

DENSO DIGEST



SPECIAL
WATER INDUSTRY
EDITION

WINN & COALES INTERNATIONAL LTD

Anti-Corrosion and Water Treatment Solutions for the Water Industry

This edition of the Denso Digest focuses on the involvement of five subsidiaries of Winn & Coales International Ltd with various water companies in Great Britain, Canada and Australia.

The subsidiaries, all working within their own specialist areas, are able to share knowledge and technological skills thereby enhancing and accelerating problem solving. This pooling of resources provides customers with a first rate service and peace of mind with the support of on-site guidance and troubleshooting by a team of experienced area managers and engineers.

A complete list of subsidiaries is listed below including the five featured in this issue;

WINN & COALES (DENSO) LTD

Denso House, Chapel Road, London SE27 OTR, England

✓ **Anti-corrosion and sealing system**

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Fax: 0181 761 2456



DENSO WATER TREATMENT LTD

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75 Shields Court, Unit 3, Markham, Ontario, L3R 9T4, Canada

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18211 Chisholm Trail, Houston, Texas 77060, United States of America

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✓ **Marine corrosion protection systems**

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✓ **Marine corrosion protection systems**

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Hartlepool's Duplicate Main



Application of Denso Paste.

A 5½ km water main of 700mm diameter ductile iron pipe is being installed by Hartlepool Water to boost supplies from the Dalton Piercy Reservoir to Hartlepool. This independent water company celebrates its 150th anniversary this year. The contractors for the project are John Mowlem Construction plc.

The new duplicate main is joined to an earlier 30 inch steel pipeline at each end of its length prior to joining the Hartlepool area distribution system alongside the A689. This will reinforce the distribution system and enable Hartlepool Water to shut off the old 30 inch line for cleaning and maintenance - for the first time since it was laid 35 years ago.

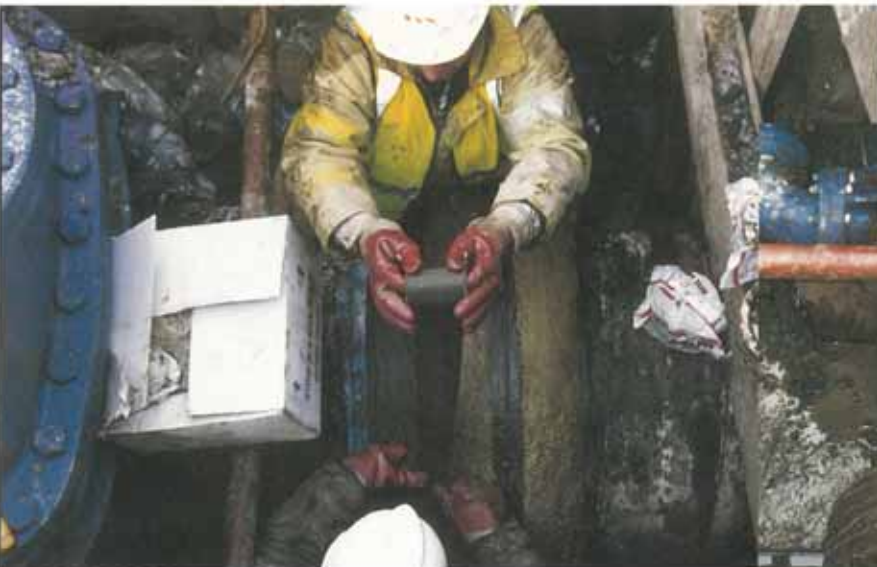
Manganese in the water, which is pumped from underground sources, creates a particular problem because together with other materials it forms a deposit in the mains. In future it will be possible to switch from one main to the other as required, enabling regular cleaning to take place.

An additional problem is the ever present one of corrosion, which is particularly aggressive in this coastal area. The ductile iron pipes are supplied factory coated and wrapped but with the ends left bare. All the resultant flange joints are being protected during installation with Denso Profiling Mastic applied on top of Denso Paste then over-wrapped with Denso Tape.

Past experience of the system indicates that, even in this marine environment, it will provide effective protection for at least thirty years.



Denso Profiling Mastic is used to smooth the joint's contours.



Overwrapping with Denso Tape.

A protected flange joint.





Denso Water Treatment Service for Bexley Schools

Denso Water Treatment Ltd in cooperation with Sprayglass International Ltd, a fellow subsidiary of Winn & Coales International Ltd, recently completed a water hygiene servicing project for three schools within the London Borough of Bexley, Kent. The work had to be completed within the strict time schedule imposed by a one week mid-term break.

At two of the schools Denso Water Treatment Ltd installed destratification pumps on the hot water tanks to circulate the water and keep a constant temperature. This overcomes the tendency for the water to 'layer' in temperature zones, with the colder layers sometimes becoming susceptible to bacterial growth.

The water hygiene service also included chlorination and where necessary making good pipe insulation lagging.

Sprayglass International Ltd's part in the cooperation involved the application of Nu-Tank 400E tank lining to three tanks and installation of Nu-Lid 30 water tank lids in all three schools. The custom made Nu-Lid 30 water tank lids conform to Water Byelaw 30 and have an air filter to exclude light, insects and airborne dirt.

The glass flake reinforced Nu-Tank 400E coating system was developed for in-situ refurbishment of water tanks

which are not severely corroded or where conventional blast cleaning cannot be carried out. It has WRc approval 910950 for use with potable water and complies with requirements of BS 6920:1988/90.

This project illustrates how the close cooperation between the two companies enables customers to enjoy a complete service for their water treatment and storage requirements.



Installing a destratification pump.



Tank re-lined with Nu-Tank 400E.



Nu-Lid 30 water tank lid in position.

Melbourne Water Ltd Install Electronic Flowmeters

Melbourne Water Ltd, Australia, have employed the services of Transfield Construction Pty Ltd to install electronic flowmeters into approximately 20 different water main locations around Melbourne and throughout Victoria to improve the measure of water flow.

The flowmeters, ranging from 225mm to 1400mm diameter, were connected using flanges and nut/bolt assemblies. The connections were protected for a minimum life expectancy of 20 years using Denso MP Primer, Denso Mastic, Denso Mastic Blankets, Denso Tape and Denso MP/HD Overwrap Tape.



The magnetic flowmeter is shown connected to a new pipe main and the nut/bolt assemblies protected with Denso MP Primer.

The Denso Mastic and Denso Tape have been applied to the flange assembly.



The flange assembly is completely protected using the Denso MP/HD Overwrap Tape for protection against backfill when installed.

New Whorley Reservoir Pipe Joints Sealed

The historic Whorley Hill reservoir near Barnard Castle, built at the turn of the century to meet the water demands of the surrounding area of Darlington and parts of Teeside, was deemed to be unable to cope with the expected demands of the 21st century. In consequence Northumbrian Water are replacing it with a new, much larger, 40 million litre capacity reinforced concrete covered reservoir, which is being built into the hillside and landscaped over.

The new reservoir during construction.

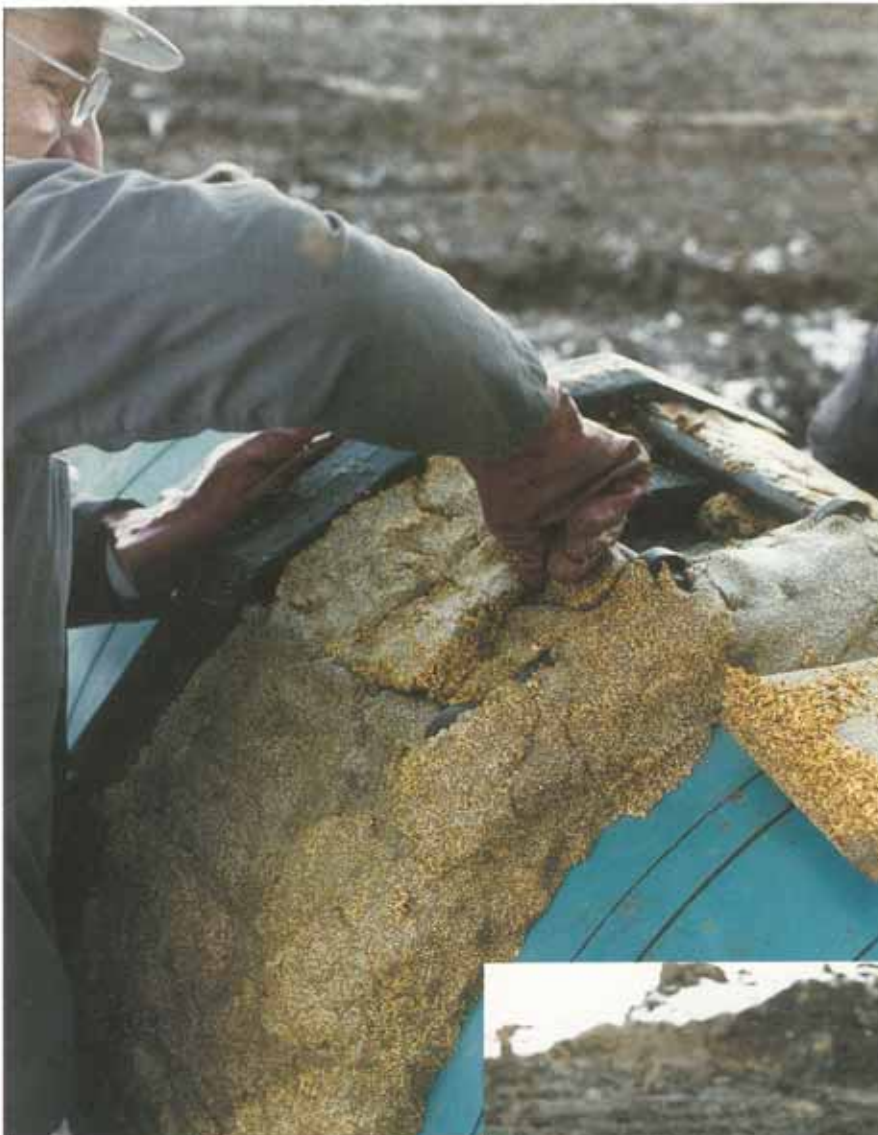


The main contractor for the project is Harbour and General Works Ltd of Gateshead. It is part of a £4 million scheme which started in June 1995 and will be completed at the end of 1996. The scheme is part of £140 million of water quality and water main improvements scheduled by Northumbrian Water for completion between 1995 and the year 2000.

An important part of the Whorley Hill civil works is the 200mm and 900mm diameter pipework to the inlet, outlet, washout and overflow mains. Equally important is the anti-corrosion protection which, in the case of the pipework joints and couplings, is provided by the use of Denso Paste, Denso Profiling Mastic and Denso Tape to comply with C.E.S.W.I. P1 specification.

Denso Paste applied to Tybar joint.





Denso Profiling Mastic is easy to apply and mould prior to wrapping with Denso Tape.

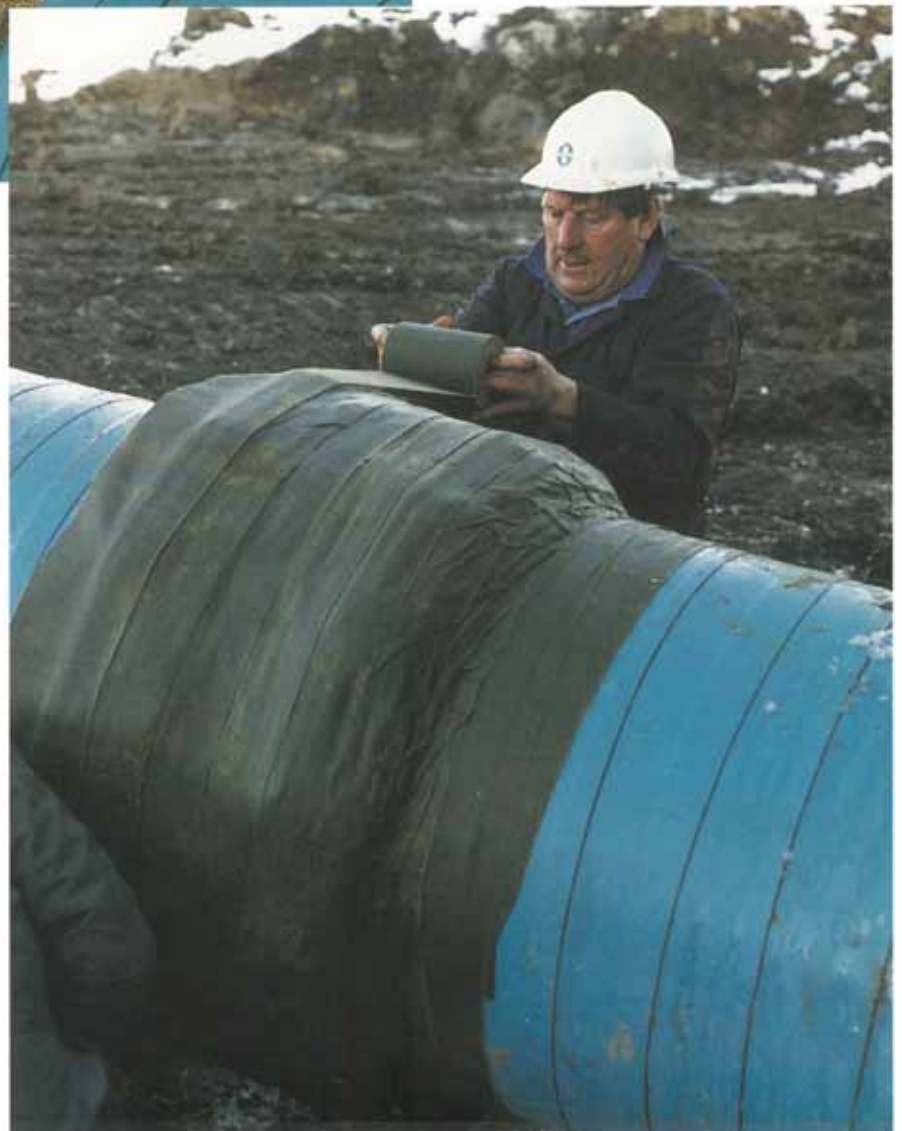
This protective system consists of an application of Denso Paste after which Denso Profiling Mastic is used to cover all nuts, bolts and protruding or sharp edges, to give a smooth external profile. Two separate spiral wraps of Denso Tape are then applied, each with a 55% overlap, thus providing four layers of tape, to complete the protection to P1 specification.

Harbour and General state that the reason the Denso system was chosen was because it met the specification/service requirement, backed up with excellent technical service, and offered a cost effective solution.

The remainder of Harbour and General's contract for the new Whorley Hill reservoir included:

Construction of a small control building in stonework and a reinforced concrete substructure chamber. Associated excavations, backfilling, regrading of the site and site works, including site drainage, access road, cable ducts and landscaping. Demolition and backfilling of the existing reservoir and buildings.

The final wrap of Denso Tape at 55% overlap provides four layers of protection.



Denso Canada's Commitment to the Water Industry

For many years, the main market for Denso North America Inc product sales has been the Canadian water industry. Our commitment to the engineering and municipal sectors has been rewarded through the constant inclusion of our products in specifications requiring Denso anti-corrosion systems, throughout the country.

In 1995, this commitment was once again recognised with the awarding of a specification by CBCL Engineering Ltd, a highly regarded consulting engineering firm located on the east coast of Canada. Denso products were accepted as the anti-corrosion system for installation on a waterworks infrastructure project located outside Halifax, Nova Scotia.

This scheme, known as the Bedford By-Pass Project, consisted of approximately 18,000 metres of 24 inch and 30 inch diameter water main, complete with appropriate valving, fittings and flanged joints. Denso's participation was the result of a great deal of effort on the part of our local Halifax distributor, K & D Industries Ltd who, in addition

to providing constant field support, also supplied the contractor with Denso Petrolatum Tape, Mastics and Primers. The bulk of the project involved priming and wrapping large mega-lug couplings and various flanges with Denso Petrolatum Tape and Mastic Blankets. After an initial field visit to demonstrate the application of the Denso products, the contractor readily carried on with the rest of the job with periodic assistance from K & D Industries.

Across Canada, Denso North America Inc is constantly involved in supporting the water industry with a complete range of anti-corrosion products and participates fully in all aspects of this industry, being recognised throughout the country as the world leader in anti-corrosion systems.

Water main joint protected with the specified Denso system.





Protal Coating for Yorkshire Water Pipebridge

A pipebridge carrying a 600mm main taking raw water from Yorkshire Water plc's Damflask Reservoir, Low Bradfield, has recently been protected with the Denso Protal coating system. This was part of a maintenance programme carried out by contractors Forest Site Services Ltd, for Yorkshire Water on the 92 year old pipebridge.

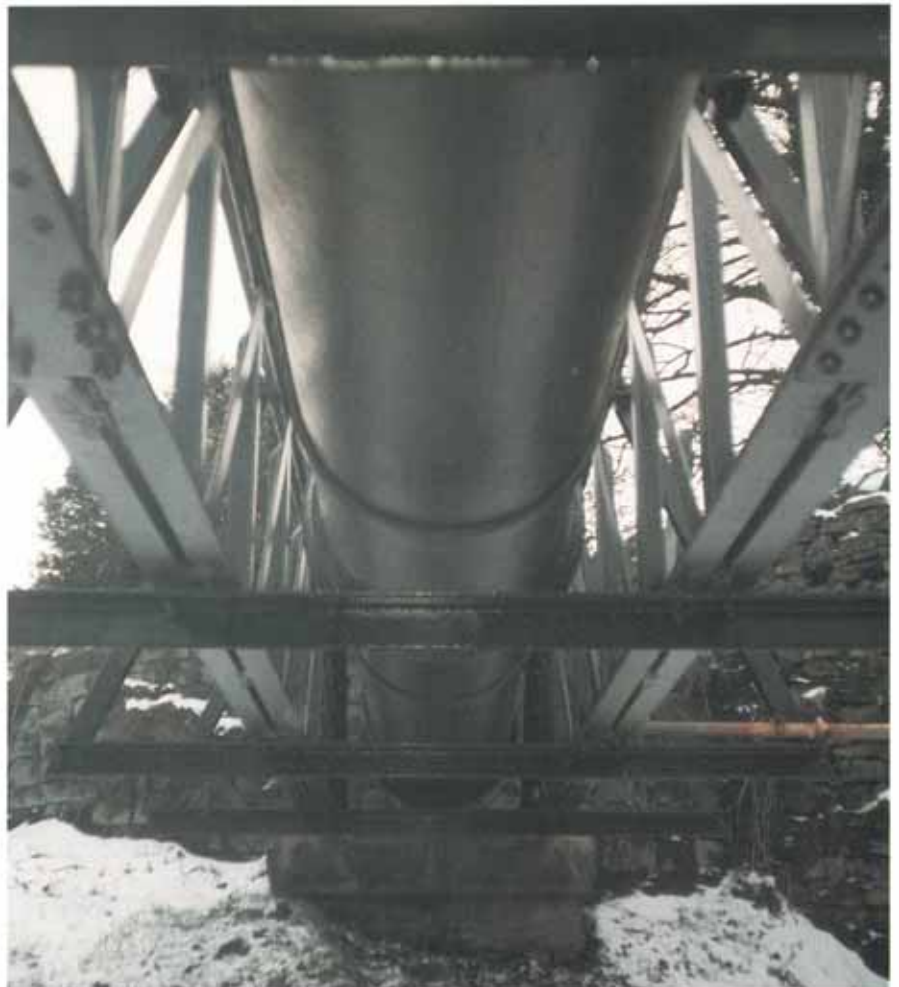
The programme also included Protal coating of the 600mm main itself, both on the pipebridge and where the main is carried above ground over two conduits adjacent to the reservoir.

Forest Site Services abrasive blasted the pipebridge structure to SA 2 $\frac{1}{2}$ standard and applied two coats of Protal 59AC epoxy resin based primer/undercoat to a minimum wet film thickness of 150 microns. An application of Protal 3080, a high gloss top coat, completed the system.

The main pipe was wire brushed clean and then two coats of Protal 1950 - a vinyl bitumen one-pack coating - were applied.

Protal coatings provide effective anti-corrosion protection by forming a firmly bound corrosion inhibiting film on the metal surface and by covering the surface with a thick, effective physical barrier against air and moisture.

Underside of pipebridge showing Protal coating system.



Culverts Sealed at Abbey Mills

Thames Water is currently carrying out a £25 million project for the development and renewal of its Abbey Mills sewage pumping station at Stratford, East London. The Abbey Mills Pumping Station receives sewage from about 1 million people and pumps it for treatment to Beckton Sewage Treatment Works. A new pumping station is being built adjacent to the existing 1860's building, which will be retained both as an historical mid-Victorian industrial building and as a back-up facility during storm flow conditions.

Principal contractor on the project is Trafalgar House Construction (Special Projects) Ltd.

The outfall structure of the new pumping station incorporates 93 twin cell concrete box culverts, each with external dimensions of 5.54m x 3.20m. These were specially designed by FC Precast Concrete of Derby to meet Thames Water's requirements. Tokstrip was chosen as the sealant between the culvert sections.

One reason for the choice of Tokstrip is that it was favoured by FC Precast Concrete who have a wide experience of its successful use as a joint sealant on their box culverts on many previous sewerage and drainage projects. The Trafalgar House contractors state that they found the Tokstrip sealant easy to use and quick to apply.



The Abbey Mills development site.



Twin cell concrete box culverts specially designed by FC Precast Concrete of Derby.

Culverts installed with Tokstrip used as the joint sealant.



DoE approved, Tokstrip is now widely used for sealing the joints of precast concrete sectional units in drainage and sewerage construction. Under compression it deforms through the joints to provide a flexible watertight seal.

Tests supervised by the Building Research Station have shown that Tokstrip sealed ogee pipe joints reached an internal hydrostatic pressure of 2.5 bar (37psi) and retained a seal under shear loading, angular deflection and straight draw.

As part of the same overall Thames Water project, 20 single cell culverts, 4.2m wide and 3.3m high, have been used to divert the flow from an existing sewer into the new pumping station, Tokstrip has also been chosen as the sealant for these single cell culverts.

New Range of Water Tanks Include WRc Approved Lids

The range of Denso Nu-Tanks grp water tanks has been expanded to 26 sizes offering capacities from 50 to 1000 gallons. Prices now include the cost of a Nu-Lid 30 tank lid with integral insulation, screened inlet and inspection hatch, which conforms to Water Byelaw 30. The lids meet all current regulations and are WRc approved with a 25 year guarantee.



A Nu-Lid 30 lid, with screened inlet and inspection hatch, is included with each Denso Nu-Tank.

Denso Nu-Tanks are constructed from WRc approved materials and have a specially formulated glass flake reinforced barrier coating which reduces the permeability of the material, thereby retarding osmosis. Winn & Coales offer a 15 year guarantee against osmotic blistering, a problem affecting many grp water tanks, which can create the ideal breeding ground for legionella pneumophelia (Legionnaires Disease).



The tanks are available with or without insulation and are manufactured as either one-piece mouldings or split sections to facilitate easy entry through loft hatches.



Denso Nu-Tank with special glass flake reinforced barrier coating which retards osmosis.

Densoseal 100 Waterproof Membrane



Densoseal 100 Waterproof Membrane showing paper interleaving for easy application.

A cold applied adhesive waterproof membrane designed for internal and external tanking. It prevents ingress of water into buildings and protects building structures and culverts from the effects of chlorides, sulphates etc in ground water and soil.

Densoseal 100 is a tough waterproof polyethylene membrane coated with a polymer modified bitumen adhesive. The adhesive surface is protected by a paper interleaving wider than the membrane for easy release during application.

An extra double sided adhesive strip ensures thorough sealing at overlaps.

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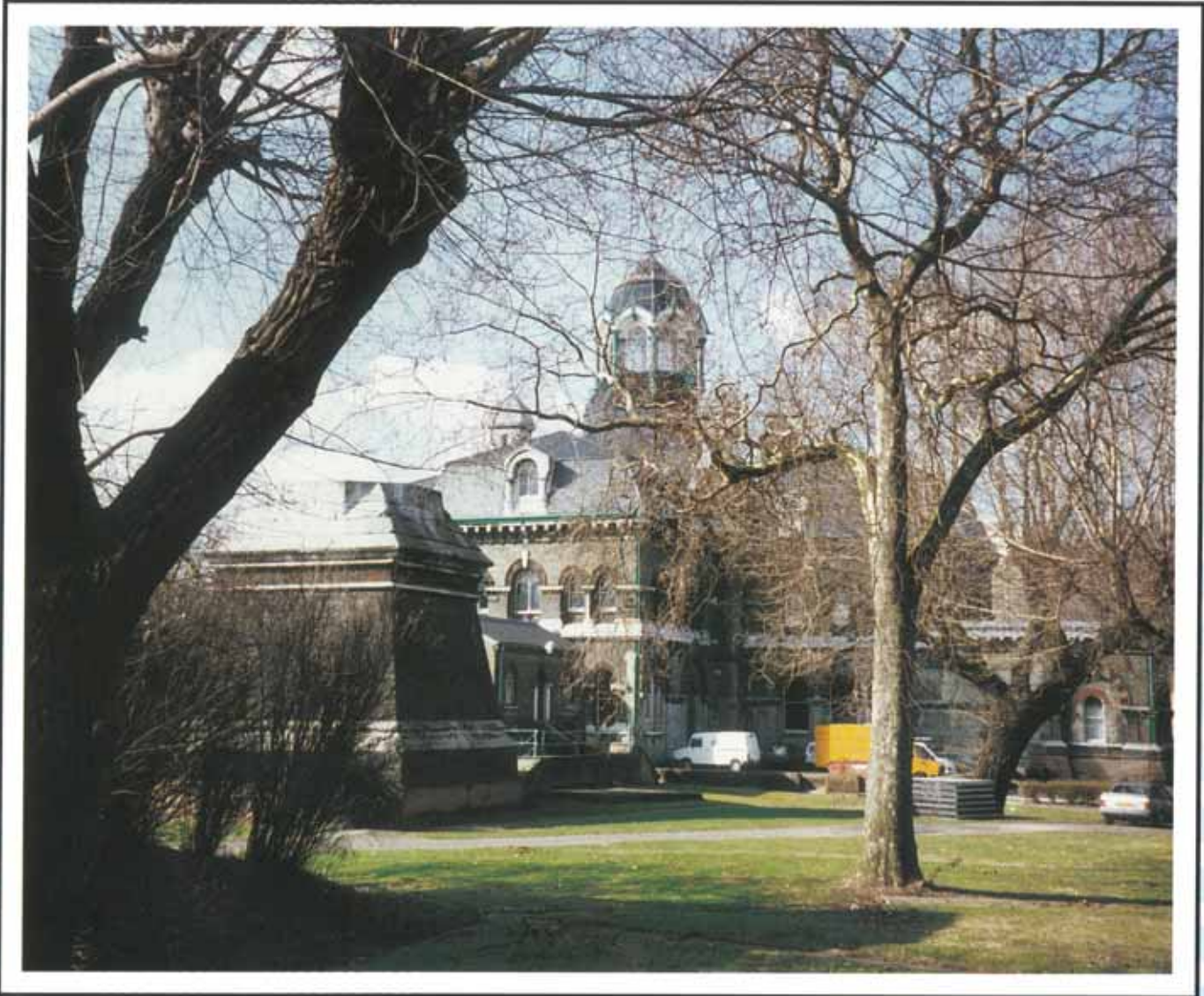
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Front cover: Whorley Hill Reservoir, see pages 6-7.

Back cover: The original Victorian Abbey Mills Pumping Station at Stratford. See page 10.



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