NOTTINGHAMSHIRE COUNTY COUNCIL SUPERANNUATION FUND

REPORT ON THE ACTUARIAL VALUATION

AS AT 31 MARCH 1989

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Nottinghamshire County Council

I Background to the Valuation and Purpose of the Report

1.1 While the Regulations governing the Local Government Superannuation Scheme operate on a country-wide basis, each Administering Authority (whether County, London Borough or designated authority in the case of the former Metropolitan Counties) controls its own Superannuation Fund or Funds. Membership of a Fund extends beyond employees of the Administering Authority itself to include the employees of other "Scheduled Bodies" (i.e. District Councils, Probation and Magistrates County Committees, Polytechnics from 1 April 1989, etc) and Admitted Bodies (typically local transport companies still controlled by a local authority and other bodies providing public or charitable services to the local community). Superannuation Funds do not cover employees covered by other Statutory schemes such as Teachers, Police and Firemen. A full list of the employers participating in the Nottinghamshire County Council Superannuation Fund can be found in Appendix C to this Report. Admitted Bodies within the County are included in a separate Fund which has been reported upon separately.

1.2 The Superannuation Funds are currently governed by the Local Government Superannuation Regulations 1986 (as amended) made by the Secretary of State for the Environment under Statutory powers incorporated in the Superannuation Act 1972.

1.3 The purpose of the valuation is to determine the contributions to be paid by employers participating in the Superannuation Fund, with any revision to take effect from 1 April 1990. Under Regulation P6 of the 1986 Regulations, employer contributions are determined in two parts:

(a) a common rate based on the existing and prospective liabilities of the Fund arising from circumstances common to all the participating employers; and

(b) individual adjustments arising from circumstances peculiar to an individual employer.

1.4 While the Regulations express the "common" rate as a percentage of pensionable employee's remuneration, it has become common practice to adopt the practical expedient of expressing employer contributions as percentages of employee contributions. These are normally 6% of pensionable remuneration for employees classified as 'officers', with 5% for other employees (classified as 'manual workers'). Many employers have also adopted the practice of paying for current expenditure on pensions increases by an addition to the employer's contribution rate, though in most cases pensions increases in respect of former employees of Admitted Bodies have been charged to those Bodies on a pound-for-pound basis.

1.5 For the most part, the Regulations did not, at 31 March 1989, cover increases to pensions in payment or deferment. These pensions increases are governed by the Pensions (Increase) Act 1971 and by Section 59 of the Social Security Pension Act of 1975 and were not liabilities of the Superannuation Funds at 31 March 1989. New Regulations requiring the payment of these increases from Superannuation Funds with effect from 1 April 1990 are described in Section II of this Report.

1.6 The previous actuarial valuations of Local Government Superannuation Funds in England and Wales were carried out as at 31 March 1984. As a result of that valuation, employers participating in the Nottinghamshire County Council Superannuation Fund paid contributions from 1 April 1985 varying from 65% to 75% (exclusive of pension increase costs) of employees' contributions.

1.7 In April 1986, in accordance with the Nottinghamshire County Council (Superannuation) Act 1985, an additional superannuation fund, the Admission Agreement Superannuation Fund (The Second Fund) was established, the liabilities in respect of admitted bodies were transferred thereto, and the Fund was apportioned. Subsequently, the liability in respect of the East Midlands Airport Company, previously part of the County Council, was transferred to the Second Fund as from 1 April 1987, and a transfer payment made.

1.8 The apportionment of the Nottinghamshire County Council Superannuation Fund as at 31 March 1986 showed a marked improvement in the financial position of the Fund and in consequence we recommended a general reduction in employer contributions of 30% of employee contributions.

1.9 This Report has been prepared in accordance with the Guidelines GN9: "Retirement Benefit Schemes - Actuarial Reports" published by the Institute of Actuaries and the Faculty of Actuaries as current at the date of signature.

1.10 The pension and lump sum benefits provided under the Local Government Superannuation Scheme are set out in detail in the Superannuation Regulations and are summarised in a number of booklets produced by Administering Authorities and their Consultants. In the circumstances, it was not thought necessary to provide a summary of the benefits under the Scheme in this Report.

II **Changes to the Regulations and changes to other legislation affecting the Local Government Superannuation Scheme**

2.1 In a Scheme as complex as the Local Government Superannuation Scheme, it is inevitable that there should be a continual stream of changes to the Regulations governing the Scheme. The changes of greatest actuarial importance since the 1984 valuation are discussed briefly in the following paragraphs, together with changes in legislation affecting pension schemes generally.

Consolidated Regulations

2.2 In 1986, the 1974 Regulations and numerous subsequent changes were consolidated into the Local Government Superannuation Regulations 1986 (SI 1986 No 24). It is the nature of consolidation of legislation to codify the status quo rather than to introduce new changes. Nevertheless, the Regulation governing the derivation of employers' contributions to the Scheme did contain a significant change of wording.

2.3 Whereas Regulation B8 of the 1974 Regulations specified that employers' contributions should be a rate which should be "at all times be as nearly constant as may be .....", in Regulation P6 of the 1986 Regulations, the phrase employed is "having regard to ..... the desirability of maintaining as nearly constant a rate as possible". This softening of the specification gives a greater flexibility in fixing employers' contributions.

'Deemed' Pensionable Employees

2.4 Where a passenger transport executive or district council set up a company under the Transport Act 1985 or under the Airports Act 1986, the existing pensionable employees (including manual workers in their one-year waiting period) could be 'deemed' to be employees of the passenger transport executive or district council (the Local Government Superannuation (Miscellaneous Provisions) Regulations 1986 and 1987 - SI 1986 No 380 and SI 1987 No 293). New employees could not be so deemed, although transfer of other employees could occur. Thus the deemed employees form a largely closed group within a Superannuation Fund with the result that their average age will tend to increase and the contributions needed to support their accruing benefits will also increase. A full allocation of superannuation costs to the employing company would need to take this aspect into account. Nottingham City has so deemed its transport employees, and the contribution rates certified in Appendix C takes this into account.

<u>Admission of Part-time Employees</u>

2.5 The 1987 Regulations also gave part-time employees working more than 15 hours a week for more than 35 weeks a year the right to opt to join the Local Government Superannuation Scheme. For many authorities, this led to a substantial number of employees joining the Scheme. Their impact on the contribution rate depends on the age, sex and officer/manual worker composition of the new admissions compared with those of the existing pensionable employees. Surpluses or deficiencies in Funds may now need to be spread over a larger body of pensionable employees, thus diminishing their impact.

The Social Security Act 1986

2.6 This Act (which provides for the new system of 'personal pensions') was implemented in the Scheme by the Local Government (Superannuation and Compensation) (Amendment) Regulations 1988 (SI 1988 No 466). Three principal changes were introduced.

(a) The qualifying period for benefits was reduced from five to two years. This has the impact of increasing the number of deferred pensions and thus the burden of administration but has little direct financial effect on superannuation funds;

(b) Pensionable employees became entitled to pay additional voluntary contributions on a money-purchase basis through the Scheme to an external provider such as an insurance company or building society. This has no direct financial impact on superannuation funds but did introduce superannuation officers to the requirements of the Inland Revenue in applying the benefit and contribution limits. There will have been an increase to the burden of administration due to this change.

(c) Compulsory membership of pension schemes as a condition of employment was prohibited with related requirements to allow existing pensionable employees to opt to leave the Scheme and to require new employees to opt to join the Scheme. It was found that relatively few pensionable employees left the Scheme, but only about half of new employees joined the Scheme. It is our understanding that, in consequence, Ministers have now agreed that new employees from 1 April 1990 onwards should join the Scheme, subject to the right to opt out.

Finance Act 1986

2.7 Growing concern about large surpluses in pension schemes generally and the need to codify repayments from pension schemes to employers led to the control of surplus provisions contained in the Finance Act 1986 (now consolidated within the Income and Corporation Taxes Act 1988). These require that, where pension schemes have assets which exceed accrued liabilities, both calculated on a basis prescribed by regulations, by more than 5%, action must be taken to reduce the surplus to within the 5% margin within five years by one or by a combination of the following methods:

(a) improving benefits,
(b) reducing contributions,
(c) a refund to the employer (subject to a 40% tax penalty).

Where these requirements are not met, the investment returns on the surplus assets become subject to income and capital gains taxes.

2.8 It seemed likely that Local Government Superannuation Funds would reveal substantial surpluses at the 1989 valuations. Changing the benefits was not a practical solution, and reducing employers' contributions, even to zero for five years, was not likely to be a sufficient remedy. The funding of pensions increases seemed the obvious solution.

The Local Government Superannuation (Funds etc) Regulations 1990

2.9 The Local Government Superannuation (Funds etc) Regulations 1990 (SI 1990 No 503) came into operation on 1 April 1990. They specify that pensions increases pertaining to pension (and lump sum) payments which are themselves Superannuation Fund liabilities should be paid from Superannuation Funds as from 1 April 1990. Thus the present actuarial valuation must take these increases into account.

2.10 The new regulations provide for recharges to be continued where pensions increases have been recharged to employers who have no liability to contribute to the Fund under Regulation P7. However, it should be noted that the recharging is now to be done from the Superannuation Fund and the amounts repaid are to be credited to the Fund. These recharges include those made in respect of former employees of functions transferred to Health and Water Authorities and functions transferred from one County to another as part of the 1974 Local Government reorganisation.

2.11 These new Regulations also change Regulation P6 by deleting the phrase "to ensure its solvency" and substituting "to ensure that the Fund is able to meet 75% of its existing and prospective liabilities". We understand that the 75% is to be used as a target level for funding and not as a minimum funding level. The effect is to require employers' contribution rates to be set so as to reduce the funding level (allowing for pensions increases) over a reasonable period of years having regard to the criteria discussed in paragraph 2.3 above ("the desirability of maintaining as nearly constant a rate as possible").

2.12 Provision is made for employees "deemed" to be pensionable employees under Regulation B2 to pay contributions assuming a 100% funding level as the target. This enables them to provide in a logical manner for all their pension liabilities.

Miscellaneous Changes

2.13 Other, more minor, changes introduced recently include:

(a) provision of pensions to widowers in respect of service from 1 April 1988;

(b) provision enabling administering authorities to deduct expenses of administration from superannuation funds; and

(c) provision for employees transferred on a local government reorganisation to elect to retain separated benefits for each period of employment.

2.14 Other changes to national legislation also affect the Local Government Superannuation Scheme. These include:

(a) requirements to disclose personal and general information relating to a pension scheme to individual members;

(b) the reductions to the benefits of the State Earnings Related Pension Scheme and consequent reduction in accrual of Guaranteed Minimum Pension;

(c) provision for increases of 3% p.a. from State pension age to Guaranteed Minimum Pensions accruing from 6 April 1988;

(d) the introduction of personal pensions as an alternative to occupational pension schemes; and

(e) the facility for paying additional voluntary contributions separate from the occupational scheme (FSAVCs).

III Information Supplied for the Valuation

Statistical Information

3.1 Details of pensionable employees as at 31 March 1989, together with details of former pensionable employees and their dependants (pensioners, widows, deferred pensioners, etc) with entitlement to benefit from the Fund, were supplied mainly on magnetic tape derived from the CLASS system. The tape also included information about exits from each main data group during the period 1 April 1984 to 31 March 1989. Details of pensioners and widows whose entitlement to pension accrued prior to 1 April 1974 were supplied on updated listings based on the data supplied for the valuation as at 31 March 1984 and were converted to magnetic format for the purposes of carrying out the valuation.

3.2 A brief summary of the data used in the valuation is given in the table below. A more detailed summary with comparative figures for 31 March 1984 is attached at Appendix A.

Summary of data as at 31 March 1989 as used for the Valuation

	Numbers	Annual Amounts (£ millions)
Pensionable employees (including part-time)	22,610	198.083
Deferred Pensioners	4,790	2.950
Pensioners	8,455	17.284
Widows	1,912	1.717

Notes
(i) salaries of part-time pensionable employees are included at their equivalent full-time level at 31 March 1989;

(ii) all salaries are shown as annual amounts payable over the year to 31 March 1989;

(iii) all pensions shown include pensions increases accrued, excluding the increase due on 10 April 1989.

3.3 Appendix A shows that the average pensionable remuneration has increased from £6,299 at 31 March 1984 to £8,761 at 31 March 1989, an average increase of 6.8% p.a. The rate of increase for those who were pensionable employees at both 31 March 1984 and 31 March 1989 was 8.0% p.a. (the higher level being accounted for by promotions, incremental scales, etc). For comparison, the average annual increase in national average earnings over the same period was 8.5% p.a. (all GB employees, all industries and services).

3.4 The average basic pension in payment (including widows' pensions) increased from £782 p.a. to £1,168 p.a. over the period, an average annual increase of 8.4% p.a.

Financial Information

3.5 We were supplied with the Fund's Annual Reports (which contain audited accounts) for the five years of the intervaluation period. A summary of the accounts for the five-year period is given at Appendix B.

3.6 We were also supplied with a list of the assets held by the Fund as at 31 March 1989. These are summarised in the following table with figures for 1984 inserted for comparison:

Distribution of assets by market value

	On 31 March 1989		On 31 March 1984	
	£m	%	£m	%
UK Securities				
Fixed interest	37.4	7.7	42.4	18.6
Equities	293.9	60.7	129.2	56.8
Overseas Securities	84.3	17.4	27.1	11.9
Unquoted Investments	3.2	0.7	2.0	0.9
Property	43.4	9.0	19.9	8.7
Net Current Assets	21.6	4.5	7.1	3.1
Total Assets	£483.8m	100.0%	£227.7m	100.0%

Note

Property holdings include property unit trusts.

3.7 The investment performance of the Fund is mentioned in the Investment Statistics (1979 - 1989)published by CIPFA and the Society of County Treasurers. The average annual return obtained on the Fund during the intervaluation period was 16.0% which compares with the median annual return obtained on all participating Local Government Superannuation Funds, also of 16.0%.

3.8 The major component of these returns is the doubling in market value of UK equities over the five years, caused mainly by a doubling in dividend rates over the period.

3.9 By comparison, the average rate of increase in pensionable remuneration was 8.0% p.a. and the average rate of increase in the General Index of Retail Prices was 5.1% p.a. Thus the average 'real' return obtained by the Fund was about 11% p.a. It would not be prudent to expect return at this exceptionally high level to continue for any length of time (this matter is discussed in Section V below).

3.10 Since the previous full valuation, a Second Fund has been established as detailed in paragraph 1.7. In addition, Nottingham Polytechnic has become a separate scheduled body, having previously been part of the County Council.

IV **The Method Adopted for the Valuation**

4.1 The main purpose of the valuation is to determine the rates of contribution to be paid by participating employers from 1 April 1990 onwards. This determination is carried out in three parts:

(a) the comparison of the assets with the liabilities in respect of benefits accrued prior to 31 March 1989 in order to establish a surplus or deficiency;

(b) the calculation of contribution rates needed to support accruing benefits for service after 1 April 1990; and

(c) an adjustment to the rate calculated in (b) to allow for any surplus or deficiency in the Fund at the valuation date, calculated in (a).

Calculation of the past service liabilities

4.2 The benefits accrued in respect of service prior to the valuation date are projected using the statistical and economic assumptions described in the next Section. These calculations were carried out on two bases:

(a) excluding pensions increases (i.e. the position as at the 1984 valuation); and

(b) including pensions increases.

A value is then placed on these benefits by discounting them back to the valuation date using the valuation rate of interest.

4.3 As described in the next Section, different groups of statistical assumptions are made for each of the four major data sub-groups (male and female officers, male and female manual workers) and the calculations are made separately for each group. The results for each group are collated by employer and expressed as a single value for each employer.

4.4 In calculating the impact of pensions increases, we have allowed for the practice of calculating increases after State pension age on the pension as increased to date less the Guaranteed Minimum Pension. We have also allowed for the increases of up to 3% p.a. on that part of the guaranteed minimum pension which accrues after 5 April 1988.

4.5 The value of benefits exclusive of pensions increases was then compared with the value placed on the assets (see paragraph 4.7 below) to determine the surplus in the Fund as at 31 March 1989 prior to transferring the liability for pensions increases to the Fund. As the greater part of this surplus was known to have arisen from the very high investment returns earned on the Fund's assets during the intervaluation period, for the purposes of establishing contribution rates, it was considered appropriate to attribute the assets between participating employers in proportion to the accrued liabilities the assets were designed to cover. This also has the effect of distributing the surplus in proportion to the accrued liabilities.

4.6 In accordance with the provision of the new Regulations described in paragraphs 2.10 and 2.13 above, 75% of the accrued liabilities (including pensions increases) in respect of Scheduled Bodies and 100% of the accrued liabilities (including pension increases) in respect of 'deemed' employees, were then compared with the distributed assets to determine the surplus or deficiency. This was done separately for each participating employer, but with appropriate adjustments to allow for the following points:

(a) pensions increases would continue to be re-charged to the Health and Water Authorities in respect of persons leaving or retiring from those functions prior to their transfer from Local Government in 1974;

(b) similar action was taken in respect of former employees of the Vehicle Licensing function;

(c) pensions increases in respect of polytechnic employees who left or retired prior to 1 April 1989 are to be recharged to the Polytechnic Central Funding Council;

(d) the pensions, including pensions increases, in respect of transport companies and airports in respect of employees who left or retired prior to the establishment of the companies are the responsibility of the relevant councils; these have been subsumed in the contribution rates certified for the councils concerned.

Valuation of assets

4.7 It is necessary to allow for the assets on a basis which is consistent with the valuation of the liabilities of the Fund. As in 1984, we have thought it appropriate to avoid the fluctuations inherent in market values and have placed a value on the income expected to be received from the assets held on account of the Superannuation Fund. It would be possible to carry out these calculations in respect of the actual assets held by the Fund at the valuation date. However, at any one time, the actual distribution of assets is designed to take into account expected short-term considerations and reflects the average distribution over the long term only coincidentally. Hence it is usual to assume that all the assets are realised at their market values and reinvested (at no cost) in a model portfolio based on the Financial Times-Actuaries All-Share Index representing 'real' assets and on the Financial Times-Actuaries 25 year High Coupon Gilt Index representing fixed interest assets.

Contribution rates for future service

4.8 It would be feasible for the calculations to be carried out for the Fund as a whole and a single contribution rate applying to all employers derived. This approach was adopted in the 1984 valuation. However, Scheduled Bodies paid differing rates of additional contributions to cover the costs of pensions increases attributable to each body. With the change to funding pensions increases, it was thought appropriate to calculate separate contribution rates for each employer.

4.9 Contribution rates have been calculated for each employer using the actuarial method known as the "Projected Unit" method. Under this method, the benefits expected to accrue in respect of the year of service following the valuation date are projected and discounted in the same way as the past service accruals in respect of the pensionable employees. The value of benefits is then related to the pensionable payroll at the valuation date to obtain a contribution rate as a percentage of salary, or related to the annual rate of employees' contributions at the valuation date to express the contributions required as a percentage of employees' ordinary contributions, for administrative convenience.

<u>Unfunded element</u>

4.10 Now that we have to fund just 75% of the liabilities, it is necessary to consider what should happen to the other 25%. All the benefits will be payable from the Superannuation Fund, not just 75%, and it is logical to allow for the other 25% in setting contribution levels. If the Fund had just sufficient assets to cover 75% of the liabilities, it is clear that 25% of the benefits paid each year must be covered by additional contributions or the funding level will fall below 75%. For this reason, we have added 25% of the current expenditure on benefits to the contribution rates to cover the "pay-as-you go" element. This appears to be permissible under the revised Regulations and indeed is necessary in order to comply with the requirement that contribution rates are maintained at as nearly constant a rate as possible.

<u>Amortisation of surplus or deficiency</u>

4.11 Under the Local Government Superannuation Regulations, the only option available to deal with a surplus or deficiency in the Fund is to adjust future contributions. In deciding how this adjustment should be calculated, we have to have regard to the following points:

(a) the statement in the Superannuation Regulations that employers' contributions should be at a rate fixed "having regard to .... the desirability of maintaining as nearly constant a rate as possible";

(b) the likely tax penalties under the Finance Act 1986 if the Fund is seriously overfunded; and

(c) the artificially low funding target imposed by the new provisions regarding the "funding level".

4.12 Taking these points into consideration, it was agreed that it would be appropriate to amortise the surplus by decreasing employers' contribution rates by a fixed proportion of the employees' contributions over the average expected remaining working lifetime of the pensionable employees present at the valuation date, about 12.5 years.

V The Assumptions Adopted for the Valuation

5.1 An actuarial valuation is concerned with the whole future lifetime of the Fund and not just the period up to the date of the next valuation. The valuation is therefore concerned with a very long period in the future, possibly 70 or 80 years (a member now aged 20 is expected to retire in 40 years' time and then may receive benefits for a further 30 or 40 years). The employers' commitment to the Fund is to meet the cost of the benefits provided in the way specified in the Regulations after taking account of the contributions paid by members.

5.2 In order to make projections of the payments into and out of the Fund, a large number of assumptions about the future have to be made. These assumptions can be regarded as falling into two groups as follows:

(i) the economic assumptions which cover the valuation rate of interest, increases in general levels of remuneration and the growth in the flow of income from ordinary shares, unit trusts and properties.

(ii) the statistical assumptions which are all age-related and cover such matters as rates of mortality of members, both in service and during retirement, the rates of withdrawal from membership and the progression of pensionable earnings from age to age attributable to increasing age and responsibility.

5.3 Our preliminary ideas as to the economic assumptions were discussed in some detail in a seminar held for our clients in the Autumn of 1988 and in a formal memorandum circulated to clients later that year. Our reasons for retaining those ideas were discussed in our Autumn 1989 seminars, and a summary was circulated as Issue 9 of "Local Government Comment". A precis of the discussion is given below for completeness.

5.4 From the general description contained in paragraph 5.1, it will be clear that the valuation is a forward-looking process concerned with a long period in the future. Furthermore, it is important that the assumptions are the most appropriate and informed which can be made because an apparently modest change in the assumptions can lead to a marked change in the level of employers' contribution shown to be required by the valuation.

Economic Assumptions

5.5 On the occasion of the 1984 valuation, the key economic assumptions, which were adopted for the long-term future period with which the valuation is concerned, can be summarised as follows:

	Nominal % p.a.	*Real % p.a.
The rate of price inflation	$5\frac{1}{2}$	-
The valuation rate of interest, i.e. the rate of return from both income and capital appreciation, expected to be secured on new investments made over the long-term future of the Fund	9	$3\frac{1}{2}$
The increases in pensionable earnings as a result of inflationary pressures	7	$1\frac{1}{2}$
The increases in the flow of income from ordinary shares, unit trusts and properties	$4\frac{1}{2}$	-1

* The rates relative to price inflation.

5.6 At first sight it may be thought that the operation of the economy is variable with no stable relationship existing between the various factors about which assumptions need to be made in the valuation basis. However, when past experience is examined over a period of a length consistent with the long future period with which the valuation is concerned, a degree of stability in the relationship between the relevant factors becomes apparent. Indeed, it is important to emphasise that it is the relationships between various assumptions which are important, rather than the absolute level of each assumption.

Increases in Prices

5.7 The first economic assumption to be considered is price inflation, represented by the General Index of Retail Prices. When the valuation work was carried out, price inflation had increased to a peak approaching 8% p.a., having averaged about 5% p.a. over the preceding five years and having been as low as 2½% from mid 1985 to mid 1986. Given the commitment of the UK Government (and the governments of other European Community countries) to control price inflation, we have assumed that the rate of growth of prices will average 4½% p.a. in the future.

Growth in Pensionable Earnings

5.8 The next element of the basis to consider is the general rate of growth of wages and salaries as a result of increasing productivity and of inflationary pressures i.e. growth excluding that arising as a result of the pay progression of an individual due to increasing seniority. Prices and wages tend to increase together, but the wages index increases at a faster rate than the retail prices index indicating an increase in wages in real terms. There has, in fact, been a steady growth in the excess of wages index over prices during the period since 1920. It is a remarkably smooth rate of growth and averages about 2% p.a.

5.9 We believe there are sound reasons for assuming that national average earnings will continue to grow by 2% p.a. more than prices in the future and accordingly propose to adopt this assumption in the valuation. Combining the 2% real growth of wages and salaries with 4½% nominal increase in retail prices, leads to a nominal rate of growth of pay levels of 6½% p.a.

Investment Returns

5.10 There are two major assumptions which must be made in the valuation as regards investment returns. The first assumption concerns the rate of future dividend growth and is necessary in order to place a value upon the assets held at the valuation date. The second assumption concerns the overall rate of return expected to be secured upon new investments made over the future lifetime of the Fund. Separate consideration is given to each of these assumptions in the following paragraphs.

Rate of Dividend Growth

5.11 In recent years, the growth in the level of share dividends has exceeded the Retail Prices Index; and although in the last decade the reverse was the case, we believe the appropriate assumption for the valuation is that the growth in future dividends will remain constant in real terms. With an assumed rate of price inflation of 4½%, this assumption leads to a 4½% nominal rate of growth of dividends.

UK Equities

5.12 The overall rate of return on equities held for a long period can be shown to be approximately equal to the rate obtained by adding together (a) the dividend yield upon which the stock was purchased and (b) the rate of dividend growth secured. The rate of dividend growth has already been considered in paragraphs (5.10) above, so consideration need now only be given to the dividend yield.

5.13 The dividend yield on ordinary shares represents the terms on which a stream of future dividends can be bought and sold. Generally dividend yields are low when share prices are high (and vice versa) and the market peaked in 1972 and 1987. Dividend yields at the valuation date were about 4½%, which is a little less than the average level over the last sixty years or so.

5.14 In our view 4½% is an appropriate rate of dividend yield to assume for future purchases and sales. This assumption, combined with the proposed assumptions of price inflation of 4½% p.a. and no growth of dividends in real terms leads to a total investment return of 4½% p.a. in real terms and about 9% p.a. in nominal terms. This rate may be taken to be net of expenses of investment, including investment management fees and investment administration costs.

Fixed Interest Gilt-Edged Securities

5.15 When inflation was not a feature of the economy, the rates of interest obtainable on fixed interest gilt-edged securities was some 3% to 4%. The rates however rose to record levels in the 1970s, when inflation was high, and the rates current at the valuation date were just over 9½% for long-dated gilts. The course of long-term interest rates provides no evidence to suggest that the proposed rate of 9% p.a. is inappropriate, when taken in conjunction with other factors.

Index-linked Gilt-Edged Securities

5.16 These securities provide a useful point of reference against which yields obtainable on other classes of investment may be judged. Over recent years, they have been bought and sold in the market on real yields usually in the range of $3\frac{1}{2}$% to 4% p.a. It is to be expected that a well-managed and balanced portfolio should be able to obtain a higher yield than that obtainable by investing solely in index-linked gilts and that index-linked gilts will not form a large proportion of the investment portfolio. In this context, an assumed average real rate of return of $4\frac{1}{2}$% p.a. on the overall portfolio of investments does not seem unreasonable.

Summary

5.17 From the preceding paragraphs, it can be seen that the assumptions made in the 1989 valuation are as follows:

	Nominal % p.a.	*Real % p.a.
The rate of price inflation	$4\frac{1}{2}$	-
The valuation rate of interest, i.e. the rate of return from both income and capital appreciation, expected to be secured on new investments made over the long-term future of the Fund	9	$4\frac{1}{2}$
The increases in pensionable earnings as a result of inflationary pressures	$6\frac{1}{2}$	2
The increases in the flow of income from ordinary shares, unit trusts and properties	$4\frac{1}{2}$	-

* The rates relative to price inflation.

<u>Statistical Assumptions</u>

5.18 The main assumptions in this area are as follows:

(i) the rates of mortality, ill-health retirement, withdrawal from membership and retirement in normal health which will be experienced by active members in the future;

(ii) the rates of mortality which will be experienced by members after they have retired and by their spouses;

(iii) the proportion of members and pensioners who are married at their death;

(iv) the future rates of change in pensionable pay which arise from pay scales or other influences domestic to the employer.

5.19 It has been found that for many of the statistical assumptions, past experience is a good guide to what is likely to happen in the future. Such assumptions may therefore be derived from past experience adjusted to provide for continuing trends such as reducing rates of mortality.

5.20 The assumptions which we have made for the 1989 valuation are based very largely on our analysis of the experience of Local Government Superannuation Funds over the period between the 1979 and the 1984 valuations. We are able to analyse the experience of about one-third of a million contributing members and so the analysis produces highly significant results.

5.21 To some extent it would have been preferable to have looked at the experience between the dates of the 1984 and 1989 valuations before settling the 1989 valuation assumptions. It is, however, unlikely that an examination of the later experience would have led to any changes to the assumptions which would have had any significant effect on the valuation results. Furthermore, to have waited until the analysis of the 1984 to 1989 experience was available would have resulted in an unacceptable delay in the production of the valuation results.

5.22 It is worth commenting upon two of the sets of statistical assumptions made in the 1989 valuations, namely the mortality assumptions and the salary progression assumptions.

5.23 Mortality. One point which had to be considered with great care is whether allowance should be made in the assumptions for the possible effect of AIDS when the future progress of AIDS continues to be extremely uncertain. Research which has been done within the Firm on the possible effect of AIDS on the financial position of pension funds generally suggests that the effects would not be material. Accordingly we have decided that no explicit allowance need be made for it in the 1989 valuations, and indeed the assumptions we have made reflect the continuing increase in the expectation of life.

5.24 Salary Progression. The progression of salary from age to age as a result of seniority has usually been less steep at the older ages than at the younger ages. For some time now, however, a feature of our analyses of the salary progression of pension scheme members is that, whilst older employees, say those aged over 45 or 50, have received increases in excess of price inflation, they have not received increases fully in line with general earnings escalation. This feature has occurred across the board i.e. in our analyses of the experience of both private and public sector pension schemes. In the 1984 valuations, we adopted a flat salary scale at the older ages, i.e. one which at these ages anticipated total earnings increases in line with the national average. However, for the 1989 valuations, we have adopted a decreasing scale, the reduction averaging ½% for each year of advancing age which, when combined with the assumed general rate of earnings growth of 2% p.a. above price inflation, leads to assumed increases of 1½% p.a. above price inflation at these older ages.

VI **Results of the Valuation**

6.1 As discussed in Section IV above, we look at the results of the valuation in three parts:

(a) the comparison of liabilities in respect of past service with the assets available;

(b) the contributions required to support future accruals of benefits; and

(c) the adjustments to this contribution requirements to take into account the past service position.

In the following paragraphs consideration is given to the results, calculated by reference to the actuarial assumptions described in Section V, in the context of first the true position, i.e. a funding target of 100% of the liabilities, and then the position on the basis of a target funding level of 75%.

Past service position

6.2 In view of the introduction of pensions increases as a Fund liability, we need to look separately at the position with and without pensions increases. For the Fund as a whole, on the basis of funding for 100% of the liabilities, we have the following results.

	£ millions	
	Excluding Pensions Increases	Including Pensions Increases
Value of liabilities in respect of:		
Pensions to former employees and their dependants, and widows' pensions	97.90	198.76
Deferred benefits for early leavers	13.70	21.26
Current pensionable employees in respect of service prior to 31 March 1989	193.44	235.26
Total accrued liabilities	305.04	455.28
Assets as valued	487.62	487.62
Surplus	£182.58	£32.34
Funding level	160%	107%

6.3 By comparison, in the 31 March 1984 valuation there was a surplus of about £24m. By the interim review as at 31 March 1986, this had increased to a surplus of £74m. The main reason for the continuing increase in surplus to £182.58m now shown on the basis excluding pensions increases is the continuing good performance of the assets. Other contributions to surplus have arisen from the change of actuarial basis and from pensionable employees leaving the Fund before age 50 in slightly larger numbers than expected. Pay increases a little larger than anticipated offset these profits to a limited extent.

6.4 The imposition of the liability for pension increases changes the position to a smaller surplus amounting to about 7% of the assets. In view of the over-funding penalties imposed by the Finance Act 1986 (see paragraph 2.7 above), the need to transfer pensions increase liabilities to the Superannuation Fund is clear. The additional liabilities have been covered by the surplus.

Future service contribution

6.5 The combined employers' and employees' contribution rates needed to support accruing benefits are set out in the table below (expressed as percentages of employees' contributions).

	Excluding Pensions Increases	Including Pensions Increases
Combined rate	178%	212%
less employees' contributions	100%	100%
Employers' rate	78%	112%

6.6 These rates compare with the 100% employers' "primary" rate set at the 1984 valuation, the decrease in the figures excluding pensions increases being primarily the result of the changed actuarial assumptions and method.

6.7 It should be pointed out that these rates are sensitive to the actuarial assumptions, particularly the economic assumptions used. For example, an increase in the overall return on assets assumed from 9% to 9½% with no other charges in the assumptions would decrease the combined rate of contributions (including pensions increases) from 212% to about 185% of employee contributions (but would have little net effect on the surplus shown in paragraph 6.2).

Employers' contributions on 100% funding target

6.8 A 100% funding level would give employers' contribution rates (for the Fund as a whole) as follows:

	% of employees' contributions
Combined rate for future service	212
less employees' contributions ..	100
	112
less amortisation of surplus ...	27
Employers' contribution rate ...	85%

Funding level of 75%

6.9 On the basis of a target level of funding of 75%, the apparent past service position is improved as the following table shows:

	£ million
75% of liabilities 455.28 x .75	341.46
Assets as valued	487.62
"Surplus"	£ 146.16

6.10 Amortising this "surplus" over a period of 12.5 years gives an average reduction in employers' contributions over that period of 121% of employees' contributions.

6.11 Employers' contributions for the Fund as a whole are then obtained as in the following table:

	% of employees' contributions
Combined rate for future service	
212 x 75% funding level	159
plus unfunded element	55
less employees' contributions	100
	114
less amortisation of surplus	121
Employers' rate	-7%

6.12 Employers' contribution rates for each Employing Authority are certified in Appendix C to this Report.

Finance Act 1986

6.13 The Fund is shown to be in surplus in paragraph 6.2, but there is no question of overfunding on the basis prescribed by the Finance Act 1986 (now incorporated within the Income and Corporation Taxes Act 1988). Our formal Certificate to this effect is attached at Appendix D to this report.

VII **Conclusions and Recommendations**

7.1 The main result of the valuation is to show that good asset performance has increased the Fund's surplus to the extent that the surplus was more than sufficient to cover the accrued pensions increase liabilities transferred to the Fund.

7.2 A more optimistic view of the future built into the actuarial assumptions and methods would have led to the incorporation of pensions increase liabilities without a significant increase in the contributions required. However, the imposition of the 75% funding target leads to a substantial reduction in the contributions to be paid by Scheduled Bodies. These contributions may be expected to increase at each successive future valuation as the "surplus" over the 75% funding level is utilised.

7.3 We recommend that each employer pays from 1 April 1990 to 31 March 1993 the proportion of employees' total contributions set out in Appendix C to this Report which is in the form of a Certificate complying with the provision of Regulation P6 of the Local Government Superannuation Regulations 1986.

A F Wilson
Fellow of the Institute of Actuaries
Partner in the Firm of R Watson & Sons

AFW/17G7/D3638.RP1
September 1990

Appendix A to Report on
the Actuarial Valuation
as at 31 March 1989

NOTTINGHAMSHIRE COUNTY COUNCIL SUPERANNUATION FUND

Summary of Membership Data

	1989 Valuation	1984 Valuation
Active Members		
Number of active members	22,610	21,722
Total annual pensionable pay	£198.083m	£136.835m
Average annual pensionable pay	£8,761	£6,299
Deferred Pensions (inclusive of pension increases)		
Number of deferred pensioners	4,790	2,008
Total annual deferred pensions	£2.950m	£0.805m
Average annual deferred pension ...	£616	£401
Pensioners (exclusive of pension increases)		
Number of pensioners	8,455	6,379
Total annual pensions	£11.241m	£5.848m
Average annual pension	£1,330	£917
Widows (exclusive of pension increases)		
Number of widows	1,912	1,679
Total annual widows' pensions	£0.866m	£0.453m
Average annual widow's pension	£453	£270

Note: 1984 valuation figures include bodies now in the Second Fund

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NOTTINGHAMSHIRE COUNTY COUNCIL SUPERANNUATION FUND

Summary of the Fund accounts for the period 1 April 1984 to 31 March 1989

		£m
Market Value of Fund as at 1 April 1984		227.65
Income		
Employees' contributions	48.50	
Employers' contributions	46.47	
Transfer values received	13.30	
Investment income	256.16	
Other income	0.37	
	364.80	
Expenditure		
Pensions, grants and gratuities ..	84.24	
Transfer values	12.19	
Refunds of contributions	2.42	
Expenses of administration and investment	2.92	
Transfers to Second Fund	6.89	
	108.66	256.14
Market Value of Fund as at 31 March 1989		£483.79

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NOTTINGHAMSHIRE COUNTY COUNCIL SUPERANNUATION FUND

Certificate of the Actuary regarding contributions payable by the employing Authorities

The County Treasurer
Nottinghamshire County Council

Dear Sir

(1) In accordance with your instructions, I have made an actuarial valuation of the Nottinghamshire County Council Superannuation Fund as at 31 March 1989.

(2) In accordance with Regulation P6(1) of the Local Government Superannuation Regulations 1986 (as amended) I have made an assessment of the contributions which should be paid to the Superannuation Fund by the employing authorities.

(3) I set out in the attached Statement the contributions which, on the above basis, should in my view be payable to the Superannuation Fund by the interested employing authorities.

Yours faithfully

A F Wilson
Fellow of the Institute of Actuaries
Partner in the Firm of R Watson & Sons

September 1990

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R WATSON & SONS
CONSULTING ACTUARIES

NOTTINGHAMSHIRE COUNTY COUNCIL SUPERANNUATION FUND

Common Contribution Rate payable by each employing authority under Regulation P6(1)(a): Nil

Individual Adjustments payable by the respective authorities under Regulation P6(1)(b) expressed as varying percentages of the respective members' contributions in the cases of the bodies listed below:

	Percentage of members' contributions from 1 April 1990 to 31 March 1993
Nottinghamshire County Council	-
Bassetlaw District Council	11
Mansfield District Council	16
Newark & Sherwood District Council	5
Ashfield District Council	-
Broxtowe Council	-
Gedling Council	5 (0.3)
Nottingham City Council	
- Deemed Transport Employees	151 (7.8)
- Other Employees	20 (1.1)
Rushcliffe District Council	4
Selston Parish Council	-
Ruddington Parish Council	-
Nuthall Parish Council	-
Balderton Parish Council	-
Probation Committee	-
Cotgrave Parish Council	-
Newark Internal Drainage Board	-
Magistrates Courts Committee	-
Leics, Northants & Notts Local Valuation & Community Charge Panel	-
East Midlands Airport (pre 1.4.87)	-
Bramcote Crematorium Joint Committee	-
Harworth Parish Council	-
Greasley Parish Council	-
Laneham Internal Drainage Board	-
Newark Town Council	-
Calverton Parish Council	-
Stapleford Town Council	-
Nottingham Polytechnic	-
Keyworth Parish Council	-

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CERTIFICATE

This Certificate is given to the Commissioners of Inland Revenue for the purposes of paragraph 2(3) of Schedule 22 to the Income and Corporation Taxes Act 1988.

NOTTINGHAMSHIRE COUNTY COUNCIL SUPERANNUATION FUND

I hereby certify that:

(1) in my opinion as at 31 March 1989 the value of the assets of the Fund did not exceed 105% of the value of the liabilities of the Fund;

(2) the assets and liabilities to which paragraph (1) refers have been determined in accordance with principles and requirements prescribed by the Pension Scheme Surpluses (Valuation) Regulations 1987.

Signature .... September 1990

A F Wilson
Fellow of the Institute of Actuaries
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