Connect

Issue 1

Inspiring sustainable business: Unilever and Royal HaskoningDHV
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Foreword

One year on from the merger which created Royal HaskoningDHV, it is inspiring to reflect on the creativity and innovation generated through the process of two historic organisations coming together. In this issue of Connect we describe some of the results of the pioneering work we continue to produce for our clients and in the integrated vision we have developed for our business with regard to people, planet and profit.

One of the most rewarding aspects of our merger was the opportunity to crystallise the guiding mission of the new organisation. What grew from this was a commitment to delivering added value for our clients whilst collaborating with them to create meaningful solutions for a more sustainable society. We intend to enhance society together, through our work for clients, through our own operations and through our engagement with local communities, sharing our knowledge and expertise.

The notion of partnership is vital because we believe that these solutions can no longer be created without collaboration from our partners, clients and other stakeholders. This is a theme echoed in comments by Paul Polman, CEO of Unilever, in the article on page four about how Unilever is leading the way in combining sustainability with business success.

This has taken place against an economic climate which remains challenging, particularly in Europe and North America. Yet these challenges provide opportunities. We have continued to win major projects and to push boundaries forward in the schemes we present to our clients. In particular, we remain responsive to the need for economically viable, sustainable solutions achieved through innovations and creative use of new techniques and materials.

We are proud of our achievements over the past 12 months, which is the start of an ambitious and challenging journey. We hope it is one all our clients and partners will be happy to join as collectively we commit to enhancing society together.

Bertrand van Ee (Chair)
Inspiring, differentiated, sustainable: UNILEVER’S GROWTH MODEL

Having proved that a sustainable, equitable business model can be both financially rewarding and good for the planet, Paul Polman at Unilever is calling for deeper collaboration and partnerships to achieve real transformation.
When Unilever launched its sustainable living plan prevailing wisdom might have considered the ambitions to be paradoxical. On one side the company committed to halve the environmental footprint of its products, help more than 1 billion people improve their health and source 100% of its agricultural raw materials sustainably. On the other it sought to double the size of its business.

The brilliance of the move by CEO Paul Polman lay not only in its audaciousness but in the clear-sighted vision which connected business success with sustainable growth. “We are proving that it is possible to change the business model away from serving short-term interest and towards one driven by sustainable, equitable growth that recognises businesses have to play a positive role in the societies in which they operate,” he says. “Unilever is showing that this can be done while at the same time being profitable and rewarding for shareholders.”

Unilever’s position at the forefront of the corporate sustainability movement creates challenges of its own, not least that some targets require customers to change their behaviour. This is happening, says Paul, but not fast enough. Vital too is the need to enrol others. “Even if Unilever hits the stretching targets we’ve set – and we are well on our way – if not many others follow, we will still have failed society,” he explains.

The company is seeking to lead by example and to use its scale and reach for added impact. It is also working with broader industry groups, NGOs and governments to drive change. “I think we have moved from a position of what some might describe as ‘mutual suspicion’ between business and the NGO community to one where everyone increasingly recognises the strengths of others. Governments can act as enablers, business can bring extended supply chains together, NGOs have the expertise on the ground to make initiatives work,” he says.

“I’ve seen the success in India where Unilever’s Lifebuoy brand has worked with the government of Tamil Nadu to promote handwashing and help reduce incidence of diarrhoea. I’ve seen it in action in Kenya where Lipton has worked with the Rainforest Alliance to bring certification to thousands of smallholders. I’ve seen it in Vietnam where Signal and Mentadent have worked with the World Dental Federation to improve dental health,” he adds.

Paul’s hope is that, through witnessing successes, more individuals and businesses will want to get involved. “If businesses see examples of successful partnerships in action, why would they not want to contribute to solving problems that threaten the societies within which they exist – especially when they threaten their very own long-term future? Contributing to a more sustainable and equitable world will reduce risk, lower cost, energise the workforce and provide new opportunities for growth.”

Unilever is blazing a trail and demonstrating the benefits for the business – the ideal scenario to encourage a following.

THE FACTS

Unilever is one of the world’s largest consumer goods companies with a portfolio ranging from nutritionally balanced foods to indulgent ice creams, affordable soaps, luxurious shampoos and everyday household products. It owns more than 400 brands, including Ben and Jerry’s, Dove, Hellmann’s, Lipton and Radox. Headquartered in the United Kingdom (UK) and the Netherlands and with operations spanning the globe, Unilever’s products are sold in more than 190 countries.

Royal HaskoningDHV has a long association with Unilever, having worked with the company on a range of projects over many years. These include the design, project and construction management of factory projects in Vietnam, a full range of consultancy services for the construction of a cold storage unit in the UK, and the master planning of a new cosmetics factory in Indonesia.
There is an urgent need for innovative, sustainable solutions to the diverse challenges facing our world. Change is achievable, but is not happening with sufficient vigour and scale. Royal HaskoningDHV is committed to accelerate and add substance to the creation of a more sustainable society working together with our clients and stakeholders.

From a global perspective, the world is changing fast. Population growth, increasing demand for finite and contentious resources, climate change and environmental and social issues all demand new ways of thinking and innovative solutions. The challenge is how to meet current needs for prosperity while also creating a ‘future-proof’ society.

At Royal HaskoningDHV we believe the expertise and innovation is available to create positive and lasting change. We also believe that business has a critical role to play. A prominent report for the UK government concluded that investment in change offered the best return for business.

International research is indicating that sustainability is increasingly important in attracting and managing talent. Furthermore, organisations like Unilever (featured on page four) are showing that a sustainable business model makes good business sense, bringing real benefits to the bottom line.

At Royal HaskoningDHV we have made our commitment to sustainability explicit through our desire to enhance society together. “In each market in which we operate, be it cities, water, transport or industry, the need for sustainable solutions, transitions and system changes is evident. We can contribute to their creation,” says Marjolein Demmers, Director Corporate Responsibility. “Our corporate responsibility agenda is broad in scope and ambition. It places sustainability at the heart of everything that we do in the best long-term interests of our clients.

“We are already working with some clients to mitigate social and environmental uncertainties where they are an urgent daily reality for them. These projects illustrate that change is possible in new, affordable ways. Now we intend to define benefits in our work for every client.

“It is through integrating new ideas and sustainability within our international engineering projects that we can create the greatest impact,” says Marjolein. “Increasingly in the long term, the old solutions just won’t deliver so our long-standing commitment to innovation and creativity is more important than ever. Matched with our ability to understand the issues from our clients’ perspective, our engineers and consultants are able to develop attractive, affordable, sustainable solutions.

“Within our own organisation we are moving towards sustainable operations and reducing our carbon footprint. We are also identifying where we can use our knowledge to give back to society, donating not only money but our time and expertise, particularly in the field of education.

“As one of the world’s largest independent engineering consultancies involved with projects for our clients across the globe, we have the opportunity and the expertise to help our clients to become part of the solution to these major global challenges,” Marjolein explains. “We intend to build the much-needed momentum and critical mass by sharing our experience and creating sustainable projects that help our clients to be successful now and in the future. In doing so, we enhance society together.”
Marjolein Demmers, Director Corporate Responsibility

- **Education:** Industrial Design Engineering (Delft), Environmental Science (Amsterdam), International MBA (INSEAD, Fontainebleau).

- **Achievements:** Life cycle assessments and product redesign, restructuring and strategy development for multinationals, strategy and innovation in waste management (Essent/Waste management), renewable energy business development (Essent/Energy), development of environment & sustainability consultancy (DHV), sustainability programme within DHV.

- **Core interest:** Marjolein has always worked in the field of sustainability, committed to working towards a sustainable society through a holistic approach to corporate strategy, sustainable development and change management.

- **Motivation:** The great opportunity and fascinating challenge we have every day is to take steps and system changes necessary to secure the future well-being of our global civilisation.
Bangladesh is one of the world’s poorest nations and one of the most susceptible to climate change. An increase in rainfall, rising sea levels and tropical storms is forecast to bring serious consequences for human health, agriculture, drinking water and food security in the coming decades. Making matters worse, along parts of the country’s coastline, severe coastal erosion means some low-lying coastal regions are particularly vulnerable to flooding.

The Dutch Partners for Water programme is funding a pilot project in southeast Bangladesh using oyster reefs. The aim is to test their potential as a natural way to protect vulnerable sections of coastline against erosion, and to discover their potential as a food source for local consumption and trade.

The pilot uses methods based on the ‘Building with Nature’ concept, where environmental challenges are remedied through the use of naturally occurring resources. Working together with the various teams taking part in the pilot, Royal HaskoningDHV has helped design the pilot and reef elevation, and is managing the hydrodynamics, hosting workshops and driving publicity for the project.

Dr. Petra Dankers, Royal HaskoningDHV’s senior consultant for morphology and eco-engineering, explains how the pilot began: “Research carried out by IMARES...”
in the Netherlands as part of the Building with Nature programme, proved that oyster reefs have the potential to offer an excellent form of coastal protection as sediment forms naturally behind oyster reefs. To take the project a step further, we needed to find out if the method would work in a different part of the world.

“To make this possible, the team approached the Dutch Partners for Water for funding. Bangladesh was chosen because of its critical issue concerning climate change and its close ties with the Netherlands, which meant relationships were already established.”

Alex Hooijer, leader of the pilot on behalf of Royal HaskoningDHV explains how the project could prove beneficial to Bangladesh and other countries if successful: “In some areas of the Bangladesh coastline, the shallow foreshore that acts as a buffer against waves has virtually disappeared. We wanted to test whether the oyster reefs could help recreate it. Initial tests relating to oyster spat (oyster larvae), and the ability of the oyster reefs to grow in this area have proved positive. However these tests were carried out on a very small area, so we are now scaling up the project to see how it will work on a larger area.

“To do this we are building structures along the coasts of Kutubdia and Maheshkhali islands. If successful, we believe the method can be expanded to protect more areas of coastline, and deliver a sustainable food source that could be used by local communities for food and trade.”

Petra concludes: “Local people are already getting involved in the project and we are preparing an ‘aquatic cook book’ that explains the importance of the oyster reefs and the part they can play in helping protect and sustain Bangladesh coastal communities.”

Results of the second phase of the pilot will be published in December 2014.

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“Oysters naturally create three dimensional reefs which can influence current, erosion and sedimentation, offering a sustainable option for coastal protection.”
A NEW APPROACH TO HELPING SOUTH AFRICA OVERCOME DROUGHT THROUGH INNOVATIVE DESALINATION AND WASTEWATER REUSE INITIATIVES.

With an annual rainfall of just 464mm, compared with the world annual average of 860mm, South Africa is categorised as a ‘semi-arid’ region. However, during the drought that has plagued South Africa’s Cape coastal communities since 2009, the primary source for the region – river flow – dropped between 50 – 75% of normal making it the southern Cape’s worst recorded drought in 150 years.

An innovative approach that has successfully averted water shortages in drought stricken areas has been developed by Royal HaskoningDHV engineers in South Africa. A fast and economical approach called ‘Life beyond our rivers’ implements desalination and wastewater reuse strategies, bringing water security and much needed relief to the 1.6 million people who live in these water stressed communities.

Jan Theron, one of Royal HaskoningDHV’s water reuse experts, explains how ‘Life beyond our rivers’ schemes are helping communities up and down the Cape coastline:

“In normal conditions the towns and cities along the Cape coastal belt rely on surface water capture into reservoirs or reliable rivers but during drought conditions these water sources become severely distressed. The beauty of the ‘Life beyond our rivers’ solution is that it takes just months to implement rather than years. This means communities receive respite from water shortages, while planning and finance is approved for larger more conventional schemes.

“The scheme successfully averts water shortages by making better use of available sources, and supplements traditional, cheaper sources with more
expensive water – but with the facility to revert to the more economical solution when demand drops or when the conventional sources are producing enough water.”

SECURING THE WATER SUPPLY OF TOWNS ALONG THE GARDEN ROUTE

The first of these lifesaving schemes is taking place in towns along South Africa’s popular Garden Route, helping almost half a million people overcome the difficult challenges brought about by water shortages.

With 180,000 residents, George is the largest town on the Garden Route, where more than half the town’s potable water ends up in two wastewater treatment works (WWTW) at Outeniqua and Gwaiing. Jan explains how the ‘Life beyond our rivers’ approach is supplementing the existing water supply by an additional 30% of current demand: “The answer here was to use an indirect water reuse strategy. Final effluent from Outeniqua is polished through ultra filtration then disinfected before it returns to the main storage dam where it mixes with the natural inflow from the catchment and water from other schemes. The water is then pumped to the water treatment works and treated to potable standards. This supplements the existing supply by an additional 10,000 m³ per day.”

At the towns of Sedgefield, Knysna and Plettenberg Bay, available resources are being supplemented with desalination plants, while further down the coast, at Hermanus, effluent reuse is being investigated as a means to increase and secure the town’s water supply. Royal HaskoningDHV has carried out preliminary design and feasibility reporting on a direct potable reuse scheme in conjunction with improvements to the Hermanus Municipality’s WWTW. This effort will provide 2,500 m³ per day of potable quality treated effluent for direct injection into the drinking water network, reducing water shortages for its 30,000 residents.

THE FACTS

A staggering 30% of the potable water in South Africa is either lost through leaks or not paid for by consumers. Royal HaskoningDHV has carried out several water conservation and demand management projects, the latest currently underway in Mbombela in the Mpumalanga Province.
Prize winning desalination scheme

The harbour town of Mossel Bay is home to 130,000 people and one of South Africa’s oil refineries, operated by PetroSA. It is critical to the country’s fuel supply.

Supplementing Mossel Bay’s threatened water supply began with a water swap initiative. Potable treated water from the PetroSA refinery is exchanged for treated final effluent, saving valuable drinking water for residential demand.

Jan Theron comments: “The initial plan was to supply PetroSA with 15,000 m³ per day by drawing 5,000 m³ per day of final effluent from the regional WWTW and pumping it into the refinery’s raw water storage dam as part of the refining process. However the prolonged severity of the drought threatened to disrupt the refinery’s capacity. In 2009 the town was declared a disaster area. The next solution was a 15,000 m³ per day emergency seawater desalination project; this was delivered in record time, and averted what could have been a national fuel crisis.”

Royal HaskoningDHV project managed the scheme on behalf of Mossel Bay Municipality and PetroSA. The scheme was recognised by CESA (Consulting Engineers South Africa) and IMESA (Institute of Municipal Engineering of Southern Africa) at their annual engineering excellence awards in 2011 and 2012 where the scheme achieved first prize in its category.

SUSTAINABLE WATER TO SUPPORT POPULATION AND INDUSTRIAL GROWTH

The fourth largest city in South Africa, Port Elizabeth, has a population of 1.4 million. The Nelson Mandela Bay Municipality, in particular the Coega Industrial Development Zone (IDZ), is a designated growth point. The development of industries and population boom within the municipality has created an increased demand for treated water. Together with the severe drought conditions this has placed tremendous stress on existing surface water resources.

Royal HaskoningDHV engineers are currently upgrading the existing Fishwater Flats WWTW to a 170,000 m³ per day treatment capacity to enhance the water supply. Planning and design are underway to provide advanced treatment in the form of membrane bioreactors and reverse osmosis plants. These will supplement existing water resources and provide the Coega IDZ and Nelson Mandela Bay Municipality with sustainable industrial and potable water through indirect effluent reuse. The first phase of the scheme will produce 60,000 m³ of water per day, suitable for industrial and potable reuse with a second phase of similar magnitude to follow.
INTEGRATED WATER REUSE MANAGEMENT
Jan stresses that: “In order to successfully develop, implement and manage water reuse infrastructure it is critical that it is fully integrated as part of an existing water resource portfolio. This holistic life cycle approach will ensure the feasibility and long term sustainability of water reuse infrastructure to supply communities and commercial and agricultural water users with improved security of safe water supply that is future proof. Management, planning, design, implementation and operation and maintenance considerations shared, provide guidelines towards optimum water reuse integration.”

LIFE BEYOND OUR RIVERS IS PART OF THE BIGGER PICTURE
South Africa is acutely aware that it cannot rely on its rivers only for its water supply. The development of large scale dams is limited due to the unavailability of suitable dam sites and the ecological impact of dams. Therefore desalination, water reuse, water conservation and demand management are the options for municipalities and industrial users. Their impact is studied in so called ‘Reconciliation Strategies’, in particular for remote rural areas where water supply is lacking but groundwater extraction is considered a viable alternative and not yet fully exploited. Royal HaskoningDHV engineers in South Africa are involved in verification and validation of the water use by agriculture, which as a sector accounts for about 65% of river water usage. This is part of the Water Allocation Reform, in which Royal HaskoningDHV also offers strategic advice.

THE FACTS
In addition to proven universal water treatment methodologies, Royal HaskoningDHV has developed Nereda®, a ground-breaking wastewater treatment process that purifies water using the unique features of ‘aerobic granular biomass’. The world’s first Nereda® demonstration plant was commissioned in 2009 at Gansbaai in the Western Cape, where final effluent quality has exceeded expectations. A second Nereda® plant is due to open later this year at Wemmershoek near Stellenbosch.

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THE FACTS
Our transport expertise covers:
- Data collection, review and analysis, monitoring and evaluation
- Traffic modelling, micro simulation, traffic management and ITS applications
- Road geometric design and impact analysis
- Financial and technical feasibility and training
- Detailed designs and specifications of preferred solutions
- Implementation strategy and terms of references for preferred solutions

Green light for Riyadh’s city transport network

Within 50 years Saudi Arabia’s capital city Riyadh has developed from a walled town into a metropolis of 5.5 million people. Severe traffic congestion and road safety issues, caused by population growth and increased economic activity, have made transport in and around the city time consuming, unsafe and unhealthy. Now a project is underway to help identify where measures can be taken to make Riyadh’s roads become safer and healthier for its citizens.

To help find a way to solve Riyadh’s traffic congestion issues, the city’s Development Authority (ADA) has commissioned Royal HaskoningDHV’s transport team to analyse the city’s road network and transport system over a two year period – between 2012 and 2014.

Ziad Al Mahmoud is responsible for managing the project on behalf of Royal HaskoningDHV. Ziad comments: “A main part of the project is to identify 30 critical locations and major traffic problems, and define measures to increase efficiency and safety through traffic management enhancement and innovative technology.

“These issues vary from parking problems, congested corridors, poorly functioning traffic signals to traffic safety and behavioural problems. Our transport team is documenting these, together with plans, pictures and videos, analysis results, proposed solutions, implementation requirements and impacts.”
A wide range of transport services are being delivered, including traffic modelling and micro simulation, traffic management and ITS applications, road geometric design, impact analysis and detailed designs.

Ziad continues: “Key tasks include monitoring and evaluating traffic performance, identifying and analysing traffic black spots and bottlenecks and assessing the urgency, priority and impact of each selected improvement measure.”

The development of detailed designs and tender documents, including bills of quantities and specifications, cost and time estimates for implementation, are also part of the project.

“In addition we are providing hands-on technical support to ADA staff in order to resolve other traffic problems, assist the traffic control centre and provide ADA staff with training.

“The outcome of the project will lead to the development of a proper transport system for the city,” Ziad concludes. “This will enhance the quality of life in Riyadh by making the city and roads safer, more accessible and sustainable through the reduction of congestion, road traffic accidents and carbon emissions.”

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Bhopal is often referred to as the 'City of Lakes' because of its natural lakes and scenic beauty. The second largest city in the Indian state of Madhya Pradesh, Bhopal is home to around 1.8 million people and is the state's administrative and political centre.

However, while Bhopal is a thriving city of strategic importance and size, it faces many infrastructural challenges. Housing for people who work for the government is inadequate and has become dilapidated. There is low density development within the city centre on the one hand, while on the other, an increasing urban sprawl has developed on the city’s perimeter. This has resulted in an increasing financial burden on the local institutions responsible for managing and maintaining Bhopal’s urban services, as well as impacting people commuting to the city, because of the distances they need to travel to and from work.

To alleviate the problem Bhopal’s Development Authority designated 15 land parcels, measuring more than 250 hectares in total, for sustainable development within the city’s planning area, commissioning DHV India Pvt Ltd (part of Royal HaskoningDHV), to carry out the work.

Ajay Agrawal, director of planning and strategy, for India, comments: “The aim of the project is to create an environment that will enable world class infrastructure, improve the quality of life for the people who live and work in Bhopal, and to attract investment, either through Public-Private Partnership or budgetary allocations.”

The project incorporates the aspirations of various city stakeholders and involves three strategies: urban renewal and rejuvenation, re-densification of low density areas, and identification and development of new green field schemes.

Ajay continues: “In terms of sustainable development of the land parcels a city is not a commodity, it is a community. Therefore the needs and aspirations of the people who live within the community should be taken into consideration while preparing the plan for any area. We ensured social sustainability through a series of public consultations and consideration was given to conserving bodies of water, trees and green areas in the plans for re-densification, which ensures environmental sustainability and the use of locally available materials are used to confirm material sustainability. The project has been designed to bring about a ‘win-win’ outcome for the government, the developer and the community, to ensure economic sustainability.”
THE FACTS
The land development work also involved:
- Studies to ascertain demand and market assessments
- Project identity and concepts
- Preparation of plans and layouts for the schemes including urban design guidelines
- Techno-economic feasibility and costing
- Project structuring including development of institutional and financing options
- Bid documents and managing the bid process developer selection.

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Going for growth

Accelerating Brazil’s infrastructure programme
While all eyes are on Brazil in the run up to the World Cup and the Olympics, the country’s infrastructure ambitions have been in the spotlight since the government announced its multi-billion dollar Growth Acceleration Programme in 2007.

Royal HaskoningDHV is lending its expertise in aviation, maritime and immersed tunnelling. René Zijlstra is director of business development for infrastructure in Brazil: “Since the Government announced its massive growth acceleration programme infrastructure projects have increased at pace. The work we are involved in includes Brazil’s first immersed tunnel and extension of Viracopos International Airport near São Paulo. Our maritime expertise was also instrumental in the launch of the Atlântico Sul Shipyard off the coast of Rio de Janeiro in 2010.”

**FIRST IMMERSED TUNNEL FOR BRAZIL**

Together with our Tunnel Engineering Consultants partner Witteveen+Bos, we are leading the design process for Brazil’s first immersed tunnel at the port of Santos in São Paulo. This is one of the country’s most significant infrastructure projects as it brings immersed tunnel technology to Brazil for the first time.

“The tunnel will link the cities of Santos and Guarujá, which are located on opposite sides of the port. At the moment people need to travel between the two cities to commute to work and school. Currently the only direct way to do that is by passenger ferry. The alternative, which is the only option for freight vehicles, is to take a 50 km detour. As a result, travel time, traffic congestion, and pollution are an issue.”

While looking for a solution, authorities in São Paulo initially discussed bridge options, but these were ruled out due to cost and adverse impact on the city.

René continues: “We were invited to carry out a feasibility study based on our international expertise in immersed tunnel technology. Results of the study indicated that an immersed tunnel was a real option.”

Once the tunnel is completed it will provide lanes for pedestrians, cyclists and vehicles, relieving the burden on ferry services and significantly reduce driving time for freight vehicles.

“Santos is also a popular port for cruise ships and it is expected that the forthcoming games will boost tourism. The tunnel will really improve the connection between the port and São Paulo.

“In terms of retaining investment within the country, this type of technology is also good for Brazil’s economy because it only requires 20% specialist international input. This means 80% of the investment remains in Brazil. We are also seeing interest from other areas of the country which is very positive.”
VIRACOPOS INTERNATIONAL AIRPORT – GETTING READY FOR THE WORLD CUP
A large international gateway is a priority for Brazil as it prepares to host the World Cup. When it completes in 2014, the newly extended Viracopos International Airport will have the capacity to handle 80 million passengers and 1.4 million tons of cargo. Royal HaskoningDHV’s aviation specialist NACO developed the master plan for the passenger terminal, multi-storey car park and air and land side infrastructure.

ATLÂNTICO SUL – RELAUNCHING BRAZIL’S SHIPBUILDING INDUSTRY
Atlântico Sul is the largest, most modern shipyard in Brazil. The impetus for constructing the shipyard was the discovery of oil off the Rio de Janeiro coastline. Completion in 2010 was celebrated with the launch of a Suezmax 274 m oil tanker, the first major vessel built in Brazil for more than a decade. Royal HaskoningDHV designed the 75 m entrance gate to the drydock, and consulted on design and construction of its underfloor drainage system.

MAJOR LEAP FOR HEALTH AND SANITATION THROUGH NEREDA® WASTEWATER TECHNOLOGY
Less than 30 per cent of all Brazil’s domestic wastewater is treated. Now millions of Brazilians will enjoy better public health through the implementation of Nereda®, Royal HaskoningDHV’s innovative wastewater treatment technology. A cooperation agreement signed between Royal HaskoningDHV and Foz, the Brazilian water company of Odebrecht Ambiental in July this year will deliver three Nereda® plants in 2013, treating the wastewater of more than half a million people. Another 10 Nereda® plants are planned within the next five years. Nereda® treats wastewater using aerobic granular biomass, which uses less energy and chemicals and a smaller footprint than conventional treatment systems.

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THE FACTS
Brazil has a population of around 198.3 million people (UN, 2012). The capital of Brazil is Brasilia and its largest city is São Paulo. Its main language is Portuguese and its chief exports are manufactured goods, iron ore, oil, coffee and oranges.

Brazil’s Growth Acceleration Programme (PAC I 2007 and PAC II 2010), focuses on logistics, energy and social-urban themes on six fronts: Better City (urban infrastructure), Citizen Community (safety and social inclusion), My House, My Life (housing), Water and Light for All (sanitation and access to electric energy for remote locations), Energy (renewable energy, oil and gas) and Transports (highways, railways, airports, amongst others). (Source brazil.gov.br)
State-of-the-art container terminal for Port Suez Canal

2013 heralds a milestone for Suez Canal Container Terminal (SCCT) and Royal HaskoningDHV, as a decade of development at Port Said East culminates in the completion of Phase II projects.

During the past decade significant development has transformed the harbour into a sustainable gateway for Egypt and the transhipment of containers for business around the Black Sea, Southern Europe and the Mediterranean. Boasting 2.4 km of new berths and 120 hectares of developed storage and operational area, Port Said East is now the leading container distribution hub for the eastern Mediterranean.

SCCT appointed Royal HaskoningDHV and its local sub-consultancy, Pacer of Cairo, to provide maritime engineering consultancy and to help SCCT project manage this strategic maritime development.

"The Port Said East container terminal is the most significant and sophisticated development on the Suez Canal in Egypt today."

John Cunliffe, senior project director at Royal HaskoningDHV, comments: “At the turn of the millennium, the Port Said East site was hardly recognisable from other remote locations in the Sinai Desert east of the Suez Canal. Since then SCCT has worked with Port Said’s Port Authority and Royal HaskoningDHV to develop the site into a world class container terminal.

“Phase I of the project completed in 2006. Now completion of Phase II effectively doubles the size of the terminal, and provides ability to handle an annual container throughput of over five million TEU. Significant import and export potential is also provided.” (Note: Present capacity is limited to 3.6 million TEU until a separate entrance channel to Port Said East has been constructed/dredged).

ACHIEVING THE VISION
SCCT’s vision was to operate a container terminal complex at the north end of the Suez Canal to take full advantage of the strategic location to attract major global shipping lines, whose key routes already pass through the Suez Canal.

By acquiring the most modern equipment, using state-of-the-art technology and establishing the most efficient operating procedures, the Port Said East container terminal is the most significant and sophisticated development on the Suez Canal in Egypt today. Completion of the Phase II terminal alone represents a total investment for SCCT in excess of USD 1 billion.

MARITIME SERVICES
SCCT used a mix of international and local construction contractors to optimise costs while maintaining high technical and safety standards, successfully developing their business as a result.

The first contract of Phase II, a Marine Works contract for the design and construction of the 1,200 m quay wall with 18.5 m design dredged depth, was awarded in August 2008. The contract of value USD 219 million was awarded to China Harbour Engineering Company (CHEC). The works were completed in 2011.

Royal HaskoningDHV prepared detailed design contracts for construction of the terminal and buildings. This required overall terminal planning and assistance to SCCT with operating strategy, along with major designs for the buildings and storage yard, future rail terminal and supporting facilities. Designs, tender
Said East

documentation and tender processes were followed by detailed negotiations with contractors and contract award.

Royal HaskoningDHV also carried out master planning for marine and hinterland development at Port Said East for the Egyptian Government.

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THE FACTS
All works were supervised by Royal HaskoningDHV / Pacer. Main construction contracts prepared by Royal HaskoningDHV were awarded to:

- Archirodon (Egypt) – Phase I terminal and buildings
- CHEC – Phase II quay
- Petrojet – Phase II terminal and buildings
An unprecedented expansion in liquefied natural gas import facilities in India provides dramatic evidence of the country’s intent to solve its chronic energy deficit. The results, as Niek van der Sluijs explains, have wider benefits than simply keeping the lights on.

Power cuts have long been a feature of life in India. However, as the country’s economic development has gathered momentum, the lack of reliable access to energy is more than simply a nuisance. It is hindering the country’s economic progress.

This in turn is holding back benefits for the whole society because economic growth advances human development and alleviates imbalances in economic wealth and living conditions.

There are also practical social benefits to be gained. In 2009, a quarter of the population had no access to electricity and three-quarters lacked modern fuel for cooking and heating. This is beginning to change with more Indian cities introducing a fixed gas supply to homes. While the power, fertiliser and industrial sectors continue to have the highest demand for natural gas, requirements for city gas distribution will rapidly rise.

Due to a shortfall in domestic natural gas production, no less than 18 projects for import liquefied natural gas (LNG) terminals are currently at varying stages of development. Three have been completed and are operational, one is coming on stream shortly and the rest are still on the drawing board.

Liquefaction achieves a higher reduction in volume than compressed natural gas, making LNG cost efficient to transport over long distances where pipelines do not exist. Once it arrives at the port, it is regasified and distributed as pipeline natural gas.

This move to LNG as an important fuel source brings with it environmental benefits in a country which has historically depended on coal. Natural gas is the cleanest of fossil fuels and therefore assists in India’s commitment to reduce carbon emissions and alleviate environmental degradation.

Royal HaskoningDHV has been closely involved in these LNG developments which build on the company’s considerable expertise and strong international track record in consultancy and project management for LNG facilities, including so-called FSRU (Floating Storage and Regasification Unit) projects. Currently the company is associated with seven of India’s import terminal projects, providing services ranging from feasibility studies to master planning, environmental modelling and design.

Having assessed the feasibility and viability of the project, one of the key
challenges is ensuring the safety of the port-side operations. Risks are most pronounced as the vessel enters the port and during the vessel mooring and discharging operations.

The natural gas industry as a whole has a strong safety record and it is through expert knowledge and continued commitment to mitigate risks that this will be maintained in the long term. Royal HaskoningDHV has the global experience to assess such risks and develop or design mitigating measures accordingly.

For example, wave modelling underpins the design and construction of breakwaters to protect the LNG carrier against waves in the port. Quantitative risk analysis methods look at the consequences of a potential LNG leak in terms of gas cloud dispersion and ignition risk to ensure facilities are planned with minimised impact on their environment. For Royal HaskoningDHV, corporate responsibility and sustainability are integrated into all projects and operations.

Our work with the Indian LNG projects looks set to yield a range of positive benefits for India’s economic development and for the society as a whole.

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Like many other city dwellers before them, the people of Nijverdal have co-existed with a national highway running directly through its city centre for decades. Due to the proximity of the N35 national highway, which until recently parted Nijverdal into two halves, the city’s population of 25,000 people have endured issues relating to road safety, traffic congestion, air and noise pollution, on a daily basis.

The last of a number of cities in the Netherlands to share its centre with a national highway, 2013 heralds a long awaited milestone for Nijverdal’s residential and business communities, as phase II of a new combined rail and road tunnel completes construction beneath the city centre.

The tunnel is the first of its kind in the Netherlands. Borne from a local initiative, the successful outcome of the project has required intensive cooperation between road authority RWS and rail asset manager ProRail, as well as local and provincial government, and the train operating company.

The Nijverdal ’Combiplan’ consists of a 400 m long tunnel, with an open-tunnel section and approach ramps on both ends. When the final phase of the tunnel is completed later in 2013, it will accommodate two double traffic lanes, each housed within a separate tube and a double track railway line.

Working together with ProRail and co-partner Arcadis to deliver phase II of the project, Royal HaskoningDHV designed and managed the rail section of the ‘Combiplan’ tunnel and provided environmental expertise such as ground water protection measures.

Phase II, which completed with the opening of the rail tunnel on 1 April 2013, included the design and construction supervision of the rail tunnel as well as a new railway station.
proves safety overnight

Nils den Hartog is responsible for overseeing the project. He comments: “The opening of the rail section of the tunnel has already increased safety significantly. The tunnel design meant it was possible to remove five railway level crossings and deliver a brand new railway station for the city’s commuters.

“During the 40 month construction period, temporary provisions were made for rail passengers, which included the erection of a temporary railway station. The second phase of the project involved construction of the 1 km tunnel and additional structures, such as a river crossing.”

The rail tunnel and brand new station opened on 1 April 2013. The road tunnel is due to open later in the year.

Bernadette Paping-Geertman, Project Manager for ProRail, said: “ProRail is extremely proud of Nijverdal’s new rail infrastructure and railway station. The project has immediately improved the lives of Nijverdal’s residents by providing them with safer infrastructure and a more efficient public transport service.”

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The growing appeal of anaerobic digestion

The relationship between waste, energy and resource recovery is becoming increasingly important in sustainable solutions. It is no surprise therefore that anaerobic digestion plants, which divert organic waste from landfill and produce renewable energy in the process, are rapidly increasing in number across England.
Anaerobic Digestion (AD) technologies are not a new phenomenon. For more than a century they have been used in many sectors including agriculture, food waste and wastewater treatment. However recent years have seen an escalating interest in this technology and in the creation of a decentralised energy network with aspirations to be self-sufficient and sustainable.

The AD process involves the natural breakdown of biodegradable organic matter into a mix of gasses (known as biogas), biofertiliser and water. This biogas can be harnessed to produce renewable energy in the form of electricity, heat and fuel. AD presents a sustainable, environmentally friendly and cost effective energy source from purpose-grown crops and ‘waste’.

It remains a general requirement of the EU Landfill Directive that all Member States must reduce the amount of biodegradable municipal waste sent to landfill. Andrew Dyne, director for business development at Royal HaskoningDHV, sees considerable opportunity for AD to facilitate this and to establish a decentralised mix of energy sources.

The opportunities arise partly from practical considerations: organic and food waste is not yet banned from landfill, although there have been calls to do so. There is also an increasing impetus on organisations to become more cost effective and sustainable, thus many are looking to convert their ‘waste’ into a renewable energy revenue through AD solutions.

“Anaerobic digestion plants exemplify localised development projects,” says Andrew. “The plants are often smaller and less intrusive than other forms of energy production; they are also often sited near the waste source, underpinning the commercial and community benefit of AD.”

Plans are under way to build a significant number of these AD plants across the UK. Royal HaskoningDHV, in association with Barhale Construction, is working on one of the first of about 40 which altogether are intended to contribute an estimated 100MWe to the UK National Grid by 2018. The plant in Halstead, Essex, will process around 45,000 tonnes of commercial and industrial food waste per year and generate 2MW of renewable energy.

It will go into operation in 2014. “The challenge of this project is the tight timescale and the order in which the work needs to be carried out to meet the deadline,” explained Dave Bradley, Head of Mechanical and Electrical at Barhale. “Our client has given us a robust schedule for commencing power generation.”

Recognising these challenges, Barhale Construction and Royal HaskoningDHV held a workshop for all the project stakeholders. “Together we explored, analysed and critically tested the project layout, design and buildability. Royal HaskoningDHV’s value engineering ethos brought a balance of innovation and practical, cost effective engineering solutions to a very challenging project,” continued Dave.

With the number of AD plants set to increase exponentially over the next couple of years, Royal HaskoningDHV is looking to bring together more organisations with complementary strengths and expertise in AD, and to ensure that Royal HaskoningDHV remains the partner of choice.

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New industrial coastal zone set to boost Cameroon’s economy

Construction of a 21st century port and industrial complex has begun south of a small coastal town in south western Cameroon. Comprising a deep sea port, a 260 km² industrial zone and residential city for about 300,000 people, the area is set to become an international industrial production area, shipping and an export hub for metallurgy, petrochemistry and agricultural products. The development will deliver long-term benefits to Cameroon and the Kribi community through new infrastructure, jobs and homes and international investment.

Working together with Cameroonian consultancy partner Global Option, Royal HaskoningDHV was commissioned by the Government of Cameroon to create a master plan and development strategy for the port and industrial complex, to guide sustainable spatial, environmental and social and economic urban development.

Ruud Platenburg is managing the project on behalf of Royal HaskoningDHV: “Since 2005 Royal HaskoningDHV has been involved in projects related to sustainable development in Cameroon and notably in the Kribi region. The successful partnership between the Ministerial Steering Committee for Kribi Development and Royal HaskoningDHV started in 2009, with environmental and social studies during the preparation phase. To date Royal HaskoningDHV has supported the Government with various assessments, feasibility studies, resettlement plans and this high profile master plan.”

Bart Brorens is responsible for the project’s master plan and development strategy: “The Government has taken a holistic, integrated and long term approach to the development of this area. The master plan and strategy brings to life the government’s vision for the industrialisation of Kribi and its coastal zone and focuses on the step by step transition needed to realise the project.”

Phase 1 of the master plan is already significant and will boost Cameroon’s industrialisation. It will deliver an industrial deep sea port complex offering services to super tankers and container vessels, a 9,500 ha extensive industrial zone for heavy, medium and light industry, business activities and airport development.

“The completion of the port will enable the export of large quantities of mineral ores including raw iron ore as well as petrochemical products. In the meantime large multinational companies such as Rio Tinto and GDF-SUEZ have started to develop their industrial complexes. The construction of Phase 1 of the port complex is about halfway and is planned to become operational by the end of 2014.”

The initial ‘utility backbone’ is also part of phase 1 and will deliver new infrastructure to the area surrounding the port, providing a new highway to the north, a railway line and energy supply.

“Phase II will deliver the industrial facilities and high tech factories that will enable Cameroon to process the raw materials itself. The government is keen for local people to operate the processing factories, so the provision of schools and education centres will be key to helping future employees acquire the necessary skills.”
By 2040, the new city will house up to about 300,000 people and provide government buildings, schools, a hospital, shopping centres and urban services.

The town of Kribi, which is some 25 km north of the new port, will maintain its identity as a fishery centre and holiday destination. Regional investment will be used to develop tourism and preserve its natural marine and land environment. In turn, Kribi residents will benefit from the opportunities offered by the new development.

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Royal HaskoningDHV is an international non-listed engineering company delivering consultancy and project management services and ranks in the top of the individually owned engineering companies worldwide.

Our client magazine Connect showcases the initiatives our clients undertake and the work we do to enable them to deliver results that enhance society together.

As part of our commitment to environmental sustainability, Connect can be downloaded as a PDF from the web.

We always welcome comments from our readers. If you have any questions or feedback about anything you have read in Connect, please email sarah.miles@rhdhv.com

For further information about Royal HaskoningDHV please visit our website royalhaskoningdhv.com

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