



FOCUS ON HEALTHCARE

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CHAIRMAN'S MESSAGE



In 1977 we had a vision to create the Middle East's most innovative and networked healthcare facility, known then as the New Dubai Hospital. At the time, the project incorporated the latest medical technology with a cutting-edge system and design that could best serve the needs of patients and staff.

Now, some 35 years later, while the technology has changed significantly, our vision and commitment has not as we continue to deliver healthcare facilities that combine leading technologies with an aesthetic environment that focusses on the experience of the patients.

Riad T. Sadik
Chairman

CEO AND MD'S MESSAGE



In an industry such as ours, being able to work collaboratively with clients to successfully deliver world-class social infrastructure, such as state-of-the-art healthcare facilities, underpins the future of our business.

With more demand than ever being placed on contractors to take social infrastructure projects from build to operation, HLG's specialist local skills and expertise—coupled with the international experience of the Leighton Group and commitment to best practice outcomes—will serve us well in this growing sector.

Laurie Voyer
CEO and Managing Director

AKHBAR ALDAR

Akhbar AlDar, which in Arabic means "news of the house", is the corporate magazine of the Habtoor Leighton Group (HLG).

HLG is one of the leading diversified international contractors in the Middle East and North Africa. The Group employs more than 25,000 people, making it one of the largest construction groups in the region.

HLG is part of the Leighton Group, Australia's largest project development and contracting group with annual revenues exceeding US\$18 billion. The Leighton Group's major shareholder is HOCHTIEF AG, the world's largest international contractor.

HLG focuses on five core market sectors:

Infrastructure

Building

Rail

Oil and Gas

Mining

The Group also operates a diverse range of complementary Associated Businesses, offering clients a one-stop solution for all their construction, development and asset management needs.

HLG has an extensive track record in large-scale projects across the region. For more than 40 years it has built a strong and loyal client base across both the public and private sectors.

Cover picture: Mafraq Hospital, Abu Dhabi.

HLG secures accommodation and utilities project on ZADCO's artificial islands in Abu Dhabi

HLG has secured a major contract for the design and construction of accommodation and utilities for artificial islands being constructed in the Zakum Development Company's (ZADCO) Upper Zakum offshore oil field development, 84 kilometres off the coast of Abu Dhabi.

HLG CEO and Managing Director Laurie Voyer said the new project reflected the Group's strategy of diversifying the composition of its order book and builds on the Group's reputation as one of the leading diversified international contractors in the Middle East and North Africa.

"Over recent times, HLG has made a conscious effort to diversify our workload, and securing oil and gas-related projects such as this are part of our approach."

A key aspect of the project's delivery is logistics – with ZADCO acknowledging HLG's vast experience in delivering complex projects in difficult and remote locations.

"By successfully delivering this project according to ZADCO's program, HLG is in an ideal position to secure additional oil and gas-related work for ZADCO and other oil and gas companies across the region.

"The UAE remains our largest geographic market and we expect it remain so for some time," Laurie added.

HLG's scope of work comprises the engineering, procurement and construction (EPC) of accommodation, supporting buildings and permanent utilities, including:

- Accommodation for 2,150 people
- Kitchen, mess hall, clinic, laundry
- Recreation areas and mosque
- Operations and drilling offices and workshops
- Power, water, diesel fuel and sanitary systems

The project will commence immediately and is scheduled for completion in August 2015.

HLG-wide Safety Week

Safety Week was one of HLG's first safety initiatives of the year – delivered to engage workplaces across our business.

Every workplace could choose how to take part, and what initiatives and events to participate in to best communicate a safety message.

All participating workplaces were presented an award in recognition of their dedication and commitment to the meaning behind our safety slogan SAFETY, WE CAN'T LIVE WITHOUT IT.

Some of the activities on projects included:

- Presentations on safe scaffold erection
- Emergency evacuation drills
- Power-tool usage demonstrations
- Driving ability tests
- Competitions and awards





HLG secures Al Kabaan Reservoir in Qatar

HLG has secured the QR70 million (US\$19 million) Al Kabaan Reservoir and Pipeline project - its third project for the Qatar General Electricity & Water Corporation (KAHRAMAA).

The design and construct contract includes the following:

- Geotechnical investigation
- Hydraulic study for new Al Kaaban water supply, storing and distribution system, including surge and transient analysis for the complete piping system
- Reinforced concrete (RC) reservoirs with a six million gallon capacity
- Pumping station to accommodate six VFD pumps including controls, instrumentation and MEP works
- Concrete boundary wall around the new and future reservoirs
- Tanker filler station
- Guard house and 11KV substation
- Accommodation building
- Chlorination building and system
- Inlet/outlet pipe works and valve chambers
- Road works, street lighting and landscaping

The HLG team in Qatar has developed an outstanding relationship with KAHRAMAA, having handed over the reservoir and pumping station milestone one (RPS MS1) project in Duhail, which connects the Duhail RPS to the water network.

The pumping station was commissioned into service nearly four weeks ahead of the scheduled date of 15 April, and is part of the US\$210 million development of new and independent water infrastructure facilities in the Duhail and Umm Qarn communities on the outskirts of Doha.

Major Projects

HLG's Major Projects and Engineering Services Group (MPESG) was formed in 2010 to provide specialist support services to HLG's regional operating entities.

The group provides overall support to HLG's identified major project opportunities and assists with bid support, strategic business development, project development expertise and engineering services.

In response to recognised market opportunities in the rail and water sectors across the GCC and North Africa, the MPESG established Advance Rail and Advance Water Groups to provide industry-specific infrastructure expertise by partnering with and leveraging from the existing knowledge and experience in John Holland, part of the Leighton Group.

Major projects are designated depending on a number of factors, including:

- Prospective contract value greater than AED4 billion
- Significant joint venture or consortium
- High degree of technical, contractual or commercial complexity
- Outside HLG's usual building and civil infrastructure envelope

Advance Rail Group

Advance Rail Group (ARG) is positioned as one of the most experienced rail contractors in the Middle East and North Africa. Led by a team of experienced project managers and specialist engineers, and backed by access to modern, state-of-the-art plant equipment, ARG benefits from the combined strength of its parent companies HLG and John Holland and specializes in the development, design, construction, testing & commissioning, maintenance & operation of transport, mining, metro, regional and heavy rail infrastructure projects.

In pursuit of the many opportunities in Qatar, ARG recently formed a joint venture with Dragados – representing a best-in-class rail execution partnership between three of the world's most experienced contractors. In April 2012 the ARG Dragados JV was invited to tender for both the Red Line North Underground (running a length of around 13 kilometres) and the Green Line Underground (running a length of around 15 kilometres). Both tunnel packages are part of the first five tender packages for Doha Metro, which are due in August 2012.



Advance Water Group

Driven by a combination of population growth and increasing demand for modern infrastructure, more than US\$50 billion will be invested in GCC water-related projects over the next 5 years – a significant percentage of which will come to market in advanced PPP (Public Private Partnership) contract forms such as BOT (Build Operate Transfer) and BOO (Build Own Operate). Given the size, complexity and specialist skills required for this market, HLG has established Advance Water Group (AWG) in order to leverage the local knowledge of HLG and the water expertise of John Holland's Water and Environment business to deliver early and effective entry into this sector in the MENA region.

AWG will provide specialized services in the following areas:

- Water treatment including desalination
- Wastewater treatment
- Water recycling
- Water storage
- Transmission networks



LMEC's New Jeddah office

Leighton Middle East Contracting (LMEC) recently opened an office in Jeddah – the Group's second office in Saudi Arabia – reflecting the growth opportunities presented by the western region of the country. The team is focused principally on identifying and evaluating new opportunities located in the region.

The decision to expand into the western province of Saudi Arabia is a strategic decision for the business, with the Saudi market forecast to achieve record levels of expenditure. General Manager Paul Redstone explained how the new office allows LMEC to maintain closer ties with existing clients and build new connections in the important western region of Saudi Arabia.

“There are a number of major water and mining initiatives in the western region. And ever since we established our first office in Riyadh 12 months ago it was apparent that a local presence in Jeddah was an essential part of our growth plans. A permanent ‘on-the-ground’ presence is essential.”

HLG's LMEC division continues to gain momentum in Saudi Arabia, with the award of the Group's first two projects contributing close to one billion Saudi Riyal backlog to the business.

LMEC's new office is located at Jameel Square, on the corner of Tahliya street and Al Andalusia street, Jeddah.

THEY SAID IT

“Saudi Arabia has allocated a SAR86 billion (US\$23 billion) healthcare budget for 2012, the largest in the history of the Kingdom. It has also allocated SAR273 billion (US\$73 billion) for various health initiatives in its 2010-2014 five-year plan, including the construction of 121 hospitals, 700 primary healthcare centres and 400 emergency centres.”

Parham Gohari, Senior Manager, and Sari Alabdulrazzak, Manager: Strategy Consulting Deloitte Middle East.

“The revenues from medical tourism are estimated at AED110 billion (US\$30 billion). We believe that medical tourism is a space that involves and impacts various sectors within Dubai. Its growth would lead to a positive impact on the economy, as well as be a driver for trade and investment in healthcare, tourism and hospitality services.”

Qadhi Saeed Al Murooshid, Director-General of Dubai Health Authority (DHA).

“The focus in this year will be creating rest places for outdoor workers during the mid-day break including the construction of umbrellas and other temporary facilities to protect workers from the heat.”

Major General Mohammad Ahmad Al Merri, Director General of the General Directorate of Residency and Foreigners' Affairs (GDRFA) and Chairman of the Permanent Committee for Labour Affairs in Dubai.

“The opportunities in Qatar for everyone connected with the real estate business are limitless and exhibitors have told us their experience here has been excellent. For those based in Doha, and for those coming to see it for the first time, everyone has gained incredibly useful insight into how Qatar is growing and the relationships made at Cityscape Qatar will truly help to shape the future development of this country under its 2030 Vision.”

Rohan Marwaha, Managing Director for Cityscape Group, commenting on the first Cityscape Qatar that took place during the last week of May.

“The contract extension at Sonoma recognises the hard work that the mining team has put into the project over the past five years and we look forward to many more opportunities in the future.”

Hamish Tyrwhitt, Chief Executive Officer, Leighton Holdings, commenting on Leighton Contractors' Mining Division winning a contract for QCoal's Jax mine's bulk sample project and an extension to its Sonoma mine in Queensland, Australia.

HLG HEALTHCARE: DELIVERY FOR LIFE

In a sector worth a predicted AED 290 billion (US\$80 billion) per year across the GCC, there are few contractors that can offer the breadth of local experience, combined with the depth of international expertise, as Habtoor Leighton Group.



John Hunter Hospital, NSW, Australia



The Royal Melbourne Hospital, Victoria, Australia



Rashid Hospital, Dubai, UAE

With an impressive 50+ healthcare projects completed in Australia and Asia, and several more in the Middle East, HLG's healthcare philosophy of 'Delivery for Life' is centered on: delivering the right people to support the front-end briefing and project definition; delivering intelligent design and best healthcare-specific engineering practices; and achieving project delivery certainty through HLG's local presence and long-term regional commitment and accountability.

It is this delivery philosophy that underpins HLG's end-to-end approach to healthcare projects to ensure the provision of world-class social infrastructure. And with significant population growth and emergent health concerns to be prepared for, analysts are estimating substantial growth requirements for internationally accredited healthcare infrastructure by 2020.

While health and medical facilities share many similarities with the build of education and other commercial amenities in terms of value, scale and risk, the complexities associated with the design and build of medical projects

surpass any comparable building. Group Manager, Design & Engineering, Michael James explains:

"Delivering state-of-the-art healthcare facilities requires a high level of specialist skills and technical expertise to ensure projects are set up correctly to succeed in delivering the required healthcare outcomes, to a realistic timeframe, and within budget.

"Healthcare and hospital projects are among the most challenging of builds simply because of the immense level of integration and coordination required between the MEP (mechanical, electrical & plumbing), FF&E (furniture, fittings & equipment), OS&E (operating systems and equipment) and specialist medical equipment requirements. If not properly integrated, uncertainties in any one of these areas can cascade through the design and procurement processes and place the delivery timeframe at risk."

To avoid such uncertainties for HLG healthcare projects, the Group has undertaken extensive benchmarking audits and analysis on all of

the Leighton Group's international healthcare projects to enable development of a real, robust and reliable framework for accurate times to complete and outturn cost data, which form key references in the group knowledge base.

"Leveraging both Leighton's international track-record, and HLG's history of delivering iconic projects throughout the Middle East, gives our clients the confidence that our project management and program delivery is fully informed – with real healthcare delivery knowledge, particularly in managing the transition into operation, including commissioning, testing and handover phases.

"The best designed healthcare facilities are those that are flexible and adaptable to enable 'as late as possible' procurement of key technologies to take advantage of ongoing advances in medical equipment, and thought leadership in providing for patients and their families outstanding inpatient and outpatient environments," Mr James adds.



THEME OVERVIEW



St. Vincent's Hospital, NSW, Australia



Royal Prince Alfred Hospital Redevelopment, NSW, Australia



Greenslopes Repatriation Hospital, QLD, Australia



Bathurst Hospital, NSW, Australia



Townsville Hospital Redevelopment, QLD, Australia

Stephen Bennet, HLG Project Director of a major healthcare project currently under construction in Abu Dhabi, says that today's healthcare designs are in response to the shift in healthcare models.

"Not so long ago, quiet garden areas, fountains, children's corners and wireless networks were unheard of in healthcare facilities, but these type of amenities are becoming more and more typical – particularly given the increased demand for outpatient facilities. It all comes down to the design and planning and how well-equipped healthcare facilities are to respond to changing needs of the community, or manage an emergency situation."

Responding to changing needs also involves taking a more responsible and sustainable approach to construction.

"We are implementing a program that has resulted in more than 75% of our project construction waste being diverted from landfills through the recycling of concrete, steel, wood, plastics and paper. In terms of value, 26% of construction material used on one of our projects was made from recycled content," said Mr Bennet.

More and more, a project's construction material is being extracted and manufactured in the UAE and the region constituting 37% of the total material cost, and creating more jobs in the UAE, resulting in less omissions during the transportation of the material.

On one particular project, more than 50% of the project's purchased wood is Forestry Stewardship Council (FSC) Certified, which ensures it comes from responsibly managed forests. 100% of the adhesives, sealants, paints and coatings used as part of the construction works are low Volatile Organic Compound (VOC) products – contributing to better indoor air quality once the hospital is operational.

Low-flow fixtures and automatic sensors, which reduce water use by 40% over baseline; efficient mechanical equipment – with high performing triple glazing façades, which will improve the building energy performance by up to 20%; and installation of solar hot water heaters, which will meet total project water needs – all contribute to operational enhancements.

But delivering safe, sustainable and comfortable environments is about more than reducing waste, water and energy consumption, and improving air quality. It is also about the provision of improved facilities, enhanced aesthetics and a customer-centric approach, which includes addressing the needs for greater security and emergency response procedures.

Past and present healthcare projects by HLG and the Leighton Group

1. Al Wasl Maternity & Paediatric Hospital, Dubai, UAE
2. Albury Base Hospital, Albury, NSW, Australia
3. Albury Base Hospital, Albury, NSW, Australia
4. Alice Springs Hospital Expansion, Australia
5. A major healthcare project in Abu Dhabi, UAE
6. Bathurst Base Hospital Redevelopment, NSW, Australia
7. Blacktown Hospital Reconstruction, Blacktown, NSW, Australia
8. Caritas Medical Centre, North Wing (Staff Accommodations), Hong Kong
9. Dubai Hospital, Dubai, UAE
10. Greenslopes Repatriation Hospital, QLD, Australia
11. Haven of Hope Hospital Redevelopment, Hong Kong
12. Hollywood Private Hospital
13. Joondalup Health Facility, Western Australia
14. Lake Macquarie Private Hospital, NSW, Australia
15. Launceston General Hospital, Launceston, Australia
16. Lidcombe Hospital Redevelopment, Bankstown, NSW, Australia
17. Mafraq Hospital, Abu Dhabi, UAE
18. Mater Adult Hospital, Brisbane, QLD, Australia
19. New Albany Health Campus
20. New Royal Adelaide Hospital, South Australia
21. Peel Health Campus, Mandurah, WA, Australia
22. Perth Childrens Hospital, Western Australia
23. Prince of Wales Hospital, Sydney, Australia
24. Rashid Hospital, Dubai, UAE
25. Royal Hobart Hospital, Hobart, Australia
26. Royal Melbourne Hospital, Victoria, Australia
27. Royal Newcastle Centre John Hunter Hospital, Australia
28. Royal North Shore Hospital, Sydney, Australia
29. Royal Prince Alfred Hospital Redevelopment, NSW, Australia
30. St. George Hospital, NSW, Australia
31. St. Vincent's Hospital, NSW, Australia
32. Teluk Intan District Hospital, Malaysia
33. Townsville Hospital Redevelopment, QLD, Australia
34. United Christian Hospital Extension ñ Block P, Hong Kong
35. Westmead Hospital, NSW, Australia
36. The Olivia Newton-John Cancer and Wellness Centre, Victoria, Australia



THEME OVERVIEW



Westmead Hospital, NSW, Australia

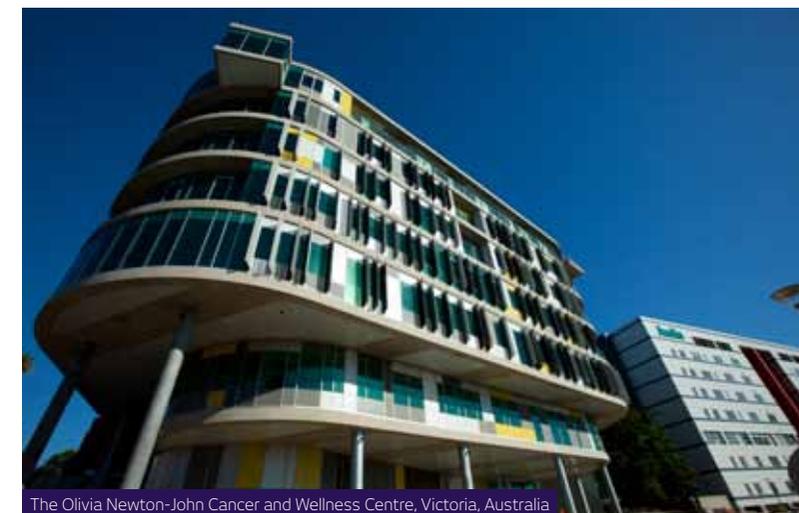
Al Mafraq Hospital, Abu Dhabi: This new 739-bed general hospital will be one of the leading trauma/surgery hospitals in the region, providing specialised care overseas for neurosurgery, orthopaedics, acute rehabilitation and plastic surgery.

The scope of works includes construction of a two-storey basement including service accommodation, labs, CSSD, dining and parking; a three-storey outpatient building including clinics, a link bridge, three-storey podium building including diagnostics, operating theatres, ER, rehab, ICU and maternity, two nine-storey and two 11-storey inpatient towers, peripheral buildings including substations, cooling plant, workshop, mortuary, underground tanks and service tunnels, landscaping, infrastructure and external works.





Townsville Hospital Redevelopment, QLD Australia (Thiess)



The Olivia Newton-John Cancer and Wellness Centre, Victoria, Australia



United Christian Hospital Extension Block P, Hong Kong

HLG's success in the healthcare sector is centered on our approach to working in partnership with our clients, joint venture partners and sub-contractors to work as one team in overcoming the challenges that present themselves during a project's lifecycle.

Open lines of communication, effective collaboration and a high degree of technical competency enables delivery of state-of-the-art healthcare projects that provide better services for the Middle East.

At Al Mafrq Hospital in Abu Dhabi, HLG in joint venture with HLG Specon and Murray and Roberts, is delivering an AED2.2 billion (US\$600 million) contract for SEHA – the Abu Dhabi Health Services Company.

The project, which is scheduled for completion in 2014, is set to be one of the leading trauma and surgery hospitals in the region, and will provide a convenient and cost-effective alternative for patients seeking specialized care in neurosurgery, orthopedics, acute rehabilitation and plastic surgery.

To ensure Mafrq's many systems and services were coordinated from the project's early stages through to design, construction and future operation – in a common environment, the team used fully integrated Building Information Modeling (BIM) to digitally build the hospital in 3D before building it physically. Project Director Vanessa Currie sees this as one of the biggest successes of the project to date.

"We are achieving real results using BIM as the central coordination tool to support our business processes and client communications.

"We've created 3D models, with the outcome being the production of shop drawings from which the project is being constructed. To our knowledge, we are at the forefront of using BIM technology to this extent."

HLG's BIM approach is supply chain inclusive with MEP Partner, HLG Specon, and other major subcontractors, including façade and steelwork, coordinating their models into the

structural and interiors models to create an integrated outcome.

"This process is relatively new in the region, and though a challenge for our industry, we are achieving numerous strategic, operational and technical wins – and it will go a long way to ensuring we continue to meet our delivery requirements for our clients," Ms Currie added.

With the healthcare sector forming a major business focus for HLG, being able to offer clients certainty in delivery remains the Group's biggest advantage due to its corporate strength.

HLG, with enviable design build capabilities in the healthcare sector, coupled with a strong track-record of delivering best-in-class healthcare projects in Australia, Asia and the Middle East, is focused on delivering intelligent healthcare solutions and working in partnership with clients, partners and sub-contractors – using the right controls at the right time to deliver on time and cost, without compromising on quality.



HLG is constructing the AED2.2 billion (US\$600 million) Mafraq Hospital, located in Al Mafraq, Abu Dhabi, in joint venture with Murray & Roberts. The project is being constructed for the Abu Dhabi Health Services Company (SEHA). The 739-bed general hospital will be one of the leading trauma/surgery hospitals in the region, and will provide a cost-effective alternative for patients who previously had to seek specialised care overseas for neurosurgery, orthopaedics, acute rehabilitation and plastic surgery.





Saif Al Hameli

Group Chief, Construction and Facilities,
Abu Dhabi Health Services Company (SEHA)

BUILDING FOR HEALTH

HLG sits down with Saif Al Hameli from the Abu Dhabi Health Services Company (SEHA) to discuss the construction of healthcare projects.

Can you provide an overview of your experience in the construction of hospitals and healthcare facilities?

I have about 20 years of diverse background in engineering and project management and have been in healthcare and healthcare-related projects for almost 10 years with both the Health Authority of Abu Dhabi (HAAD) and SEHA.

My exposure has included experience in healthcare activities from planning, design, and construction to maintenance and operations.

I oversee about 20 projects currently in various stages of development from concept and design to construction and commissioning. I have around 40 people in the department, and another 60 or so project and construction managers in the field, overseeing various activities and projects in Abu Dhabi.

What is the role of SEHA and its portfolio of hospital developments?

The Facilities and Construction Division of SEHA is striving to improve the healthcare infrastructure of the public healthcare system of the Emirate of Abu Dhabi and provide the communities with facilities of high standards in line with the direction and vision of the government and His Highness, Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Ruler of Abu Dhabi.

As a company, our mission is continuous improvement to recognised international standards en route to our vision to provide our customers and communities with world-class healthcare. Improving our healthcare facilities is part of a coordinated effort across a number of interrelated areas in healthcare delivery including: better outcomes management; quality improvements in healthcare delivery, safety, efficiency; improved

systems (including our health information and business intelligence systems); and responsible financial performance. New hospitals, like the new Mafraq Hospital, which is currently under construction, are the most noticeable examples of this coordinated effort to make the public healthcare system of Abu Dhabi one of the best healthcare delivery systems in the world. The new Al Mafraq Hospital is planned and designed to be a master piece and establish itself as a world-class referral centre in healthcare in the Middle East and one of the cornerstones of healthcare provision in the UAE.

And it is just one of several projects we have in the works. We are also completing a series of new clinics for our Ambulatory Healthcare Services group, and we just received approval to tender for a new Sheikh Khalifa Medical City. We are in the process of evaluating tender responses for a new Al Ain Hospital and we are working on designs for and awaiting approvals to proceed with a new Rehabilitation Hospital. A new Al Sila Hospital and a new Ghayathi Hospital are also on the way, so we are quite busy.

What is the process and timeframes involved with the development of healthcare-related projects. What stages does the development go through as a whole and what is the contractors' involvement at each stage?

To develop a healthcare project is different from other construction projects because the planning is so detailed and involves so many stakeholders – each of whom has a vested interest in the final design from a patient safety perspective, a patient service perspective and an efficiency perspective.



While the patient is our ultimate customer, their proxies include consultants, physicians, nurses, techs, lab people, radiographers, transport personnel, pharmacists, admitting staff, dietary people, housekeeping, environmental safety, maintenance, special project managers and other end users... it is a lengthy list!

We have many focus groups, and we take input from all of them (including patients) and design our specifications around their needs to serve the patient better. It is a very detailed exercise starting from planning definition of requirements to preparing detailed specification documents. It takes anywhere from eight months to two years to carry out a full planning and design of a healthcare facility, depending on its nature and complexity.

After completion of the design and tender documents, the projects are procured by inviting high profile qualified contractors to bid on the project. After a very detailed evaluation, the project is sent to the Executive Council for approvals, after which SEHA then contracts with the selected contractor. We then have to obtain various government approvals, permits and the like. And finally, the construction can then start. From concept to completion, you can see that even a small clinic can take two years to complete, while a major hospital like the new Mafraq Hospital may take six or seven years.

In SEHA projects, the contractor is always treated as a partner to deliver the project, with the contractor benefitting from the support required to deliver the project on win-

win basis. They are involved in all decisions – particularly in value engineering, starting from bidding tendering phases. By SEHA policy, the contractor is only engaged after completion of the design.

What are the special considerations when tendering out and constructing a healthcare project?

Tendering of a healthcare project is similar to other building projects except that we have to identify and engage specialized contractors with knowledge and experience in healthcare projects. Special consideration should be taken for phasing of the project to include all the special works, particularly the medical equipment and furniture.

How do these differ from other building jobs?

Hospital buildings differ from other facilities in many aspects, particularly the MEP and medical equipment. Walls, work surfaces and ceiling materials must be bacteriostatic. Door and handle surfaces are bacteria resistant or coated with negatively charged ions to repel dirt and bacteria. Special paints and varnishes are used that have special bacteriostatic properties. The walls carry not only standard electrical but specialized electrical connections to protect sensitive medical equipment from power fluctuations.

There are back-up systems to almost everything. The plumbing is not only for water but for vital gases including oxygen, nitrous oxide, medical air, carbon dioxide, and nitrogen. Technology surrounding medical

innovation in pharmacy, diagnostic, nursing and treatment procedures requires an up-to-date knowledge from our consultants in order to be at the forefront of medical techniques, while ensuring that these systems are also tried and tested in the health care industry.

In this respect, Information Technology (IT) is evolving to provide better integration between hospital staff, hospital systems, patient and care givers, and improved mobility to hospital staff by means of handheld wi-fi devices replacing fixed and mobile computer stations. Whilst these technologies are not always available or known at the time of planning, the hospital infrastructure should, where possible, have capacity and flexibility to incorporate future IT upgrades and innovation.

There are many pieces of medical equipment that are of high sensitivity which if not installed, calibrated and tested correctly can affect people's lives. Special care is taken that all installations and equipment are correctly installed and placed. Testing and commissioning of the healthcare facilities is rigorous. Multiple certifications are required before patients can use the facility and the operation of the hospital buildings commences.

What importance is given to Mechanical, Engineering and Plumbing (MEP) works.

The MEP works in hospitals are the most critical and complicated aspect of the building, therefore special care is always taken at all stages starting from planning, through to design and construction.





“The project is managed using highly qualified engineers and project managers. It is the first healthcare project in the Gulf to use BIM software and full document management system.”



Commissioning of the MEP works is a very important phase before installing the medical equipment. One important aspect is that SEHA approves only high profile specialised MEP contractors to implement such important works. As previously detailed, there is no margin for error. People's lives are in our hands. We never forget that.

What is the importance of the client/ operator, consultant and contractor relationship?

At SEHA we work with all parties as partners based on a positive relationship focusing on the one goal to build the facility and have it built to a high level to meet the vision of SEHA and to provide a good environment for patients and visitors particularly, and hospital staff in general.

What do you look for in a contractor?

Fairness, honesty and focus on doing the work on time, with required quality. They should not be claim oriented.

Are there any unique initiatives or procedures put in place for the construction of the new Mafraq Hospital?

The project is the biggest healthcare facility that is being constructed at present in the Gulf. It is also an ESTIDAMA-rated project meaning that it has embraced all four of the urban sustainability concepts of the Abu Dhabi Planning Council including the

environment, the economy, along with the social and cultural fabric of the community.

It utilizes multiple recycling systems for waste and run-off water, special glass materials to increase light transmission while reducing heat transmission, special high efficiency air conditioning and air handling systems to increase efficiency and reduce power requirements and employs extensive use of solar panel and other energy efficient system to further reduce its burden on the environment.

The hospital was the recipient of the 2010 Best Sustainable Hospital project in the Middle East at the Hospital Build Middle East exhibit held in Dubai. Special care is being taken to construct the project on time, and a special steering committee was set up to oversee and solve major issues.

The project is managed using highly qualified engineers and project managers, and is the first healthcare project in the Gulf to use BIM software and full document management system.

What are the key challenges being faced on the project?

As with any major project there are always challenges. Completion of works and getting approval from governmental departments are major issues. However, with good planning and the support of many authorities we have not come across major problems so far.

How has the relationship with HLG grown over the course of the project?

All stakeholders know how important this project is to Abu Dhabi and the UAE and they are all positively engaged to make sure it is successful. As with any major project that is years in the making, the other challenges are user changes that need to be properly managed. This is being done with the help of the project manager, the consultant and the contractor.

What current and future trends do you see in the construction of healthcare facilities and the range of services offered?

The Government of Abu Dhabi is giving high priority to develop healthcare infrastructure of a high standard in the Emirate of Abu Dhabi to serve the communities and provide world-class healthcare environments to the residents of Abu Dhabi.

In the next few years, we will see more new projects launched that will replace aging healthcare infrastructure. And while activity in the public sector is significant, there will be even more activities in the private sector as providers enter the market to take advantage of the significant opportunities for growth in this region.

Who will benefit from all this? The patient. Competition means services improve for everyone.



MEP, A TOP PRIORITY FOR HEALTHCARE

Mechanical, Electrical and Plumbing (MEP) works are a crucial part of any healthcare project, explains Managing Director of Habtoor Leighton Specon (HLS) Thrasos Thrasylvoulou. And having been directly involved with the construction of over 20 hospitals, Thrasos is very experienced in the field.



Thrasos Thrasyvoulou
Managing Director
Habtoor Leighton Speccon



In most multidisciplinary high-end projects such as hospitals, MEP works lie on the 'critical path' and are crucial to the success or failure of the project, both in terms of time and quality.

Accounting for anywhere between 35 and 40 per cent of the total project value, MEP works (including all systems) begin right after piling is completed. The first MEP jobs involve underground drainage and external works. MEP works reach their peak between 50 and 70 per cent mark of the civil works, and continue until the end of the project, with testing, commissioning, handing over and the final close-out of the contract.

HLS is currently involved in three healthcare projects in Abu Dhabi.

The new Al Mafraq Hospital in Abu Dhabi is one of the largest MEP projects currently under construction in the UAE. There are currently over 500 workers on the project with a total of 3,000 workers expected during peak MEP work.

HLS's scope of work as an overall partner to the project's integrated model includes: engineering; the preparation of shop drawings; procurement; installation; testing & commissioning of all MEP works including lighting, power, ELV systems, HVAC, plumbing, drainage, cold and hot water, medical gases, pneumatic systems, LPG gas systems, generators, MV switchgears, transformers to cater for the 22kV/11kV substations and distribution, landscaping, infrastructure and external works.

The project's building information management (BIM) system enables three-dimensional drawings and the simultaneous preparation of

both civil and architectural working drawings. Modular installations of pre-fabricated electro-mechanical services for wiring and ducting are also being utilised.

A large hospital project poses several challenges and requires a high level of interaction between civil works and MEP works. At the new Mafraq Hospital HLS achieves this by interacting directly with the main contractor as one team and attending technical meetings, progress meetings, quality and safety meetings together.

Since hospitals deal with the lives and the health of patients, special attention is given to hygienic and clean conditions and the distribution of air and water. Strict quality controls and installation procedures must be followed at all times to ensure the highest standards.

HLS is currently involved in two other major hospital projects in Abu Dhabi, one of which is with the Six Construct Samsung JV on the Cleveland Clinic Abu Dhabi.

The HLS team is highly experienced in this sector, with many senior staff having previously worked specifically on hospital projects, both locally and overseas.

The HLS Group Engineering Manager, who is currently based at the new Al Mafraq Hospital project, has worked exclusively on MEP works on 17 large hospitals in the last 10 years in the UK.

The Testing and Commissioning Manager has over 15 years of experience in the testing and commissioning of hospitals in the UK.

Similarly other key personnel in the project management and execution teams, including supervisors, have significant experience in the field. The advantage of having this experience in the team is that when required, team members are very capable of making sound on-the-spot decisions on their own.

Another strength of HLS is a strong focus on health, safety, quality and the environment. It is one of just a handful of MEP companies to be certified under OHSAS18001:2007, ISO9001:2008 and ISO14001:2004.

Maintenance of hospitals, which is critical, is usually offered under separate contracts and the industry norm is a maintenance period of five years. HLS's staff are also very experienced in this field, with many of them having previously carried out maintenance of HVAC systems at the new Nicosia General Hospital in Cyprus.

HLS is currently tendering over AED4.5 billion worth of projects and we are looking at taking on some of the largest MEP projects in the Middle East and North Africa. We expect to be involved with several large healthcare projects in the region over the next few years.

As an Associated Business of the Habtoor Leighton Group, HLS is one of the leading MEP specialist construction companies in the region, with experience in turn-key projects. With more than three decades of experience in the regional MEP sector, the HLS core team has delivered landmark projects including airports, hotels, hospitals, commercial and residential towers, universities, military projects, HV/MV substations and overhead transmission lines.



HLS carrying out MEP works

Leighton Contractors and Thiess have constructed several leading healthcare facilities across the country. They are both wholly-owned subsidiaries of HLG's parent company Leighton Holdings Limited (LHL), and HLG benefits from leveraging the global experience and resources of both these organisations.

New Royal Adelaide Hospital, South Australia

NEW ROYAL ADELAIDE HOSPITAL

Leighton Group company, Leighton Contractors, is part of a consortium constructing the new Royal Adelaide Hospital (new RAH). In 2011, the South Australian Government selected SA Health Partnership to deliver its patient centered, technologically advanced hospital – the cornerstone of the State's broader Health Reform.

The new RAH, to be built on a nine hectare site in the heart of the Adelaide's CBD, is due for completion in 2016.

The A\$1.85 billion (US\$1.9 billion) project will be delivered as a Public Private Partnership (PPP) under the State Government's Partnerships SA model, and Leighton Contractors' share in the project is A\$930 million (US\$960 million).

The SA Health Partnership is responsible for the financing, design, construction commissioning and facilities management of the non-clinical services of the hospital for 35 years, returning the hospital to the State in 2046. Design and construction is being provided by Leighton Contractors and Hansen Yuncken and in a Joint Venture (HYLC); facilities management provided by Spotless and the Information Communications Technology (ICT) support and maintenance by

Hewlett Packard. Leighton Contractors is also one of the key equity investors in the project.

SA Health will continue to provide all core clinical services, staffing, teaching and research.

Key components of the project include:

- An integrated ICT solution that is central to the design and operation of the new RAH
- Technology features including patient weighing beds, wireless technology and equipment tracking capability, and intelligent information systems such as bedside entertainment and meal ordering for patients as well as access to patient records via mobile devices
- 2.7 hectares of courtyards, sky gardens, outdoor treatment areas - more green space for patients

- 100 per cent single inpatient rooms with opening windows, natural light and access to outdoor areas and green space –focusing on natural healing and well being for patients and staff
- 40 per cent reduction in carbon emissions - using less water and energy
- 4 Star energy rating
- A commercial retail area
- An underground car park with approximately 2,300 bays

Upon completion, the new Royal Adelaide Hospital will be the most technologically advanced hospital in Australia with 800 beds, including 100 same-day beds, and the capacity to accommodate more than 85,000 overnight admissions and 400,000 outpatients per year.



Royal North Shore Hospital Redevelopment, NSW Australia (Thiess). Image Courtesy of NSW Health.

SYDNEY'S ROYAL NORTH SHORE HOSPITAL REDEVELOPMENT IN AUSTRALIA

Leighton Group company, Thiess, is part of a consortium that will deliver Sydney's Royal North Shore Hospital and Community Health Services project for InfraShore Pty Ltd. With a design and construct contract valued at A\$721 million (US\$747 million), the project is the largest-ever health Public Private Partnership (PPP) undertaken in New South Wales and is scheduled for completion in 2014.

Consortium members include Thiess Pty Ltd, Thiess Services, ISS Facility Services, Wilson Parking and financier ABN AMRO. The contract involves the financing, design, construction operation (with the exception of the provision of clinical services) and maintenance of the facility for a period of 28 years.

The PPP has enabled architects and planners to draw on the best ideas from around the world and deliver an expandable design that can grow and change in response to healthcare needs.

The designs for the new buildings will create an integrated hospital campus – promising ease of access for patients, families and visitors, while supporting effective patient flow and minimising travel times.

On completion, the redeveloped Royal North Shore Hospital will offer a new Main Hospital Building (Acute Care facility), a new Community Health Building and refurbishment to some existing buildings, providing:

- 462 acute beds to complement the 124 beds provided within the already completed Douglas Building
- 40 acute mental health beds
- additional chemotherapy and renal dialysis chairs
- enhanced diagnostic services and ambulatory care services, and
- a total of 29 procedure and operating rooms.

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