Australian Healthcare Facilities:

PLANNING FOR AN UNCERTAIN FUTURE

Design • Development • Technology

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AUSTRALIAN HEALTHCARE WEEK

Designing healthcare facilities for Australia: What's on the horizon?

It's been a big year for healthcare facilities design in Australia. Kempsey, Blacktown Mt Druitt, and Gold Coast Private Hospitals have seen significant developments over the course of 2013 and the VCCC, Royal Darwin and Fiona Stanley in Perth are just some of the big players making advances in design.

Over the last 12 months, I've been lucky enough to interview some of the key players in health facilities design, management and construction – those directly involved in projects that are shaping our healthcare facilities for the future.

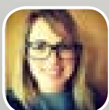
As the Australian demographics change, so do the needs of the patients, staff and visitors who require health services. Maximising the potential of a limited budget is becoming much harder and customer centricity is becoming more important than ever to improve outcomes.

It seems pretty clear there are still some key underlying challenges that remain in the industry; whether planning, expanding, building, maintaining or retrofitting a health facility. The growing population and tightening funding is central to the need for continuous innovation. There are also some huge opportunities that have been gathering pace over the last 12 months, opening up a whole new realm of possibility for innovation in design, sustainability and technology, to name just a few.

To get a clearer picture of what's changing the landscape of future healthcare facilities, ahead of **Australian Healthcare Week 2014** we brought together eight of the industry's key players, already heavily involved in driving sustainable facilities for the future.

We posed the question – how can Australia plan effectively for an uncertain future?

I've drawn up this report on some of the key trends that emerged, I hope it gives you some insight.



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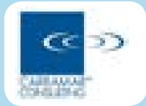
Roundtable Participants

Chairperson:



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Adaptability

DEMOGRAPHICS

It's no secret demands placed on health facilities are constantly changing, which means the services provided need to be flexible.

So can you really plan and forecast the needs of the Australian population?

There are a few strands that emerged during the discussion. Stuart Moore (Epworth Healthcare) referred to the analytical information Epworth use during the development stages of projects and how this can help with mapping provisions: "We look at data in terms of trends in clinical areas of all sides, public and private, across Australia. We use this data to try to map out growth areas across Victoria (the market in which we operate). That information directly impacts the development projects for our existing sites. We also look at Greenfield opportunity sites in Geelong.

"That information is used alongside the figures we get from Government forecasting such as funding models etc."

Epworth HealthCare Current Major Development Projects

Epworth Geelong

- Greenfield
- 2011 to 2016
- Total Cost - $447m
  - Stage 1 - $185m
- University Teaching Hospital
- Adjoins Deakin Waurn Ponds campus
- Design completed
- Construction Jan. 2014

Overview of projects at Epworth Geelong

There's a whole range of information available from the Government that can be incorporated into plans. Anna Morgan (Southern Health) uses information based on areas of growth to gain a better understanding of the timing for expected growth in particular areas when mapping out services.

"The growth catchment predictions impact decisions made in our area quite heavily. We have a lot of older established areas that we currently serve, but in the outer regions there are identified nominated growth areas. We have to understand what the time frames are for that growth so we can incorporate them into our plans."

The fluctuating population growth rates and behaviour predictions of those people have certainly been a challenge for health facilities in the past.

Leonie Hobbs (Carramar Consulting) has first-hand experience in Queensland, where unexpected population growth led to a long term design predicament: "We closed many beds because we had huge facilities at the time. Then something happened that we weren't expecting: we had a huge population influx. We hadn't designed to manage that. That's the dilemma we are still stuck with now. The population modelling was done correctly, it was the provision of services themselves that we got wrong – we were hearing people would use more ambulatory services and therefore need less bed days, but we still needed the beds."

So how can we really predict population? Ultimately, modelling can never be exact, but the message is to use the data sources available to make the most informed decisions.

THE WORKFORCE CHALLENGE

Of course, the adaptability challenge extends beyond the build of facilities to occupy surrounding communities; the service itself needs to be just as flexible.

Two themes tie into the debate: the provision of services themselves and the location.

Perhaps one of the most interesting pieces of research happening currently is in Queensland around contestability. Leonie explained: "With the potential of outsourcing public work, there's becoming a trend in QLD, NSW and WA where we are seeing more of a 'Fee for Service' model provided by the private sector. This may be something on the landscape for the future."

Time will tell how much of an impact outsourcing and contestability will have. Projections produced by HWA in the 'Health Workforce 2025' report make it pretty clear that without major reform in the pattern of health service delivery, Australia faces huge shortfalls in the nursing and related workforce nationwide, and in the supply of general practice and many specialities outside inner metropolitan areas.

There are considerations that should be made during the design and development to start to tackle this challenge. The first is around staff and the experience they have. If we make our facilities a better place to be, we're more likely to retain staff. The roundtable participants discussed how the biggest asset to any facility is the people who work within it, they therefore need to also be at the centre of the design.

We looked at several examples, ranging from the layout of facilities to providing open spaces for staff to relax and research.

The second consideration is around how we're providing the service itself and a question that was raised by Arch Fotheringham (Brookfield Multiplex): "Are we taking the person to the facility or the facility to the person?"

LOCATION BASED HEALTH

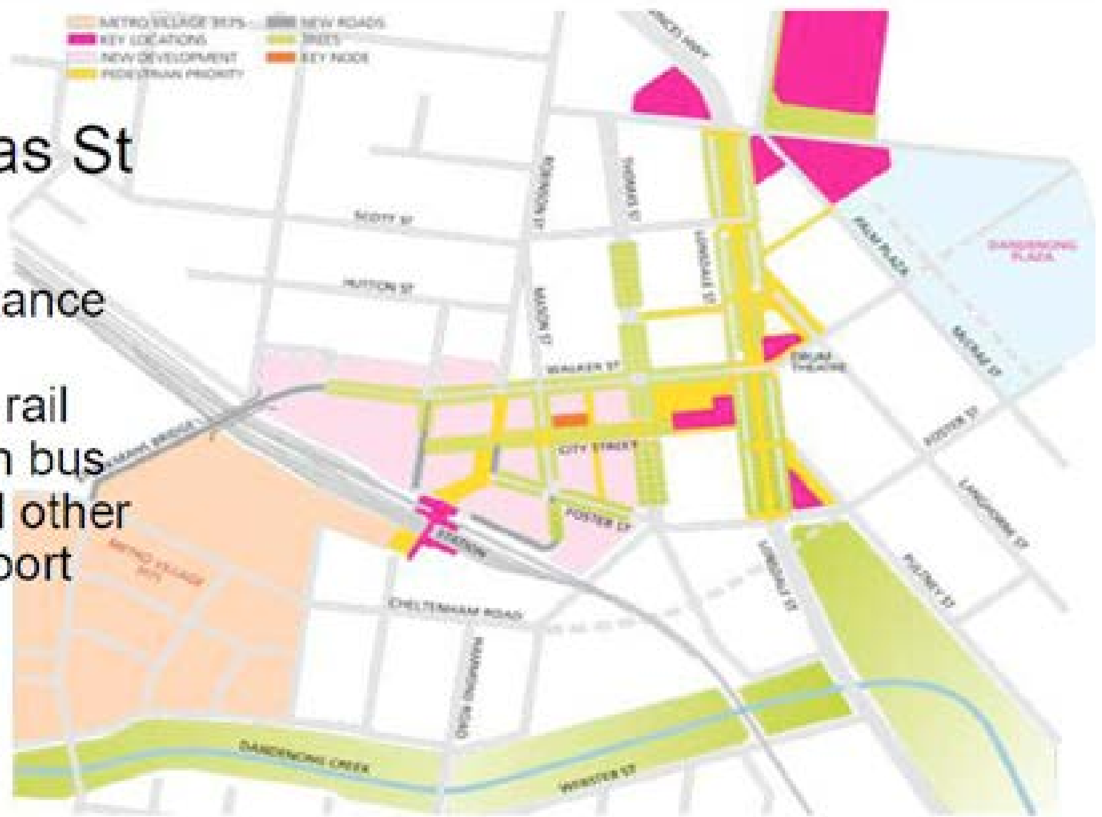
As mentioned earlier, the Government growth reports are one tool for forecasting. Arch suggests that it's important not to reduce options when providing services in these expanding areas: "It's easy to say there's a growth area but you need to look at how you get people out to where that facility is. A good example is if you look at the Western Melbourne area, where a large percentage travel to Central Melbourne for treatment because it's not available in that area. It extends beyond buildings…"

Anna spoke of a recent project in Dandenong, where they experienced similar location issues. The team are in the process of building new and improved facilities at Dandenong Hospital to ensure continued access to the highest quality of care for the community.

The work redevelops a number of community and ambulatory care services provided in disparate locations, bringing them into one central precinct. It's an approach that extends existing services rather than builds new ones.

122 Thomas St

- 3600sqm
- Walking distance from the Dandenong rail station, main bus terminal and other public transport



122 Thomas St - Dandenong

MonashHealth

Location of new building in Dandenong

"As we continue forward, we're about to do master planning in a growth area to do a very similar thing to what we've done in Dandenong. It's about community services, medical consulting, allied health consulting and referring back to our main bases in adjacent areas where the tertiary services are. Understand the services you already have, look at how you can build on them."

We couldn't look at location services without discussing at least part of the rural health challenge. We have an ageing population; a large number of people are retiring and moving out to more rural areas where there aren't as many accessible sub-acute services. They currently have to gravitate back into the capitals.

The population will still also continue to be dispersed – inner city health facilities are run off their feet whilst rural facilities are much quieter and come with their own workforce challenges.

Australia can't continue to be so metro-centric.
Leonie confirmed, "The models of care are changing rapidly. We design to a model of care and it quickly changes. Take cancer care: we used to bring patients in for treatment and get great outcomes and survival rates. We're now seeing the day ambulatory oncology unit gets just as good outcomes. Another example is around physiotherapists. I'm consulting with a facility at the moment that has a strong Allied Health background, the whole structure needs to change as we're now moving into therapy aids. There will be fewer physios and more aids, more groups and less individual spaces. I'm learning people will require less cube rooms and bigger group spaces. We have to be flexible enough to change models of care."

Solutions need to be found and they're expected to be driven through design innovations, extended workforce training and technology.

Funding

VALUE MANAGEMENT

The panel addressed statistics being released in several publications, stating by the year 2020 nearly all of each individual States' budgets would need to be spent on health to manage demand.

It's not sustainable, so how is it going to change? The Government and the private sector have to look at different deliveries for health treatments.

The phrase 'value management' emerged. As recently as August 2013, the Royal Hobart Hospital's $580 million redevelopment was re-drawn to prevent a budget blow out. The hospital – which is now scheduled for completion in June 2017 – will have less floor space, five fewer operating theatres and will take a year longer to build.

Energy consumption also came into the value management debate, as Chris Buntine (Aurecon) confirmed the impact: "Hospitals are becoming more energy intensive; there are huge opportunities to reduce the rate of increase or even bring them down by designing facilities that are more energy efficient. There is a range of ways we can do that and it will free up funding for other uses. We're starting to look at buildings that can reduce energy consumption by 50% and in some cases look at zero carbon – it's huge jumps in energy efficiencies, there's potential for us to make drastic increases there."

FUNDING MODELS

There's a continued shift to alternative funding models. The 'Fee for Service' model is just one that's growing in WA and NSW andthere's an indication that this may also be explored at the Sunshine Coast. Australia should be watching closely to see what the outcome of contestability is.

Anna explained how there's a need for a new form of thinking in Victoria: " We are having to get a bit smarter with our funding and make it stretch a lot further, as we're not getting the same sort of funding. It's time to think outside the box if we want to keep resourcing our facilities, not just looking to government for funding. Look inside your organisation, at sponsorship and other support methods. It's a key way to get funding to renew services and facilities. There are health services in Victoria that are starting to do that, but many still aren't looking beyond the mainstream."

For example in Dandenong, Monash acquired long term leasehold of a property and then arranged for the landlord to fit out the building in accordance with their design. Over a ten year lease period, Monash will pay back the landlord for those fit out works.

TECHNOLOGY

There is little doubt that technology will play a central role in healthcare reform to contain costs, improve accessibility, security, patient experience and, most importantly, save lives. The technology already exists; the challenge lies in collaborating, managing change and investing in the right technology upfront for long term cost efficiencies.

Example of technology discovered during the Australian Health Design Councils Inaugural Study Tour to Europe 2013

Mark Mitchell (Billard Leece) elaborated: "We need to create buildings around people using technology rather than technology people have to work around. It should be at the centre as an enabler. Adaptability and future proofing come at a cost – you need to find the balance."

One example comes from the Victorian Comprehensive Cancer Centre. As Project Director, Tony Michele is very familiar with the considerations that come with implementing new technology: "The cancer centre is a fantastic example, there's $150 million worth of equipment going into a $1 billion building. All the major vendors say beyond seven years at a point in time it's very hard to get that long term over-the-horizon factors into your design. You typically design infrastructure for long term, infrastructure 40, 50, 60 years, and fit out 20 years, but technology is fit for between seven and ten years.

"In Victoria we're seeing a growing recognition that technology sits on a single backbone, something that's not previously been pursued in public hospital buildings in Victoria. It used to be separate network or cable systems for the individual components that support service delivery. Certainly within the cancer centre and the new Bendigo Hospital, we've pursued a single backbone for all systems to be attached to which does provide flexibility. There's the public pressure to get value for money so you need to put in the best supporting infrastructure that technology hangs off for the money that you have."

Inevitably technology will change cost risk factors; you need to allow for things to change over the life of the building – long life, loose fit – there has to be the capacity to be able to swap things in and out by recognising that it's going to change."

Whilst addressing the issue of funding technology, although not a direct design challenge, the group highlighted the need for Australian healthcare to look at prevention in the first place: "Expect more funding to go into health initiatives to reduce costs down the line."

PUBLIC-PRIVATE PARTNERSHIP (PPP)

Many of our Health Facilities Design and Development events have featured a spotlight on PPP models, now widely used across Australia.

According to a new Clayton Utz report, despite their critics, Public Private Partnerships (PPPs) still have a role to play in helping to deliver on Australia's future infrastructure needs – if they are used on the right projects where they can demonstrate their true value.

Arch has worked on five and insists there's better design and better transfer of risk. "Long term, the facility is there for 25 years and still holds the same value at the end of the 25 years. Other shorter term facilities quickly get in a position where money needs to be spent earlier to bring the building back up to scratch. With PPPs, all the operator of the facility has to think about is providing the services it was designed for. That's a big benefit."

Anna also has experience working with PPPs and can see similar benefits: "One of our hospitals is a PPP and even at seven years old looks brand new. It's because of that continual replacement, it has to be maintained. You walk into some other facilities and they certainly look their age, if not older. In that sense, it certainly is value for money to make sure that infrastructure is sustained over a period of time."

However there's scope for the industry to learn from PPPs without adopting the model: "We should be looking at what the public sector can learn from PPPs without necessarily going down that line. There is better quality maintenance and more investment from the client upfront – more smarts up front, essentially ensuring that every dollar is spent in a better way," explained Mark.

PPPs do come with their disadvantages though, one of the biggest around cost and price to bid. It's exceedingly high and on average two out of three bids will lose, which can result in costs of thousands, if not millions.

Sustainability

For maximum efficiency, sustainability considerations are made during the planning stage, but what are the real benefits of sustainability incorporated into design and development?

Mark explained how the real benefits can be seen when combining sustainability and experience: "It's the science of sustainability alongside your evidence based design that come together through the experience, it makes people feel good and when people feel good, there's a correlation with positive health outcomes."

Chris highlighted the need to keep focused on what you're trying to achieve: "We often see too much points chasing, it's a matter of finding out the priorities for the hospital and seeing how they line up. That's really a documentation evidence reporting system, it's not meant to be a set of design guidelines. We should be putting that to the side and free thinking around potential innovative opportunities. If you're doing all those things, you'll probably pick up those efficiency points anyway.

"The private sector is getting heavily involved in sustainability, we call it liveability – it's a good story in terms of it marketability and it creates richer and more vibrant communities. We're finding it's a shared initiative between public and private."

COMMUNITIES OF THE FUTURE

This liveability factor extends beyond design of the facility, encompassing the potential influence a facility could have on the design of the wider community. Could Australia use hospitals as a driving force, creating a community approach to energy efficiency?

Chris emphasised the potential in extending planning considerations: "When we're talking about planning, that's our opportunity to talk about the surrounding community and how that's planned to promote greater levels of liveability with healthier, more integrated communities where you've got active lifestyles and healthy food options.

"There's a lot of discussion about what a sustainable community looks like and I think the healthcare sector can get very involved in that discussion because prevention is cheaper, more cost effective and of course long term. We should be broadening the sense of what planning means."

TECHNOLOGY INFRASTRUCTURE

Another key factor in sustainability comes with future proofing. ICT is without a doubt one of the hardest components of a facility to future proof, even throughout the period of the construction contract. Stuart explained his approach for managing this phase of development: "We're talking four or five years on average and there are a number of packages within a construction contract which we (as a client) prefer to co-ordinate with service engineers. We'll then actually hold on to them ourselves until much later in the construction programme before letting them as separate construction packages."

Glen Scott (Schneider Electric) confirmed it's the hardest part designing for something way down the line by the time it gets installed. With ICT there is a whole range of cabling for a whole range of different scenarios, whether it's in the ceiling, or the walls – there's a need to make provisions but not necessarily decisions until much closer to commission.

Leonie drew on the experience of the Gold Coast University Hospital. "It was predicated to have an electronic medical record. Building MRI and PET Rooms, we're now future proofing PET because we don't know whether it's going to be in or out. We're planning for things we don't know the answer to in the end, then we have to retrofit something we didn't have to plan for."

So how do we try to plan for the unpredictable? There was a consensus in the group that it ultimately comes down to not cutting off any options, but maintaining a balance. The roundtable participants had some advice:

Stuart: "Don't reduce your options. Plan to provide yourself with enough options to at least be able to make a change without it being a massively disruptive."

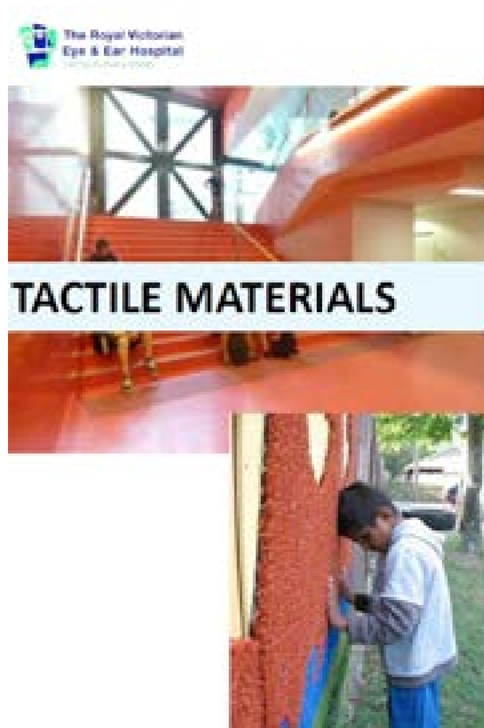
Arch: "For the Royal Children's Hospital, it was a case of as late as possible selection of equipment. To give us the backbone to support this approach, we had to have a model to base our decision on. We went through and identified what the limitations were. For example, if we go for a 5 Tesla, what would that mean if we went for a 7 Tesla in the future – what would be the ramifications to the building and could we manage the weight. You need sufficient capacity for a different outcome. It's that risk analysis, then making an educated selection. No one can see the future so you just do all you can to prepare."

Mark: "A lot of what ICT can offer changes the way people work which can be quite dramatic, it's not something you can just work out later on, as it can radically affect the way you design a building. Be wary of over-building: we've seen money invested in future proofing that end up cutting out options for current capabilities."

Arch: "Understand that in health you're replacing 30% of your FFE every year so within three years it's all replaced. Always look to maximise your dollar and ensure that you're getting a return on what you're spending, not just using something that's the bees knees out of America."

It's going to be an interesting next 10 years for technology and sustainability. There's been a focus on sustainability for what we can do for the planet, but it's now about what can be done to benefit the patient. It's time to get better at quantifying the impact of what's being designing for.

Technology has the potential to radically transform the entire range of health services, the potential is huge. ECQs can now be sent to people's phones – the future could see the same for a CTG with the obstetrician on the move who can make decisions miles away. The message from the group: Plan for looking beyond the hardware at exactly what we have the potential to do. Create buildings that are around the people using the technology rather than the technology, where people have to work around the technology. It should be at the centre as an enabler. The key is adaptability and future proofing comes at a cost – you need to find the balance.



Example of materials incorporated into the RVEHH

Customer Centricity

It's essential to understand how to plan, design, construct, redevelop, manage and co-ordinate with stakeholders, as ensuring customer centricity is key to meeting objectives.

We're seeing huge leaps in design methods that take into account the environment for the patient and visitors throughout the course of their stay.

PATIENT FLOWS – INNOVATION IN DESIGN

One project capitalising on new innovation opportunities is The Royal Victorian Eye and Ear Hospital (RVEEH). Jenni Gratton-Vaughan, Executive Director Strategy, Planning and Redevelopment at RVEEH and Neil Appleton, Design Director at Lyons Architects recently shared with me the unique work they're doing to create a change in the patient experience, ranging from flow throughout the facility to using high visual contrast to delineate between floor surfaces and wall surfaces.

It's becoming paramount to identify where the stress points are for a patient and incorporate these into design.

Other examples mentioned during the roundtable discussion included the New Queensland Children's hospital, being naturally ventilated on the first three floors as a result of the design, responding to the feedback about children being around the air-conditioning.

Chris talked about incorporating Biophilic design: "It's a big focus; we can give people more control of their environment and reconnect people to their natural environment, to provide a calming influence."

Example of proposed bedroom design at the RAH

The patient flow doesn't start and stop at the front doors of the hospital, it's important to ensure innovations in patient flow don't also become a hindrance: "Technology can help mitigate stress in areas such as car parking and check in – but it's a balance, and you need to know your customers, you don't want to make it more hard work for patients. It needs to be appropriate and enable, not disable," Leonie explained.

It's predicted more elderly people will be visiting medical centres so the industry needs to test innovations to see if they're the right answer before any significant roll outs. Evidence based design, using study research and observations needs to be monitored.

COMMUNICATION

Consultation and communication with user groups and stakeholders is a huge part of the development of any project; although it can often take the most time, it's making substantial differences to the design and outcomes of Australian facilities.

Mark's had vast experience in the field and noted that perhaps it's time for a change in the way users are communicated with: "We could educate users right at the beginning of the whole process; their role shouldn't be to just go in and pick holes in the design. They should be talking about how design could be better in terms of operating to that specific facility. These people often know the building in and out, and know small tweaks that could be made to make big differences. That brief isn't always given to them.

"Customer engagement is really changing the face of design; the design of healthcare over the last ten years has been so much more than the ten years prior to that. There is much more involvement from the public and different sectors, the collaborative process has really improved and I'm optimistic it will keep improving at this rate."

It's that element of collaboration and communication that will continue to be essential to assuring an efficient design and development process.

Conclusion

The roundtable certainly raised some interesting challenges that need to be tackled to meet future demand. The conversation is set to continue during **Australian Healthcare Week 2014**, to be held in Sydney on 25-27 March 2014. The event will bring together health professionals, contractors, architects and technology specialists to network and develop actionable strategies to:

1. **Build and develop health facilities that are more efficient and suited to meet the health demands of the coming century**

   CLICK HERE to find out more

2. **Embed new technology that will improve health productivity whilst continuing to improve medical outcomes**

   CLICK HERE to find out more