

# A game of two halves

The construction of the new Wembley Stadium is one of a number of building mega-projects that have posed huge procurement challenges, says Andrew Myliu

**The £757 million Wembley National Stadium is one of the largest, most costly and complex construction schemes in the UK. Like all mega-projects, it poses enormous technical and logistical challenges. How a project is procured has a huge bearing on whether problems arise, and whether disputes break out between different parts of the construction team.**

The stadium, which is scheduled to open on 13 May 2006, is being built under a design-and-build contract. This is a modern procurement method under which the main contractor (Multiplex, an Australian company) in effect becomes the agent for the client (Wembley National Stadium Limited - WNSL), as well as being responsible for building the job.

This is a departure from the norm as traditionally, clients would deal independently with a designer, quantity surveyor and main contractor. Under design-and-build, however, the main contractor becomes the client's single point of contact, managing all other contractual relationships and the associated construction risks. The contract was also let on a fixed-price, lump-sum basis, shifting project risk to the contractor.

## Dumping risk

Simon Murray, chairman of contractor Geoffrey Osborne and former director of major projects at Railtrack, says that in principle, "having a single party who you deal with and who takes responsibility is good, but it shouldn't be absolute. It's naive to put all risk onto the team doing the project. And if you are doing something of national significance, the idea that you can dump risk is absurd."

Risk dumping happens when companies pass responsibility for danger or problems that may occur during construction to firms they hire to do work for them.

"Main contractors' relationships with the supply chain are very patchy," Murray says. "There are some who want to get the lowest possible price and dump risk on the people they hire to do the work. Yet those who really know how to do things are the suppliers and specialist contractors."

He contends that lowest price generally offers a false economy, since it forces suppliers to compromise on the quality of their technical solution.

Graham Edgell, group procurement director at contractor Morgan Sindall, agrees: "A lot of clients are after a quick process - they just want the job done, without any added-value. Because we make such a stupendous effort for such small reward, and our guys are under such pressure to deliver for the sum agreed, there's no opportunity of letting your guard down. You've tied yourself to a price and then you've got to go out and do it."

Funding the Wembley Stadium project ran into trouble before private-sector backing to build the stadium had been secured, when government funding body Sport England handed over a £120 million lottery grant to WNSL to help with site acquisition.

Quantity surveyor Cyril Swett and the Office of Government Commerce (OGC) reviewed the project's finances and it was recommended that future lottery-funded projects be routinely audited by the OGC. Swett also recommended that the project be let on a fixed-price, lump-sum basis. If costs were to

escalate, this meant WNSL would not have to foot the bill and therefore would not come begging to the government to be bailed out.

Despite the UK construction industry tradition of firms "buying work" - taking on projects at cost, simply to keep its people and plant active - British firms walked away from Wembley. Multiplex, however, claimed it could deliver the job for the price offered, and told its shareholders it would turn in a profit.

Wembley's great technical challenge was the structural design, construction and erection of its signature arch. Multiplex awarded steelwork firm Cleveland Bridge an 81-week, £60 million lump-sum, fixed-price subcontract to fabricate, supply, deliver and erect the arch and roof.

However, this deal has encountered problems. In a claim against Multiplex for non-payment, filed at the Technology & Construction Court, Cleveland Bridge alleges that "by spring of 2003 there were serious problems arising from late and incomplete design by the civil and structural engineers, Mott Stadium Consortium [which had been novated to Multiplex], and delays in providing design information. The design changes and late information caused substantial costs increases, and delays and disruption to the subcontract works." The delay was put at 50.5 weeks.

Though Cleveland Bridge and Multiplex agreed a plan for accelerating work, plus compensation for the resulting change in the subcontract terms, a legal row broke out, over alleged non-payment and contract breaches. The Technology & Construction Court is due to hear the case later this year.

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Despite the integration that should have been achieved by using a design-and-build contract, "Wembley is a graphic example of old-style adversarial contracting," according to Bob White, chief executive of Constructing Excellence, a quango given the task of improving performance in the construction industry, and chairman of project management firm Mace.

Despite the problems construction consultant Frank Griffiths says the Wembley project will offer valuable lessons for the Olympic team. "WNSL thought that a fixed-price, lump-sum contract could be the solution to all its problems. But that is only fine if the contractor has all the resources, time and money required for the project."

For such a contract to work, he adds, there has to be a rigorous work programme in place, and the client also needs to understand how the work is going to be subcontracted. "Through using a design and build contract, WNSL thought it had offloaded risk to Multiplex, but it hadn't."

## BAA and LCR

Other such mega-projects have taken a different approach. British Airports Authority (BAA), which is building Heathrow's Terminal 5, and London & Continental Railways (LCR), the client for phase two of the Channel Tunnel Rail Link, have demonstrated a collaborative approach to procurement and project management. Both have enormous in-house procurement and project management teams, which supervise and reduce risk at all stages of design and construction.

"BAA and LCR have spent a fortune on ensuring they're informed," says Gil Howarth, founder of project management company Howarth Associates. Both have elected to work in partnership with their contractors, using the same offices, sharing information and resources, and, crucially, any savings or overruns.

Bearing in mind the scale and complexity of the Heathrow Terminal 5 project, it is easy to see why BAA is demanding such control. There are a multitude of hurdles facing the team - they include tunnelling beneath the live airport to extend London Underground and Heathrow Express links, as well as assembling and lifting the terminal's steel roof.

"If things go as they normally do on major UK construction projects, the statistics say that Terminal 5 could be three years late, 80 per cent over budget and with six people killed," says Matthew Riley, commercial director at BAA. "None of those events is acceptable."

BAA ditched conventional, reactive contracts, in which one party claims against another for delays or extra costs, in favour of creating incentives for proactive behaviour that would pre-empt problems. This tactic was guided by study of other major construction schemes, which revealed that, as a client, pushing risk to arm's length offered no real protection. "The client is always accountable in the end, on cost, time and health and safety - everything," says Riley. If the project were to go wrong, its failings would have an impact on BAA's reputation in the industry and on its standing in the City."

BAA took the radical step of accepting all risk, and took out £4 billion worth of insurance. "By doing that you take away negativity, allow space for innovation and create the opportunity for people to perform at levels they haven't been allowed to before," explains Riley.

A special contract, the Terminal 5 Agreement, was produced for the project, requiring totally integrated teams, including principal subcontractors up through main contractors and designers to BAA itself and British Airways, Terminal 5's end user. Contractors are paid on a cost-reimbursable basis, with performance encouraged by offering bonuses for beating target costs and completion dates; conversely, they share some of BAA's "pain" when schedules and costs overrun.

The agreement engaged all the key players early on to identify risks well before they come into the construction programme, leading to highly evolved risk-management strategies. For site deliveries, this has involved the establishment of a dedicated logistics centre whose sole task is to know when particular materials are needed and to timetable their arrival - a crucial function considering that the overarching risk on Terminal 5 boils down to the delivery of construction materials and components to a site that is surrounded by the day and night activity of the world's busiest international airport.

London & Continental Railways is not so forthcoming about its strategy. "The detail of how we run the project is a commercial secret," says the project's head of communications. What is not secret, though, is that the project is being procured under the private finance initiative, which means that, although the rail line becomes government property in 25 years' time, its construction is funded and managed by private sector firms, which shoulder all financial risk.

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LCR is a consortium of eight firms, four of which - consulting engineers Arup and Halcrow, project manager Bechtel and signalling firm Systra, have formed a subsidiary, Rail Link Engineering (RLE). RLE is the vehicle through which LCR has managed design, procurement and project management.

Like Terminal 5, the Channel Tunnel Rail Link is a gargantuan project. The scheme's superlative technical achievement has been the burrowing of 7.5km of tunnel from Stratford in east London to St Pancras station. One of the tunnels did hit an unmapped well, causing a sinkhole to open up in a back garden in east London. But the major identified risks failed to arise, largely as a result of painstaking risk reduction, in which the client vetted designs, supervised the geological site investigation, scrutinised the contractor's choice of tunnelling methodology and equipment, and kept an eye on project delivery.

## Cost efficiencies

The style of collaborative project management practised by BAA and London & Continental Railways grew out of the North Sea oil and gas industry 30 years ago, and was being adapted for the construction sector by BAA and other clients more than a decade ago. But partnering only grabbed attention following the publication of two government-sponsored reports in 1994 and 1998 respectively, *Constructing the Team*, authored by Sir Michael Latham, and *Rethinking Construction*, by Sir John Egan.

Egan calculated the UK's £58 billion a year construction sector could achieve cost efficiencies of 30 per cent, reduce defects by 20 per cent and increase profitability from 2 per cent to 5 per cent by developing better leadership and greater focus on customer needs, by integrating processes and teams, and by adopting an agenda driven by quality rather than cost.

For clients, this meant releasing large volumes of work in a steady stream to give contractors more continuity, and adopting them as preferred suppliers. For contractors, it meant breaking the practice of paying subcontractors late and of casually hiring and firing labour.

Egan urged: "Industry must replace competitive tendering with long-term relationships based on clear measurement of performance and sustained improvements in quality and efficiency."

## Close relationships

The Rethinking Construction recipe spawned public-private partnerships and the private finance initiative, prime contracting, framework contracts, design and build and early contractor involvement, says Howarth. The principles of each procurement model are similar: clients initiate close relationships with or within the supply chain.

Nick Raynsford MP, vice-chairman of the Construction Industry Council and former construction minister, who played a key role in disseminating Egan's message through central and local government, is "deeply disappointed at how little it has penetrated". Government clients such as the Highways Agency and Environment Agency, the Ministry of Defence and National Health Service have become exemplars of supply chain partnering, but the OGC is struggling to change procurement practices at a grass roots level, he concedes.

"One of the worst clients in the UK is the government," agrees Stef Stefanou, chief executive of contractor John Doyle Construction. "When it comes to bringing specialists in, the principal contractor does things in the old-fashioned way - lowest price and screw the subbies."

The OGC disagrees strongly with this claim. In its view, evidence to support such assertions does not exist. In its defence, it cites a recent NAO report, *Improving Public Services through Better Construction*, which concluded that great improvements had been made by public sector procurers in delivering construction; in particular, by departments and agencies adopting partnering and collaborative approaches in their construction work.

"The NAO estimated that the change in performance is likely to have avoided overspends of about £800 million," says an OGC spokesman. The NAO also found that a range of value for money gains from partnering and the early involvement of integrated supply chain teams are emerging as a result of streamlined purchasing processes and improved whole life costs.

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"We should not be complacent and more needs to be done to build on the improvements achieved. But it is hardly true to say that OGC is struggling to change procurement practices at grass roots. The top six central government construction procurers represent 70 per cent of this sector's capital expenditure, and they have all made great strides in integrated procurement approaches."

The spokesman continues: "Based on National Audit Office estimates, between £500 million and £2.6 billion in annual public sector construction expenditure could be saved if the good practice were applied across all of the public sector."

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