

Creating sustainable construction sites

Traditionally, construction sites were not models of sustainable practice. Leighton Contractors is turning the tide in Queensland with a collaborative approach.

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Petie Walker, One One One Eagle Street, Project Manager

The construction site is where a sustainable design is translated into a sustainable building. Yet, while green building materials and products are commonplace on today's sites, environmentally friendly practices are not always the norm. To help address this, Leighton Contractors is taking a different approach to project and site management in Queensland.

Darren Weir, General Manager, Northern Region, Construction says, "We are building a strong reputation for relationship based contracting, or collaborative contracting as it is sometimes called. Recent projects like Inner Northern Busway (INB Queen Street to Upper Roma Street) and Green Square have helped cement this, with INB winning two awards for industry excellence in alliancing. We are using similar models on current projects including the Eastern Busway – Buranda to Main Avenue – the HQ development and the One One One Eagle Street project. One of the benefits of this model is that it encourages and emphasises innovation in design and construction, including sustainability innovations."

"We've undergone culture change throughout our organisation and we need to carry this through to subcontractors so they share our goals," says Petie Walker,

Project Manager of One One One Eagle Street. "If you work on a green building you have a different mindset at the end than when you started, and you bring it to the next project. We're working hard to encourage our subcontractors to have that mindset."

The Green Square South Tower project was the catalyst for change, she says.

"It gave us the opportunity to go hard on sustainability and we made the most of it at every level of our business, including how we engage with subcontractors," recalls Petie. "It was hard to start with, but we've seen a huge leap in the education levels of suppliers and subcontractors. Collaborative Contracting has helped us to take sustainability, and our Green Star experience, beyond being just a tool to creating a culture that embraces the whole contracting community."

The Collaborative Contracting program that Petie developed for South Tower's construction has been carried through to Leighton Contractors' subsequent building projects in the region. Collaborative Contracting creates a 'one team' environment that cuts across traditional demarcation barriers.

"We want to avoid a situation, for example, where an on-site variation is made to a materials specification that affects the sustainability of the building

because the designer wasn't consulted," says Petie. "Or where a carpenter thinks it's OK to make temporary formwork out of non-recycled timber. We try to get across the message that everything you do on a construction site has a potential environmental impact, and that creating a sustainable building site extends to every material, every action and every person."

Sustainability training

Before construction begins, the Leighton Contractors team facilitates the creation of a Contractors' Charter at workshops with subcontractor representatives. The Contractors' Charter flows on from the Project Charter, which they develop in a similar way with the client level organisations. Both Charters list agreed objectives and commitments for the project, but viewed from two different perspectives.

The Contractors' Charter is displayed on signs around the site and at sitework barbeques where subcontractors discuss the list. The Charter also provides the framework for the subcontractor education program.

"It's unusual to have all the same subcontractors on every job, so we take education seriously," says Petie. "We

have our own sustainability training program for onsite personnel on top of whatever their employer might provide, because it's important they understand and support our sustainability goals and our expected practices. We give them a sustainable site briefing and we also include sustainability in our safety induction. Then we keep the momentum going with newsletters, posters and other communications."

Team activities are equally important, bringing together subcontractors, Leighton Contractors staff and client representatives for competitive events that require them to work as teams and encourage friendships, as well as family fun days, bowling and other informal events. Having a high level goal that goes beyond business as usual is also helpful for team-building, says Petie. At South Tower, striving for a Green Star Rating for Office Design, a first in Queensland, helped to excite and bond the team.

Incentives for sustainable practice

Once a project is underway, the team runs an incentive scheme for good examples of sustainable practice. For example, during the South Tower construction, they rewarded a company that suggested an environmentally friendly

method of washing out concrete trucks.

"One of the really exciting aspects of a collaborative culture is the flow on effects it has beyond meeting the project's sustainability requirements," says Petie.

"Workers and staff often come up with environmentally-related initiatives. At South Tower they started a worm farm at the site office and a compost heap at the crib facilities, using the compost to fertilise young trees. In the end the workers were self-regulating; two months into the structure, we had no need to put people onto sorting waste because people always used the right bins."

"Traditional design and construct has a 'them and us' mentality so the Collaborative Contracting style we adopt is what sets us apart from other contractors. We're not required to work this way but it's worth every effort. For us it's the preferred way to work, and it means clients and subcontractors like to work with us."

Right Petie Walker and Mark Brockhurst on the Green Square site in Queensland.



A starring role

Leighton Contractors is committed to remaining at the forefront of sustainable development. Leighton Magazine spoke to two Queensland based senior managers – Greg Muir, Building Operations Manager and Mark Sanders, Building Services Manager – and to client Andrew Borger, Executive Director, Leighton Properties, who is also a Director of the Green Building Council about their ‘green building’ experiences.

Why is Leighton Contractors behind so many ‘green’ commercial buildings in Queensland?

GM: The catalyst was designing and building Green Square’s South Tower, which Brisbane City Council wanted to be Queensland’s first 5 Star Green Star rated building. Green Star was a new concept in Australia and although we had applied elements to our projects, such as energy efficiency, we hadn’t done so systematically. South Tower took us to the next level. After that, we were sustainability evangelists.

AB: We had butterflies over South Tower because sustainable building was new territory for us. Working with Leighton Contractors gave us confidence; we were treading new ground together and sharing the risk. Since then, the Northern Region team has gone through cultural change – they have true believers from top to bottom. Partnering with them gives us a major

competitive edge because they apply their expertise from day one of a bid to make sure we have a development application and cost plan that are workable.

How has the industry changed in Queensland since South Tower?

GM: In 2004 it was difficult to persuade suppliers to meet our environmental specifications for South Tower. Only one supplier offered concrete with fly ash in the mix; the others told us fly ash was too hard to source, so we told them we would not give them work until they met our environmental specifications. When we started work on North Tower 12 months later, there had been a quantum leap: four concrete suppliers offered us an environmental product. Now all parts of the Australian supply chain provide green equivalent products, and prices have come down.

AB: Green Star design has gone from being a trend to being a ‘must have’: it is compulsory for all Grade A and Premium Grade commercial buildings to have a 4 or 5 Star Green Star rating. So there have been fundamental changes in the past five years that have given the whole industry a big kick. Developers like us now have compelling commercial reasons to build sustainable buildings. More than 90 per cent of our major tenants want a high level of sustainability. This doesn’t mean we can charge higher rents, but it does mean our buildings lease first and lease faster. Also, as an asset, the investment return is higher because of reduced operating costs.

How is Leighton Contractors helping to raise standards for sustainable buildings?

MS: We see it as our role to drive change by sharing our experiences with the whole

industry. Our team has a program of knowledge sharing activities, from presenting our achievements at industry events about sustainability to addressing Green Star accredited professional training sessions. We also carry through what we learn from one project to the next, and are committed to pushing the barriers. At Green Square North Tower, we installed a gas fired cogeneration system and an exhaust control system; technology that had never been applied to a commercial building in Australia. At HQ, we achieved the highest score to date for a Green Star v2 rated office – 84 points. We applied our experience and were driven to go that extra mile. Our extra research and design initiatives add value for our clients, dramatically improve sustainable outcomes and expand our knowledge, which can then be applied to other projects.



Left to right Andrew Borger (Leighton Properties), Mark Sanders and Greg Muir.

AB: In May 2004, when we won the South Tower contract, Leighton Properties had a \$200m pipeline of projects in Queensland. Now our pipeline is \$3bn. That’s what sustainability has done for our business. The Leighton Contractors Northern Region team has achieved outstanding sustainable outcomes for us on three successive projects – South Tower, North Tower and HQ – and set the sustainability bar higher each time. They have pushed us to aim higher and come up with even smarter solutions than we envisaged. When we were planning North Tower, they decided during the construction phase that for a small uplift in contract price, we could go for a 6 Star Green Star rating instead of 5 Star. This required a key initiative so we decided on cogeneration. This decision not only helped to make North Tower Queensland’s first completed 6 Star Green Star rated office building and an award-winner, it is providing higher cost

savings than anticipated and has put us in a great position for when the emissions trading scheme is introduced.

What are the big issues in sustainable buildings today?

GM: We can guarantee that we will design and build a project to the desired Green Star Rating standards, but we cannot guarantee the performance outcome because we do not control how the building is operated, managed or maintained. That’s why we never walk away from a project after handover. Every quarter in the first year of operation, we take our subcontractors and designers back to see how we can improve its efficiency. We use remote monitoring to obtain real time information about what is working and what is not, so we can let the facilities manager or owner know what they need to do to maintain sustainability levels over different seasons.

AB: The next challenge is how tenants use the buildings. With South Tower, we had 11 different government tenants moving into a building that was the first of its type. So we worked with Brisbane City Council to develop an education program about using a green building which we implemented three months before the building was completed. If we don’t put the effort into education, the environmental benefits will be lost and cost savings won’t be realised, so it’s a good investment.

What lies ahead for sustainable buildings?

AB: First, we will see the rise of commercial and mixed use precinct developments that realise greater energy, water and waste system savings than single buildings. Second, governments will pressure the industry to achieve the same sustainability outcomes in multi-unit residential buildings as in commercial buildings.

Third, the emissions trading scheme (ETS) will force owners to assess how their existing buildings cope within an ETS environment. Having a portfolio of sustainable buildings could provide companies like ours with savings in the marketplace that owners of high-emitting buildings won’t have.

MS: Every building we design is more intelligent than the last and emerging technologies can only drive more change. They will help us to reduce water and energy consumption further and to find more cost effective ways to reach environmental benchmarks. We will also see an emphasis on the sustainability of a building over its whole lifetime that goes beyond water and energy consumption. Increasingly, clients are asking us for a lifecycle analysis of all materials and plant, and we see this trend continuing.