

Thematic Review | Jan 09

Eco-chic? Sustainable Design

A Review of London 2012 Design



Introduction

1. Aim of the review

- 1.1 The Commission published its first governance review in November 2007¹. This includes a programme of thematic reviews that we will carry out as part of our assurance of the Games. One of these scheduled reviews was to review the design processes for the Games and a review was conducted with these aims:
- To ensure that SD objectives are being translated appropriately to design of all venues² and public realm; and
 - To ensure effective controls are in place to assure performance, through reviewing the processes and panels that are in place to do this.

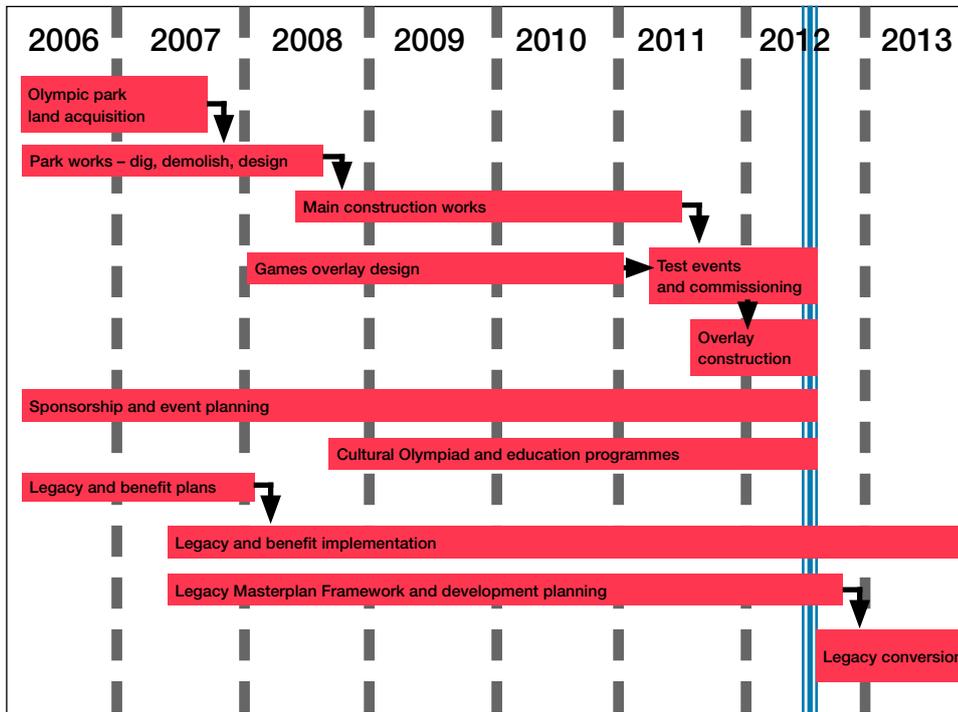
2. Commitment to achieving Sustainable Development through design

- 2.1 The London 2012 Sustainability Plan, published in November 2007, sets out how London put sustainability at the heart of its bid for the 2012 Games and that it remains central to the vision for 2012. The plan has a programme-wide commitment to sustainability across all venues and Games-related activities and is clear that design will play an important role in delivering this.
- 2.2 The plan identifies architecture and urban design as an area requiring cross cutting action on sustainability. This includes environmentally efficient and climate-proofed design, creating new habitat on and around buildings and using design to create inclusive places that boost cohesion and regeneration.
- 2.3 The procurement of ecologically sensitive, healthy materials with low embodied carbon is also an area identified for cross cutting action and therefore one that needs to be reflected through the design process.

¹ http://www.cslondon.org/documents/2007_Governance_Review.pdf

² This covers both permanent and temporary venues but does not include the Olympic Village as it forms part of the wider Stratford City development. This is scrutinised by an Environmental Review Panel, which CSL links into as appropriate.

3. Timeline³



4. Structure of the review

- 4.1 This review focussed on the design process in the ODA, LOCOG and the LDA as they are responsible for designing and developing the permanent and temporary venues for the Games and the transition into legacy.
- 4.2 The review also covered the extent to which these design processes are integrated, so that the new venues being constructed are able to meet Games requirements and provide for legacy needs and that potential legacy requirements are considered when planning “temporary” Games-time provision.

³ From “Towards a One Planet 2012” the London 2012 Sustainability Plan.

RAG: Green

5. Introduction

5.1 The ODA is responsible for the construction of all permanent venues, both in the Olympic Park and in other parts of the country (Broxbourne, Weymouth and Eton Dorney). These are to be delivered to meet Games-time requirements and to provide a legacy. It is also responsible for the construction of two temporary venues, which will be constructed for the Games and then relocated afterwards. This review has focussed on the venues in the Olympic Park.

5.2 Permanent

- Olympic Stadium
- Aquatics Centre
- Handball Arena
- Eton Manor
- Velopark (Velodrome and BMX)
- Broxbourne White Water Canoe Centre
- Weymouth and Portland Harbour (improving existing venue)
- Eton Dorney (improving existing venue)
- International Broadcast Centre/Main Press Centre
- Hockey Centre
- Energy Centre
- Parklands and Public Realm

5.3 Temporary

- Basketball Arena
- Royal Artillery Barracks
- North Greenwich Arena 2

5.4 This review has not covered the Olympic Village as it forms part of the wider Stratford City development. This is scrutinised by an Environmental Review Panel, which CSL links into as appropriate.

6. Key documents

■ External

- Jan 2007 ODA Sustainable Development Strategy
- June 2007 ODA Design Strategy Designing for Legacy
- 2007 Design Principles for the Olympic Park
- November 2007 London 2012 Sustainability Plan
- Olympic, Paralympic & Legacy Transformation Planning Applications
- September 2008 Inclusive Design Strategy
- September 2008 Inclusive Design Guidance

■ Internal

- September 2007 ODA Risk & Audit Department Report on the Review of Design Process
- Design Process Overview
- Design Brief Template
- Project Design Briefs

7. Resources

7.1 The ODA has design teams in place for the main venues, with design advisors supporting these teams to provide a single internal point of contact on design for the project sponsor responsible for the venue. The design advisor provides a link for the design team to the teams responsible for each of the ODA priority themes⁴, which include sustainability issues. The design advisor ensures that the relevant ODA and Delivery Partner teams for each priority theme are able to link with the project sponsor and design team to provide specialist input. Each of the design teams has an inclusive design expert, with the ODA also having a central resource to ensure this is incorporated in each project.

8. Design process/sign-off/Assurance

8.1 The ODA design process goes through a series of stages, corresponding to the RIBA stages that take a project from concept, through tendering to detailed design and on into construction.

8.2 In order to ensure that they have clearance of the designs for Games-time use and for legacy, the ODA has processes to obtain sign off on the designs from LOCOG and the LDA. Any issues relating to this sign off are addressed in the sections for that organisation.

⁴ ODA priority themes are: Sustainability; Design and accessibility; Employment and skills; Equality and inclusion; Health, safety and security; Legacy.

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- 8.3 Sustainability issues are addressed through:
- a requirement for the legacy performance of venues to meet a BREEAM 'Excellent' rating;
 - a requirement for the Olympic Village to achieve Code for Sustainable Homes 'Level 4';
 - civil engineering works being assessed against CEEQUAL;
 - Implementation Guidance for Project Teams which covers the following areas:
 - Environmental impacts
 - Energy in use
 - Water
 - Materials
 - Biodiversity
 - Waste;
 - Project Specific Notifications for the following areas:
 - Water demand reduction
 - Energy in use;
 - and through the client review process at each main stage of the design development.
- 8.4 The ODA Sustainable Development and Regeneration Team and equivalent staff in the ODA's Delivery Partner review design briefs against 18 environmental sustainability KPIs to assess how the design is performing in these areas. Their comments are provided back to the design team for a response. These responses are either accepted, which can be subject to it being resolved in the next design phase, or it is marked for resolution or escalation.
- 8.5 There is a Built Environment Access Panel which addresses accessibility issues that aims to review projects at least twice during the design process.
- 8.6 The designs are taken to external technical reviews and technical forums. The technical forums provide an opportunity for external organisations to provide comment on the designs. In the forums, the designs are presented and discussions are then held on aspects of the design in individual groups focussing on specific areas, including the built environment, natural environment, access, security, planning and inclusion.
- 8.7 The designs are reviewed by the CABE/Design for London design review panel for London 2012. This consists of expert advisors drawn from England's architectural, built environment and creative communities and advises the ODA on the quality, sustainability and legacy of London 2012 proposals.
- 8.8 Design in the ODA is a process-led approach to ensure that standards are incorporated into venues. Resources are in place to enable this to happen.

9. Findings

- 9.1 The ODA has taken a broadly effective process-led approach to sustainability in the design process. There is guidance that is provided to design teams which supports the implementation of the relevant standards. This mainly deals with environmental sustainability and access issues, with the other socio-economic elements of sustainability being addressed through the way that the venues and materials are procured. The process has led to high standards of sustainability being specified.
- 9.2 The review process outlined in paragraph 8.4 appears to be generally effective, covering the main environmental issues we would expect, with other processes addressing wider sustainability issues such as accessibility and inclusive design. However, we have seen issues remaining from one design stage to the next without being resolved and are therefore concerned that, if this continues, some issues may not be addressed before it becomes too late for them to be addressed effectively.
- 9.3 As the design and associated value engineering processes are iterative, we cannot yet comment on the final design outcomes. Our findings at this stage relate to the design processes observed and the situation at this stage.
- 9.4 London 2012 has stated that it will be the Greenest Games ever. The process so far suggests that the buildings will be efficient and effective in dealing with sustainability issues and has enabled a range of sustainability criteria and innovation to be incorporated. We look forward to the final outcomes of the design process and will be interested to see if it is delivering innovative sustainable designs.
- 9.5 There were some early difficulties encountered with some of the first venues to be designed. The ODA's Sustainable Development Strategy has been in place since January 2007 but arguably project-specific sustainability guidance was not in place early enough. It has taken time to turn the strategy into project-specific KPIs. This has led to the teams responsible for the Main Stadium and Aquatic Centre having to catch up during the design process. The main issues with these venues now appear to have been resolved and it is to the credit of the engineers in these teams, the ODA delivery partner and the ODA Sustainable Development and Regeneration Team that this has been achieved. However, at the time of this review, not all venue designs have achieved a BREEAM excellent rating. We are told by the Sustainable Development and Regeneration Team that they expect the designs to achieve BREEAM excellent but we are unable to verify this at this stage.

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- 9.6 Later Design Briefs contain more sustainability criteria and include specific measures to be required for the venue. For example, the brief for the Handball arena includes specific measures relating to indoor arenas as well as a wide range of measures that apply the ODA sustainable development aims and objectives to the venue.
- 9.7 A commitment was made that London 2012 would be the most accessible Games ever and the ODA has taken steps to try to ensure that this is the case. There is evidence that the processes set up to cover inclusive design and the Built Environment Access Panel and Access and Inclusion Forum are making a difference and are flagging up potential issues that are being resolved.
- 9.8 It will be essential that the ODA continue to provide sufficient resources to ensure that all the venues are accessible.
- 9.9 The technical forums have tended to focus only on the immediate venue and not the surrounding area and only cover the current planning application and not legacy issues. They are also wholly dependant on the information provided, the attendees present, the time allocated to discussion and the way in which the discussion is summarised and fed back.
- 9.10 The Parklands and Public Realm plans cover the entire site except the venues and the venue-specific Technical Forums that we have attended have focussed on the venue itself and not anything outside of the planning 'red line' around the venue. Design and Regeneration appear to have the overview of the entire Olympic Park but because of the way the site is divided into projects, the relationship between them and integration of them is not clear and it is difficult to see how it fits together as a whole.

Recommendation 1

That a presentation be produced to set out the overall park design and how all elements link together. All venues and the park and public realm should then ensure that their designs are in keeping with the overall vision.

- 9.11 The CABE/Design for London review panel which advises the ODA on the quality, sustainability and legacy of London 2012 proposals has provided public comment on the planning applications so far. However the comments published on their website to date do not appear to explicitly cover the full range of sustainability issues.

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- 9.12 The value engineering process has unexpectedly had some environmental benefits through the move to lighter weight construction materials, for example in the Velodrome and Main Stadium. This has led to reduced amounts of steel being used, leading to a reduction in embodied carbon dioxide emissions. However, the amount of embodied energy in the materials (and the amount of carbon dioxide emitted as a result) could have been further reduced if timber had been used as an alternative construction material. We understand that there were issues around the use of timber; specifically that contractors were not used to using timber as required by the projects and risk factors around innovation.
- 9.13 We have not yet seen evidence of value engineering removing sustainability features that would jeopardise the achievement of the ODA's sustainable development targets. However, some decisions are being taken which, whilst not in conflict with the Sustainable Development targets, are arguably not consistent with the aspirations of the strategy. We understand that there has to be 65 hectares of concourse and paving in the parklands and public realm during the Games but would like to understand the rationale for the choice of materials currently being proposed and how they contribute to the sustainability objectives.

RAG: Green

10. Introduction

10.1 LOCOG is responsible for the staging of the Games, for the provision of temporary venues and sites, for the temporary overlay at existing and new venues and for the live sites.

10.2 Temporary venues

- Excel
- Greenwich Park
- Regent's Park
- Hyde Park
- Horse Guard's Parade
- Hadleigh Farm

10.3 Overlay at existing venues

- North Greenwich Arena 1
- Lord's Cricket Ground
- Earl's Court
- Wimbledon
- London Streets
- Millennium Stadium
- Hampden Park
- Old Trafford
- St James' Park
- Villa Park
- Wembley Stadium

11. Reference to key documents

- External
 - November 2007 London 2012 Sustainability Plan
 - November 2008 Sustainable Sourcing Code

12. Resources

12.1 LOCOG have a dedicated project manager for each venue, who provide a single point of contact with the ODA and liaise internally for LOCOG requirements, including with the Environment and Sustainable Development Team. The temporary venues are currently at the feasibility stage, with detailed design to be carried out during 2009 and 2010.

12.2 At the time of gathering information for this review, LOCOG did not have any specialist resource dealing with inclusive design, although there are architects with some knowledge of the issues. As of August 2008, LOCOG have engaged engineering consultants with accessibility expertise and intend to engage further specialist resources in 2009.

13. Design process/sign-off

13.1 LOCOG works in partnership with the ODA to help drive venue optimisation and efficiencies and provides support and sign off on all ODA venues to confirm that their Games-time requirements have been satisfactorily accommodated.

13.2 LOCOG prepare Venue Requirements (LVR) for each venue. These set out the key design, planning and construction requirements (including overlay) for the venue to operate successfully for the Olympic Games and Paralympic Games. The LVR is not a venue design brief to use for procurement purposes. The formal design brief will be prepared by LOCOG in conjunction with relevant internal and external stakeholders.

13.3 The LVR aim to fulfil the following key objectives:

- To provide initial planning and technical criteria for use by LOCOG in the tendering, negotiation and procurement of the overlay.
- To provide specific planning and performance information to ensure that master plans and architectural designs address the specific needs for hosting the Games, and ensuring that appropriate land, transport, and spatial design criteria are known at the earliest stages of the master planning, land acquisition and the specific venue design processes.
- To make certain that LOCOG has, as the Games operator, a set of established design criteria for each venue that allows further detailed development of the operational plans.
- To assist LOCOG in the technical assessment, evaluation and judging of design proposals received in the development process.

13.4 These will be supported by Sustainability Requirements for Venues which will cover broad parameters and requirements of design, construction, operations and deconstruction and feed into the LVR and the Model Venue Planning documentation.

14. Findings

14.1 LOCOG are responsible for the development of over 130 venues, which range from distribution centres, to providing overlay at venues on the Olympic Park and existing stadia, to training venues and the management of live sites around the country.

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- 14.2 In November 2008 we received the LVR for an existing venue that will have Olympic overlay for the London 2012 Games and reviewed the environmental and sustainability design considerations in it. These appear to cover the 5 key themes effectively and there are good elements of consistency with related ODA targets.
- 14.3 LOCOG will be developing heads of terms with key suppliers for a range of goods, including temporary venues, and will need to build sustainability and access requirements into these. We understand that the Sustainable Sourcing Code will inform the heads of terms for key suppliers of temporary venues and overlay and LOCOG will commence procurement of these in 2009.
- 14.4 LOCOG has issued a Sustainable Sourcing Code which sets out their requirements for sourcing products and services. It uses a set of core principles, which are:
- responsible sourcing;
 - use of secondary materials;
 - minimising embodied impacts;
 - healthy materials.
- 14.5 However, there is a caveat in the code in relation to leased items, as LOCOG believe it is more sustainable to lease items already in the marketplace than to require new items to be produced. LOCOG state that they will seek to influence the marketplace where they can. The ODA's experience in this area suggests that significant lead time must be allowed in order to produce results. In addition there will be significant amounts of items that, whilst they will be leased by LOCOG, will need to be produced new for the Games due to market capacity constraints.

Recommendation 2

That LOCOG explore the opportunities to influence the marketplace for the goods and services they require to seek to enable the requirements of the Sustainable Sourcing Code to be applied despite the goods and materials being leased and not bought.

- 14.6 LOCOG have set a challenging target of zero waste to landfill at Games-time. They have committed to apply waste reduction and minimisation principles to temporary venues and the fit-out of all venue, to design out waste and promote, reuse, recycling and recovery of materials. However, there are no specific targets yet for waste arising during the fitting out and removal of overlay and from temporary venues. We understand that a Waste and Resource Management Strategy is being developed in 2009 and that LOCOG aims to put in place a comprehensive asset recovery plan for the period immediately after the Games.

Recommendation 3

That targets are set for the waste arising during the fitting out and removal of overlay and from temporary venues. The zero waste to landfill principle should be a key consideration when deriving these targets.

14.7 London 2012 has undertaken a carbon footprint and is developing a Carbon Management Strategy, which will be published shortly. This will highlight the areas for attention to minimise the carbon footprint of the Games. One of the key areas is likely to be the design of temporary venues and overlay, including the type, size and choice of materials.

Recommendation 4

That the findings of the Carbon Footprinting and Carbon Management Strategy are applied to LOCOG's design processes to minimise the carbon footprint prior to procurement.

14.8 At the time of gathering evidence for this review, interviews and review of minutes of the ODA Built Environment and Access Panel suggest that LOCOG did not have sufficient depth of inclusive design expertise available to address all the issues raised. We understand that LOCOG has engaged engineering consultants to provide support on accessibility.

Recommendation 5

That LOCOG engage a specialist resource to deal with inclusive design to ensure that accessibility and related issues are appropriately addressed.

14.9 We understand that LOCOG intend to take a flexible approach to the provision of accessible seating, allowing them to vary the level of provision depending on demand. We recognise the constraints of the venues supplied by the ODA but believe there needs to be flexibility to provide sufficient accessible seating to meet demand. We understand that LOCOG plan to address this through their operational strategies.

Recommendation 6

That LOCOG should give consideration to the provision of additional accessible seating that will enable the accommodation of greater numbers than originally planned for where necessary.

RAG: Amber

15. Introduction

- 15.1 The LDA is the interim legacy client for the Olympic Park and is therefore responsible for ensuring that the venues and park that are designed and built by the ODA are compatible with emerging plans for their legacy use and that the legacy use is in keeping with the commitments to provide a sustainable legacy.
- 15.2 The LDA is leading work on creating a Legacy Masterplan Framework (LMF) for the Olympic Park and surrounding area.

16. Key documents

- External
 - January 2008 Sustainable Development Guide: Implementing Sustainable Construction
- Pending publication
 - Legacy Masterplan Framework (LMF)
 - LMF Protocol (incorporates sustainability objectives)

17. Resources

- 17.1 The LDA are gearing up for their role as interim legacy client, with a consultancy team having been recruited to prepare a Legacy Masterplan Framework (LMF). They have a representative on each key steering group and project board, to ensure that LDA requirements are considered for each project.
- 17.2 The LDA have merged their Olympic teams to form a single Olympic Legacy Directorate to take forward all their Olympic work, on land preparation, skills and employment, venue management and the LMF. Sustainability is resourced through dedicated officers working within the Olympic Legacy Directorate and through the consultancy team working on the LMF.
- 17.3 The LDA has brought in a part-time resource to work on inclusive design issues.

18. Design process/sign-off

- 18.1 The LDA signs off all ODA venues that it will have responsibility for as interim legacy client; however where legacy use is unclear there is a potential element of risk with regard to the sustainability elements of the design.

19. Findings

- 19.1 As the interim legacy client, the LDA leads the development of the LMF to take forward the Olympic Park. They have engaged a team of consultants to progress this work, including the development of a protocol to ensure that relevant sustainability issues are incorporated in all elements of the LMF.
- 19.2 The LDA's involvement in all venue projects is designed to ensure, as far as is possible at this stage, that ODA design of venues and parklands does not compromise known legacy use or in the absence of a known legacy use, retains maximum flexibility for legacy.

Recommendation 7

That the LDA ensures that the site and venues are future-proofed and retain sufficient flexibility to adapt to new opportunities and satisfy longer term policy requirements such as the Mayor of London's Climate Change Action Plan and draft Climate Change Adaptation Strategy.

- 19.3 If sufficient flexibility is maintained with the development platforms in the park, opportunities can be taken to bring more innovative and sustainable solutions that also lead to savings in infrastructure. Retaining the necessary flexibility could lead to tensions between the LDA's client and landholding arrangements. It is important that the long term sustainability is optimised and not constrained by a lack of flexibility in the development platforms.

Recommendation 8

That the LDA continue to maintain governance arrangements that recognise the inherent tensions and ensure sustainability is appropriately embedded in all aspects of design and delivery.

- 19.4 It is important that this flexibility also enables suggestions and recommendations arising from the consultation and engagement process for the LMF so that it can be seen to be a genuine engagement process. We understand that this is the case with the emerging LMF.

20. Looking forward

- 20.1 As well as our findings above, we have looked at areas where we believe action will need to be taken in order for a sustainable legacy to be achieved. These are set out below.
- 20.2 We understand that at present the approach taken by the LMF is a responsive one, with the LMF protocol (which covers sustainability criteria) developing and evolving alongside the LMF. This is intended to ensure that the protocol is able to influence the design but also incorporate new criteria as the benchmarks of good practice change.

Recommendation 9

That the LMF sustainability criteria drive design. In order to meet the Mayor of London's climate change target of a 60% reduction by 2025, the development is likely to need to be zero carbon in use and have very low embodied CO₂ compared to a business as usual design, in addition to supporting a shift to lower carbon transport options, and enabling a reduction in the impact of food and consumption.

Recommendation 10

That the findings of the London 2012 Carbon Footprinting and Carbon Management Strategy are applied to the LDA's design processes to inform the areas needing action to reduce their carbon footprint.

20.3 We understand that the LMF is intended to provide a framework for development over a 35–40 year period after the Games and will include flexibility and accommodate changes in areas such as future policy, technologies and lifestyle changes.

Recommendation 11

That the LDA sets out clear policy going forward, linked to an understanding of the rate of change of what will be the norm in development schemes when projecting forward to 2012, 2020 and 2050, particularly when considering the rate of change in approaches to addressing sustainability, through technological advances and behavioural change, over the past 5–10 years. This needs to include a commitment to continuous improvement of the sustainability performance of the development, as it will occur over a long period of time.

20.4 We are aware that the LDA has recently appointed an expert at designing accessibility in sporting venues. At present the panels set up to look at accessibility issues are only looking at the work of the ODA. There is the potential for their remit to be extended to cover the LDA and LOCOG as well.

Recommendation 12

That the LDA ensures the legacy builds on the accessibility of the Games, with its aim to be the most accessible Games.

20.5 We are disappointed that there continues to be a lack of clarity around the provision of leisure water in the iconic venue of the Aquatic Centre as this would help utilise the potential of the Games to encourage healthy living.

Programme-wide

21. Introduction

- 21.1 The design process is often viewed as one that is contained within individual delivery bodies, as they design and build/transform the venues that they are responsible for. For the London 2012 Programme, it is vital that there is a coordinated approach across all three bodies responsible for venues, to ensure that they are effectively connected with each other. This means that where appropriate they are able to transition from one phase to another, meeting all the requirements of each organisation at each stage.
- 21.2 Ultimately the starting point for design decisions would be whether the venue being designed is needed. This is largely determined by the plans in the Games Foundation Plan, although one significant change with the relocation of Fencing to the Excel has removed the need for a temporary/relocatable venue by making use of an existing one. This has positive sustainability implications through the reduced amount of materials that will now be required. It is to the credit of both LOCOG and the ODA that this has been able to be achieved.
- 21.3 Media reports suggest that there could be sustainability benefits to relocating other venues. We understand that an evaluation of some venue sites has been undertaken. We would welcome the opportunity to review details of the sustainability implications of the conclusions reached and how they contribute towards overall sustainability targets.
- 21.4 The Games-time masterplan has to deal with the movement of large numbers of people, requiring dispersed venues for reasons of health and safety and crowd control. This masterplan sets the context for the legacy, though more efficient use of utilities and space could perhaps have been achieved through different siting of venues.

22. Clarity of roles and responsibilities and accountabilities

- 22.1 The ODA is responsible for the construction of all permanent venues, both in the Olympic Park and in other parts of the country (such as Weymouth). These are to be delivered to meet Games-time requirements and to be designed to provide a legacy.
- 22.2 LOCOG is responsible for the staging of the Games, for the provision of temporary venues and sites, for the temporary overlay at existing and new venues and for the live sites.
- 22.3 The LDA is the interim legacy client for the Olympic Park and is therefore responsible for ensuring that the venues and park that are designed and built by the ODA are compatible with emerging plans for their legacy use and that the legacy use is in keeping with the commitments to provide a sustainable legacy.

22.4 A key factor in ensuring sustainable design is the integration between all of these roles and ensuring continuity of approach to sustainability, so that the new venues being constructed are able to meet Games requirements and provide for legacy needs and that potential legacy requirements are considered when planning “temporary” Games-time provision.

23. Design process/sign-off

23.1 The ODA has a need to drive the process forward and push venues through the design and planning processes to commence construction, in order to meet its deadlines for completion. However, there are processes in place to ensure that issues and requirements from LOCOG and the LDA are raised during design and there are processes in place for LOCOG and the LDA to sign off each design before they are taken forward. There is a joint LDA/ODA Programme Board which receives reporting from both bodies on issues that need to be resolved. There is also a Joint Committee of ODA, LOCOG and the ODA's Delivery Partner to facilitate joint working.

23.2 There does not appear to be any process in place for direct communication between LOCOG and the LDA, for example, over temporary Games-time provision that may be appropriate to remain in legacy. However, we understand that initial dialogue is taking place and this will develop further.

23.3 GOE also has a role in the design assurance process, primarily covered by a designated Project Lead from within the Executive, who provides an oversight function on all delivery matters for individual projects. The projects are reviewed through the ODA assurance framework at various key stages of their development, and the GOE Project Lead is involved at all stages to ensure priority themes, including design, are appropriately considered.

24. Findings

24.1 The three bodies involved in the design and development of the various venues and sites for the Games have design processes in place. However, we have concerns about the extent to which they are able to deliver the most sustainable outcomes.

24.2 We found that the ODA had encountered early difficulties with some venues due to a lack of clear guidance at the outset of the design process for the early venues, which has led to the teams responsible having to catch up during the design process. There is an opportunity for other Key Stakeholders to learn from this.

Recommendation 13

That there is clear integration of sustainability objectives into the early design stages for the remaining developments and ongoing projects of all the Key Stakeholders. This is in order to prevent the need to alter designs to build in sustainability criteria or retrofit at a later stage as this may lead to increased cost and consumption of resources.

Recommendation 14

That sustainability specialists are involved in the evaluation of design-related tenders to ensure that the relevant issues are considered at an early stage.

24.3 The ODA and LDA have a joint programme board to which issues are escalated if they are not resolved through the project processes. However, if this joint board is not able to resolve an issue, and particularly if additional budget is required to be spent, there is no clear process to escalate it further, as the Olympic Projects Review Group⁵ determine budget allocation.

24.4 We are concerned that there are some opportunities being missed where additional investment now could deliver benefits in legacy. These arise where potential investment is identified by the ODA through their design work, which could deliver benefits in legacy, but are not necessary to meet the ODA's sustainable development objectives, or have not yet been explicitly set by LOCOG as venue requirements. They are therefore not considered as appropriate expenditure for the ODA to bear. These opportunities are not necessarily identified by the LDA at this stage in the programme due to their current level of resources as interim legacy client.

Recommendation 15

That there is a forum at which the ODA, LDA and LOCOG consider the areas where there are opportunities for additional investment in sustainability measures that could deliver longer term benefits. This should cover the level of investment required, the sustainability benefits that would accrue and any longer term resource savings that it would bring.

24.5 There does not yet appear to be a formal decision making process between LOCOG and the LDA over temporary overlay being put in place that could form part of the legacy of the Games. We understand that initial dialogue is taking place and this will develop further as the Games approach.

⁵ The Olympic Projects Review Group reviews projects against established investment and project criteria for projects with costs exceeding the ODA's delegation limit.

Recommendation 16

That the LDA and LOCOG produce a plan for the use of Games-time facilities and equipment which would be appropriate to be retained after the Games to support the legacy. This should be supported by dialogue on how sponsorship could be used more creatively to support provision in legacy as well as at Games-time.

- 24.6 There is uncertainty around the legacy use of some venues. In some cases the legacy use is clear but the legacy management is not clear, meaning that the future managers are not able to input into decisions being made now about the venue's future use. In other cases both the legacy use and legacy management is unclear. As decisions are being taken now when future uses and standards for venues may not be clear, this could lead to greater resource use, or challenges in adapting venues and sites, when they are transformed into their legacy uses.
- 24.7 The longer term management structures for the park are being developed by the LDA through its business planning and governance review process. This work is underway and will inform the current LMF and ODA parklands design and public realm projects. The long term management of the Olympic Park needs to be resolved as the uncertainty over the future uses of the park mean that they cannot be designed in now.

Recommendation 17

That long term management of the Olympic Park is resolved as soon as possible so that Park and Public Realm plans will be appropriate for legacy and will require a minimum amount of transformation.

- 24.8 There are some concerns around the ODA's interface with LOCOG on inclusive design issues, as at the time of undertaking this review LOCOG did not have sufficient specialist staff in this area. Inclusive design principles are integrated into the design process with the support of internal architects, however it is felt that LOCOG needs to bolster its expertise in this area. This particularly applies to how the venues will be operated. For example, the ODA is preparing a lift strategy for the Aquatic Centre as part of the planning conditions and need input from LOCOG on this, (as Games-time operator), to ensure that all users have a positive Games-time experience. This is also the case when addressing issues that may not be considered by designers, such as access for disabled media representatives or when considering movement around the park, as there is a need to ensure that all areas are accessible.

Recommendation 18

That LOCOG engage with the ODA on the accessibility of venues during Games time and how their operations will enable the venues to be fully accessible. This also applies to how LOCOG will be assisting people with mobility difficulties to move through the park and how this is incorporated into the park design.

24.9 The LMF process will determine the legacy masterplan, which is likely to be different to the original legacy masterplan that was used by the ODA to develop its plans. The extent to which the ODA is able to respond to changes in the legacy masterplan could minimise impacts in the post Games transformation phase.

24.10 The Terms of Reference for the London 2012 Sustainability Group require it to **own, and drive forward the sustainability agenda**. We see no evidence of the group driving forward the sustainability agenda in relation to design in the minutes of the group.

Recommendation 19

That the London 2012 Sustainability Group consider and recommend to OBSG alternative design solutions to deliver more sustainable design outcomes, where these are raised through the programme-wide sustainability reporting process or by members of the group.

Review of design against the five key themes

25. Climate Change

- 25.1 The ODA has committed to a 50% reduction in carbon emissions from the built environment by 2013. This is reflected in the design process by requiring each venue to be 15% more energy efficient than required by the 2006 building regulations. Individual areas are also picked up for consideration in each venue, for example indoor venues maximising natural lighting and ventilation.
- 25.2 The energy centre will contain biomass boilers and a CCHP plant to supply heat, coolth and electricity to the site. A wind turbine is also to be installed to the north of the site to supply electricity.
- 25.3 We understand that the Olympic Village is to be developed to level 4 of the Code for Sustainable Homes but the Village is not included in this review as it is covered by a separate panel, which CSL engages with.
- 25.4 A carbon management strategy is being developed, which will enable action to be targeted on the most significant areas to reduce carbon emissions. This is being extended to cover carbon emissions in legacy and will need to inform the design process, particularly when the legacy development is set against the target from the Mayor of London's Climate Change Action Plan to reduce carbon emissions by 60% by 2025.
- 25.5 The ODA is requiring the contractor developing each venue to provide information on how the design of the works allows adaptation to a changing climate by using the London Climate Change Partnership adaptation checklist.

26. Waste

- 26.1 There has been action taken during the site preparation works that has ensured that over 90% of demolition waste has been separated for reuse or recycling. A sitewide waste management contractor has been appointed and has committed to 90% diversion of construction waste from landfill.
- 26.2 Targets for the use of secondary materials have been set at 20% of materials by value and 25% of high-grade aggregates by volume. We believe these represent best practice.
- 26.3 LOCOG have not set targets for waste arising from temporary venues and overlay and therefore need to be clear about how the principle of zero waste to landfill is applied to fitting out venues and removal of temporary overlay.

27. Biodiversity

- 27.1 The ODA have revised their plans for the Parklands and Public Realm and have refined their Biodiversity Action Plan to take into account these plans. Both documents were submitted to Planning for approval in October/November 2008. They also include requirements to address a number of biodiversity issues in their design briefs, such as designing to support the protection and enhancement of key species, habitats and ecology of the Lower Lea Valley and designing legacy lighting systems to reduce light pollution and ensure that light is not shone on waterways.
- 27.2 LOCOG intend to address venue specific biodiversity issues through their Venue Environment Management Plans. Where a planning application is required, biodiversity implications will also be addressed through the planning process.
- 27.3 It is important that any biodiversity plans produced are effectively integrated into other plans and projects so that the biodiversity implications are addressed in them. We have seen evidence of this in the Parklands and Public Realm plans but will wish to see this across all areas.

28. Inclusion

- 28.1 The ODA has put a series of measures in place to ensure that the issues of inclusive design are addressed. These include the Built Environment Access Panel, an Access and Inclusion Forum and requiring all design teams to have an inclusive design expert. This is currently proving to be effective.
- 28.2 At the time of gathering information for this review, LOCOG did not have any specialist resource dealing with inclusive design, although there are architects with some knowledge of the issues. As of August 2008, LOCOG have engaged engineering consultants with accessibility expertise and intend to engage further specialist resources in 2009.
- 28.3 The LDA are recruiting a part time resource to address inclusive design in legacy developments.

29. Healthy Living

- 29.1 ODA design briefs include a requirement to demonstrate that the health and well-being of construction workforces and future users of the park are at minimal risk, both through the specification of materials used and the prohibition of substances that could cause damage to humans or the environment.
- 29.2 Design teams are expected to specify materials free from substances harmful to health, including volatile organic compounds and respirable particulates and fibres.
- 29.3 LOCOG's Sustainable Sourcing Code seeks to ensure that the health impacts of materials used are considered and managed.

Appendix 1 – Method

1. Methodology of review

Interviews

We carried out a series of interviews with staff involved in design and/or the delivery of sustainability objectives in design in the ODA/ LOCOG and the LDA.

These interviews covered:

- The organisation's design processes
- How sustainability fits into them

We interviewed the following people:

LDA: Mark Downes

LOCOG: Paul May, Melina Sims, Phil Cumming

ODA: Selina Mason, Dan Epstein, Stephanie Applegate, Margaret Hickish, John Hopkins

Design for London: Mark Brearley, Lara Gibson

These were followed up with further communication to clarify these matters.

We also attend technical forums covering the Main Stadium Games-time plans and the International Broadcast Centre/Main Press Centre (IBC/MPC) and Velopark plans prior to submission of their planning applications.

2. Documents reviewed

The following documents were reviewed as part of this review:

- London 2012 Sustainability Plan
- ODA
 - Designing for Legacy
 - Inclusive Design Strategy
 - Inclusive Design Guidance
 - September 2007 ODA Risk & Audit Department Report on the Review of Design Process
 - Design Process Overview
 - Design Brief Template
 - Project Design Briefs (Velopark, Handball, Parklands and Public Realm)
- LDA
 - January 2008 Sustainable Development Guide: Implementing Sustainable Construction
- LOCOG
 - Sustainable Sourcing Code

3. RAG Status definitions

The following criteria were used to assign a RAG status to each area:

- **Red** Significant concerns about performance and little evidence of recovery plan. Significant threats exist which may impact successful achievement of the Sustainable Development objectives and projected targets for the issue if not addressed in the short term.
- **Amber** Evidence not currently available in response to recommendation or some significant concerns about performance but evidence that they are being addressed is available. Threats exist which may impact successful achievement of the Sustainable Development objectives and projected targets for the issue if not addressed in the medium term.
- **Green** No significant threats to achievement of the target performance for the issue were identified.

Appendix 2 – Glossary and list of organisations

Glossary of common acronyms used in relation to the London 2012 Olympics

BAP	Biodiversity Action Plan
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Method
BOA	British Olympic Association
BPA	British Paralympic Association
BSI	British Standards Institute
CSL	Commission for a Sustainable London 2012
CSR	Corporate Social Responsibility
DEFRA	Department for the Environment, Food and Rural Affairs
DCMS	Department for Culture, Media and Sport
E&D	Equalities and Diversity
5 Boroughs Partnership Board	Representatives of the five Host Boroughs; Greenwich, Hackney, Newham, Tower Hamlets, Waltham Forest
GFP	Games Foundation Plan
GLA	Greater London Authority
GOE	Government Olympic Executive
IOC	International Olympic Committee
IPC	International Paralympic Committee
LDA	London Development Agency
LEST	London Employment and Skills Taskforce
LETF	Local Employment and Training Framework
LLV	Lower Lea Valley
LOCOG	London Organising Committee of the Olympic Games and Paralympic Games
LSDC	London Sustainable Development Commission
NRG	Nations and Regions Group; 12 senior representatives from UK business and sport, ensures the whole of the UK is involved in and benefits from the 2012 Games
OB	Olympic Board
OBSG	Olympic Board Steering Group
ODA	Olympic Delivery Authority
OPSU	Olympic Programme Support Unit
PSA	Public Service Agreement
RAG	Red, Amber, Green
SD	Sustainable Development

Key Organisations delivering the 2012 Games

Organisation/group	Background	Role in relation to the London 2012 Games
British Olympic Association	The National Olympic Committee for Great Britain and Northern Ireland.	Co-signatory to the Host City Contract, signed with the International Olympic Committee. Co-signatory to the joint venture agreement which established LOCOG. The Chairman is a member of the Olympic Board. Represented on LOCOG's Board, the Olympic Board Steering Group and other stakeholder groups.
British Paralympic Association	The National Paralympic Committee for Great Britain and Northern Ireland.	Represented on LOCOG's Board, the Olympic Board Steering Group and other stakeholder groups.
Commission for Architecture and the Built Environment	The government's advisor on architecture, urban design and public space.	Coordinate a London 2012 design review panel with Design for London to advise the Olympic Delivery Authority on London 2012 projects.
Design for London	Established to support the delivery of well-designed projects across London, and to make sure that design excellence is reflected within all projects that the mayoral agencies commission or fund.	Coordinate a London 2012 design review panel with the Commission for Architecture and the Built Environment to advise the Olympic Delivery Authority on London 2012 projects.
Department for Culture, Media and Sport	Government department.	The lead government department for the Games, with overarching responsibility for managing the Government's interests and responsibilities.
Government Olympic Executive	Dedicated unit within the Department for Culture, Media and Sport, reporting direct to the Minister for the Olympics.	The team responsible for handling Olympic matters within the Department for Culture, Media and Sport. Provide assurance to the Olympic Board and the Minister for the Olympics that activities across the London 2012 programme are being well managed, and provide effective governance and risk and financial management for the Games as a whole.

Organisation/group	Background	Role in relation to the London 2012 Games
Greater London Authority	Strategic governing body for London covering transport, policing, fire and emergency services, economic development, planning, culture and the environment. Comprises the Mayor of London, the executive of the Authority, and the London Assembly which scrutinises the Mayor's activities.	<p>Contributing up to £625 million to the public sector funding package for the Games, to be generated from council tax receipts.</p> <p>The funding package for the Games includes up to a further £300 million which the Mayor of London agreed to make available over the lifetime of the programme.</p> <p>The Mayor of London is a co-signatory to the Host City Contract, signed with the International Olympic Committee.</p> <p>The Mayor of London is a member of the Olympic Board.</p> <p>The Mayor of London is a co-signatory to the joint venture agreement which established LOCOG.</p>
London Development Agency	The Regional Development Agency for London, co-ordinating economic development and regeneration. Accountable to the Mayor of London.	<p>Responsible for acquiring the land on the Olympic Park site, and leading on the development of the Legacy Masterplan Framework.</p> <p>Contributing up to £250 million to the public sector funding package for the Games, in addition to funding the land acquisition.</p> <p>Planning and implementation of a strategic regeneration plan for East London to secure Olympic legacy benefits.</p>
London Organising Committee of the Olympic Games and Paralympic Games (LOCOG)	A company limited by guarantee, established by a joint venture agreement between the Secretary of State for Culture, Media and Sport, the Mayor of London and the British Olympic Association.	<p>Responsible for the operational and staging aspects of the Games.</p> <p>The liaison point for the International Olympic Committee and a party to the Host City Contract, signed with the International Olympic Committee.</p> <p>The Chairman of LOCOG is a member of the Olympic Board.</p>

Organisation/group	Background	Role in relation to the London 2012 Games
London 2012 Sustainability Group	Comprises senior representatives from the Olympic Delivery Authority, LOCOG, British Olympic Association, Government Olympic Executive, Greater London Authority and Defra. Other Government departments and Olympic stakeholders may be invited to attend. The Commission for a Sustainable London 2012 is invited to attend for part of meetings. The group meets every two months.	Responsible for the sustainability agenda, including overseeing, co-ordinating, monitoring and delivering sustainability commitments in the Sustainability Plan. Provides collective advice and assurance on the progress of sustainability commitments across the programme and shares best practice across the programme. Coordinates internal and external stakeholder engagement in relation to all sustainability and environmental issues.
Olympic Board	Established by a Memorandum of Understanding between the Secretary of State for Culture, Media and Sport, the Mayor of London and the British Olympic Association. Comprises the Minister for the Olympics, the Mayor of London, and the Chairs of the British Olympic Association and LOCOG. The Chair of the Olympic Delivery Authority and the Commissioner of the Metropolitan Police Service attend Board meetings. Chaired alternately by the Minister for the Olympics and the Mayor of London.	Responsible for resolving and determining issues raised by members of the Olympic Board to ensure the delivery of the Games, and for ensuring that a sustainable legacy is achieved following the staging of the Games. Oversees the Olympic programme, and receives reports and plans from the bodies involved in staging the Games.

Organisation/group	Background	Role in relation to the London 2012 Games
Olympic Board Steering Group	Comprises senior officials from the Government Olympic Executive, the Greater London Authority, the British Olympic Association, LOCOG, the Olympic Delivery Authority, the Olympic Lottery Distributor, the Department for Communities and Local Government, and the British Paralympic Association. Chaired by the Director General of the Government Olympic Executive.	Supports the Olympic Board at official level. Takes a strategic overview of the work of the stakeholders in relation to the Olympic programme as a whole. Responsible for ensuring that the Olympic Board is kept informed and regularly briefed on all relevant matters.
Olympic Delivery Authority	Established by the London Olympic and Paralympic Games Act 2006. Non-departmental public body, sponsored by the Department for Culture, Media and Sport.	Will prepare the Olympic Park site, build the new venues and provide for their legacy use, and deliver the Olympic Village, media facilities, certain off Park venues, and infrastructure for the Games. The planning authority for the Olympic Park area – any application relating to land within the area is considered by the Olympic Delivery Authority's Planning Committee rather than the local borough. Responsible for developing an Olympic transport plan and for delivering certain Olympic transport projects.

Appendix 3 – Status of recommendations from the 2007 Governance Review relating to design

Number	Responsibility	Recommendation	Status
Recommendation 4	ODA LOCOG	ODA and LOCOG should develop a clear statement of intent with respect to standards for temporary venues and temporary overlay.	LOCOG is responsible for temporary venues. LOCOG Venue Requirements (LVR) have been developed for some venues which include sustainability requirements for design. We understand that overarching Sustainability Requirements for Venues will be developed during 2009. We will monitor development of these. Progress made.
Recommendation 6	ODA	Clear and specific SD objectives and targets should be embedded in ODA sub-project plans, with associated personal objectives, recruitment and training to ensure appropriately skilled personnel. This should have sufficient clarity to support the ODA plans to implement an ISO 14001 based management system.	There are clear SD objectives set out in the project brief for the handball arena and velopark. Progress made.
Recommendation 20	CSL	The commission should undertake a review based on the ODA internal audit report into design to ensure that SD issues have been dealt with appropriately.	This review has picked up the issues contained in the internal audit report. Complete.

Number	Responsibility	Recommendation	Status
Recommendation 2.11	ODA	Ensure that the recommendations highlighted in this report and in the emerging Legacy Masterplan. Framework are taken into account in procurement specifications and design briefs currently being developed. Create a mechanism to ensure that emerging issues can be accommodated where reasonable and practicable during the course of the project.	The Main Stadium and Aquatic Centre designs have evolved to incorporate sustainability criteria that were not in the original design briefs. The LMF will not be available in time to be considered in ODA procurement but needs to be considered by LOCOG with regard to provision for legacy. Progress made.
Recommendation 2.12	ODA	Ensure that shortage of information on legacy use of facilities does not preclude the business case for sustainable options by working with a range of options and scenarios for whole life cost to enable value judgements to be made when faced with shortage of information. Ensure that the value engineering process does not compromise the SD standards established for the project.	Whole life costing has not fully been applied to ODA procurement, due to the lack of knowledge of legacy use and focus on programme and budget to 2012. Evidence not yet obtained or unavailable. Value engineering has led to examples of positive environmental impacts where the embodied energy in materials has been reduced. Progress made.
Recommendation 3.2	ODA LOCOG	Continue to develop a strategy for dealing with environmentally sensitive materials through the design and supply chain process.	ODA design briefs address environmentally sensitive materials. LOCOG has developed a Sustainable Sourcing Code, although concerns remain about how it will be used when leasing materials. For both ODA and LOCOG, choice of materials for the proposed wraps and the use of PVC still need to be resolved. Progress made.

Number	Responsibility	Recommendation	Status
Recommendation 3.3	LOCOG ODA	Develop a strategy and standards for temporary overlay and temporary venues.	LOCOG is responsible for temporary venues. LOCOG Venue Requirements (LVR) have been developed for some venues which include sustainability requirements for design. We understand that overarching Sustainability Requirements for Venues will be developed during 2009. We will monitor development of these. Progress made.
Recommendation 3.12	ODA	Ensure that the ODA energy scheme is developed to utilise alternative fuel sources over time and during legacy.	This will be addressed through the carbon review. Evidence not yet obtained or unavailable.
Recommendation 3.13	LOCOG ODA	Define energy targets for temporary venues and other venues requiring temporary overlay.	LOCOG is responsible for temporary venues. LOCOG Venue Requirements (LVR) have been developed for some venues which include sustainability requirements for design. We understand that overarching Sustainability Requirements for Venues will be developed during 2009. We will monitor development of these. Progress made.
Recommendation 3.16	ODA LOCOG	Develop clear plans for how habitat is to be restored after construction on all sites.	The Park and Public Realm design brief and Olympic Park BAP set out how the park will address biodiversity issues. LOCOG's VEMPS should address biodiversity issues for their venues. Progress made.
Recommendation 3.17	ODA LOCOG	Set out how biodiversity is incorporated into the design process for venues and other development.	ODA design briefs include a requirement to demonstrate that biodiversity impacts are managed through an ecological management plan. They also include other specific biodiversity issues. Progress made.
Recommendation 3.29	ODA LOCOG	ODA/LOCOG to clarify how it will implement the commitment to access and mobility for Olympic Park and for temporary venues and temporary overlay.	Accessible transport strategy has been developed. Further work is required regarding movement through the park for the mobility-impaired, including the elderly and the infirm. LOCOG need to do further work on temporary venues and overlay at existing venues. Progress made.

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