HUTCHISON'S WATER PLAY

For all the talk of increasing demand and climate change-driven shortages, precious few are doing anything about one of the two resources most crucial to life: water.

Hutchison Whampoa, however, is on the job. It is making and moving water to where people need it most. From hydrating nations to putting clean water in an athlete's hand, HWL is using world-class technology and decades of engineering experience to provide water where it is needed and to make sure it isn't showing up where it isn't wanted. If even the mildest of predictions about the huge demand for water management and technology come true, HWL is going to be on the front line in supplying global water needs for decades to come.

A STREAM IN THE DESERT: SOREK DESALINATION PLANT

In the Old Testament, Isaac repeatedly quarrels with Philistine shepherds over the rights to a number of wells (Genesis 26). Water management has been an issue in the region since time immemorial. However, new technology and thoughtful water management could change how the region thinks about water. Desalination is the key.

One of the largest desalination projects in the world is the Sorek Desalination Plant (SDP). Located about 15 km south of Tel Aviv, SDP has a total capacity of 150 million cubic metres per year. In a joint bid with local company IDE Technologies, Hutchison Water Limited won the tender to build and operate this important one of a kind facility. "The Sorek Desalination Plant was the first major project that Hutchison Water carried out. We were very pleased that the first project of this scale was the world's largest," says Amikam Cohen, CEO of Hutchison Water. Since its completion in 2013, the plant has continuously provided clean, fresh, potable water to millions of users, satisfying 20 per cent of Israel's residential and commercial water demand.

TECH BREAKTHROUGH

The SDP utilises the seawater reverse osmosis desalination process to provide water to Israel's national water carrier system. The plant employs some of the most advanced technologies available. Gil Doron, Senior Project Manager of Hutchison Water, explains, "The Sorek project is really a groundbreaking project in desalination." It uses 16-inch membranes instead of 8-inch membranes, and these are positioned vertically rather than horizontally, simplifying processes and allowing for safer operation. The intake and outtake pipes are carried in a tunnel under the seabed approximately two kilometres out to sea, assuring the quality of the seawater used and protecting the environment. "There is a pit which was built on the beach of Palmachim, and if you walk on the beach you won't have a clue that underneath it there is a shaft and a tunnel – an amazing technological achievement," Mr Doron explains.

> **"It was like Armageddon."**
>
> Mike Madine,
> Sewerage and New Development Manager, Northumbrian Water

WORKING HAND IN HAND

Technological and environmental commitment has not gone unrecognised by the industry. The Sorek plant recently won the "Desalination of the Year" award at the Global Water Awards. The award is given by Global Water Intelligence, the leading research player in the field. Sorek was recognised as the most impressive technical and ecologically sustainable achievement in the industry. On the success of the project, Dan Eldar, Executive Director of Hutchison Water, says, "In terms of the execution of this project ... this is an exemplary project which was built very successfully, on time and on budget."

IDE Technologies' expertise was joined to a very experienced team which was assembled for Hutchison Water. The Hutchison Whampoa Group brought its financial expertise to bear, lending to the Sorek project's success. "We were

HUTCHISON'S KINROT VENTURES

Hutchison Water's track record enabled it to win a bid in 2012 to operate a technology incubator in Israel: Hutchison Kinrot Ventures. The incubator gives Hutchison Water the ability to grow early stage technology companies and to help them go to the market with a proven, working technology. Dr Eldar explains, "We help more than a dozen technology companies develop their products and prepare them for penetration into global markets so they can benefit from the Group's global presence in more than 50 countries around the world."

These are just two firms with outstanding potential to change the world:

Aquarius Spectrum has a unique solution using innovative sensors and algorithms to provide high-accuracy acoustic water leak detection at low costs. Its technology allows the detection of leaks as small as one millimetre, allowing utilities to prioritise repair efforts and reduce leakage. This helps utilities save water, energy and money.

Hydrospin, established in 2010, has developed a unique micro-generator that produces energy from water flow inside distribution pipes. The energy produced powers the operation of devices measuring water toxicity, pH, chlorine, and pressure. This system provides utilities with real-time data and eliminates the need for costly and toxic battery packs and damage-prone solar panels. Better information at a lower cost helps save the environment with fewer expensive batteries used and improved water management.

really proud to have been able to raise the financing for this project, and to do it in a way which really takes into account the financial strength of the Group," explains Ronen Wolfman, CFO of Hutchison Water.

The combination of advanced technology capabilities and international financial nous meant that the joint venture could deliver a low-cost and efficient, high-quality project. "It all boils down to a lower price for Israeli consumers," says Dr Eldar.

QUENCHING MORE THAN THIRST

While the SDP has been touted as a technological marvel and a financial success, it provides more than a supply of clean water. By producing clean, potable water through desalination, Israel produces more than half of the drinking water it needs and is able to, and does, provide water to its neighbours. Dr Eldar explains that by addressing demand arising from water scarcity, SDP had "demonstrated that water can be produced at a very attractive price, and, rather than creating regional strife and tensions, water supply can be a foundation for regional cooperation."

THE FUTURE

Dr Eldar hopes to replicate the Sorek project in other parts of the world. "We are now the builders and operators of one of the world's largest desalination plants and that puts us in a very good position to win additional contracts in the water space." Mr Cohen sets out his expectations, saying, "The proven success of Hutchison Water in building and operating one of the world's largest desalination plants gives us an opportunity to further grow our desalination business in other areas of the world, building upon the technology and know-how of the Group, as well as upon the Group's financial strength."

While Hutchison Water is using new technologies to provide water in the desert, Northumbrian Water Group (NWG) is using decades of expertise to bring clean water to the people of Britain – and then carry it away again.

FEAST OR FAMINE – WATER AND WASTE MANAGEMENT IN THE UK

From the deserts of the Middle East to Europe's wet north-east, HWL is managing water in ways that reflect the diverse environments in which the Group works. In the rainy north-east of England, desalination is not required. There, the challenge is to hold water, make it pure, and ensure it reaches the sea without putting houses underwater en route.

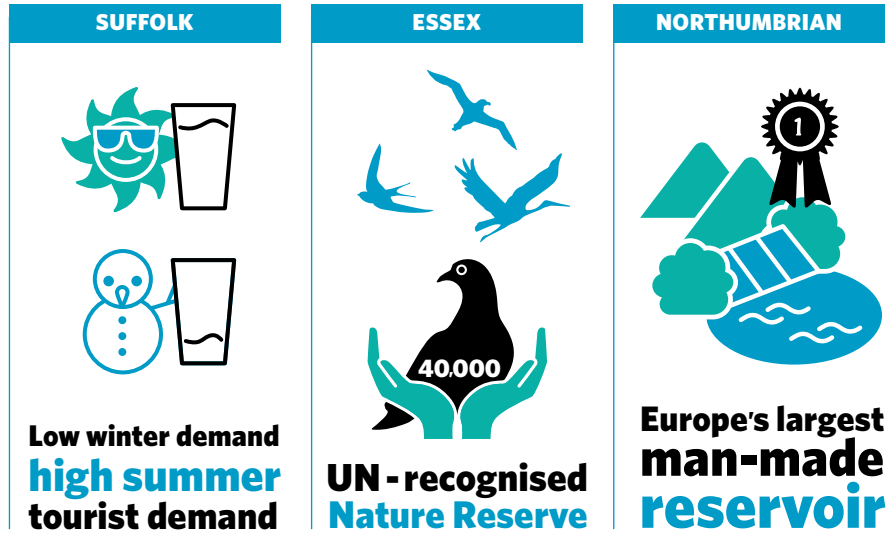
THE ENGLISH TRIO

NWG has three operations in the UK. Each has unique characteristics and separate systems, making them almost as distinct from each other as they are from Sorek.

- Northumbrian Water is the original, and largest of the operations. It supplies potable water and manages waste water disposal and run-off. This means managing waterway contamination and flooding arising from man-made causes, extreme weather and possible future climate change effects.

- Essex – The driest part of England features a reservoir that not only serves the people, but also houses a UN-recognised bird reserve.
- Suffolk – The smallest operation has low winter demand contrasted with high summer tourist demand.

Across the UK, the general approach is to store water during the winter and then release it over the summer. Reservoirs, built in the Victorian era, powered Britain's rise as an industrial nation. Many of the same reservoirs are still in use. Alongside them, more sophisticated water management has come into play as well as new resources including the giant Kielder Water reservoir opened by Her Majesty the Queen in 1982.



RESERVOIRS – A NATURAL SANCTUARY

Fortunately, the company has recently completed measures to avoid future shortages. The expansion of the Abberton Reservoir saw GBP150 million spent to expand its capacity by 60 per cent to 40,000 megalitres. Planning began in 1993, permission was finally granted in 2009, and the expansion was completed in 2013.

The delay was due to repeated protests by environmentalists. The reservoir, however, has now become a recognised centre for nature preservation. The Abberton Reservoir Visitor Centre sees thousands visit its vibrant wildlife reserve every year, and the reservoir is a vital resting stop for over 40,000 migratory birds annually. They find a more tranquil resting place than existed during the Second World War, when The Dam Busters, the Royal Air Force's 617 Squadron, practised bombing runs there. The reservoir is a UN-designated Ramsar Convention site, recognising its importance as a wetland habitat worthy of special note.

NORTH BY NORTHUMBRIA

The eponymous Northumbria, in England's north-east, is where the company has its origins. Its Kielder Water, the largest man-made reservoir in Europe, is one of 22 major impounding reservoirs, serving 2.7 million people. It is surrounded by Kielder Forest – the largest working forest in England. The area was a water-hungry centre of heavy industry in the Victorian era, and the reservoir was created to serve that industry. However, it was completed just as industry decamped to Asia, system maintenance reduced leakage dramatically and industrial processes improved water use efficiency – all reducing demand. The upside is that Northumbrian Water is ready for potential climate change.

CLIMATE CHANGE UK

Current thinking is that climate change means the UK will have wetter winters and drier summers – overall a neutral impact on annual supply. The concern is that weather incidents will be more intense with sharper bursts of rainfall giving rise to flooding. With large reservoirs already in place, Northumbrian Water is ready upstream. Downstream is another issue.

THUNDER THURSDAY

Thunder Thursday – 28 June 2012. A perfect storm, or rather three of them, caught the entire nation's meteorological establishment unaware by converging on England's north-east and dumping a month's worth of rain on the area in just two hours.

"It was like Armageddon. The sky was completely black," recounts Mike Madine, Sewerage and New Development Manager. A storm of this magnitude occurs once in 1,000 years and cannot be prepared for. NWG is ready for nearly any contingency, but nature continually tests its limits.

With sophisticated radar weather tracking stations and close cooperation with the UK government's Environment Agency and municipal officials, the company has been much more proactive about controlling flooding in recent years. The upstream parts of Northumbrian Water receive relatively clean water which is treated so that it reaches top drinking water quality standards, but its sewerage division must deal with whatever the

public puts down the drains. It must work with developers, the public and nature to keep waterways clear.

DWAINE PIPE SAYS 'ONLY PEE AND POO GO DOWN THE LOO'

Dwaine Pipe has become Northumbrian Water's champion for keeping drains clean. He teaches people about the two distinct systems for sewers, what goes in each and what shouldn't be flushed away. Homes and businesses send foul water to one system that delivers it to treatment plants. Rainwater run-off from streets, outdoor eaves and yards goes directly into rivers and streams, clean enough to be returned to the environment. The systems in the past were somewhat mixed, allowing some run-off water into the sewerage system. But now, increased demand means systems are being sealed off from each other so only waste water goes through the foul water system to the treatment plant, improving efficiency. Dwaine Pipe has become a surprise hit with the community and has had a real impact on the business.

STOPPING DO-IT-YOURSELF FLOODING

A proactive approach also means that Northumbrian Water closely monitors major and minor landscaping that can change the region's flood-risk profile. For example, if 1,000–2,000 new homes are built in an area, it can dramatically impact run-off patterns far away downstream.

At a micro-level, 'urban creep' can also increase flood risk. Households that pave over lawns and gardens can reduce the local area's ability to absorb rainfall and increase loading on rainwater collection systems. Collectively, an area's flood-risk profile becomes riskier over time.

Furthermore, the distinction between the two systems may be lost on many 'do-it-yourself' plumbers who connect their home's foul water output to rain run-off collection systems – a big no-no that Northumbrian Water must be on the lookout for.

FLOOD ALERT!

While the weather cannot be controlled, it can be prepared for – almost always. Advanced radar tracking with the Met Office, which detects incoming weather, sees Northumbrian Water spring into action, warning high flood-risk customers to batten down the hatches. Heavy rains in 2005, 2009 and on Thunder Thursday mean that customers take such warnings very seriously.

Decades of rich and varied experience, domestic and international, coupled with a

DWAINE PIPE – A PIPE FOR THE PEOPLE

Northumbrian Water staff refer to Dwaine Pipe as being 'recruited' in July of 2012, as if he is a real person. Created as part of the public information campaign 'Love your Drain', he has had an operational and cost-saving impact on the company beyond expectations.

Blocked drains – caused by things like nappies, baby wipes and cotton buds – cost Northumbrian Water around GBP1.6 million per year.

They developed a fully integrated behavioural change campaign with clear objectives. Dwaine Pipe was created to appeal to a broad range of customers, delivering messages in a positive, fun way around keeping drains clear. Most water companies tell people what they can't do rather than what they can do. Northumbrian Water wanted to help and engage their customers in a clean fresh way rather than hector them.

A radio campaign, roadshow events, press advertising and an educational programme with a Dwaine Pipe puppet show sees him travelling the length and breadth of the north-east of England. He has appeared in pantomime and cooked up a storm with celebrity chef Jean-Christophe Novelli at a food festival where he encouraged everyone to scrape cooking fats into the bin. This activity has been supported by a secondary campaign that targeted businesses such as takeaways and restaurants and provided them with tools to deal with grease disposal.

Analysis shows blockages have been reduced by more than 10 per cent, representing a significant saving to the business and a real service improvement for customers.

As well as reducing blockages, Dwaine Pipe has been winning awards too. The campaign was a Gold Winner in the Chartered Institute of Public Relations Corporate Social Responsibility Campaign and recently won Marketing Initiative of the Year at the *Utility Week* awards, the Oscars of the UK utility industry.

Northumbrian Water's customers love Dwaine Pipe too. He has an integrated social media campaign, which sees him communicate with residents of the north-east and promote his key messages. Dwaine Pipe has his own Facebook and Twitter accounts (follow him on Twitter @loveyourdrain) and his popularity is spreading.

Stringent procedures to produce distilled water: multi-step filtration and boiling water at 105°C.

long-term outlook mean that NWG is well positioned to become the water bearer for the over four million people they serve in England.

Sphere has shown how water can be sourced from the sea and collected from the sky. The oldest part of the Hutchison water story has its origins in a part of the world where indoor plumbing didn't even exist, water quality was always suspect and was a threat to people's health. Demand for pure water is still high in Hong Kong and China, the birthplace of Watsons Water.

WATSONS WATER: 100 PER CENT PURE

Watsons Water has the oldest origins of any part of the Hutchison water story. The century-old water manufacturer was the first company in Hong Kong selling distilled water and was a pioneer in the carboy business (large replaceable water bottles used in dispensers). The company originated from a vision of Dr Alexander Skirving Watson, founder of the A S Watson Group. He wanted to provide people with clean water – a challenge in 1903's Guangdong – to help them look after their health and well-being.

Nowadays, Watsons Water uses a multi-part process to ensure the purest water. It puts the water through a three-layer filtration – sand, then carbon, then micron-filtration. Next, the water is boiled at 105°C, the optimal temperature, according to the Manufacturing Director of A S Watson Industries Ltd, Mr Teo Keng-peng. It is distilled from steam at a lower 30°C, then treated with purifying ozone before bottling.

PURE WATER, PURE IMAGE

Purity and hygiene are vital safety considerations and also a marketing strategy. "We share the same water source with other water companies but what differentiates us is that we adopt multi-step filtration and distillation processes," says the Managing Director of A S Watson Industries, Michelle Chan. "We don't think price is the major concern for customers. The main concern lies in the confidence of the customers in the products they buy." Emphasis on quality assurance and quality control builds trust in the marketplace.

Inside the factory plant of the company in Hong Kong, Mr Teo opens the doors to a room where machinery booms and the temperature is as high as a sauna. This is where the distilled water is produced. The testing room, however, is a sharp contrast. It is cool and tranquil, with all the right ISO certificates on the wall. The staff in the testing room perform frequent tests on all Watsons' products and every incoming batch from suppliers.

The company holds to one principle, lending to its success in Hong Kong and China. "There is a personal touch," explains Ms Chan. In 2002, the company revolutionised the design of the water bottle to make it easier to grab. Also, its award-winning two-capped design is unique in the market and gives the product a distinct appearance compared to its counterparts.

TRUST

Watsons' bottled water is also a big success in China since it made its return in 1996. It was first imported from Hong Kong in glass bottles for consumption in five-star hotels. In 2003, the brand rolled out a mass market version for consumers following the switch to the two-capped design. As a trusted brand selling distilled water in China, Watsons Water has fulfilled its customers' desire for safe water.

Water in China is supplied by water departments in local cities, either from the public water supply or designated water sources approved by the local government. Watsons Water's factories in Guangzhou, Shenzhen, Dongguan and Beijing go through the same stringent procedures to produce distilled water – the multi-step filtration and boiling water at 105°C – as undertaken in Hong Kong.

Quality control is critical in China. The company has conducted research on the Chinese market and confirmed that most consumers expect bottled water to be safe and reliable to drink. To meet customer expectations, Watsons' factories in China conduct rigorous testing of their products to guard against bacteria, heavy metals and toxic substances.

Watsons' use of technology and strong customer communication is similar to that used by NWG, albeit to different ends. Along with Sorek, all three operations use solid engineering to ensure that people in Asia, Europe and the Middle East have a steady supply of aqua. The Group-wide investment in people, engineering and technology means that as water becomes more valuable, HWL will be ready to both help its customers provide for their needs and to take care of the planet. □