

WATER

Throughout the world, more than a billion people do not have a source of safe drinking water and 1.7 billion are without proper sanitation. Add to that the fact that the world's population, which will be more than six billion by the turn of the century, is expected to rise to 8.5 billion just a quarter of a century later.

Unquestionably, therefore, the provision of international water and water treatment facilities is likely to be one of the biggest growth industries over the next several decades. Though the figures of inadequacy above strongly relate to the developing countries, the demand for higher standards in developed nations is also resulting in significant capital programmes.

In Europe, for instance, this decade is likely to see expenditure of around £200 billion on water-related activities. Much of this will be to meet new European Community regulations, although even now some new demands such as those under the European Urban Wastewater Treatment directive are not yet fully revealed. There are equally stringent rules to be met under the drinking water directive.

It is known, for instance, that France is planning water investment to the year 2,000 of £33 billion, Italy £21 billion, and Germany £47 billion. Italy is looking into privatisation as is Spain, and several countries outside the Community in Central and Eastern Europe are aiming to devolve responsibility down to municipalities from centralised State systems.

In Hungary, for example, where 91 per cent of the population has safe drinking water, there is a belief that water resources should remain as national property, but it is felt that service activities should be transferred to the private sector, governed by the market. Poland, Czechoslovakia and the former East Germany are also interested in the possibilities of private financing to reduce the burden on the State.

The countries of Central and Eastern Europe are, in fact, one of the major geographical catchment areas for British companies who are seeking international business in the water industry. Others are

Europe, the Asia-Pacific region, and the Middle East.

The United Kingdom has one of the biggest national water infrastructure capital expenditure programmes among European nations. Though a figure of around £30 billion to the end of the century has been forecast, it is now being suggested in official quarters that this could rise to £60 billion.

The bulk of this is accounted for by the ten water companies which were established in England and Wales at the turn of the present decade. The programme covers a whole range of technological disciplines to improve and expand facilities, but this, in turn, opens up immense opportunities for the water plcs beyond their own catchment areas. As Vic Cocker, managing director of Severn Trent Water, says: "Water is becoming a global business, and the UK industry has been given a head start in competing on the world stage".

That does not mean that British contractors, consultants and equipment suppliers have not already made their mark on the world scene. The British Water Industries Group has long been established as a co-ordinating, advisory and promotional organisation for all sectors of the water industry. It has more than a hundred members who keenly seek business in international markets.

Hungary, in fact is a good example of where two of their consultancy members are directly involved. Earlier this year, the first Anglo-Hungarian joint venture in environmental and water management consultancy was established between the Government-owned Vituki water resources research centre in Budapest, Sir William Halcrow and Partners, and the UK's Water Research Centre.

Another consultant, Mott MacDonald, will next year complete a £10 million study and design project to upgrade the sewage treatment plant for Miskolc, Hungary's second city. Here, again, the Water Research Centre and Hungarian associates are involved.

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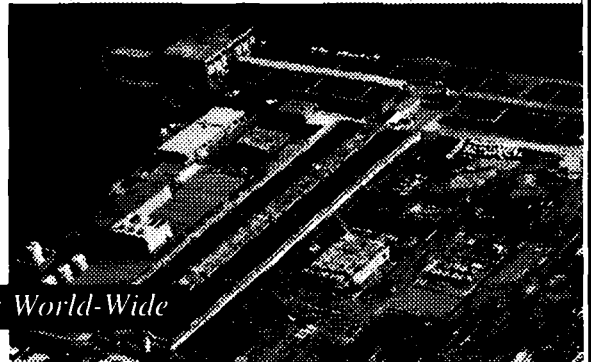
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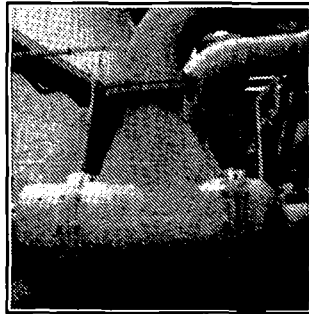


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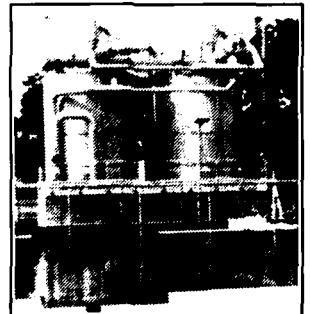
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The existing sewage treatment plant for Hungary's second biggest city, Miskolc, which will be upgraded following the completion next year of a £10 million study and design project involving consultant Mott MacDonald.

improve the water quality for Shanghai's 12 million inhabitants as well as controlling pollution in the Huangpu River. It is being carried out by the Shanghai Municipal Government and has engineering works valued at up to US\$600 million funded by the World Bank. The team for the work also includes North West Water International, the Water Research Centre, KPMG and Mouchel Environmental.

The involvement of North West Water International is significant because around half of the dozen privatised UK water companies are themselves putting considerable energy into seeking international business through a variety of channels - among them, consultancy, joint venture and direct acquisition of interest in various overseas companies. Achievement's editorial staff have interviewed leading executives in these companies and here, led by the biggest of the plcs, is what they discovered.

Thames Water's group chief executive Mike Hoffman's aim is for his company to become a major international force in water-related industries.

He told Achievement this will be through concentrating on four main areas of activity.

The first is design and contracting, a capability which has been given emphasis through the acquisition of PWT Worldwide which already had an international reputation in water and water effluent treat-

ment and industrial fluid processing. It is a world leader in municipal water and sewage treatment.

The second area is water-related products and services. This covers equipment for treating water, waste water and industrial process fluids. Among the respected names in this field are Permutit, PCI Membrane Systems and Stella-Meta Filters.

Thirdly is international consulting through Thames Water International Services which for three decades before privatisation had provided managerial, financial, operational and training advice.

Lastly, Thames Water Environmental Services concentrates on the upkeep of sewer and drainage systems, waste management, ground maintenance, land reclamation and landscaping.

Although PWT Worldwide is considered an ideal name for the design and contracting business, it was decided recently to change the name of PWT Products and Services to Thames Water Products and Services. One main reason for this is the acquisition of other companies in this area, particularly F.B. Leopold Co, a major supplier of filtration systems in the United States.

The Thames Water International Services consultancy is focussing its quest for new business on defined geographical areas. This is both for O & M activity and advising on specific issues such as leak reduction and lost water programmes.

"Generally", says Mr. Hoffman, "we shall continue to acquire companies on an

infill basis to fit in with our existing product range. But one area where there is going to be an explosion of growth at some stage is the operate and manage concept where you put equity into a project.

"I see that as an important future where, from the point of view of Thames, we have the financial strength to borrow at reasonable rates outside the utility company; we have a brand name which will attract international partners; we have one of the best management teams; and we have first-class research and development expertise. Above all else, I know someone in our company is a world-class expert on almost any subject that can arise.

"As environmental standards improve, particular areas like Eastern Europe and Africa south of the Sahara, are becoming major potentials for water and sewage schemes. There is an increasing interest among banks and others to be involved in these schemes, but business will not come quickly - it is not a panacea which will solve everybody's problems tomorrow."

As part of its push into Europe, Thames Water bought UTAG, a central German company specialising in water engineering design, consulting and contracting services. With 20 offices in eastern Germany, its position gave Thames a positive foothold in mainland Europe.

But this certainly will not be the end of international acquisitions. Mike Hoffman believes that the companies they already own have the potential to earn about £25 million by

the mid-nineties. If this was achieved they would move from representing around four per cent of overall group profit to about nine per cent.

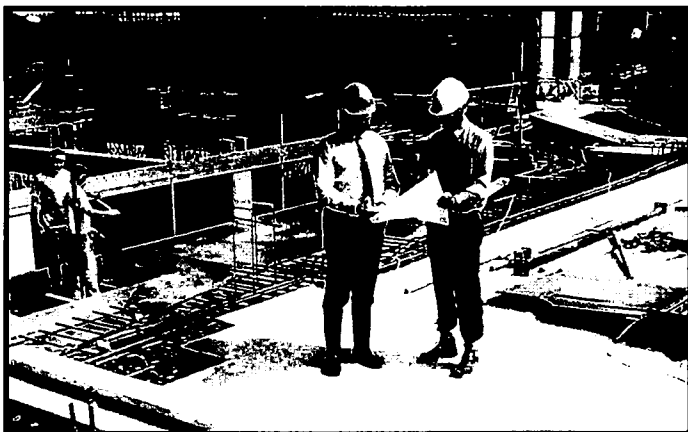
"To make a dramatic impact on our base company profit, we have to undertake some pretty major acquisitions which I think are available to us. Given today's economic situation, I would say by the end of the decade there is a bigger opportunity for equity investment in modest amounts in O&M activities than there is in spending many millions in a major acquisition".

Any international acquisitions would be grafted on to a business which already has an impressive worldwide track record. Thames Water International, for instance, can point to around 50 countries where it has been involved. A number of these are in South-East Asia, and this is a region where Mr Hoffman also sees considerable scope for the future in countries such as Singapore, Malaysia, Thailand, Hong Kong and Indonesia. They also have a base in Melbourne with activity in Australasia.

As the biggest water utility company in Britain, collecting, treating and distributing water for more than seven million people and wastewater for over eleven million including London, there is no doubt that its ambitious capital investment programme in the UK is testimony to its ability to manage major projects.

This is exemplified in the massive 80 kilometres long water ring main which they are building for London. It will be completed in 1996, and the phase two construction now taking place has achieved an average tunnelling of 250 metres a week. In some weeks an impressive 400 metres has been tunnelled, and the project is at present running six months ahead of the original plan and on budget. Mike Hoffman has the ambition to get a further six months ahead of schedule.

He would claim the ring main to be one of the biggest single engineering projects in the UK outside the Channel Tunnel and the largest water scheme in the UK.



Thames Water chief executive Mike Hoffman (left) inspecting the building of a new sewage treatment works at Camberley in Surrey.



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Anglian Water provide water and sewerage services over the biggest of all the geographical areas in the United Kingdom covered by the water companies. And although they have to serve a population spread over large rural areas, they also encompass a number of large towns and coastal regions.

It is a breadth of experience which Jim Adams, managing director of their newly-formed Anglian Water International, believes gives them a distinct advantage in meeting the needs of countries with varying terrains throughout the world.

"Our main objective", he says, "is to undertake operating concessions or contracts for overseas business. We obviously have a lot of experience in running water and sewerage services, both since privatisation in 1989 and for 15 years as a regional authority".

Although the formation of Anglian's international company is new, interest in overseas possibilities is not. Two years ago they formed a joint venture with Sir Alexander Gibb & Partners, one of Britain's leading engineering consultants who have worked in 60 countries and have around 30 overseas offices.

The aim was to seek worldwide project consulting activities, particularly those involving aid from organisations such as the World Bank, Asian Development Bank and Britain's Overseas Development Administration and they have already undertaken work in Turkey, Jamaica, Malawi, Brazil and the Seychelles. The joint venture brought together Gibb's international marketing expertise and contacts and Anglian's institutional, scientific and operating experience, together with more than 500 engineers, two thirds of whom are involved in the design and project management of major capital projects for Anglian Water in the UK.

These include what Mr. Adams claims to be the most significant water-treatment plant both in size and technology in the whole of Europe.

The £54 million overall project at Grafham is designed to remove pesticides and herbicides from drinking water at a



Well field and distribution renovation in The Gambia, led by Wessex Water, increased national production 60 per cent in six months.

throughput of 350,000 cubic metres a day.

Comments Mr. Adams: "I have no doubt when the plant is completed a year from now there will be considerable worldwide interest in it. What we are carrying out at Grafham is the use of both established and new treatment processes, and it is the size and scope of the work that makes it interesting. It forms a valuable reference for us because we can claim that we have developed, project managed and will operate a plant of the size which some of the large cities in the world will require for their whole supply".

That, however, is just one example of the expertise and capability available from Anglian Water.

Because Anglian Water emerged as a public company three years ago from a quasi nationalised business, another is advice on undertaking that transformation. Jim Adams

explains:

"There is an enormous world interest in privatisation – although I think most organisations are interested more in contracting out than in terms of transferring assets – and we feel we are in a unique position to offer services in that arena. This varies from consulting in terms of institutional strengthening; technically in terms of engineering; scientific work in such areas as water and wastewater treatment; and the advantage of many years of operating experience. This latter expertise can be translated not just into 'build, own, operate, transfer' types of contract for, say, a treatment plant, but covering the whole range of activity in water and sewage services".

He believes the scope of potential international work they seek can be divided into three elements.

The first is through consultancy services in terms, for

instance, of feasibility studies, master plans, engineering design, production of contract documents. Then there is the operating aspect where work is undertaken on a contractual or concession basis. Between these two areas is the provision of new works such as treatment plants, mains and sewers.

Anglian are building up – already in the UK and now for the international market – capability in construction, process engineering, and provision of plant. For this, they are making appropriate acquisitions as well as developing the companies they already own in a variety of technological fields such as sewage treatment and sludge digestion.

Future projects could be 'BOOT' type operations, already mentioned, where there are several years of operation at the end of them, or the involvement of a turnkey role where appropriate.

One recent example of Anglian Water's international work is their bid to secure an interest in Jivac, a South Bohemian water and sewage company which is one of Czechoslovakia's major utilities.

Eastern, Central and Western Europe, are, in fact, among the prime geographical areas where Jim Adams see potential business. Others are South America, South-East Asia and Australasia. Anglian Water already have a joint venture in New Zealand with Works Consultancy Services seeking consultancy and operating contracts.

Summing up their philosophy, Mr. Adams told Achievement: "We are interested in promoting Anglian Water as an international business, but we are looking for returns on our money and our efforts. We intend worldwide activity to be a significant part of our overall turnover".

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The company also markets and supports the M3i MOSAIC system which provides graphical large area screen displays of real-time data and images. This capability has been widely accepted as state-of-the-art methodology for displaying network status in utility control rooms. It has more generalised application in the graphical display of data and images for all command and control facilities as a dynamic replacement to traditional mimic wall displays.

M3i Systems provides a wide range of high technology products and services for the management of operations in sectors such as transportation, gas, water, electricity, telecommunications, fire-prevention and public safety. The products incorporate M3i developed graphics routines for the presentation of operational information, as contrasted with the data orientation. This provides a vastly superior method of conveying information to customer operations personnel and management.

as becoming operators of water and wastewater utilities or specific parts of their activity such as sewage treatment works or their distribution system.

But Rennie Quinn, managing director of Severn Trent International, emphasises that they would prefer to operate the whole of a system right through from clean and dirty water to the utility's billing system and customer services activities.

This expertise is based on their core business which serves a population of nearly seven million with piped water, has more than 200 water treatment works, and has a high industrialised catchment area which includes many of Britain's leading manufacturing corporations.

Mr. Quinn points out that in many countries of the world, the water supply industry is highly fragmented. In the United States, for instance, there are 60,000 cleanwater utilities. Because of this, they do not tend to have the resources to maintain in-house expertise – and that gives considerable scope for Severn Trent International to offer their experience and technology.

And it is the United States which he sees as a prime area of opportunity. Not only have they established their own arm there – ST(US)Inc., based near Philadelphia – but they have already hit the acquisition trail.

In the same locality they have bought PSC Environmental Services who operate contracts for sewage treatment works and water supply facilities for municipalities in Pennsylvania, Maryland and South Carolina. They recently spread further afield through a major project in Long Island, New York, for the operation of a sewage works and refurbishment and operation of an incinerator. The name of the company is to be changed to ST Environmental Services with the aim of becoming a national player in the American market.

Similar opportunities are taking place elsewhere in the world. They have established a joint venture in Italy called Hydrogest with local partners whose parent company is

Italimprese. Again the aim is to seek water-related operating contracts.

In Belgium they are shareholders in Aquafin, a private company which has been created by the regional government of Flanders to build and operate sewerage and sewage treatment works for which Severn Trent will provide the necessary technical input. There is need to spend around £1 billion in the next five years on the present infrastructure.

Traditionally, however, Severn Trent have been involved in international consultancy – and they intend to continue that work. They have undertaken projects in Kenya, Mauritius, India and Malaysia.

Severn Trent have also bought into strategic water-related businesses in the US. These are Capital Controls, a leader in the water disinfectant business, Stoner Associates, major suppliers of network modelling software in the water, oil and gas fields, and CS & A of Houston who produce software for billing packages.

An important current activity is in Puerto Rico. Working with the Puerto Rican Aqueduct and Sewage Authority

they are assisting with training, an institutional review, installing a computer system for billing, and creating a suite of financial procedures.

A team also recently left for Swaziland, under a UK aid programme, to undertake a general institutional review and prepare a development programme.

This breadth of activity all underlines that Severn Trent annual report corporate mission statement which adds: "Our aim is to be a wealth creator, to grow through increasing our current effectiveness and also by using and developing our special expertise through joint ventures, partnerships and acquisitions".

Wessex Water, who supply a population of 2½ million covering 4,500 square miles of southern and south western England, including the city of Bristol and the resort of Bournemouth, were the world's first water authority to establish an international twinning arrangement with another utility.

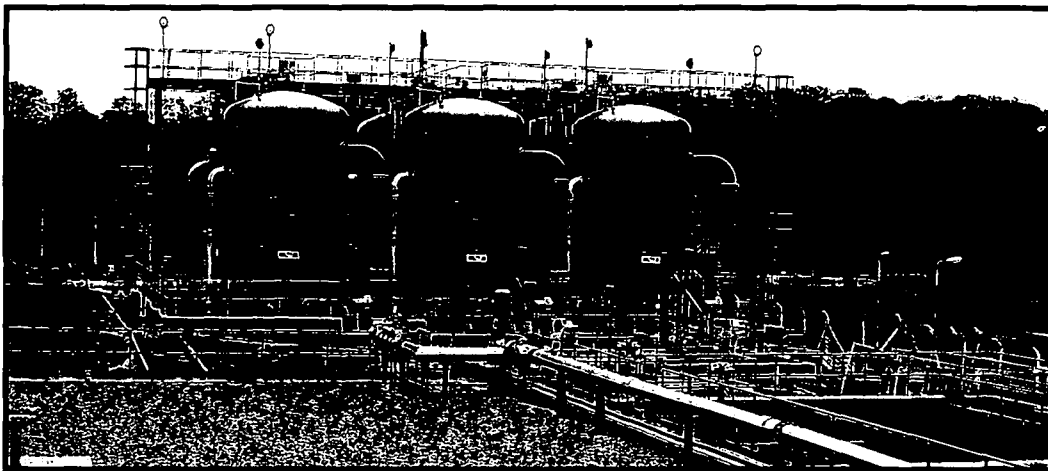
That was in 1980 and the relationship between the two organisations is still ongoing, the decade in between having transformed the water supply,

sewerage and sewerage treatment on the beautiful island of St. Lucia.

When Britain's Overseas Development Administration became involved in providing aid in 1978, less than a third of the then 70,000 population had water connected to their homes. Today, following a £647,000 aid programme, out of a total population grown to 150,000, every community of more than ten houses has a water supply.

Not only that, the St. Lucia Water and Sewerage Authority has become recognised for its high standards of service. This is the result of a twinning package which included the establishing of strong management, strategic planning, training programmes, financial disciplines, and tariff structures, improving control and monitoring systems, setting up networks and dramatically reducing the waste of water. Now a strategy for the 1990s has highlighted the need to secure water supplies into the next century, further improve its quality, and give greater protection from sewerage in rivers and coastal waters.

Provision of that and of expertise is one of the three



European Community Directives on drinking water quality have created the need for plant to meet the stringent standards laid down by this legislation.

This adsorption plant, just entering service, represents part of the UK water industry's response, setting new standards for the removal of herbicides and pesticides from water. The plant is at Everton, Nottinghamshire, and is one of three schemes which Anglian Water is introducing to benefit 200,000 people in that part of its region.

It results from the formation of a joint venture company between Anglian Water and H&G Process Contracting – Anglian H&G – which offers the water industry what it calls a 'total carbon' package covering adsorption, transfer and regeneration.

This is based on Granular Activated Carbon (GAC) – widely recognised as the most efficient way of removing herbicides and pesticides from drinking water. Anglian H&G has developed an integrated approach to the GAC cycle built around a range of new and unique adsorber designs which address problems associated with the difficult handling characteristics of GAC. They also represent a major step forward in achieving the required standards of drinking water quality in a practical and cost-efficient manner.

The final link in the concept is regeneration which allows spent carbon to be recycled and returned to water treatment plants for further active life. Anglian H&G is the UK leader in the design and installation of GAC regeneration facilities, and since its formation in April this year, it has secured contracts for the design and construction of seven new GAC adsorption facilities based upon its new concrete and steel pressure vessel designs.

main planks of Wessex Water International's thrust into world markets. This is based on its parent's high reputation for technical efficiency - its control centre monitors 30,000 'states' in its systems 24 hours a day. It is a network which claims a remarkable 99.6 per cent compliance with drinking water standards.

Its St. Lucia-type technical assistance operations are the first of the three areas of international activity. Consultancy work, chiefly involving restructuring of utility business, and instituting effective charging policies, have also been undertaken in the Gambia, Liberia, Lesotho, Africa and Poland. Eastern Europe is, in fact, a prime area for the water plcs to exploit their knowledge of corporate privatisation.

The second thrust is for BOT (build, operate and transfer) and turnkey activities. They won two BOT contracts in Portugal and put in a bid for the massive £1 billion Sydney Water treatment project in Australia.

Wessex Water International's third area is in merchandising. This includes a personal computer-based software package called Wasnet

devised for the efficient operational management of water supply and distribution systems. Packages have been sold to South Africa, Spain, Saudi Arabia and Yugoslavia.

But their merchandising also covers a range of equipment manufactured by UK companies particularly in pipes and pipe-fitting.

Wessex Water have also established Wimpey-Wessex, with the big UK contractor, who have completed a sludge drying plant in Jersey.

WWI have bid for overseas work in conjunction with Waste Management International of the United States who have a 15 per cent investment in Wessex Water.

On the opportunities worldwide, John Hill, director of Wessex Water International, told *Achievement* "There are many examples around the world where heavy capital investment was undertaken by water authorities ten years or so ago, but very quickly the benefits have been dissipated through misdirected management. It is relatively straightforward to achieve significant gains based on the operational expertise we have developed. For example, management could achieve very appreciable

benefits without incurring significant capital expenditure".

For John Hill and his team, the last two or three months have been eminently productive internationally. They have secured four new contracts, for a design-and-build project for a sewage treatment works in Portugal, and for institutional development activities in Guyana, Venezuela and Kenya.

Wales is essentially a land of mountains and valleys, the highest peak being Snowdon at 3,560 feet. It also has a long expanse of coastline.

This may be challenging terrain for Welsh Water, the company which supplies water and sewage treatment and disposal for an area covering 22,000 square kilometres, but it also gives a spin-off of expertise for similar problem areas in many other countries.

Welsh Water International, the overseas trading arm of the company which supplies a national population of three million people augmented by eleven million tourists, is already involved in such countries as the West Indies, Australasia, Malaysia as well as eastern and southern Europe.

There are four main areas

within water and sewerage utility management services on which they are focussing their international operations. These are operations and maintenance contracting, either alone or in joint venture with local partners; management, technical and scientific consultancy; training and management development; and providing a range of advanced computer software and operational products.

Welsh Water International aims to assist in recommending the organisation structure which indicates the most appropriate capital and operating framework for the business they are assisting. This will take account of economies of scale, geographic and service factors, political and ownership issues, and the use of competitive forces which could range from franchising to the build, own and operate philosophy already discussed.

In their operational consultancy role, the know-how available includes demand forecasting, resource management, leakage control, quality monitoring, waste and wastewater treatment, sewage disposal methods, and conservation of the environment.

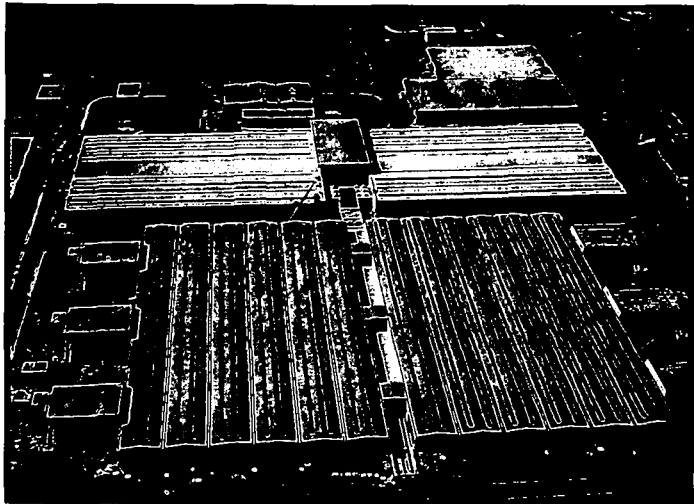
One of the big advantages is that Welsh Water, as a national rather than a regional company, has its own engineering and environmental consultancy, Wallace Evans, creating the ability to offer integrated packages. Covering civil, structural, mechanical and electrical engineering and project management as well as environmental science, chemical and microbiological water analysis, the company has offices overseas in Ireland, Germany, Hong Kong, Turkey, Spain and the West Indies.

One acknowledged area of expertise Welsh Water have developed is what is known as WRAPS, their reporting and performance system. This inputs and processes data from other systems to produce effective and efficiency performance measures against pre-defined targets appropriate to all levels of management.

A distinction from any other water company in the United Kingdom is that Welsh Water serves a country with its own culture having its own lan-



Construction of a £54 million project by Anglian Water claimed to be the most significant water-treatment plant in size and technology in Europe. Grafham will remove pesticides and herbicides from drinking water at 350,000 cubic metres a day



This treatment plant for Turkey's capital Ankara is the second stage of a four-stream project with a total capacity of more than half a million cubic metres a day. The stage two plant, for which detailed design, procurement, installation and commissioning supervision, training and maintenance were undertaken by PWT Projects, was completed in September.

guage. Therefore it does have synergy with, for instance, the Basque country in Spain as a similar ethnic grouping within an overall nation.

But, of course, Welsh Water International's activities overseas are much wider than that. In Jamaica, for instance, they are working with the UK computer company ICL on a major contract for the National Water Commission. This is to develop an accounts system to produce customer bills, process payments and provide a comprehensive debt recovery process. It will also provide instant access to up-to-date information on customers' accounts and a full suite of management input. They are also undertaking an environmental study in Jamaica and an appraisal of the sewage outfall location for the Ocho Rios sewerage, sewage treatment and disposal project.

In Czechoslovakia, Welsh Water International have provided operational and management advice to a water company for modernising one of its main sewage treatment works. The programme will help the water company in its efforts to reduce operating costs and become a more effective organisation.

A relative newcomer to the international scene is South West Water whose area covers the holiday resorts in Devon and Cornwall encompassing nearly a third of all the UK's designated bathing waters.

Not only that, they are also managing a £900 million scheme which is Europe's biggest marine wastewater capital programme.

Andrew Joss, international projects director for South West Water and head of their international subsidiary, believes that their coastal experience, allied to the environmental pressures to which they are subjected, are positive elements in building up their strategy for their overseas ambitions. That expertise would be of particular advantage to countries with long coastlines and dispersed communities - for example, nations in the Far East, Southern Europe and the Mediterranean region generally.

Though more marketing effort has been applied in recent months to international business, South West Water have, in fact, had their toe in Europe for six years. They are involved with a North Hungarian water company in commercial relationships, particularly through the expertise of SWW's technology subsidiaries.

Elsewhere, they are working for the World Bank in China. It is a relatively small role in helping develop the financial and institutional infrastructure for the Yellow River Water and Hydro Corporation, the body masterminding the multi-billion Yellow River development project.

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