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Contributors

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L O T H I N G L A N D R U R A L D I S T R I C T

C O U N C I L

ANNUAL REPORT OF THE
MEDICAL OFFICER OF HEALTH
AND THE
PUBLIC HEALTH INSPECTOR
FOR THE YEAR
1970

COUNCIL OFFICES
RECTORY ROAD
LOWESTOFT

MEDICAL OFFICER OF HEALTH: A.C. GEE, M.R.C.S., L.R.C.P., D.P.H.

CHIEF PUBLIC HEALTH
INSPECTOR,
PUBLIC CLEANSING OFFICER
and PETROLEUM OFFICER : G.J.L. HORNE, M.A.P.H.I., A.I.P.H.E.

ADDITIONAL PUBLIC HEALTH
INSPECTOR : M. STEER, M.A.P.H.I.

MEAT INSPECTOR and
TECHNICAL OFFICER : S.C. BAKER, A.R.S.H., M.A.M.I.

CLERICAL ASSISTANT : MISS P. WALTON.

GENERAL FOREMAN : A.B. BURCH.

Council Offices,
Rectory Road,
Lowestoft.

Mr. Chairman, Ladies and Gentlemen,

I have the honour to present the Annual Report on the health of your District for the year 1970.

The trends to which I drew attention in my Report last year have been continued this year. The estimated population has increased from 21,610 to 22,560; again an increase of nearly a thousand persons. The total number of births was 366, which is an increase of 27 on the figure for 1969. The Adjusted Birth Rate of 19.6 is well above the national average and the Adjusted Death Rate continues to be below the national average.

The causes of death follow the national trend, cancer and diseases of the heart being the main causes of death. A quarter of the total deaths was due to cancer and a half due to heart disease of one form or another. Three deaths were caused by motor vehicle accidents.

Measles was the only infectious disease occurring during the year in any prevalence, some 188 cases being notified. Immunisation against this infection continued to meet difficulties due to the shortage of vaccine. One repeats the hope expressed in last year's Report, that every effort will be made by all concerned to increase immunisation against this infection as fast as circumstances permit, so that what is now the only infectious disease of children to reach epidemic proportions in this country can be ultimately eradicated.

We have again been free from serious outbreaks of food poisoning which, considering the very high level of use of this District for "holiday industry" activities, speaks well both for those responsible for providing the holiday facilities and their staffs and for the Public Health Inspector and his staff in the surveillance they carry out in this connection.

May I take this opportunity, Mr. Chairman, of thanking you and the members of your Committee for the interest you have shown in the work of the Health Department throughout the year.

I have the honour to be
Your obedient Servant,

ARTHUR C. GEE,

Medical Officer of Health.

August, 1971

GENERAL STATISTICS

Area: 44,675 acres (Census 1961)

Population 1970: 22,560 (as estimated by the Registrar-General)

Population, Census 1961: 16,034

Number of inhabited houses at 31st December, 1970: 8077

Rateable Value as at 31st December, 1970: £722,412.00

EXTRACTS FROM VITAL STATISTICS

	LOTHINGLAND					England and Wales rates
	Total	Male	Female	Crude rate	Adjusted rate	
Live births -						
legitimate	347	175	172	-	-	-
illegitimate	19	8	11	-	-	-
total	366	183	183	-	-	-
Live birth rate per 1,000 population	-	-	-	16.2	19.6	16.0
Still births -						
legitimate	3	2	1	-	-	-
illegitimate	-	-	-	-	-	-
total	3	2	1	-	-	-
Still birth rate per 1,000 live and still births	-	-	-	8.0	-	13.0
Total live and still births	369	185	184	-	-	-
Infant deaths -						
under 1 year	7	5	2	-	-	-
under 4 weeks	4	3	1	-	-	-
under 1 week	3	3	-	-	-	-
total	14	11	3	-	-	-
Deaths under 1 year per 1,000 live births	-	-	-	19.0	-	18.0
Neonatal (under 4 weeks) mortality rate per 1,000 live births	-	-	-	11.0	-	12.0
Perinatal mortality rate (stillbirths and deaths under 1 week) per 1,000 live and still births	-	-	-	8.0	-	11.0
Deaths from all causes	143	128	115	-	-	-
Death rate per 1,000 population	-	-	-	10.8	11.2	11.7

CAUSES OF DEATH

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Meningococcal infection	1	-	1
Other infective and parasitic diseases	1	-	1
Malignant neoplasm, buccal cavity etc.	1	1	2
Malignant neoplasm, oesophagus	1	1	2
Malignant neoplasm, stomach	2	5	7
Malignant neoplasm, intestine	3	5	8
Malignant neoplasm, lung, bronchus	8	3	11
Malignant neoplasm, breast	-	8	8
Malignant neoplasm, uterus	-	2	2
Malignant neoplasm, prostate	2	-	2
Leukaemia	1	-	1
Other malignant neoplasms	7	8	15
Diabetes mellitus	2	1	3
Anaemias	-	1	1
Other diseases of nervous system	2	1	3
Chronic rheumatic heart disease	2	1	3
Hypertensive disease	-	1	1
Ischaemic heart disease	33	23	56
Other forms of heart disease	5	3	8
Cerebrovascular disease	16	19	35
Other diseases of circulatory system	5	8	13
Influenza	3	6	9
Pneumonia	7	9	16
Bronchitis and emphysema	12	-	12
Other diseases of respiratory system	2	-	2
Appendicitis	-	2	2
Intestinal obstruction and hernia	1	1	2
Nephritis and nephrosis	1	-	1
Other diseases, genito-urinary system	-	2	2
Diseases of musculo-skeletal system	1	1	2
Congenital anomalies	2	1	3
Birth injury, difficult labour etc.	1	-	1
Other causes of perinatal mortality	1	-	1
Motor vehicle accidents	2	1	3
All other accidents	1	-	1
Suicide and self-inflicted injuries	1	1	2
All other external causes	1	-	1
Total all causes	<u>128</u>	<u>115</u>	<u>243</u>

NOTIFICATIONS OF INFECTIOUS DISEASES

Measles	188
Whooping cough	2
Scarlet fever	8
Tuberculosis	3
Sonne dysentry	2
Acute encephalitis	1
Meningitis	1
Salmonella	
Typhimurium	2

TUBERCULOSIS

	<u>Males</u>		<u>Females</u>		<u>TOTAL</u>
	<u>Pul.</u>	<u>Non-pul.</u>	<u>Pul.</u>	<u>Non-pul.</u>	
Number of cases on register at 1st January, 1970	55	8	25	10	98
Number of cases added during year	1	1	-	-	2
Number of cases removed during year	6	-	4	1	11
Number of cases on register at 31st December, 1970	50	9	21	9	89

Cases added to register

New notifications	1
Inward transfers	1
	<u>2</u>

Cases removed from register

Recovered	7
Died	3
Removed to other areas	1
	<u>11</u>

REPORT OF THE PUBLIC HEALTH INSPECTOR

FOR THE YEAR 1970

Mr Chairman, Ladies and Gentlemen,

I have the honour to present my Annual Report for the year 1970.

The year 1970 was officially designated "European Conservation Year" emphasising the growing fact that pollution of our environment is something which must be checked before our very existence is seriously affected. It is essential that the general public should be educated not to litter and pollute the countryside, the towns and the places of entertainment, the beaches, the rivers, the Broads. The industrialists too must realise that waste products from their factories and workshops must be disposed of without causing pollution or nuisance and that their costings must include adequate provision for this.

This Authority is trying to maintain a service to keep the countryside clean and pleasurable but the task of picking small and large items of litter from the hedgerows, field gateways and ponds is enormous and virtually impossible with the existing staff and equipment.

The Council's Housing programme and the considerable increase in the number of improvement grants given has helped to reduce the number on the Housing Application List and also the number of sub-standard properties within the District. With the proposed building programme and the trend towards improving older properties the housing problem is gradually being solved.

Again it is a pleasure to express my thanks to the members of the Council and the Chairmen of the Committees for their confidence and assistance, to Dr. Gee and to the departmental Chief Officers and their staffs for their co-operation and help. My own staff has, as always, carried out their duties and responsibilities cheerfully and efficiently. My thanks go to them and all the manual staff who have worked well throughout the year.

I am, Mr. Chairman, Ladies and Gentlemen,

Your obedient Servant,

G.J.L. HORNE,

Chief Public Health Inspector.

SUMMARY OF VISITS AND INSPECTIONS

Meat Inspection	582
Moveable Dwellings	120
Food Hygiene and Ice Cream	143
Offices, Shops and Railway Premises	121
Rodent Control and Pests	60
Cleansing (inc. Civic Amenities Act)	425
Sewage	498
Water Supplies	57
Housing (all visits)	343
Nuisances	192
Public Conveniences	75
Clean Air Act	16
Factories	15
Petroleum	61
Swimming Pools	76
Offensive Trades and Scrap Metals	15
Miscellaneous	104
Infectious Diseases	9
Oil Pollution	40
Agriculture	21
Animal Boarding Kennels	4
Knackers Yards	2
	2,979

HOUSING

168 dwellings were inspected during the year which resulted in the following action:-

Number of houses demolished and unfit houses closed:	34
Number of families re-housed from unfit houses:	13
Number of houses rendered fit after service of formal notices under the Housing Act, 1957:	3
Number of Demolition Orders made:	13
Number of Closing Orders made:	5
Number of Undertakings not to re-let:	1

Improvements to dwellings increased considerably as the year progressed. The increase in the Improvement Grants under the 1969 Housing Act gave a real impetus to the scheme and many properties were improved and repaired with grant aid which would have been uneconomical previously.

The 26 new Council dwellings at Belton helped considerably to re-house families from unfit properties in the area. There were also 28 Council houses and bungalows re-let and 3 transfers with other Authorities.

At the end of the year there was a reduction on the Housing Application List from 505 in the previous year to 427.

Provision of New Housing Accommodation

Houses erected by private enterprise:	273
Houses erected by the Local Authority:	33

Improvements to Houses

Number of dwellings in respect of which improvements were carried out with grants:

Improvement Grants:	66
Standard Grants:	26
Council houses modernised during the year:	5

MOVEABLE DWELLINGS

Number of licenced sites:	42
Number of caravans used as permanent dwellings:	186
Number of caravans used for holiday accommodation:	2,710

There has been a slight reduction in the number of licenced sites where single caravans have been removed. The larger sites, seasonal and residential, were visited regularly during the year. Non-compliance of certain conditions attached to site licences occurred on odd occasions but these infringements were put to right without any further action being taken.

FOOD PREMISES

Food hygiene continues to be an important aspect of the Department's work. The processing and preservation of food by freezing and the warehousing of food at sub-zero temperatures has increased at the premises of Messrs. Christian Salvesen.

Various foodstuffs are imported in bulk for storage. It is then re-processed and packaged throughout the year. During the Summer and Autumn local produce is prepared, quick-frozen and packaged in the factory premises.

In addition to this, containerised food is imported from various parts of the world. The containers are sealed at the country of origin and inspection at the warehouse is required under the Imported Food Regulations.

Processing of meat is also carried out by the Anglian Tenderbeef Company at Kessingland. Meat from various sources is jointed and packaged and then chilled or frozen prior to sale.

Handling methods and hygiene at these premises need to be supervised by the staff of the Department in order that proper care is taken through all the stages of production and storage.

Holiday Camp kitchens also require regular visits from the staff to ensure compliance with the Regulations and to give advice where needed. Staffing in the larger camps is still a problem. Casual, untrained staff are not ideal people for kitchen and dining-room work where high standards of personal hygiene are necessary.

Food shops in the area received the occasional visit but the standards of hygiene generally in these premises is very good.

143 inspections were made to the following 208 food premises in the district:-

Grocers and General Stores:	87
Butchers:	10
Fishmongers (wet or fried):	8
Greengrocers:	1
Sweets and confectionary:	9
Bakery and confectionary:	4
Licensed premises:	58
Restaurants and cafes:	26
Canteens:	6
Warehouses:	4

Premises registered under the Food and Drugs Act, 1955

Ice-cream manufacturers:	1
Ice-cream retailers:	73
Sausage and preserved food manufacturers:	9

WATER SUPPLIES

The East Anglian Water Company are the undertakers supplying water in the Rural District from the following works:-

- Lound, where the water is obtained from the lakes which are fed from the surrounding gravel strata;
- Barsham, where the water is obtained from boreholes into the underlying chalk;
- Holton, where the water is obtained from three boreholes in the underlying chalk;
- Broome, where the water is obtained from shallow wells into the terraced gravels.

It is estimated by the water company that approximately 305 million gallons were supplied to the district during the year and that the quantity of water produced within the district at Lound during 1970 was 912,864,000 gallons.

The fluoride content of the water is low and although this varies slightly the figure is in the order of 0.25 parts per million.

Specimen copies of analyses of Barsham Bores, Holton Bores, Broome Headworks and Lound Waterworks are shown at the end of this Report.

The results of samples taken from domestic supplies and submitted to the Public Health Laboratory at Ipswich were as follows:-

	<u>Mains supply</u>	<u>Private wells</u>
Unsatisfactory	-	6
Satisfactory	9	18

7 samples were submitted to the Public Analyst for examination for nitrate content:-

<u>Private wells</u>	-	Safe	1
		Doubtful	5
		Unsafe	1

The following is a list of the dwellings supplied with mains water:-

<u>Parish</u>	<u>Direct Connections</u>	<u>Standpipe</u>	<u>Meters</u>
Ashby	-	-	5
Barnby	85	10	11
Belton and Browston	527	1	33
Benacre	2	2	4
Blundeston	368	-	28
Bradwell	1,374	8	27
Burgh Castle	161	5	25
Carlton Colville	897	-	16
Corton	342	5	39
Covehithe	1	7	6
Flixton	17	-	10
Fritton and St. Olaves	60	2	19
Frostenden	64	11	15
Gisleham	109	12	12
Henham	6	-	4
Henstead with Hulver	91	7	20
Herringfleet	72	-	11
Hopton	268	-	60
Kessingland	1,132	13	48
Lound	91	-	26
Mutford	73	4	16
Oulton	86	-	27
Reydon	680	-	43
Rushmere	16	-	5
Somerleyton	117	-	12
South Cove	34	7	7
Uggeshall	28	9	15
Wangford	176	11	11
Wrentham	224	43	25

SWIMMING POOLS

There were 18 commercial pools in the District at the end of the year and regular testing was carried out during the summer months. No pools were found to be below the recommended standard of 1.00 parts per million of free chlorine and this may be attributed to the interest shown by owners and staff. It is the aim of the Department to ensure that one person alone tests the water at least once or twice a day and records the results on a prepared form and this has been reasonably successful.

The problem facing pool operators last year was that of vandalism and the Department's advice was sought to help deal with broken glass, plant failures and "oil pollution" resulting from polythene bags of oil being placed in the flow system and then punctured.

RODENT CONTROL

	<u>Non-agricultural</u>	<u>Agricultural</u>
Total number of properties inspected following notification:	316	23
Number infested by - rats:	243	23
mice:	95	2
Total number of properties inspected for rats and/or mice for reasons other than notification:	890	84
Number infested by - rats:	177	4
mice:	20	-

SLAUGHTERHOUSES

There are three licenced slaughterhouses and fourteen licenced slaughtermen in the District. All carcasses and offals were inspected and the condemned meat was processed at the Suffolk Fat and Bone Company's factory at Oulton. A charge on the slaughterhouse operators as prescribed by the Regulations was made for this inspection amounting to £334. 16s. 6d.

	<u>Cattle:</u>	<u>Cows:</u>	<u>Calves:</u>	<u>Sheep:</u>	<u>Pigs:</u>
Number of animals killed and inspected:	1478	48	18	318	3612
<u>Diseases other than T.B. and Cysticercosis:</u>					
Number of whole carcasses condemned:	-	-	1	-	2
Number of carcasses of which some part or organ was condemned:	273	28	-	-	330
<u>Tuberculosis only:</u>					
Number of whole carcasses condemned:	-	-	-	-	-
Number of carcasses of which some part or organ was condemned:	-	-	-	-	95

Cysticercosis: There were no cases found during the year.

The total weight of meat and offals condemned amounted to 2 tons. 19 cwt. 23 lbs.

FACTORIES ACT, 1961

<u>Premises</u>	<u>Number on Register</u>	<u>Inspections</u>
Factories in which Sections 1, 2, 3, 4, and 6 are to be enforced by the Local Authority:	7	2
Factories not included above in which Section 7 is enforced by the Local Authority:	45	13

There are no factories in the District employing outworkers although a small amount of outwork is carried out for factories outside the District.

Any new address employing outworkers is visited initially.

CLEAN AIR ACT, 1956

The two brickworks in the District registered with H.M. Alkali Inspector were inspected during the year and both are unlikely to give rise to smoke nuisances. The works at Gisleham has changed from coal-firing to oil-burning kilns.

REFUSE COLLECTION AND DISPOSAL

The quantities of refuse collected and disposed of during the year increased by over eight hundred tons, an 11% increase on the previous year.

The result of a feasibility work study carried out by the East Suffolk County Council was considered by the Council and it was agreed that a full work study team should assess the work carried out by the manual staff of the Department during 1971. This was to enable a bonus scheme to be inaugurated as recommended by the National Joint Council for Manual Workers in Circular No: NM 190.

The table below gives details of the vehicles and the tonnage collected

						<u>Diesel</u>	
						<u>Fuel used</u>	<u>M.P.G</u>
			<u>Year</u>	<u>Capacity</u>	<u>Mileage</u>		
Bedford/Eagle	XRT 351 G	1969	35 cu. yd.	7,720	1,413gls.	5.4	
Dennis Paxit IIIC	XBJ 495 G	1969	35 cu. yd.	6,457	1,248gls.	5.1	
Bedford/Eagle	TBJ 872 F	1968	35 cu. yd.	10,050	1,224gls.	8.2	
Karrier/Eagle	NBJ 694 E	1967	50 cu. yd.	9,249	1,327gls.	6.9	
Bedford/Eagle	DBJ 509 C	1965	50 cu. yd.	7,049	1,074gls.	6.5	

The vehicles collected 1,530 loads estimated at weighing 8,200 tons.

CESSPOOL EMPTYING

The two vehicles removed 4,931,000 gallons of sewage and sludge which was disposed of at Ness Point, farm land and some into the sewers. £694 was received for this service from business and other premises.

		<u>Year</u>	<u>Capacity</u>	<u>Mileage</u>	<u>Diesel Fuel used</u>	<u>M.P.G.</u>
Karrier/Yorkshire	PRT 745 F	1967	1,000 gls.	21,087	1,702 gls.	12.3
Karrier/Yorkshire	308 URT	1964	1,000 gls.	13,083	1,048 gls.	12.4

SEWERAGE

This section of the Department continued to maintain and service the pumping equipment and the disposal works. Sewer cleansing and repairs are also carried out by the maintenance staff.

A small scheme sewerage the Black Street area of Gisleham was brought into operation during the year and the contract for phase I of the Hopton scheme was accepted towards the end of the year. The Frostenden Contract was started. This provides an Electromatic Ejector to pump sewage through a 4" P.V.C. rising main to the existing works at Wrentham.

A visit to the new Somerleyton Disposal Works was arranged on the evening of 14th May when Council members were shown over the works and afterwards entertained by Bridget Lady Somerleyton at her home, The White House, Somerleyton.

The table below gives details of the various schemes within the District.

<u>Parish</u>	<u>Pumping Stations</u>	<u>Ejector & Diverter Stations</u>	<u>Disposal</u>
Bradwell	1	-	Gt. Yarmouth sewer
Belton/part Burgh Castle	4	-	Gt. Yarmouth sewer via Bradwell Pumping Station
Hopton-on-Sea	1	2	Gt. Yarmouth sewer
Lound	1	-	Gt. Yarmouth sewer via Hopton Pumping Station
Blundeston	1	2	Corton Disposal Works
Corton	2	1	Corton Disposal Works
Barnby	1	-	Worlingham Disposal Works (Wainford R.D.C.)
Mutford	1	1	Worlingham Disposal Works via Barnby Pumping Station
Carlton/part Gisleham	2	-	Lowestoft sewer.
Gisleham	1	1	Kessingland Disposal Works
Kessingland	3	-	Kessingland Disposal Works
Wrentham/part South Cove	2	1	South Cove Disposal Works
Frostenden	1	-	Frostenden Disposal Works
Wangford	1	1	Wangford Disposal Works
Reydon	3	-	Southwold Disposal Works
Somerleyton, Fritton & Herringfleet	2	3	Somerleyton Disposal Works

PUBLIC CONVENIENCES

Four conveniences sited at Hopton, Corton, Kessingland and Frostenden were used extensively during the holiday season. Routine cleansing and maintenance was carried out by the part-time attendants and the full-time staff.

BEACH POLLUTION

Beach Pollution by oil remains a problem. Not only does the oil contaminate the pebbles and sand on the beach but also the natural flotsom and other debris which is washed ashore. Men were engaged on picking up the debris along the foreshore at Kessingland, Corton and Hopton but it is a mammoth task to maintain even a reasonably clean beach throughout the summer months.

PLEASURE BOATS

There were two pleasure boats and two boatmen licenced under the Public Health Acts Amendment Act, 1907. The boats were inspected and the safety provisions were satisfactory.

(Signed) Roy C. Hooper.

THE COUNTIES PUBLIC HEALTH LABORATORIES

Thresh House,
Verulam Street,
Gray's Inn Road,
London, W.C.1.

ANALYSIS OF A SAMPLE OF WATER received 28.9.70. Our ref: Z/Y/895

from EAST ANGLIAN WATER COMPANY

Labelled Kitchen tap, 163 High Street, Lowestoft. Date: 28.9.70, 11a.m.

Taken by J. Syme

Witness H.B. Cox

Signed J. Syme

CHEMICAL RESULTS IN MILLIGRAMS PER LITRE (ppm)

Appearance: Clear and bright.

Turbidity (A.P.H.A. units): Nil

Colour (Hazen): 3 Odour: nil

pH: 7.6 Dissolved Solids dried at 180°C: 440

Electric Conductivity: 640 Alkalinity as Calcium Carbonate: 180

Chlorine present as Chloride: 60 Free Carbon Dioxide: 8

Hardness: Total: 310 Carbonate: 180 Non-carbonate: 130

Nitrate Nitrogen: 2.1 Nitrite Nitrogen: Absent

Ammoniacal Nitrogen: 0.01 Oxygen Absorbed: 0.90

Albuminoid Nitrogen: 0.07 Residual Chlorine: 0.03

Metals: Iron, Zinc, Copper, Lead: absent

BACTERIOLOGICAL RESULTS

Sampling bottles are treated to remove residual chlorine if present

Number of colonies { 1 day at 37°C. 2 days at 37°C. 3 days at 20-22°C.
developing on Agar { 0 per ml. 0 per ml. 1 per ml.

	<u>Present in</u>	<u>Absent from</u>	<u>Most probable no:</u>
<u>Presumptive Coliform reaction:</u>	- ml.	100 ml.	0 per 100 ml.
<u>Bact. coli. (Type 1):</u>	- ml.	100 ml.	0 per 100 ml.
<u>Cl. welchii reaction:</u>	- ml.	100 ml.	

This sample is clear and bright in appearance, has a reaction on the alkaline side of neutrality and is free from metals. The water is very hard in character but its hardness and its content of mineral and saline constituents in solution are not excessive. It is of satisfactory organic quality and conforms to the highest standard of bacterial purity.

These results indicate a pure and wholesome water suitable for drinking and domestic uses.

(signed) Roy C. Hoather.

16th October, 1970

LINCOLNE SUTTON & WOOD LTD.

Analytical & Consulting Chemists

Clarence House,
6 Clarence Road,
Norwich, NOR 29T.

14th October, 1970

CERTIFICATE OF ANALYSIS OF WATER

Sample received 16th September, 1970 from East Anglian Water Company

Marked Barsham Works.

Lab No: 1275/W.

Cert. No: X.2671.

The chemical results are stated in parts per million

Treated water

pH:	7.2	Free Carbon Dioxide:	-
Ammoniacal Nitrogen :	neg. trace	Total Dissolved	
Albuminoid Nitrogen :	0.07	Solids at 180°C:	625
Nitrate Nitrogen:	0.2	Iron as Fe:	0.17
Nitrite Nitrogen:	nil	Other Metals:	nil
Chlorion as Chlorine:	68		
Permang. Value:	0.40		
Hardness: Total:	255	Carbonate (temp.):	145
		Non-carbonate (perm.):	145
Colonies per ml. on agar at 37°C, 2 days:	nil		
Presumptive Coliform Organisms (Probable no: per 100 ml.) :	nil		

Appearance: clear Deposit: nil Colour: nil Taste: satisfactory

Odour: nil.

Remarks: The water is of very good organic and bacteriological quality. The analysis as a whole is in line with that of previous samples. In our opinion this water is suitable for drinking and general purposes.

for Lincolne Sutton and Wood Ltd.

(signed) Eric C. Wood.

LINCOLNE SUTTON & WOOD LTD.

Analytical & Consulting Chemists

Clarence House,
6 Clarence Road,
Norwich, NOR 29T.

21st September, 1970

CERTIFICATE OF ANALYSIS OF WATER

Sample received 8th September, 1970 from East Anglian Water Company

Marked Treated water - Holton Works. Lab. No: 1192/W Cert. No: X.2599.

The chemical results are stated in parts per million

pH:	7.45	Free Carbon Dioxide:	14
Ammoniacal Nitrogen :	0.01	Total Dissolved	
Albuminoid Nitrogen :	0.01	Solids at 180°C:	620
Nitrate Nitrogen :	0.1	Iron as Fe:	0.1
Nitrite Nitrogen :	nil	Other Metals:	nil
Chlorion as Chlorine :	134		
Permang. Value :	0.44		
Hardness: Total:	340	Carbonate (temp.):	235
		Non-carbonate (perm.):	105
Colonies per ml. on agar at 37°C, 2 days:	-		
Presumptive Coliform Organisms (Probable no: per 100 ml.):	-		

Appearance: clear Deposit: nil Colour: nil Taste: satisfactory
Odour: nil.

Remarks: This water is of very good organic quality and there is no chemical evidence of pollution. The analysis is similar to that of previous samples and in our opinion this water is suitable for drinking and general purposes.

For Lincolne Sutton and Wood Ltd.,

(signed) Eric C. Wood.

LINCOLNE SUTTON & WOOD LTD.
Analytical & Consulting Chemists

Clarence House,
6 Clarence Road,
Norwich, NOR 29T.

21st September, 1970

CERTIFICATE OF ANALYSIS OF WATER

Sample received 8th September, 1970 from East Anglian Water Company

Marked Raw water - Broome and Treated water - Broome Lab. No: 1188/9/W.
Cert. No: X.2597.

The chemical results are stated in parts per million

	<u>Raw water</u>	<u>Treated water</u>
pH		7.3
<u>Nitrogen</u>		
Ammoniacal		neg. trace
Albuminoid		0.05
Nitrate		2.5
Nitrite		nil
Chlorion as		
Chlorine		48
Permang value		0.7
<u>Hardness</u>		
Total		390
Carbonate (temp.)		245
Non-carbonate (perm.)		145
Free carbon dioxide		20
Total dissolved		
solids at 180°C		550
Iron as Fe		0.08
Other metals		nil
Colonies per ml.		
on agar at 37°C.,	nil	nil
2 days		
<u>Probable No: per</u>		
<u>100 ml.</u>		
Presumptive coliform		
organisms	nil	nil
E. Coli. Type 1.		

Appearance: clear Deposit: nil Colour: nil Taste: chlorine
Odour: chlorine

Remarks: This water is of very good organic quality and both the raw water and treated water are in very satisfactory bacteriological condition. The chemical analysis shows that the chlorion and the permanent hardness, and therefore also the total hardness and the total dissolved solids, are all a little higher than usual. Apart from this the analysis is satisfactory and in our opinion this water is suitable for drinking and general purposes.

for Lincolne Sutton and Wood Ltd.

(signed) Eric C. Wood.



