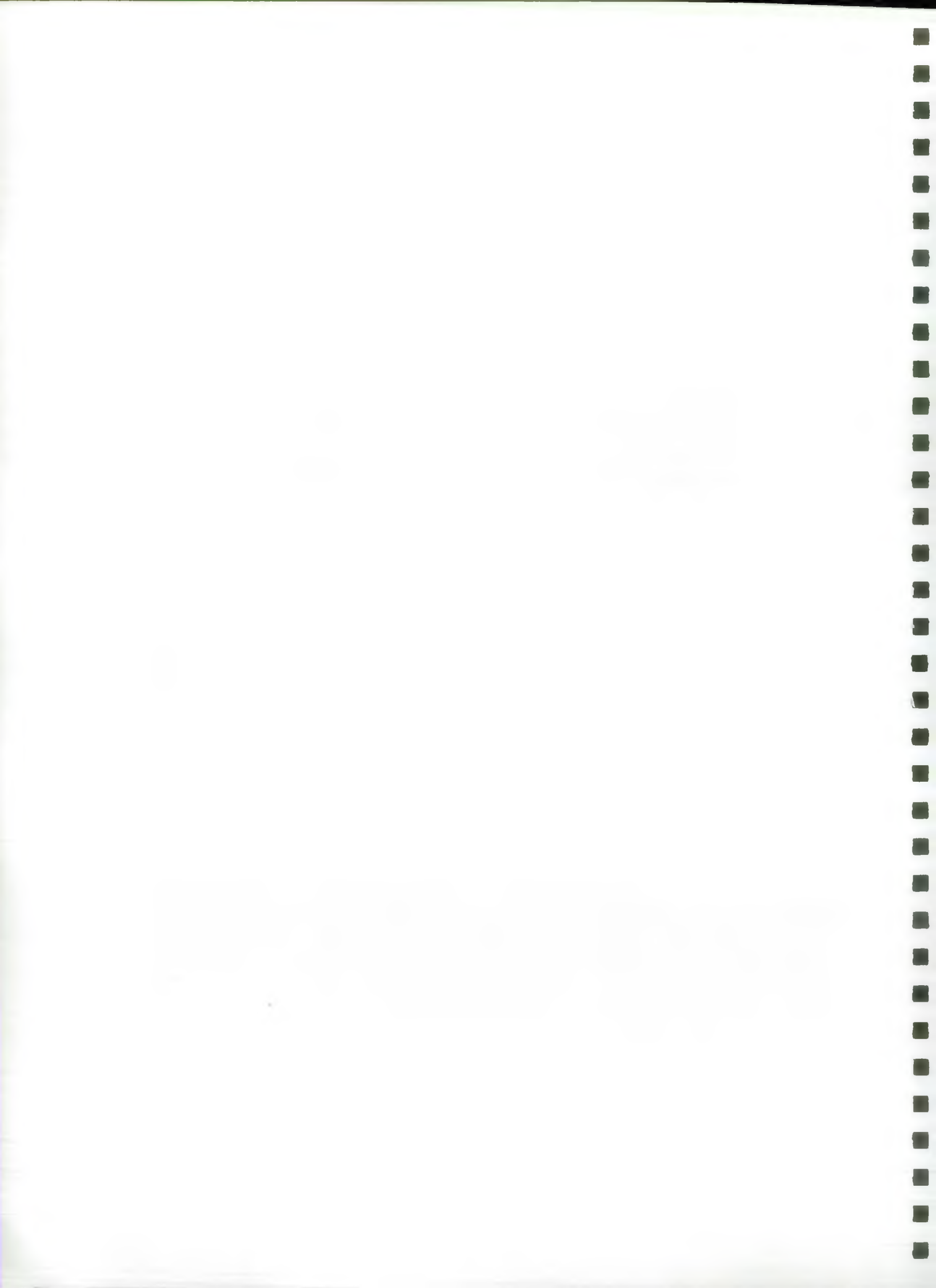
LEGEND

- 400 ISOHYETS OF MEAN ANNUAL EFFECTIVE RAINFALL
- TRENT BASIN CATCHMENT BOUNDARY
- MAJOR URBAN AREAS
- POWER STATIONS



MAP OF RIVER TRENT CATCHMENT

FIGURE 1



USES OF THE RIVER TRENT

The following points summarise the uses of the River Trent and their particular requirements. They provide a necessary background against which to consider licensing policy and, in particular, proposals for public water supply.

◆ **Water Abstraction**

- **Power Generation**

The principal abstractors from the River Trent are the nine power stations operated by National Power and PowerGen. Their water requirements vary depending on the method of cooling they employ; evaporative via cooling towers, or direct abstraction through the condensers. The older stations use direct cooling, at least in part. They therefore have licences to abstract large volumes of water; in three cases in excess of the dry weather flow in the river. Practically all of this water is returned to the river, but the protection of these licences presents major constraints to the management of the Trent.

- **Public Water Supply**

Historically, public water supplies for the Trent basin have either come from the rivers Derwent and Dove; groundwater sources within the catchment; or surface water imports either from the River Severn or from the Welsh hills via the Elan Valley aqueduct. In 1991 water taken from the Torksey abstraction below Newark (for the Trent-Witham-Ancholme scheme) was used for the first time for public water supply. A number of new supply options are being considered for the use of the Trent and these are discussed later in this report.

- **Industry**

Direct abstraction from the Trent for industrial use is not significant, being restricted to milling and cooling water.

- **Agriculture**

Spray irrigation of crops occurs in a number of areas in the Trent basin, but is most intensive in the lower reaches, particularly the Idle and Torne sub-catchments. Demand for spray irrigation is likely to increase, although availability will be restricted by the limited resources in the sub-catchments.

◆ **Effluent Disposal**

The River Trent receives significant amounts of domestic and industrial effluent. Typically, around 1500 Ml/d of effluent is discharged through sewage treatment works, which can represent over 50% of the dry weather flow in the river. About half of this effluent is derived from the West Midlands conurbation via the River Tame. The maintenance of sufficient flow to dilute effluent is a very important use of the river.

◆ **Navigation**

The Trent is a navigable river as far upstream as Nottingham. Downstream of Gainsborough it is used predominantly by commercial traffic, whilst upstream the main users are pleasure craft. The navigation authority downstream of Gainsborough is Associated British Ports (ABP), whilst upstream it is British Waterways (BW). The Trent acts as a link with the canal network in other areas of the country.

◆ **Fisheries**

The Trent supports an abundant and diverse coarse fish population throughout much of its length. The river is designated as a Cyprinid Fishery under the EC Freshwater Fisheries Directive from the Dove confluence to Gainsborough and for reaches upstream of the Tame confluence and upstream of Stoke. The possibility of reintroducing salmon to the Trent is being considered.

◆ **Recreation**

- **Angling**

The Trent is considered by many to be one of the finest coarse fishing rivers in the country. It is intensively fished over much of its length, but particularly in the Nottingham area. The river represents a major regional resource, providing enjoyment for a very large number of anglers.

- **Canoeing**

Canoeing and rowing are major uses of the river, with the National Watersports Centre being at Holme Pierrepont near Nottingham. The canoe slalom course uses flows directly from the river and is the home training ground of the British Olympic team. During low flow periods, the flow requirements of the slalom course can be almost as high as the flows in the Trent itself. The course is of major local and national significance, with the heaviest use occurring during the summer months.

- **General**

A Regional Recreation Strategy has been drawn up by the Regional Council for Sports and Recreation.

This proposes that an increase in cruising and pleasure boating should occur on the Trent, with sporting activities being encouraged in old gravel pits and other bodies of water. Nottinghamshire County Council consider the Trent to be a very important recreational resource and have drawn up their own Trent Valley Plan.

◆ **Conservation**

There are no Sites of Special Scientific Interest (SSSIs) along the river itself, although Attenborough Gravel Pits adjacent to the Trent are so designated. However the quality of the river, its flood plains and nearby gravel wetlands is generally very high, providing landscape as well as conservation interest.

The Humber Estuary, into which the Trent flows, is a SSSI as far downstream as Humber Bridge. There are extensive and important brackish water habitats which are dependent on the freshwater flow into the estuary.

◆ **Flood Defence and Land Drainage**

Flooding along the Trent is a major concern, and flood defence schemes have been constructed, particularly in the Nottingham area. The embanked reaches of the river are protected from erosion between the top of the banks and normal low water levels.

Concerns have been raised in the Upper Trent area that a reduction in flows could lead to increased weed growth in summer. This would affect land drainage and would require increased weedcutting.

STATE OF THE RIVER

The following paragraphs discuss the existing state of the river with regard to flows and water quality.

◆ River Flows

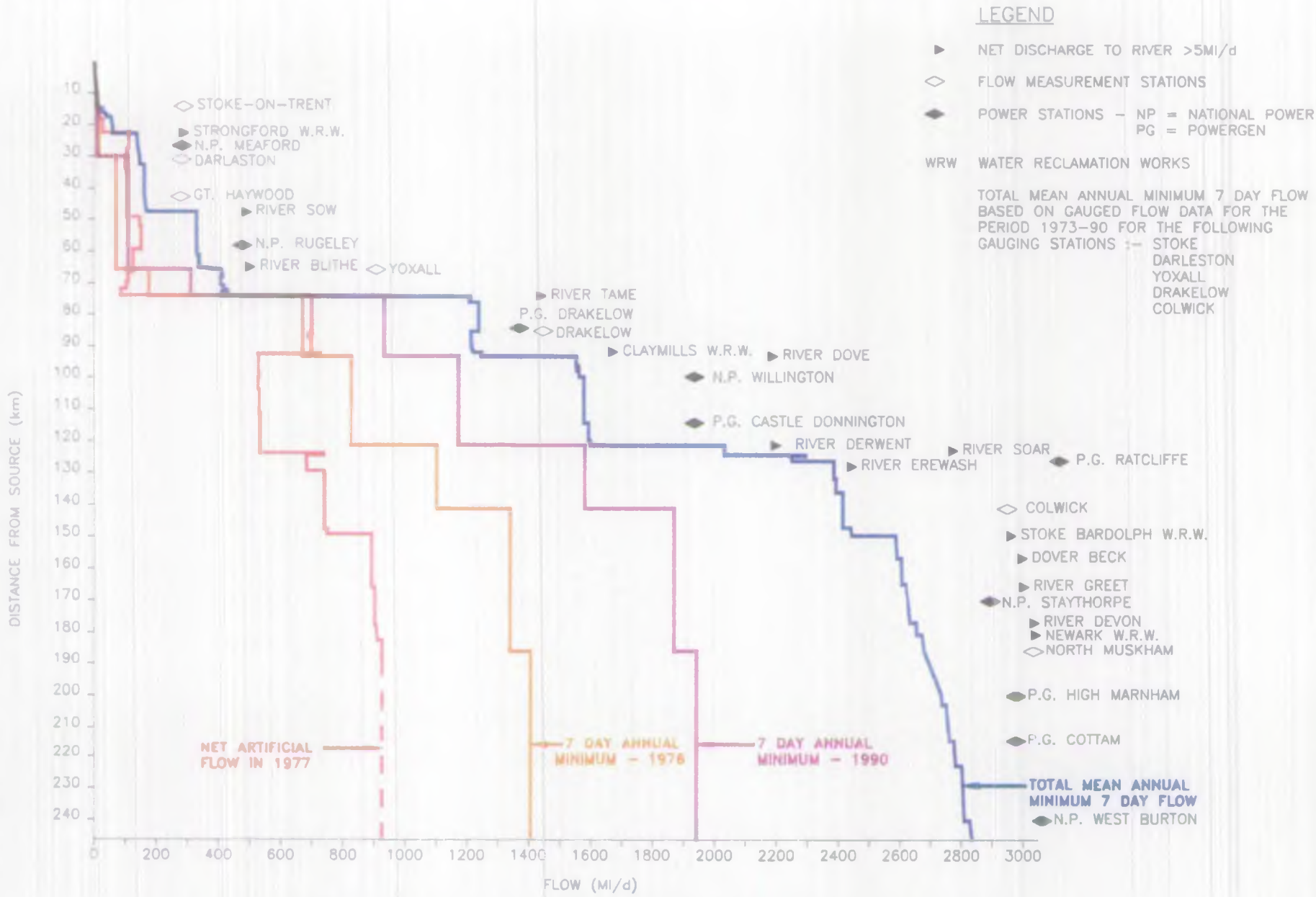
Low river flows that occur during summer are the main concern when considering licensing policy. The dry weather flow, which is a measure of average low summer flows, is shown on Figure 2 for the entire length of the river.

A substantial proportion of these dry weather flows, typically 30% to 50%, are artificial. These are flows which are not derived from natural runoff in the catchment, but which come from discharges of effluent. In the case of the West Midlands, a large part of these discharges originate from water imported into the catchment from the River Severn and the Elan Valley. In the East Midlands the water comes from reservoirs in the Derwent valley, which have stored water during the winter. This is then discharged via sewage works, thus increasing the flows in the Trent during the summer.

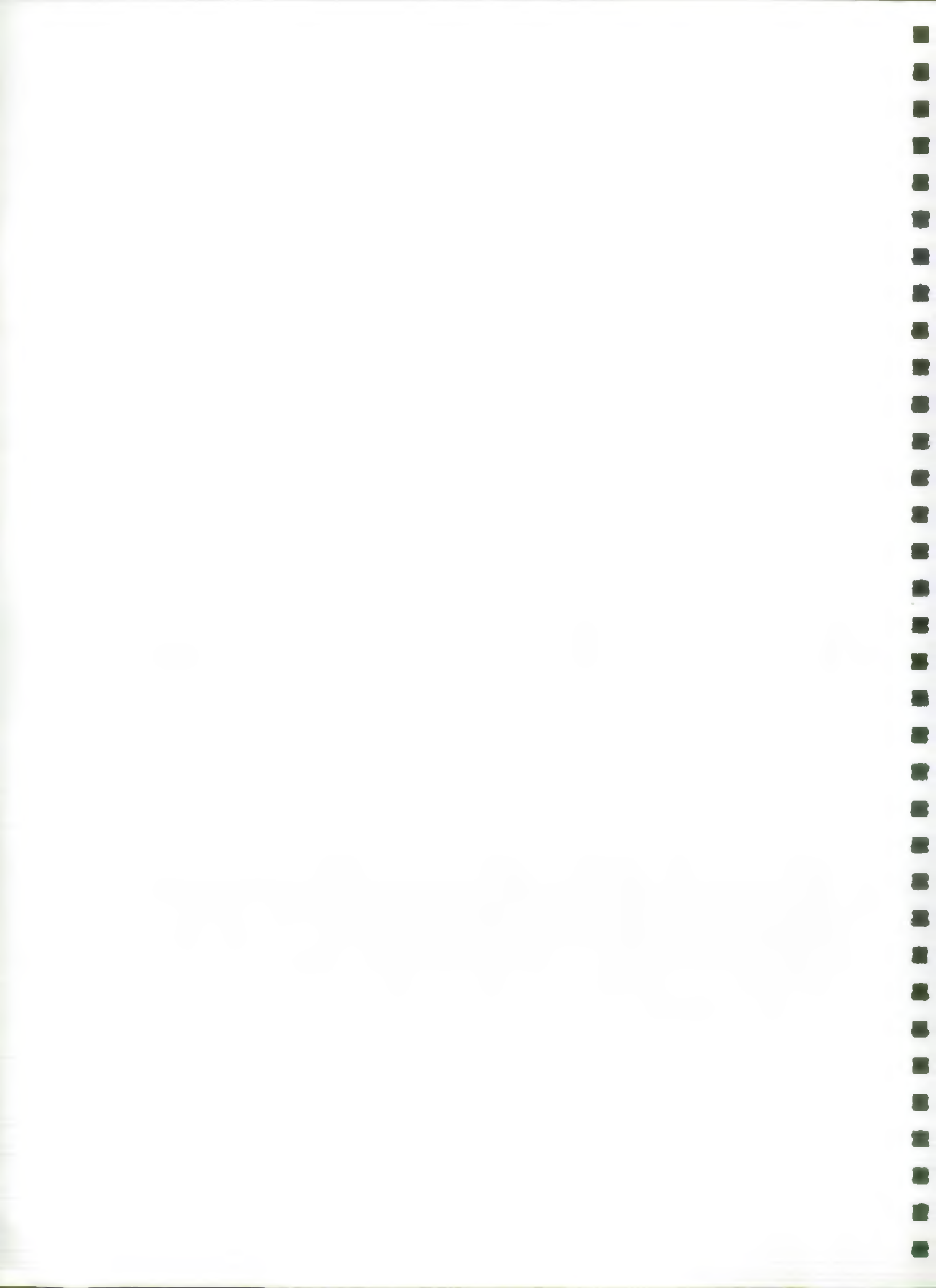
Figure 2 shows that the dry weather flow at Yoxall gauging station upstream of the Tame is 440 Mld, whilst at Colwick station downstream of Nottingham it is 2400 Ml/d. The artificial influence accounts for about 30% of each of these values.

During periods of natural drought, river flows will be below these values. For example, during the summer of 1990 the flows at Yoxall and Colwick fell to 310 Ml/d and 1870 Ml/d respectively, whilst the values for the summer of 1976 were 175 Ml/d and 1340 Ml/d.

River flows, therefore, drop significantly during droughts. The 1990 drought had a return period in the region of once in 10 years, and 1976 of once in 50 years..



TOTAL RESIDUAL FLOW DIAGRAM (QUANTITY)
DRY WEATHER FLOW CONDITIONS
RIVER TRENT



◆ **Water Quality**

The water quality of the River Trent has shown significant improvements since the mid 1960s. The majority of the river now has a River Quality Objective of DoE Class 2. The river achieves this objective for most of its length apart from notable stretches below Stoke and Nottingham WRWs. The failures are primarily associated with high ammonia concentrations, which in the case of the reach below Nottingham have also led to a failure to meet the requirements of the EC Freshwater Fisheries Directive.

There are many parameters that need to be considered when assessing the suitability of the river for public water supply. Some of the important ones are discussed in the following paragraphs, but generally the water quality complies with the relevant UK Regulations and EC Directives.

Mean chloride concentrations in the Trent are typically 100 mg/l, with maximum values rising to 200 mg/l. These are well below the UK Water Supply (Water Quality) Regulations (WS(WQ)R) limit of 400 mg/l, but could be too high for use as irrigation for some chloride sensitive crops. Industrial users can also be sensitive to changes in chloride concentrations. The NRA wish to see that a limit of 200 mg/l is not exceeded in the river.

Mean sulphate concentrations are in the region of 180 to 200 mg/l, with maximum values rising towards the UK Surface Waters (Classification) Regulations (SW(C)R) Limit of 250 mg/l for water intended for public supply.

List I and II dangerous substances do not appear to present a problem, with mean concentrations well below their respective limits.

Temperatures in the river are affected by the cooling water discharges from the many power stations. The NRA wish to limit the maximum temperature in the river to 28°C in line with the EC Freshwater Fisheries Directive. Although this value is exceeded at times near the power stations, in general maximum temperatures are below the SW(C)R limit of 25°C.

Nitrate concentrations approach, and are, on occasions, in excess of the SW(C)R limit. Phosphate concentrations are also high, although there is no SW(C)R Limit. These levels can affect the power stations since the phosphate forms deposits in the condensers, which then require cleaning. Of more concern for the river, however, is the fact that the concentrations of both nitrates and phosphates are well in excess of that required for eutrophication. Algal blooms are not a major problem at the moment, although a reduction in flow velocity and increase in water clarity could enable them to occur. The high nutrient concentrations could result in the river becoming designated as a sensitive area under the EC Urban Waste Water Directive.

◆ **Stress suffered by Users during 1990 drought**

Several users of the river experienced difficulties during the low flow periods of 1990 and 1991. These difficulties can be considered as good indicators of the impact of reduced flows due to increased abstraction.

- Willington Power Station occasionally found that there was insufficient water in the river to meet its full abstraction requirement.
- The canoe slalom course had to operate on a restricted basis.
- Anglers complained of extremely poor fishing conditions below Nottingham.
- Low summer flows reduced effluent dilution. This had a particularly marked effect downstream of Nottingham where high ammonia concentrations occurred.
- West Burton Power Station upstream of Gainsborough experienced problems due to high suspended solids in the river.
- British Waterways suffered greatly increased sedimentation in the river in the vicinity of Torksey. This, and the preceding point, are probably due to increased tidal movement up the river due to the lower freshwater flows. This would then bring tidal silts further up the river leading to the siltation problems.
- There was increased in-stream weed growth in the upper reaches of the Trent due to the shallow water depths. This led to a requirement for increased land drainage maintenance.

FUTURE CHANGES OR TRENDS

The following points identify some future changes or trends that could be relevant to the development of a licensing policy.

- The older, direct cooled power stations are approaching the end of their useful life. New stations are likely to employ Combined Cycle Gas Turbine (CCGT) technology, with evaporative cooling. The requirement for the very large licences should therefore be removed in the short to medium term.
- In order to reduce atmospheric emissions, a Flue Gas Desulphurisation (FGD) Plant is being constructed at Ratcliffe-on-Soar Power Station, and others may be required in the future. Their effluent will be a new source of chlorides, nitrates and sulphates. Changes to minewater discharges and new denitrification plants for water treatment could also increase inputs of these compounds.
- There is likely to be a continued increase in commercial and pleasure craft using the river. In order to improve navigation in the tidal reaches, a new lock has been considered below Gainsborough. This would obviously have a major impact on river users, the environment, and hence the licensing policy.
- There will be a continued increase in water supply imported to the catchment, a proportion of which will be discharged to the river via sewage treatment works.

PROPOSALS FOR NEW ABSTRACTION

At present, there are five known proposals to abstract water from the Trent. Four of these include water for public supply, whilst the fifth is for a new power station. Their general location is shown on Figure 3.

- **South Staffordshire Water Company (SSW)**

This proposal is to abstract up to 35Ml/d from the Trent and pump it into Blichfield Reservoir. The intake location preferred by SSW is at Wolseley Bridge, upstream of Rugeley.

- **Severn-Trent Water (STW)**

STW believe that a new source for the East Midlands may be required by the year 2005. They are considering an abstraction of around 150 Ml/d from river gravels alongside the Trent near the Derwent confluence.

- **Anglian Water (AW)**

AW are investigating the use of Trent water to increase the supply to the Lincoln area. The abstraction would be up to 40 Ml/d, probably from either Torksey or downstream of Newark.

- **NRA - Anglian Region (NRA-A)**

NRA-A are investigating the medium to long term options for meeting the increasing demands over their entire area. One option is to abstract up to an additional 600 Ml/d from the River Trent at either Torksey or Newark. This could then be distributed around their region, to meet demands as far south as Essex.

- **Keadby Power Limited**

Keadby Power Ltd propose to build a new direct cooled CCGT power station at Keadby near the mouth of the Trent. An abstraction licence for 984 Ml/d has been granted by NRA-ST, but with various conditions concerning future derogation. Practically all of the abstraction will be returned to the river.

LEGEND



TRENT BASIN CATCHMENT BOUNDARY



MAJOR URBAN AREAS

1

POTENTIAL ABSTRACTIONS BY:

2

SOUTH STAFFORDSHIRE WATER COMPANY (SSW)

3

SEVERN TRENT WATER (STW)

4

ANGLIAN WATER (AW)

5

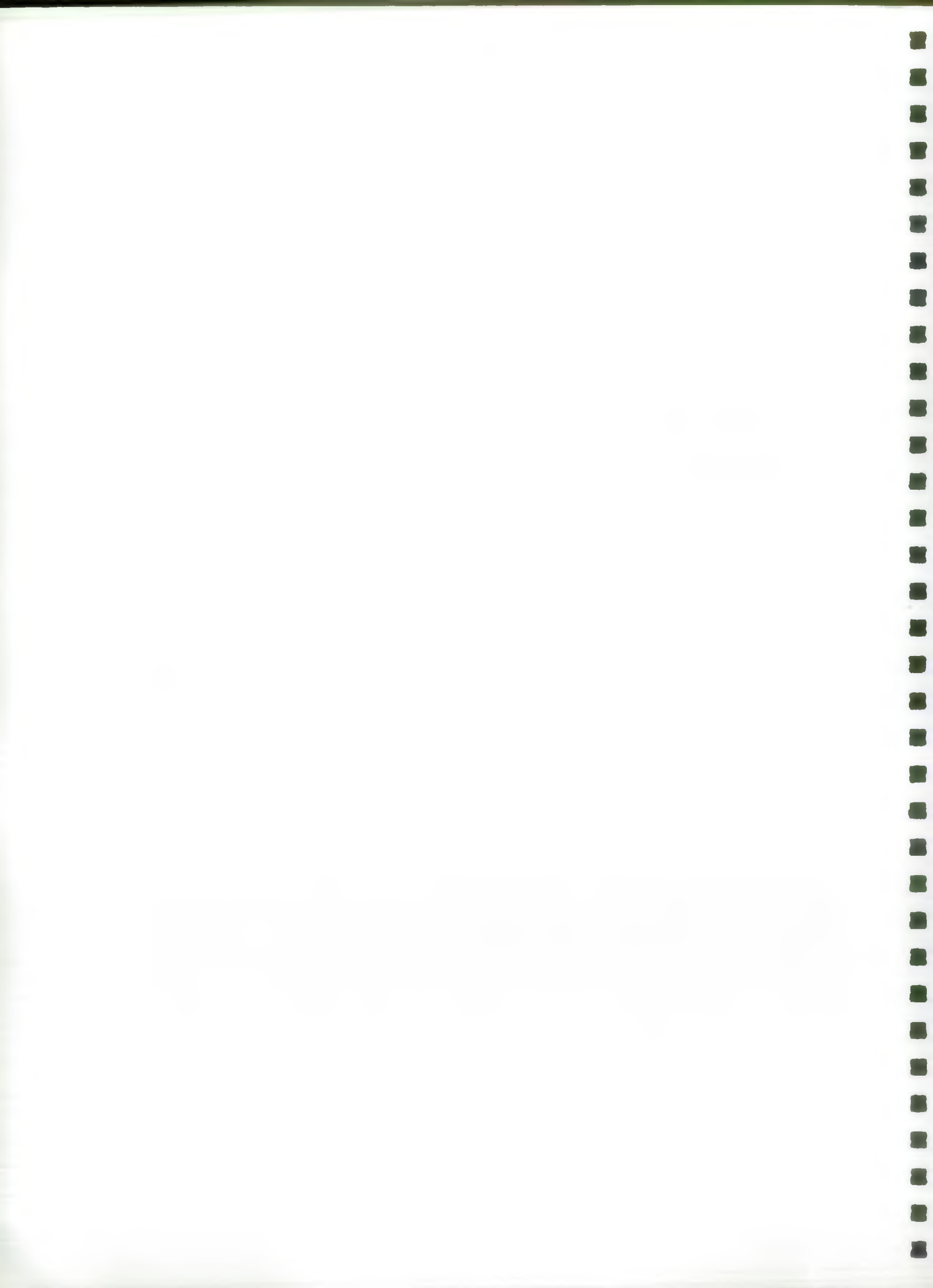
NRA - ANGLIAN REGION (NRA-A)

KEADBY POWER LIMITED



LOCATION OF KNOWN CURRENT PROPOSALS TO ABSTRACT WATER FROM THE RIVER TRENT

FIGURE 3



LICENSING POLICY

In this section a number of options for a licensing policy for the River Trent are considered. The options address the likely future abstraction demands on the river and the need to ensure minimal impact on other uses.

◆ Key Points

In developing the alternatives, the following key points have been considered.

- There are significant water resources available in the River Trent, particularly in non-drought years. This is due both to the size of the catchment and the effluent discharges it receives.
- There are four power stations (Drakelow, Willington, Castle Donnington and Staythorpe) which have licences in excess of, or close to, dry weather river flows.
- The main bodies interested in the Trent as a source of water supply are primarily looking for year-round or summer only abstraction.
- Many of the existing users of the river suffered stress in one form or another during the 1989 to 1991 drought.
- The freshwater flow into the estuary has an impact on several users, including fisheries, power stations, navigation and high quality habitats in the Humber Estuary.
- The water quality in the Trent is not a significant restriction to its use for water supply.
- The water resources in the Trent have national as well as regional importance.

◆ Policy Options

The following options were considered for a licensing policy:-

- Licence all abstractions with maximum annual and daily quantities, but with no low flow restriction.
- As above but with licences linked to a Minimum Residual Flow (MRF) in the river. When river flows fall below this value, the abstraction must cease. Four levels of MRF were considered. These are listed below in decreasing order of flow:-
 - **Fully Protect against Derogation of Existing Licenses.** This will require a MRF 70% greater than the dry weather flow upstream of Castle Donnington, and 20% greater between there and Staythorpe Power Station at Newark.
 - **10% greater than 1990 Flows.** This is based on the assumption that 1990 flows were unacceptable to river users and the environment.
 - **1990 Flows.** This is based on the assumption that flows lower than 1990 would be unacceptable
 - **Dry Weather Flow less Artificial Influence.** This assumes that the artificial influences are available for abstraction. The MRF would typically be 15% lower than 1990 flows and 40% lower than dry weather flow.

◆ **Impact on Users and the Environment**

This refers to the effect of the licensing policy on river flows and the consequent impact on river users. It is very difficult to determine the flow requirements of particular users and the effect that reduced flows could have. The study has therefore concentrated on assessing the change that the licensing policy would make to the frequency with which low flows would occur. The change in frequency of drought conditions such as those that have occurred in recent years provides a good indication of how acceptable a policy will be. However, further study work will be required to define more precisely the flow requirements along the river, particularly in the tidal reaches.

In assessing the impact on river flows, it is important to consider whether, and where, abstracted water is returned to the river. The majority of the SSW and the entirety of the STW abstractions will serve consumers within the catchment. A high proportion, perhaps 75%, will therefore be returned to the river, although there will be reaches between the abstraction and the downstream effluent return which will suffer the full effect of the abstraction. In contrast, the AW and NRA-A proposals will completely remove the water with no returns to the Trent.

Taking account of the above points, different licensing policies, and the proposed abstractions, the impact would be as follows:-

a. **No low flow restriction.** The frequency of 1976 conditions would increase from once every 50 years to once every 25 years at Yoxall, 40 years at Colwick and 7 years at Torksey. 1990 conditions would occur once every 3 or 4 years

at Yoxall, 12 years at Colwick and 2 years at Torksey. These increased frequencies of low flow stress are considered to be unacceptable to a number of river users.

- b. **MRF set at Dry Weather Flow less Artificial Influence.** The frequency of 1976 flows would not increase, but 1990 flows would occur as for (a) above.
- c. **MRF set at 1990 Flows.** The frequency of 1976 and 1990 flows would be as for (b) above. However, conditions worse than 1990 would be prevented from occurring due to abstraction.
- d. **MRF set at 1990 flows +10% or to fully protect existing licences.** These would ensure that abstraction did not cause flows in the river to fall to the 1990 level.

A further impact could be the designation of points on the river as sources of public water supply. This would occur if the proposed abstractions were taken directly from the river to a water treatment works. The designation could affect discharges to the river, although, as has already been discussed, the river water quality generally meets the requirements of the relevant Directives.

◆ **Effect on Proposed Abstractors**

The licensing policy will determine the reliable yield of the proposed schemes, and hence their economic viability.

No low flow restrictions would result in the most economic and reliable schemes, meeting the requirements of the proposed abstractors.

Tying the proposed licences to low flow restrictions implies that the abstractions will be required to cease during drought periods. This means that storage has to be provided to continue supply during these periods. This storage could be part of the proposed scheme or part of the existing water supply infrastructure. The storage could either be available in surface reservoirs or underground aquifers. The use of Trent water during non-drought periods could allow the more efficient use of existing storage, thus making it more available to provide support during drought periods.

The SSW scheme will use storage in Blithfield reservoir; the STW proposal could use storage within the Carsington scheme or perhaps in the Nottinghamshire sandstone aquifer; the AW and NRA-A schemes to supply Lincoln and Humberside could perhaps use storage in the same aquifer, whilst supply to other areas of the region would require use of a surface reservoir. These requirements obviously increase the overall cost of the schemes and could lead to them becoming uneconomic.

The amount of storage depends on the MRF policy. However, if the MRF was set to fully protect the large existing licences then it is highly unlikely that any proposal upstream of Staythorpe would be viable. For example, the proposed SSW abstraction would have only been able to operate for a few days between April and October 1990.

◆ **Conclusions**

The full aspirations of future abstractors in terms of the amount and timing of water they require are not compatible with the needs of the river environment and its existing users. There are sufficient resources available in many years, but during drought conditions (of the order of a 1 in 10 year return period) the river needs protection. It is therefore considered that some form of Minimum Residual Flow policy is necessary.

The implications of a Minimum Residual Flow (MRF) policy on the proposed abstractions are that some form of storage, either surface or groundwater, will probably be required as part of these schemes. The extent of this depends on the severity of the MRF regime.

The Trent is a very extensively used river with a large number of parties interested in any changes to the flow regime. The option of setting a Statutory Minimum Acceptable Flow (MAF) as detailed in the Water Resources Act (1991) should be considered. This would provide users with the opportunity to give their opinions and participate in the Public Consultation Process. The MAF could be established for a number of points along the river and could incorporate seasonal variations. The setting of a MAF would require further study, particularly in the tidal reaches.

The Power Generation Industry is one of the principal users of the Trent, requiring river flows to dissipate their thermal effluent. The older, direct cooled power stations have very large abstraction licences, in excess of the dry weather flow in the river. Despite this, the operation of the stations should not be significantly affected by the proposed abstractions, provided these are linked to a Minimum Acceptable Flow.

However, this does not remove the obligation on the NRA to protect the existing licences from derogation. Strict adherence to this obligation would practically prevent any resource development of the Trent upstream of Staythorpe power station near Newark. This can therefore be considered to prevent the prudent and sensible management of the river's resources by the NRA. The NRA is likely to be the only body who could negotiate effectively with the power companies regarding these licences.

TRENT LICENSING POLICY REVIEW
Executive Summary Report



◆ **Recommendations**

The following points could form the basis for a licensing policy on the River Trent.

- Hold discussions with the power companies with a view to obtaining their acceptance of legal derogation of their licences. This will allow the NRA to manage the river's resources bearing in mind the needs of all its users.
- Establish a minimum acceptable flow regime for the river. The Power Companies should be consultees in this process to ensure that their power stations suffer minimal actual derogation. Broadly, the flow regime should be set at, or slightly above, 1990 flow conditions, although further work will be required to develop appropriate seasonal flow profiles and locations for control points. The regime could either be set as a formal MAF or used as the basis for setting Prescribed Flows to which future licences could be linked.
- The implications for the Blithfield Reservoir, and the downstream River Blithe, of the proposed SSW abstraction should be studied in more detail. Provided the impacts can be shown to be satisfactory, the licence should be granted, tied to the MAF.
- Encourage Severn-Trent Water to investigate the use of Trent water within their overall supply system.
- Encourage Anglian Water and NRA-Anglian Region to investigate the use of Trent water within their overall supply systems.
- Future spray irrigation demands in the non-tidal Trent tributaries should continue to be granted under the existing licensing policy, winter storage being provided where necessary. In the tidal Trent catchment direct abstraction from the Trent should be acceptable, but linked to the same flow restrictions as other licences. The feasibility of adopting a marsh feeding approach to meeting the potential demands in the Idle and Torne catchment should be investigated.

MEMORANDUM

To: Geoff Mance
Regional General Manager
Severn Trent Region

From: Clive Mason
Regional General Manager
Anglian Region

Your Ref: GW/AMC

My Ref: DE/YS/681/4/6

Date: 14th July 1992

Geoff,

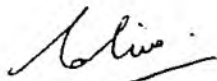
Subject: Trent Licensing Policy Review

We have received the Executive Summary of Atkins' report on the future licensing of Trent water. We note with concern that they are suggesting very substantial minimum residual flow conditions which, as the report acknowledges, would severely limit the availability of Trent water for export at times of greatest need.

We fully accept that the users of the Trent estuary should have their proper allocation of water, but we believe that that allocation should be made in the context of -

- a) the consequent costs imposed elsewhere and
- b) in comparison with flows allocated to other estuaries particularly in the east of the country.

The Trent is the country's one remaining largely un-used resource, and there is an urgent need for decisions as to its future use. We have a need to develop additional resources by 1998 and we must know the extent to which the Trent can be used. This would seem to be a national issue and could I please have your views as to how we should proceed towards a clear decision. I have copied this letter to Kevin Bond and Clive Swinnerton for information.



Clive Mason

c.c. Kevin Bond/Clive Swinnerton/Mick Pearson

: GW/AMC

Ref:

S-112



NRA

National Rivers Authority
Severn-Trent Region

3 July 1992

Mr R Cook
Chief Water Resources Engineer
NRA Anglian Region
Kingfisher House
Goldhay Way
Orton Goldhay
Peterborough PE2 0ZR

NRA	
ANGLIAN REGION	
07 JUL 1992	
No	-----
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COPY	-----
AS/MSD	

Dear

Roger

Trent Licensing Policy Review

As you know we appointed W S Atkins Water last September to undertake this review and work on their brief is now complete. I have pleasure in enclosing a copy of the Executive Summary of their report for your attention.

The review was greatly facilitated by your cooperation with the Atkins team in discussing with them your future interests in the Trent. We now have, for the first time, an overview of current and future demands on this strategically important river. Areas of work have been identified that need to be tackled to secure the rivers' effective management for the future and we will now be pursuing these.

Thank you for your cooperation.

Yours sincerely

Gwyn

Gwyn Williams
Principal - Catchment Regulation

P.S. We will send the full report as soon as we receive the final corrected version.

fo.

Direct Line 021-711-5801

June/548-Jul/123

Sapphire East
550 Streetsbrook Road
Solihull
B91 1QT
Main Exchange: 021-711 2324
Telex: 336748
Telefax: 021-711 5824

