



Department  
for Environment  
Food & Rural Affairs

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## **London 2012 Olympic and Paralympic Games**

### **The Legacy: Sustainable Procurement for Construction Projects**

#### **A Guide**

July 2013

**inspired  
by 2012**

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*“Sustainable procurement helps ensure value for money and lower operational costs whilst protecting the environment and bringing us wider societal benefits. London 2012 showed how this could be done practically and efficiently. I am keen that the lessons learned are captured and taken on board by others. This Guide is being published to help give procurers of large and small construction projects the benefits of this learning”.*

Lord de Mauley, Parliamentary Under-Secretary for Resource Management, the Local Environment and Environmental Science (at the Department for Environment, Food and Rural Affairs).



The Olympic Park.

# Introduction

*“In our bid to host the Olympic and Paralympic Games in London, we pledged to hold the greenest Games of modern times and I am pleased to say we were hugely successful in doing this. This was because London 2012 built sustainability into everything we did from procurement to the operation of the sites. It’s really important that we share what we did so that others are able to learn from our experience. This Guide pulls together the key lessons on procuring sustainable buildings and infrastructure so that others can learn from the example of the Games and ensure the legacy continues”.*

Sebastian Coe CH, KBE, the Prime Minister’s Olympic and Paralympic Legacy Ambassador.

To help perpetuate this legacy, the Department for Environment, Food and Rural Affairs (Defra) has facilitated the development of this Guide by working with BRE<sup>1</sup> to bring together Government Departments and key people involved in London 2012. Construction of buildings and infrastructure is vital to the growth of our economy. This Guide aims to help authorities deliver growth in a sustainable way taking into account the importance of protecting our natural capital for future generations as well as our social and economic capital in the form of a capable and skilled workforce and small business and entrepreneurship.

The London 2012 bid team began by working with BioRegional and WWF to create a shared vision called “Towards a One Planet Olympics”. The mission of the Olympic Delivery Authority (ODA)<sup>2</sup> was in line with this: to “deliver venues, facilities and infrastructure and transport on time and in a way that maximises the delivery of a sustainable legacy within the available budget”. This was encapsulated in the London 2012 Sustainability Policy and the Sustainability Plan, which provided the overarching sustainability framework for London 2012.

Led by the Department for Culture, Media and Sport (DCMS), as the lead London 2012 Government Department, Government proactively sought to ensure that its priorities were reflected in plans for the Games. Departments like DCMS, Defra, the Department for Communities and Local Government (DCLG), the Department for Business, Innovation and Skills (BIS) and the Department for Transport (DfT) together with other agencies (such as the Environment Agency, The Royal Parks and the Waste and Resources Action Programme (WRAP)) played a vital part in setting an ambitious but achievable set of goals. Defra played a co-ordinating role through co-chairing, with the Greater London Authority (GLA), the London 2012 Sustainability Working Group. This consisted of Government Departments and the Mayor of London’s team, as well as the ODA and the London Organising Committee of the Olympic and Paralympic Games (LOCOG).

In 2007, just over a year after winning the bid, the ODA published its Sustainable Development Strategy<sup>3</sup> with 12 objective areas. These were developed in conjunction with a wide range of stakeholders including Defra and BRE. Setting out the scope of sustainability was key to this. It was defined to encapsulate natural capital with objectives on carbon, water and waste; social issues like noise, communities, transport and mobility; and economic factors like employment and business.

1 Previously called the Building Research Establishment.

2 The ODA was created as an Executive Non-Departmental Public Body accountable to the Secretary of State for Culture, Media and Sport.

3 The Sustainable Development Strategy – <http://www.strategicforum.org.uk/pdf/ODASDSfullpolicy.pdf> – was developed along with stakeholders and completed in 2007, around a year into the initial planning period. It set out 12 sustainability objective areas: Carbon; Water; Waste; Materials; Biodiversity and ecology; Land, air, water, noise; Supporting communities; Transport and mobility; Access; Employment and skills; Health and well-being; and Inclusion. These principles are explained further in: <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/425834-ll-susprocurement-tagged.pdf>

The Sustainable Development Strategy was intended to act as a catalyst for industry to deliver an improvement in the economic, social and environmental sustainability of development across the UK. The intention was for the lessons from London 2012 to be spread far and wide. Two of the most important lessons from the Learning Legacy are that many environmental sustainability benefits go hand in hand with cost savings, and that with the right approach to projects of this scale it is possible to drive innovation in areas such as design and materials specification.

The tools and methods for achieving these multiple wins can be elusive. This Guide aims to assist by outlining the key principles, as well as processes and tools used to deliver sustainable development objectives for London 2012. It focuses on construction. But sustainable procurement also has an important role to play in relation to other aspects of an event, which for London 2012 were largely in the hands of LOCOG. It had responsibility for planning, financing and staging the Games. LOCOG also embedded sustainability in its approach but adopted different tools<sup>4</sup> suited to the supply chains involved. Good progress was made for example in relation to food procurement, for which more information can be found in the London 2012 Food Vision<sup>5</sup>.



Construction of the Olympic Stadium.

© Olympic Delivery Authority

<sup>4</sup> Full details of this are available at: <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cp-locog-sustainable-sourcing-code.pdf>

<sup>5</sup> <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cp-london-2012-food-vision.pdf>

# 1. Eight principles to inform procurement

## 1. Seek a clear and public commitment to sustainability at the highest level of the organisation

The value of sustainability was recognised alongside traditional goals of cost, time and quality, and the ODA made sustainability a board-level issue. The ODA chaired the ODA's Sustainability Committee and ensured it remained on an equal footing with other committees. In addition, the Executive Management Board reviewed performance against sustainability objectives quarterly. It was clear to all that senior management, as well as Ministers, believed in it: they owned it, and kept it on the agenda.

The ODA ensured that responsibility for sustainability was taken very seriously at every stage as projects moved from inception through to construction and beyond to legacy. A clear message was sent to industry that as a client the ODA was serious about delivering high levels of sustainability and was committed to working proactively with the supply chain.

The ODA integrated sustainability into its Procurement Policy, which stated that *“the ODA would seek to use its purchasing power to support sustainable development in London and the UK and the implementation of the ODA's Sustainable Development Strategy, and would aim to ensure that sustainability is integrated into business cases, procurement plans and related contracts”*.

Independent assurance was delivered by the Commission for a Sustainable London 2012 (CSL). It provided credible commentary, constructive challenge, and assurance of the sustainability of London 2012 through a bespoke assurance framework, recommendations and reviews.

## 2. Prepare thoroughly: early consideration of sustainability

A two-year planning period allowed for overarching, programme-wide objectives to be set prior to appointing contractors. Within the first year, a firm Sustainable Development Strategy was published. ODA worked with a wide range of stakeholders from government, non-governmental organisations (NGOs), the local community and others, prior to engaging the design teams, to develop this Strategy – a framework of issues and objectives. It then tested these objectives by commissioning feasibility studies to understand the implications of adopting such targets on projects. These informed the briefs for design teams. Once the design teams were engaged they were charged with meeting core sustainability challenges alongside all the other performance criteria they had to achieve.

Investing in expert advice early in the project enabled investigative work to be carried out to inform key decisions. For example, a focus on sustainability led to the development of a sophisticated soil remediation strategy. In order to reduce movements of soil off-site, innovative soil remediation systems were employed, specifically soil washing and bioremediation. As a result, export to landfill was minimised and transportation costs reduced with accompanying social benefits of less noise and disruption from vehicle movements.



Soil washing with the wider aim of bioremediation at the Olympic Park.

© Olympic Delivery Authority

### 3. Set specific, clear, and challenging sustainability targets from the outset

In the first two years, the vision, objectives and strategies were turned into hard targets. There was extensive pre-procurement consultation with Government, industry, NGOs and others, including a series of events and industry days to ensure the level of ambition was challenging but achievable.

Once targets were agreed and published (providing visibility and certainty for industry) they were embedded into design briefs for the venues (see case study for the Velodrome on page 16). A process was also established to get these accepted by the project management teams. It was, however, left to designers and industry to decide exactly how they would be met.

Publishing targets externally was vital to translating this commitment into practice as it made it much harder for sustainability to be given up on grounds of upfront costs. It also led to early consideration of issues. Success in terms of accessibility is in part attributable to consideration being given in the most successful projects at the outset. As a result, accessibility was integrated seamlessly into plans at no or little extra cost, avoiding extra costs of reworking design at a late stage.

#### 4. Be an intelligent client: get the right people on board, define the project and set the budget

An interim Head of Sustainability was put in place, even before the ODA was formally constituted. An ODA sustainability team was also appointed early on. The ODA took the view that its role as an intelligent client was to set the vision and goals and understand what was possible or how to determine this. It took responsibility for identifying the biggest wins, considering carefully how to specify requirements and incorporate them into design briefs.

The ODA sought to appoint the right people and to educate them about its sustainability vision and objectives, addressing where necessary their resistance to take on board sustainability considerations. For example, well-qualified and experienced programme managers, CLM<sup>6</sup>, were appointed in September 2006 as a delivery partner. They were brought in to head up the programme for the ODA. The ODA as a knowledgeable client was able to persuade them of the value of sustainability and the feasibility of its goals. As a result, it got the best from this relationship.

In 2007, the ODA with CLM developed the scope, specifications and initial budgets across the entire programme. The resulting “Yellow Book”<sup>7</sup> provided a valuable tool for tracking progress and changes. The ODA made it clear that achievement of sustainability targets had to be funded from project budgets to place the onus on teams to deliver.

#### 5. Embed sustainability objectives throughout the team and supply chain

Not only did the ODA integrate sustainability into its procurement policy and put in place a Sustainability Team, but with CLM it developed project management processes to integrate sustainability objectives into the supply chain. These processes helped deliver sustainability objectives whilst managing risk.

These processes included reporting on sustainability Key Performance Indicators (KPIs), with guidance notes to explain how to measure performance and report. Processes were put into place to ensure projects could not progress until they had demonstrated compliance with all sustainability objectives. This additional cost was offset by the reduced risk of nugatory work.

CLM worked with the ODA on robust monitoring and evaluation of contractor performance against these targets and indicators. Sustainability targets linked to remuneration were included in the personal objectives of key ODA team members.

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6 CLM was a joint venture between CH2M Hill, Laing O’Rourke, and Mace. CLM was appointed as the ODA’s delivery partner to provide programme and project management services via an NEC3 Professional Services Contract. The contract saw CLM accept significant delivery risk, and the ODA incorporated programme level cost and schedule incentives linked to the phases of delivery. CLM was delivery partner to the ODA rather than a typical contractor. More info here: <http://learninglegacy.independent.gov.uk/documents/pdfs/procurement-and-supply-chain-management/191-delivery-partner-approach-pscm.pdf>

7 The ODA’s Baseline Report (Yellow Book) together with disciplined and rigorous change control, enabled status, progress and forecasting to be reported accurately and effectively. This formed a basis for informed management decisions, allowing delivery strategies to be adjusted where necessary to ensure objectives were met. All changes, no matter how small or insignificant, required approval through the formal Change Control process. Between March 2007 and June 2011, 55 Programme Change Boards had convened to consider 5,000 proposed changes, of which 3,649 were approved.



Some of the greatest successes were achieved where objectives were aligned across all parties. For example, the decision to remediate heavily contaminated land led to a better sustainability outcome, with 80 per cent of soil being re-used on-site. This reduced transport and disposal costs and also reduced the amount of virgin material that needed to be purchased and brought on-site. This decision benefitted the contractor by reducing costs and the ODA by meeting sustainability targets.

## 6. Identify and use low impact responsibly sourced products and materials and ensure good supply chain management

The ODA set the level of ambition, and worked with contractors and suppliers to ensure innovative solutions were delivered. The real innovation came from the supply chain but the ODA enabled this to happen by identifying innovations, introducing potential suppliers to consultants and contractors, evaluating their credentials and supporting the innovations. To help manage risk, trials were set up for innovative products that designers might have been reluctant to specify due to concerns over performance. Micromanagement of the supply chain was avoided, but monitoring throughout the project ensured ambitions were met.

The ODA was prepared to confront difficult areas of materials specification and set the parameters, driving innovation as a result. For example, the London 2012 Sustainability Group published a policy on the use of Polyvinyl chloride (PVC)<sup>8</sup>, setting out parameters for using PVC on the London 2012 project including in relation to the manufacture and disposal of the material. A key role was played in this respect by CSL, which in 2007 highlighted the need for a policy in this respect, exerting pressure on the ODA and Ministers to put in place a policy. This was published in 2009, and the policy stimulated the supply chain to innovate. One supplier developed a PVC wrap with a non-phthalate plasticizer. This achievement led to the adoption of the phthalate-free wrap on the venues. A total of 98,038m<sup>2</sup> of this wrap was installed on the Olympic Park out of a potential 142,538m<sup>2</sup>.

## 7. Create a structure that supports a collaborative approach whilst maintaining an environment of challenge

The ODA found it was vital for contractors to have more to gain and less to lose from continued and whole-hearted participation in delivering on sustainability objectives. Incentivisation of partner organisations via a share in savings was one way in which this was addressed. Awards and recognition were another. Incentives were built into contracts on an incremental basis to keep motivation high and to encourage steady progress rather than a rush for the final deadline. This provided for construction of high quality sustainable buildings to time.

Collaboration between designers, project managers, contractors and product suppliers was strongly encouraged through this recognition of the need to share in gains. For example, the decision to install a steel cable-net<sup>9</sup> roof on the Velodrome reduced materials (1/10th of the steel of original design – good for sustainability), reduced installation time (bonus for the contractor), improved health and safety (no need to work at height), and allowed award winning design and

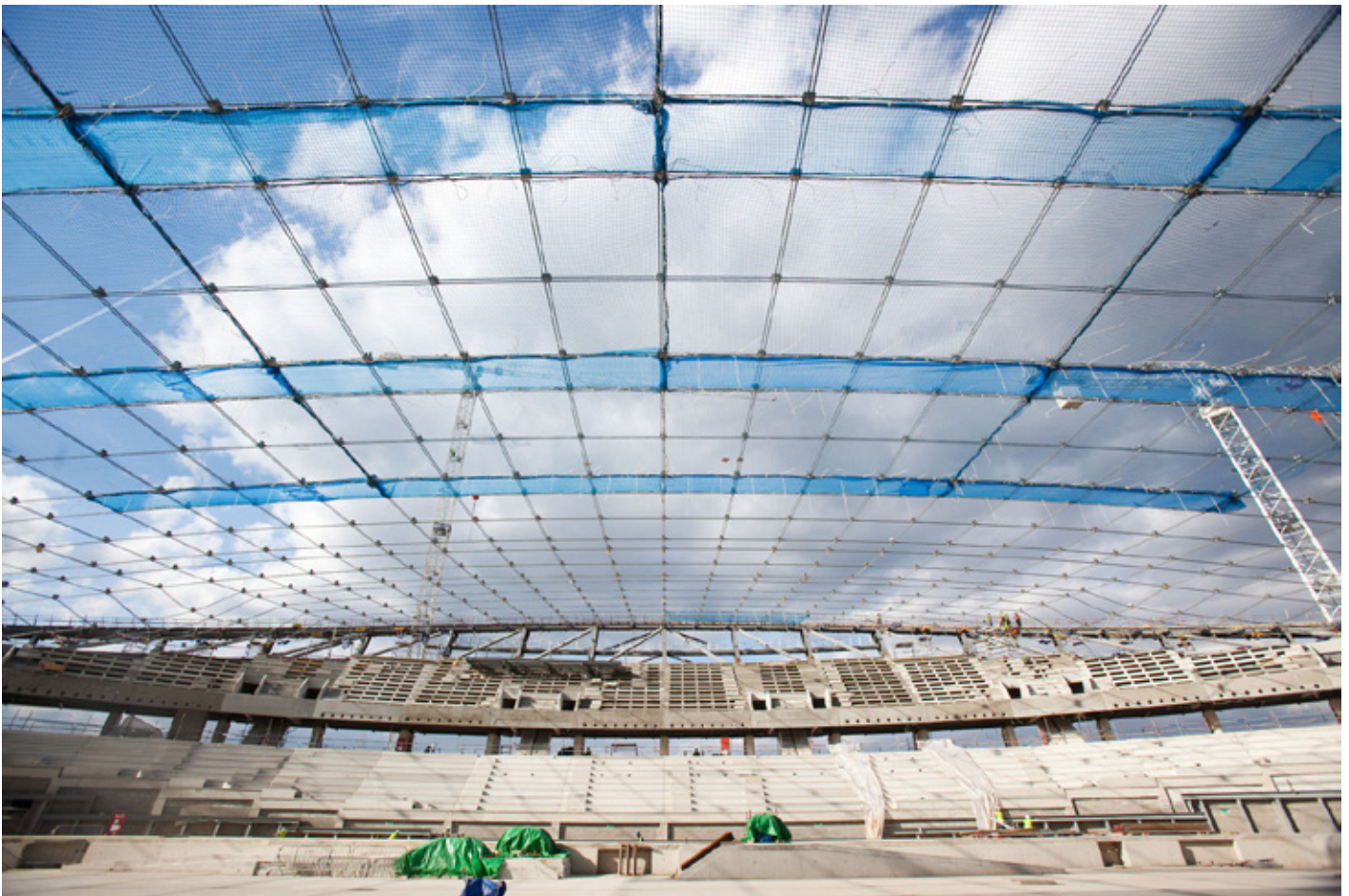
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<sup>8</sup> <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cp-london-2012-use-of-pvc-policy.pdf>

<sup>9</sup> The roof form was generated by tightly wrapping a steel cable-net down onto the curved steel-framed “bowl” supporting the seating, leading to the distinctive double curved roof form. Cables were delivered to site exactly the right length complete with end fixings. The cable-net, which looks like the strings of a giant tennis racket, was laid out on the ground. Once the cable-net was assembled, the cable-net was pulled up into position.

architecture to be created (good for designers and architects). This was supported by a New Engineering Contract 3 (NEC3) which allowed room for the contractor to contribute to an efficient design solution. The contract was based on a target price and provided for flexibility in design, allowing scope for innovation and a sharing of the savings achieved.

Initially project managers and cost consultants did not support innovative approaches because of the risks involved. The cable-net design for the Velodrome was pursued because the design team and contractor were able to agree and were willing to challenge other professionals.



Construction of the cable-net roof on the Velodrome.

© Olympic Delivery Authority

## 8. Organise procurement so services can be shared

On a large and complex programme, innovative sustainability solutions can often be better achieved through centralised site-wide provision of key services. At London 2012, concrete production as well as waste management and also safety and security were organised centrally. This enabled new and innovative solutions like low carbon concrete to be used on-site. This would not have been cost-effective if procurement of materials had not been on a site-wide basis.

The ODA invested money in trialling site-wide solutions with contractors, achieving benefits that would not have been possible if contractors were left to source services and materials independently.

## 2. The procurement process: Tools used and developed

### Outline

The ODA set out its approach in its Procurement Policy published in 2007. A number of opportunities in the procurement process were used to influence the potential sustainability outcomes:

#### a. Pre-procurement:

- Early engagement with the supply chain: industry days to communication of opportunities, which allowed identification of best practice as well as innovative products, materials and suppliers;
- Communication of contract opportunities to potential suppliers.

#### b. Tender Specifications:

- Developing a comprehensive design brief with sustainability requirements fully integrated.

#### c. Pre-qualification:

- Use of a **Balanced Scorecard** as part of **pre-qualification selection criteria**: this was of limited scope for influencing outcomes, as it focused on past performance but it helped on some aspects of sifting bidders.

#### d. Award Stage:

- Use of a **Balanced Scorecard** to assess bids: all tenders had a set of award criteria that included sustainability and were **evaluated on the basis of most economically advantageous tender** (MEAT). The technical evaluation criteria scores were weighted (often as much as 70 per cent) relative to the commercial scores. The environmental sustainability assessment formed part of the technical evaluation.

#### e. Contract Stage:

- **Contract requirements**, including detailed sustainability requirements;
- **KPIs: rigorous** monitoring of **contractor compliance** post award written into the contract;
- **Use of recognised standards.**

#### f. Other:

- **Site-wide supply contracts for materials.**

## The tools

These tools are explained below:

### A. Pre-procurement

#### (i) Methods for engaging early with the supply chain

With a target of creating the “greenest Games of modern times”, the pressure was on to get the very best from suppliers and manufacturers. This meant explaining requirements and talking to the industry at an early stage. The ODA was proactive.

- **Industry Sector Days:** At the beginning of the planning phase for the construction of the Olympic Park, the principal construction materials and products were identified (including concrete, steel, plastics, drainage piping and timber). The ODA provided suppliers with a brief which outlined the sustainability opportunities and challenges, and suppliers were invited to give a presentation to the ODA and contractors on how they would meet the challenges. This process was very instructive to the ODA, as by engaging with the product manufacturers, the client became better informed about forthcoming innovative solutions. The suppliers, likewise, were better able to innovate as they were better informed about the ODA’s requirements;
- **Olympic Liaison Group:** An Olympic Liaison Group was established by the Construction Products Association, for suppliers who registered to receive regular updates about Olympic projects. Three meetings were held a year. The aim was to inform industry of current progress on the Olympic Park, the ODA’s priorities, processes and, most importantly, forthcoming contract opportunities. This enabled industry to prepare accordingly. Similar activities have been implemented by Crossrail.

#### (ii) Communicating contract opportunities and providing support to companies to win work

There is no doubt that the familiarity and trust between contractors and their regular supply chain partners can help de-risk projects, but the ODA also wanted to create opportunities for new market entrants and to get the benefits of innovation.

- The ODA’s **Supplier Guide** provided information to suppliers and contractors interested in opportunities on the Olympic Park. Sustainability was listed as one of the ODA’s procurement values in the Supplier Guide;
- **‘Meet the Buyer’ events** were held around the country to inform industry about contract opportunities and the client’s requirements, including sustainability.

### B. Tender Specifications – Design

#### Focus on Embodied Carbon

The need to consider embodied emissions in the construction of the Olympic Park was accentuated by the short 30-day use-phase for London 2012 and the less frequent use of the venue after the Games.

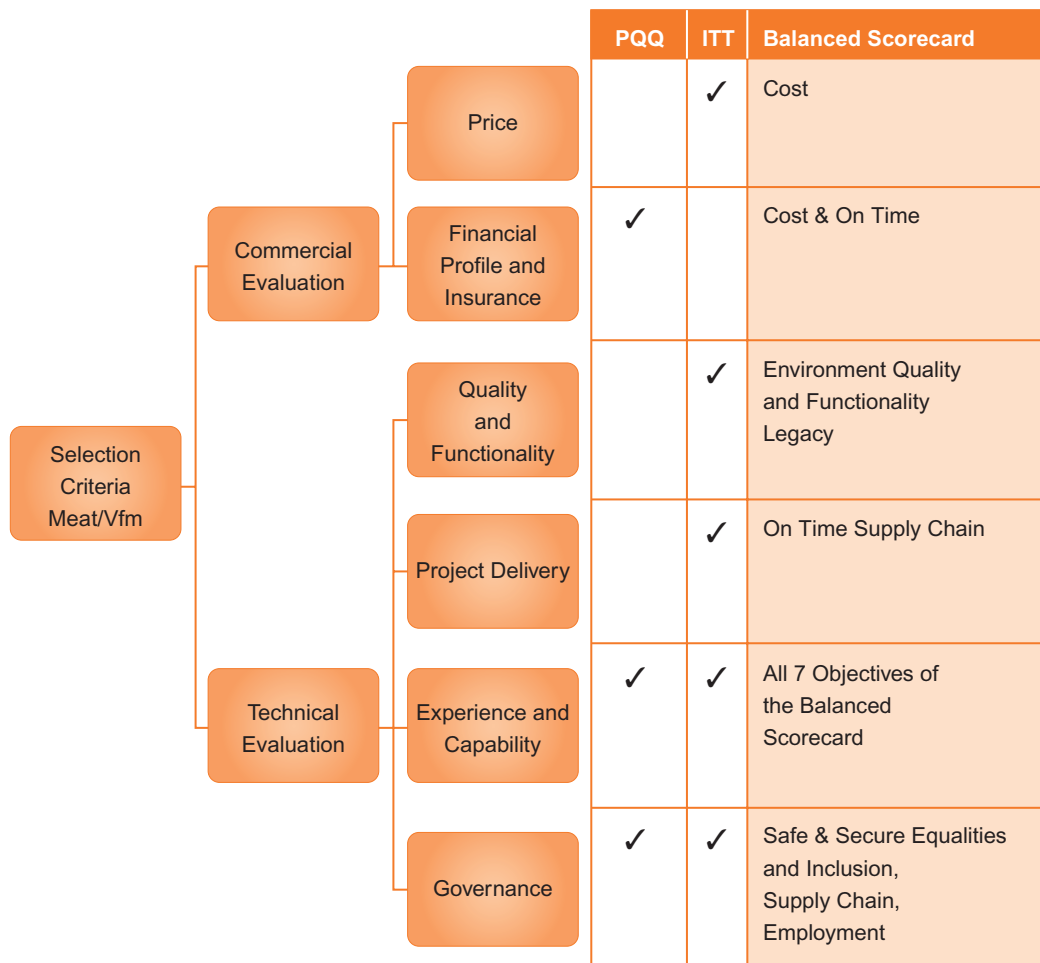
While no specific embodied carbon targets were set during the planning stage, the drive to reduce costs and build efficient structures in the project brief and during the design process led to significant savings in embodied carbon.

Analysis shows that low carbon designs result when efficient design principles are included early in the concept and design phases. The lesson from the Games is that specifying difficult-to-construct forms and using material quantities well in excess of the pure structural requirements are likely to lead to buildings with higher embodied carbon and higher cost. Buildings such as the Velodrome and the Olympic Stadium reduced embodied impacts and cost through a focus on appropriate structural design and the efficient use of materials.

### C. Pre-qualification

Concerns that Small and Medium sized Enterprises (SMEs) would be disadvantaged and deterred from bidding were mitigated by using the CompeteFor system. The CompeteFor online portal required bidders to demonstrate that they were 'Business Ready', by producing a range of corporate policies such as sustainability, and equality and inclusion, before they could access the system and become eligible for selection. Where businesses were not ready, they were referred to local business support agencies that helped them develop the required policies. This testing and support process conditioned SMEs to the ODA's wider objectives.

**Figure 1: Applying the Balanced Scorecard**



## D. Award Stage

### Balanced Scorecard

The ODA Balanced Scorecard was one of the key outputs of the ODA's Procurement Policy. This was published in 2007, prior to the start of the ODA's procurement programme.

Key stakeholders set a wide range of ambitions for the ODA to achieve. Following a consultation process, including a series of board-level workshops, a set of key objectives were adopted. These objectives formed part of the ODA's Balanced Scorecard, which were applied to all ODA and Tier One procurements.

The Balanced Scorecard summarised the ODA's Procurement Policy into a single diagram<sup>10</sup>. It expanded the evaluation criteria beyond the traditional themes of Cost, Time and Quality to include the progressive themes of Safe and Secure, Equality and Inclusion, and Environment and Legacy, which supported the ODA's priority themes. It underpinned procurement, building the ODA's policy objectives into the tender process and subsequent contracts, which then enabled delivery in these policy areas.

Within the Scorecard, sustainability considerations are an integral part of the definition of value for money (see Figure 2 on page 13). Specifically the Scorecard ensures sustainability aspects can be scored. Scores can then be weighted alongside other aspects in the evaluation of tenders, and weightings can be varied depending on the nature of the contract in question<sup>11</sup>.

The ODA's default procurement route was the EU Restricted procedure, two stages: a Pre-Qualification Questionnaire (PQQ) leading to a shortlist invited to tender (ITT). This approach was applied to all the ODA's procurements that exceeded the Official Journal of the European Union (OJEU) threshold across the ODA's construction and engineering, logistics and corporate procurements, with the questions being tailored to suit the procurement concerned. For example, the ODA's employment and skills requirements such as the percentage of the workforce to be apprentices were different on works and services contracts.

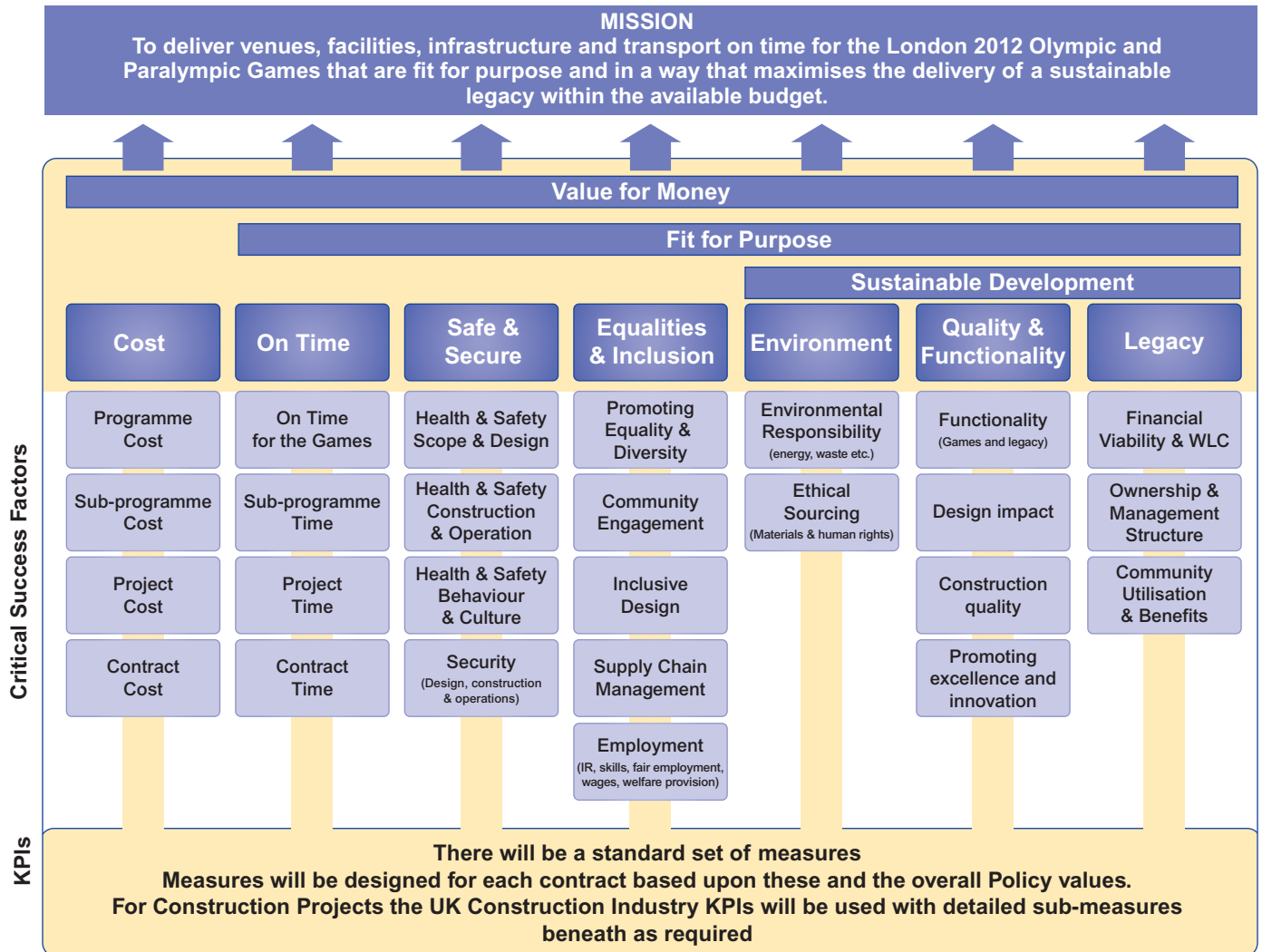
The site-wide waste management contract illustrates how the ODA applied the Balanced Scorecard during procurement. The waste management contract represented a major vehicle for delivering the ODA's sustainability objectives. As well as the ODA's standard procurement criteria (for example, cost, risk, health and safety, experience), the tender for the site-wide waste management contractor took into account the levels of reuse/recycling/recovery that could be achieved and the use of waterways to remove waste from the site.

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<sup>10</sup> The actual criteria for a Balanced Scorecard were decided for each project. The use of the term "Sustainable Development" to cover just the last three columns has been questioned – in fact, the set of criteria as a whole could be seen as delivering "Sustainable Development".

<sup>11</sup> This is not the only approach that can be taken. LOCOG also integrated sustainability into its definition of value for money. It marked bids red, amber or green against specific sustainability requirements set out in the tender documents. They included factors like types of materials used, re-use solutions and the visibility of supply chains. Any red-rated bids would be rejected and amber ones needed to be revised. For more information, see <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cp-locog-sustainable-sourcing-code.pdf> and <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cs-games-sustainable-procurement.pdf>

**Figure 2: The Balanced Scorecard**



The Balanced Scorecard was also applied to the ODA's supply chain. The ODA's Tier One contracts with the main contractors included the requirement to apply the Balanced Scorecard to all Tier Two procurements, driving the ODA's policy objectives down the supply chain and to smaller firms who had not been directly exposed to client-led initiatives.

In addition, the weighting given to sustainable development in the Balanced Scorecard was 20 per cent, which is higher than in many contracts.

Initially, bidders who had previously experienced the types of wider objectives and related questions raised by the Balanced Scorecard may have had some advantage. However this decreased over time as the market became used to the ODA's requirements.

Importantly, where a successful bidder submitted a tender going well beyond the sustainability criteria set out in the ITT, these commitments were included in the contract.



Three Mills Lock on the Prescott Channel used by barges to take waste from the Olympic Park to a specialist recycling centre in Rainham, Essex.

© Olympic Delivery Authority

## E. Contract Stage

### Form of contract

The ODA wanted to make use of a range of standard commercial and contractual approaches that supported different project types and offered different ways of managing and sharing risk. The main NEC3 contract has six contracting options including option A (priced contract with activity schedule) and C (target contract with activity schedule) which were **both** used extensively. Target contracts were chosen for projects such as the Olympic Stadium and the Velodrome where it was recognised that the contractor's contribution to design and a collaborative approach to dealing with design change would be key requirements. Despite the significant administrative burden that the NEC3<sup>12</sup> contract placed on client and contractors, it helped facilitate the delivery of sustainable projects.

- The contract clearly set out **sustainability development requirements specifically applicable to the contractor**. This was the most important element of the contract for delivering sustainable development. Where possible, these requirements were measurable, for example 'Eton Manor to deliver a 20 per cent efficiency target against Part L Building regulations';

<sup>12</sup> It was felt that the NEC3 helped embed an ethos of collaborative working and fairness. This form of contracting had been employed before by Government but its use is far from universal.



- The **collaborative approach with early-warning notice procedure** offered transparency in terms of change control and provided a contractual route to the mitigation of risk and the realisation of opportunities at contract level;
- **Contract incentives** – Incentive mechanisms to complete the works through sharing pain/gain. The use of incentives encouraged the supply chain to contribute to potential efficiencies both in construction and design.

### Use of recognised standards in addition to bespoke project requirements

The ODA Sustainable Development Strategy set out a range of bespoke standards relating to energy efficiency, water use, construction waste and materials. It also recognised the value of existing tools. It specified:

- A new version of **BREEAM** (Building Research Establishment Environmental Assessment Methodology). A BREEAM rating of Excellent was required for the permanent venues;
- **CEEQUAL** (the Civil Engineering Environmental Quality Assessment and Award Scheme) to assess 18 permanent infrastructure projects on the Olympic Park, plus the Olympic and Paralympic Village car park. A CEEQUAL Whole Project rating of Very Good was sought for each project being assessed, with an amalgamated rating for the entire Olympic Park being awarded upon completion of all of the assessments.

Both tools offered the ODA a reputable methodology that was independent and externally audited. The tools were established, tried, tested and well-understood by contractors which provided the ODA with a level of confidence that high ratings could be achieved. The ODA, however, as a sophisticated and knowledgeable client, was able to go beyond these standards by developing its own project specific requirements focusing on the outcomes it wished to achieve. They included requirements for low carbon concrete and energy performance.

## F. Other

### Site-wide supply frameworks

The ODA took a site-wide approach to some products and services to achieve sustainability in a cost-effective way. This included producing low carbon concrete on a site-wide basis, as well as setting up a Timber Supply Panel for the whole project described in more detail below.

### The Timber Supply Panel

This was established by the ODA to provide a robust and reliable means of supplying legal and sustainable timber. The Panel<sup>13</sup> was one of the ODA's site-wide supply frameworks and comprised 16 companies. Companies were chosen through a bidding process that questioned candidates' environmental and sustainability policies, and ability to deliver on the ODA's ambitions on health and safety and commercial issues. This relieved contractors of some of the risk of procuring legal and sustainable timber, shifting the balance of responsibility to the suppliers. The panel was sufficiently broad to provide effective price competition. Other site-wide frameworks were established for the supply of concrete, timber, waste and fuel.

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<sup>13</sup> By creating the Panel, the ODA made it possible for contractors to purchase sustainable timber with a full chain of custody from a reliable source. It simplified matters for everyone. A Delivery Management System helped to ensure that only members of the Timber Supplier Panel provided timber to the Olympic Park. This also enabled full checking of Chain of Custody.

## 3. Case studies

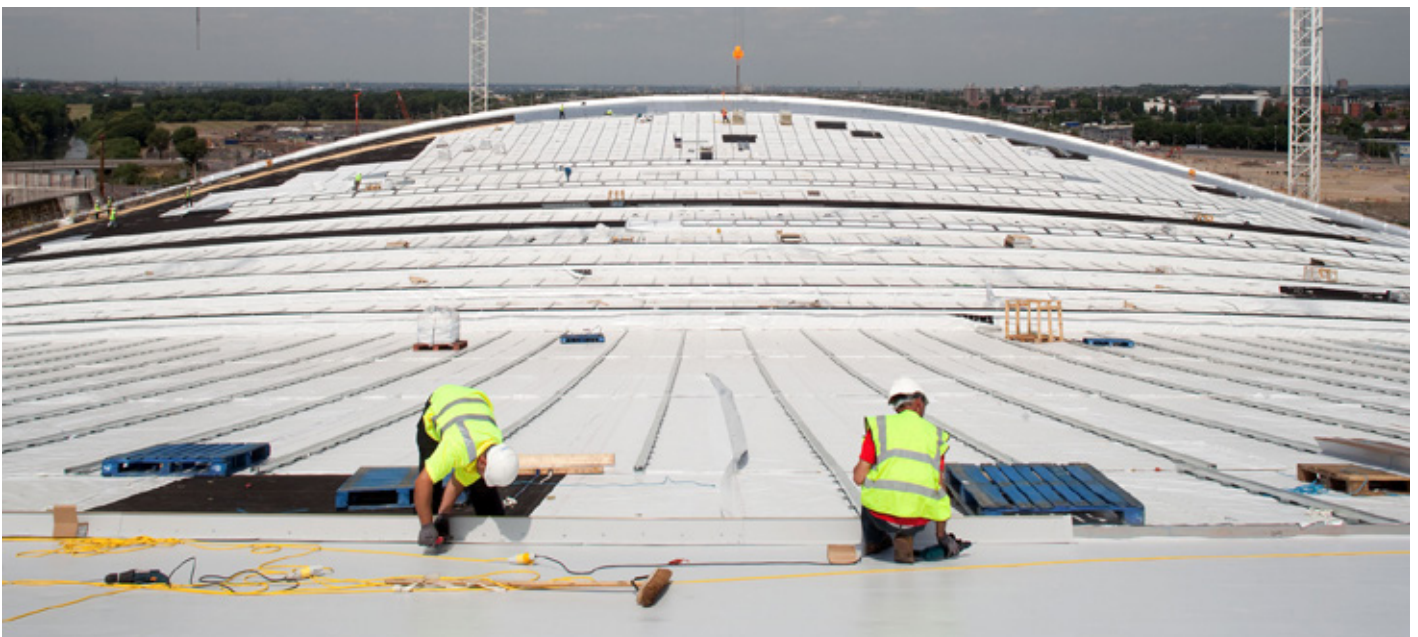
### Velodrome – the benefits of a collaborative approach

In this case the ODA brought together architect, structural engineer and contractor to form a team where all could use their skills and experience to positive effect.

This design team completed design to the Royal Institute of British Architects (RIBA) Stage C – concept design, which was the basis for procurement of the Tier One construction contractor. ISG were appointed by the ODA as contractor in June 2008 and required, within 10 days, to submit their initial target price for the works. Between June and December 2008 the design team and contractor worked together to develop the design to Stage D and the target cost plan was revised. Site construction started in February 2009 with the piling subcontract and design was carried through to Stages E/F by April 2009, at which time the final target price was agreed.

The original concept design assumed a more ‘traditional’ structural steel roof solution, but the curved form of the roof gave rise to complicated node designs and uncertainty over the erection methodology and programme. Added to this, the poor nature of the ground was adding to the weight and cost of foundations. ISG and their consultants could see significant cost and programme savings in re-considering a cable-net scheme and persuaded the client to commission a study into four alternative roof systems, including: a tensioned cable-net, compressive steel arches, glulam timber arches and a cable and timber hybrid system. The cable-net option was then selected.

**The project highlights the benefit of the collaborative approach pursued by the ODA. Use of a contract based on a target price created the space to evaluate alternative designs. The choice of a cable-net roof design contributed to bringing the project within budget with a £1.5m saving over the steel arch design and it also used about 1,000 T less steel and resulted in embodied carbon savings of over 27 per cent. It achieved 31 per cent energy efficiency savings over and above what would have resulted from simply meeting Part L of the Building Regulations. Additionally, the design provided a cleaner internal roof design, enabled erection without major disruption to other site works, reduced the safety risk and saved six months on programme timescales.**



The Velodrome's cable-net roof.

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## Sustainable concrete – taking the lead as a construction client

Initial estimates of concrete use on the Olympic Park indicated a requirement for 500,000m<sup>3</sup> of ready-mixed concrete and an equivalent aggregate requirement of 1 million tonnes. Concrete has a high environmental impact and therefore improving the sustainability of the concrete was a key focus for the ODA. Security of concrete supply was also identified as a major risk to the London 2012 construction programme. Centralised procurement, early supply chain integration and extensive trials and testing of various sustainable concrete mixes, were key to reducing the overall environmental impact of concrete on the Olympic Park.

The Balanced Scorecard approach was used to evaluate tenders. Sustainable Development requirements made up 20 per cent of the weighting of the technical assessment in the tender evaluation (much higher than standard contracts – typically five per cent at all). The tender questions were worded to encourage the supply chain to identify opportunities to deliver innovative solutions. Specifically, tenderers were asked to ensure that they either met or exceeded the following targets:

- Ensure that as a minimum, construction materials (by value) comprise at least 20 per cent recycled content;
- Ensure that 25 per cent of aggregate used will be recycled;
- Transport 50 per cent of materials (by weight) to site by sustainable means i.e. water or rail; and
- Use energy-efficient, low emissions vehicles on-site.

The concrete supplier was awarded the framework supplier agreement for the site concrete in December 2007, in part because it was commercially competitive and in part because it stood out in terms of its understanding and commitment to sustainability.

Typically precast is promoted due to faster construction programmes, reduced waste generated on-site and quality consistency. However, the London 2012 Games demonstrated that all these benefits can be achieved, and more, through a well-managed ready-mix concrete supply chain.

It was a very significant task to encourage design teams and contractors to specify the use of sustainable concrete. All contractors on the Olympic Park were contractually required to use the site-wide supplier which greatly assisted with this process. The majority of contractors initially raised issues over having to use a specified supplier, often on cost grounds. The majority of the cost premium was associated with the handling charge of raw material import at the Olympic Park's railhead. A direct agreement was reached between the ODA and the railhead operator to reduce the handling fees passed on through the supply chain. From this point forward, contractors were comfortable using the supplier.

**The strategy resulted in the use of approximately 170,000 tonnes (almost 22 per cent) of recycled and secondary aggregate, a saving of approximately 30,000 tonnes (24 per cent) of embodied carbon and elimination of over 70,000 road vehicle movements.**

You will find further case studies relating to Procurement and Sustainability respectively on the Learning Legacy website – see <http://learninglegacy.independent.gov.uk/themes/procurement/case-studies.php> and <http://learninglegacy.independent.gov.uk/themes/sustainability/case-studies.php>

## 4. Further reading

### Background

Making the Games: What government can learn from London 2012 – Institute for Government (Emma Norris, Jill Rutter and Jonny Medland) [http://www.instituteforgovernment.org.uk/sites/default/files/publications/Making%20the%20Games%20final\\_0.pdf](http://www.instituteforgovernment.org.uk/sites/default/files/publications/Making%20the%20Games%20final_0.pdf)

A Better Deal For Public Building: Report from the Commission of Inquiry into achieving best value in the procurement of construction work – All Party Group for Excellence in the Built Environment <http://cic.org.uk/admin/resources/appg-for-ebe-report-.pdf>

Learning legacy: Lessons learned from the London 2012 Games construction project [http://www.constructionproducts.org.uk/?eID=dam\\_frontend\\_push&docID=1333&filename=Olympics\\_Legacy\\_single\\_pages\\_master\\_online.pdf](http://www.constructionproducts.org.uk/?eID=dam_frontend_push&docID=1333&filename=Olympics_Legacy_single_pages_master_online.pdf)

London 2012 Sustainability plan and reports <http://learninglegacy.independent.gov.uk/themes/sustainability/london-2012-sustainability-plan-and-reports.php>

Delivering sustainability for Games venues and infrastructure <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cs-sustainability-in-venues-and-infrastructure.pdf>

### Sustainable Procurement

#### **Sustainable Procurement**

Sustainable Procurement – London 2012 Olympics and Paralympics construction programme <http://www.ice.org.uk/getattachment/f46b2187-3c36-4dbc-a2cc-c95294d99b19/Sustainable-Procurement---London-2012-Olympic-and-.aspx>

#### **ODA Procurement Policy**

Procurement Policy <http://learninglegacy.independent.gov.uk/documents/pdfs/procurement-and-supply-chain-management/39-procurement-policy-pscm.pdf>

#### **Balanced Scorecard**

Balanced Scorecard <http://learninglegacy.independent.gov.uk/documents/pdfs/procurement-and-supply-chain-management/41-procurement-balanced-score-cards-pscm-1-.pdf>

#### **Supply Chain Engagement**

The role of the construction supply chain in delivering sustainable solutions on the Olympic Park <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/425009-373-sustainability.pdf>

The CompeteFor website (e-procurement): [www.competefor.com/business/login.jsp](http://www.competefor.com/business/login.jsp)

## Products and Materials

### **Sustainable Concrete**

The procurement and use of sustainable concrete on the Olympic Park

<http://learninglegacy.independent.gov.uk/documents/pdfs/procurement-and-supply-chain-management/01-concrete-pscm.pdf>

### **Sustainable Timber**

Innovation in timber supply for London 2012

<http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/425009-188-timber-aw.pdf>

### **PVC**

Implementation of the PVC policy

<http://learninglegacy.independent.gov.uk/documents/pdfs/design-and-engineering-innovation/221-implementation-of-pvc-policy.pdf>

### **Embodied Carbon**

Reducing embodied carbon through efficient design

<http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/425009-145-reducing-carbon-aw.pdf>

## Tools

### **BREEAM**

Development and use of BREEAM for Olympic Park venues

<http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/425009-143-breeam-aw.pdf>

### **CEEQUAL**

Achieving CEEQUAL Excellent on the Olympic Park

<http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/425873-ceequal-tagged.pdf>



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