LONDON 2012
Olympic and Paralympic Sustainable Games

Stratford (Lower Lea Valley)

Laura Andreini

L'arrivo imminente delle Olimpiadi 2012, la cui inaugurazione ufficiale è prevista per il prossimo 27 luglio, costituirà la prima tappa dell'ambizioso progetto di rinnovamento previsto dall'amministrazione londinese per la zona dei docks nell'est di Londra, un'area fra le più povere del paese che si estende su di un centinaio di ettari di suolo in precedenza caratterizzato da un forte degrado ambientale.
Pertanto la XXX Olimpiade non rappresenta solo lo svolgersi di un grande evento sportivo nel quale vengono messi a confronto le prestazioni di migliaia di atleti provenienti da ogni parte del globo, ma offre l'opportunità al paese ospitante, l'Inghilterra, di sperimentare un nuovo modo di concepire le trasformazioni e la riqualificazione del territorio attraverso strategie incentrate sul rispetto dell'ambiente, la riduzione dei consumi energetici e conseguentemente delle emissioni inquinanti.

Londra 2012 vuole dimostrare, per la prima volta, la possibilità di dilatare il concetto di eco-sostenibilità alla scala del paesaggio definendo nuovi standard di efficienza e nuovi modelli di comportamento nell'organizzare e guidare le scelte di rigenerazione e rinnovamento urbano. In questa ottica nel 2007 fu emanato, da un gruppo interdisciplinare composto da organizzatori, consulenti, esperti di eventi e di sostenibilità, il BS 8901, una serie di norme e di standard che garantissero, agli organizzatori di eventi e manifestazioni di grande impatto ambientale e mediatico, un supporto allo sviluppo di un sistema di gestione avanzato e sostenibile attraverso un approccio duraturo ed equilibrato alle attività economiche, alla responsabilità ambientale e al progresso sociale.

The imminent arrival of the Olympics 2012, whose opening ceremony is scheduled for the forthcoming 27 July, will represent the first phase of the ambitious upgrading works planned by the municipal administration of London for the docklands in East London, one of the country's poorest areas which cover about a hundred hectares of ground, formerly characterized by serious environmental degradation.
The XXX Olympics therefore not only represent the organization of a great sports event in which the performance of thousands of athletes from all over the world compete; it also offers the hosting country, England, an opportunity to test a new way to conceive territorial transformation and upgrading by means of strategies that centre on respect for the environment and the reduction of energy consumption and consequently polluting emissions.
London 2012 wants to demonstrate, for the first time, the possibility to dilate the concept of eco-sustainability on the scale of the landscape, defining new standards of efficiency and new models of behaviour in organizing and guiding the choices of urban regeneration and renewal. In this perspective the BS 8901, a series of regulations and standards, were issued in 2007 by an interdisciplinary group formed of organizers, consultants, experts on events and sustainability; they provide the organizers of events and happenings with a high environmental and media impact with an aid towards the development of an advanced and sustainable management system through a long-term and equilibrated approach to economic activities, environmental responsibilities and social progress.

the five key themes of the sustainability plan

Londra ottiene con le Olimpiadi del 2012 il primato di realizzare un evento interamente concepito e realizzato secondo i più severi parametri di rispetto dell'ambiente ed eco-sostenibilità. Già il programma per la candidatura presentato nel 2005 dal Comitato Organizzatore poneva la sostenibilità come tema centrale dell'intero progetto estendendo il rispetto dei criteri e delle strategie conseguenti a tutti i soggetti e i partners coinvolti a vario titolo nella realizzazione della manifestazione.
Le linee guida del progetto furono sintetizzate in cinque punti: cambiamento climatico, rifiuti, biodiversità, salute e integrazione sociale. Gli interventi programmati hanno ovviamente coinvolto molti e diversi settori, tuttavia la parola chiave per tutti, sostenibilità, è divenuta il centro ed il motore di ogni attività: dal cibo, ai trasporti, dalla logistica alle cerimonie, dalla tecnologia alle realizzazioni concrete. Non solo gli edifici ma l'intero evento dei giochi olimpici costituisce un esempio di operatività a basso impatto ambientale.

With the Olympics 2012 London makes a record, namely that of creating an event entirely conceived and realized according to the most exacting parameters of respect for the environment and eco-sustainability. The programme presented by the Organizing Committee in 2005 for the candidature already posed sustainability as a central issue of the whole project, extending the respect for these criteria and the consequent strategies to all the operators and parties involved, for various reasons, in the realization of the event. The project guidelines have been summarized in five points: combating climatic change, reducing waste, enhancing biodiversity, promoting inclusion and improving healthy living.
The planned works have obviously involved many different sectors, but the key word for everyone, sustainability, has become the centre and driving power of every activity, from food to transports, from logistics to ceremonies, from technology to concrete realizations.
Not just the buildings, but the whole Olympic Games as an event represent an example of a way of operating with a low impact on the environment.

1. climate change

"To deliver a low carbon Games and showcase how we are adapting to a world increasingly affected by climate change."
Most activities associated with building and hosting the London 2012 Games incur a 'carbon cost'.
Our challenge is to understand how these emissions arise, work to minimise them, mitigate their impact and plan for adapting to the effects of climate change so that our buildings, infrastructure and lifestyles are fit for the long term.

2. biodiversity

"To conserve biodiversity, create new urban green spaces and bring people closer to nature through sport and culture."
London 2012 is committed to ensuring that the Games play their part by taking a responsible attitude to the management of natural resources, through direct enhancements to the valuable ecology of the Lower Lea Valley and London 2012 venues in the capital and across the UK, and by promoting the value of the natural environment and conservation throughout the UK and international sport sectors.

3. inclusion

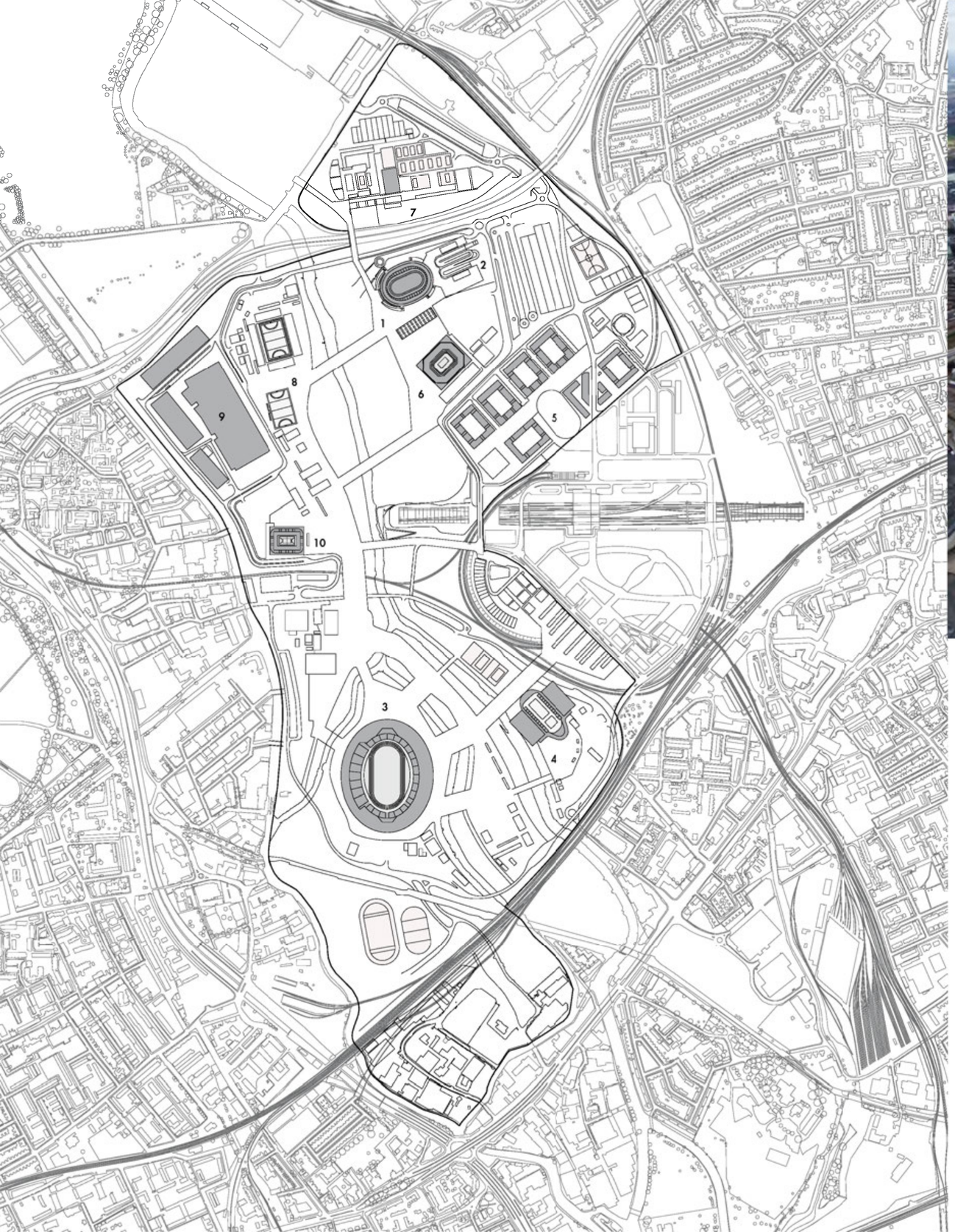
"To host the most inclusive Games to date by promoting access, celebrating diversity and facilitating the physical, economic and social regeneration of the Lower Lea Valley and surrounding communities."
The London 2012 Games will be everyone's Games. London's bid was founded on a celebration of the diversity of London's and the UK's population. London 2012 is committed to making sure that everyone can participate in, and benefit from, the Games and their legacy. This is a unique opportunity for the UK to demonstrate its rich diversity and social cohesion to an international audience and to promote the values of openness, respect and fair play.

4. waste

"To deliver a zero waste Games, through exemplary resource management practices and by promoting long-term behavioural change."
London 2012 seeks to optimise the opportunities to design out waste, while maximising the re-use and recycling of material arising during demolition, remediation and construction of the venues, as well as during the Games themselves. The Games and the lead-up to them present an opportunity to inspire change in waste management practices in the events and construction sectors.

5. healthy living

"To inspire people across the UK to take up sport and develop more active, healthy and sustainable lifestyles."
Living healthy lifestyles, within the resources of the planet, is an essential element of working towards a one planet 2012. Some of the greatest health benefits that we can achieve are those that are within our own control: by eating well, engaging in physical activity and living in a healthy environment, we can improve our quality of life, our well-being and our happiness. London 2012 is committed to maximising the health. benefits that the Games programme will bring – to spectators, to our workforce, to the whole of the UK.



Olympic Site Plan

01. Velodrome
02. BMX
03. Olympic Stadium
04 Aquatics
05 Athletes' Village
06. Basketball
07. Tennis - Eton Manor
08. Hockey
09. Media Center
10. Handball

Sustainable Development Strategy (SDS) themes

Le settimane dei record e del grande spettacolo sportivo dell'estate 2012, permetteranno a tutto il mondo di valutare, oltre l'abilità organizzativa e logistica propria del mondo anglosassone, il livello culturale e tecnologico raggiunto da una città come Londra assieme all'effettiva efficacia e concretezza dei nuovi standard abitativi e ambientali raggiunti attraverso una stretta osservanza dei più avanzati criteri di sostenibilità ed eco-compatibilità.
Sulla base dei cinque punti chiave del programma generale di Londra 2012, l'ODA (Olympic Delivery Authority) ha sviluppato e declinato una propria specifica strategia della sostenibilità attraverso 12 temi e argomenti (riportati nella tabella della pagina successiva): emissioni di anidride carbonica, acqua, rifiuti, materiali, biodiversità, impatto ambientale, comunità di supporto, trasporti e mobilità, accessi, occupazione e affari, salute e benessere, inserimento.

The weeks of records and great sports events of the summer of 2012 will give the whole world an opportunity to appreciate not only the characteristic organizational and logistic ability of the Anglo-Saxon world, but also the cultural and technological level attained by a city as that of London, along with the actual efficiency and concreteness of the new living standards and environmental quality reached as a result of strict compliance with the latest criteria of sustainability and eco-compatibility.
On the basis of the five key points of the general program of London 2012, the ODA (Olympic Delivery Authority) has developed and fine-tuned its own specific sustainability strategy through 12 themes and issues (listed in the table on the next page): carbon dioxide emission, water, waste, materials, biodiversity, environmental impact, support community, transports and mobility, accesses, occupation and business, health and wellness, inclusion.

The ODA has successfully embedded sustainability using the following 12 themes of the SDS:

- **1. Carbon**
  – minimise carbon emissions associated with the Olympic Park and venues.
- **2. Water**
  – optimise opportunities for efficient water use, re-use and recycling.
- **3. Waste**
  – implement reduction of waste through design, while maximising the re-use and recycling of materials during demolition, remediation and construction.
- **4. Materials**
  – identify, source and use environmentally and socially responsible materials.
- **5. Biodiversity**
  – protect and enhance the biodiversity and ecology of the Lower Lea Valley, and other venue locations.
- **6. Environmental impacts**
  – optimise positive and minimise adverse impacts on land, water, noise and air quality.
- **7. Supporting communities**
  – create new, safe, mixed-use public space, housing and facilities appropriate to the demographics and character of the Lower Lea Valley; make them adaptable to future climates.
- **8. Transport and mobility**
  – prioritise walking, cycling and the use of public transport to and within the Olympic Park and venues.
- **9. Access**
  – create a highly accessible Olympic Park and venues through the use of inclusive design.
- **10. Employment and business**
  – create new employment and business opportunities locally, regionally and nationally.
- **11. Health and well-being**
  – provide healthy lifestyle opportunities in the design and construction of the Olympic Park and venues.
- **12. Inclusion**
  – involve, communicate, and consult effectively with stakeholders and the diverse communities surrounding the Olympic Park and venues.

Ogni tema, ogni argomento, doveva trovare, ed ha trovato, un proprio riscontro in un'attività progettuale finalizzata alla massimizzazione dei risultati possibili nella convinzione che non esiste un metodo ottimale individuato a priori per raggiungere il benessere sociale e ambientale auspicato, ma una serie organizzata, coordinata e programmata di azioni infinitesimali, dal punto di vista del peso ambientale, la cui sommatoria integrale consente il raggiungimento di valori assolutamente significativi e rilevanti in termini di qualità e sostenibiltà ambientale.
Il parco Olimpico progettato da EDAW consortium, formato da Buro Happold, Foreign Office Architects, Populous, Allies and Morrison, con Arup and Atkins dimostra che una simile impostazione e finalità non inibisce le potenzialità espressive e compositive del complesso architettonico e paesaggistico ma, al contrario, sapientemente coordinati tali temi offrono spunti creativi che rappresentano, oltre l'essenza del software di sistema, parte integrante di un hardware alimentato da una dimensione etica che ne modifica il valore e quindi l'apprezzamento al di là del semplice giudizio sull'apparato morfologico della proposta.
L'Autorità olimpica (Organising Committee of the Olympici Games and Paralympic Games – LOCOG), con la conclusione del grande evento sportivo, consegnerà alla città l'eredità del Parco Olimpico – che prenderà il nome di Queen Elizabeth Olympic Park – attraverso una società, Olimpic Park Legacy Company (OPLC), che si occuperà di gestire l'intera area posta ad est di Londra per il prossimi 25-30 anni; una strategia che prende il nome di: piano dell'eredità.

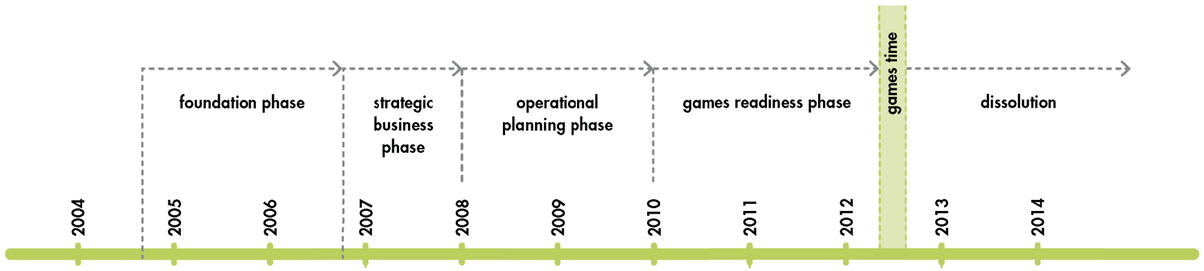
Every theme, every topic had to be, and has been, responded to in the form of a design activity aimed at maximizing the possible results, in a conviction that there is no optimal method identified a priori towards achieving the desired social and environmental well-being, but an organized, coordinated and programmed series of actions that may be infinitesimal in terms of environmental influence, but which together make it possible to achieve absolutely significant and relevant values in terms of quality and environmental sustainability.
The Olympic park designed by the EDAW consortium formed by Buro Happold, Foreign Office Architects, Populous, Allies and Morrison in cooperation with Arup and Atkins is proof that this kind of approach and goals do not inhibit the expressive and compositive potentials of the architectural and landscaped aggregate but that, quite on the contrary, when expertly coordinated, these themes are a source of creative inspirations that represent, in addition to the essence of the system software, an integral part of a hardware powered by an ethical dimension that alters its values and thus its appreciation, beyond the mere judgment of the morphological aggregate of the project.

When the sports event is concluded, the Organising Committee of the Olympic and Paralympic Games (LOCOG) will hand the heritage of the Olympic Park – which will change name to the Queen Elizabeth Olympic Park – to the city by means of a company, the Olympic Park Legacy Company (OPLC), which will provide for the management of the whole area located east of London for the next 25-30 years; this strategy is referred to as the heritage plan.
During his conference: "Olympics: starting with London: errors not to repeat" held in Rome in 2010 Ricky Burdett underscored that the whole project has been conceived so as not to repeat the post-event vicissitudes that have characterized the precedents of Athens, where the Olympic Park has remained a mainly deserted area after the games, or Beijing, where most of the built structures were not bought by the city as facilities serving the community.

Ricky Burdett, durante la sua conferenza "Olimpiadi: a partire da Londra: errori da non ripetere" tenutasi a Roma nel 2010, ha sottolineato come l'intero progetto sia stato concepito in modo da non ripetere le vicende post-evento che hanno caratterizzato i precedenti di Atene, dove il Parco Olimpico alla chiusura dei giochi è rimasto un area per lo più deserta, o Pechino, dove la maggior parte delle strutture costruite non sono state acquisite dalla città come aree a servizio della comunità. Il destino solitario e inutile del bellissimo stadio The Nest, progettato da Herzog & de Meuron, sembra quello di rappresentare uno straordinario monumento allo spreco e alla mancanza di programmazione poiché gli enormi costi sostenuti non possono certo giustificarsi con i 'venti giorni di gloria' dei giochi 2008.
La ricercata sostenibilità del programma londinese consiste, viceversa, nel riuscire a creare una nuova realtà urbana residenziale servita da adeguati servizi sportivi e sociali, collegati da un prioritario e nuovo sistema di mobilità a basso impatto ambientale, scandito da aree verdi per una comunità socialmente ed economicamente diversificata.

The solitary and futile fate of The Nest, the wonderful stadium designed by Herzog & de Meuron, seems that of an extraordinary monument to waste and to lack of planning, because the enormous costs incurred certainly cannot be justified by the "twenty days of glory" of the games in 2008.
The carefully planned sustainability of the London program on the contrary consists of creating a new residential urban reality served by adequate sports facilities and social services, connected by a prioritized and new mobility system with a low environmental impact, interspersed by green areas, for a socially and economically diversified community.

Games timeline



2007-2011
Building the stage

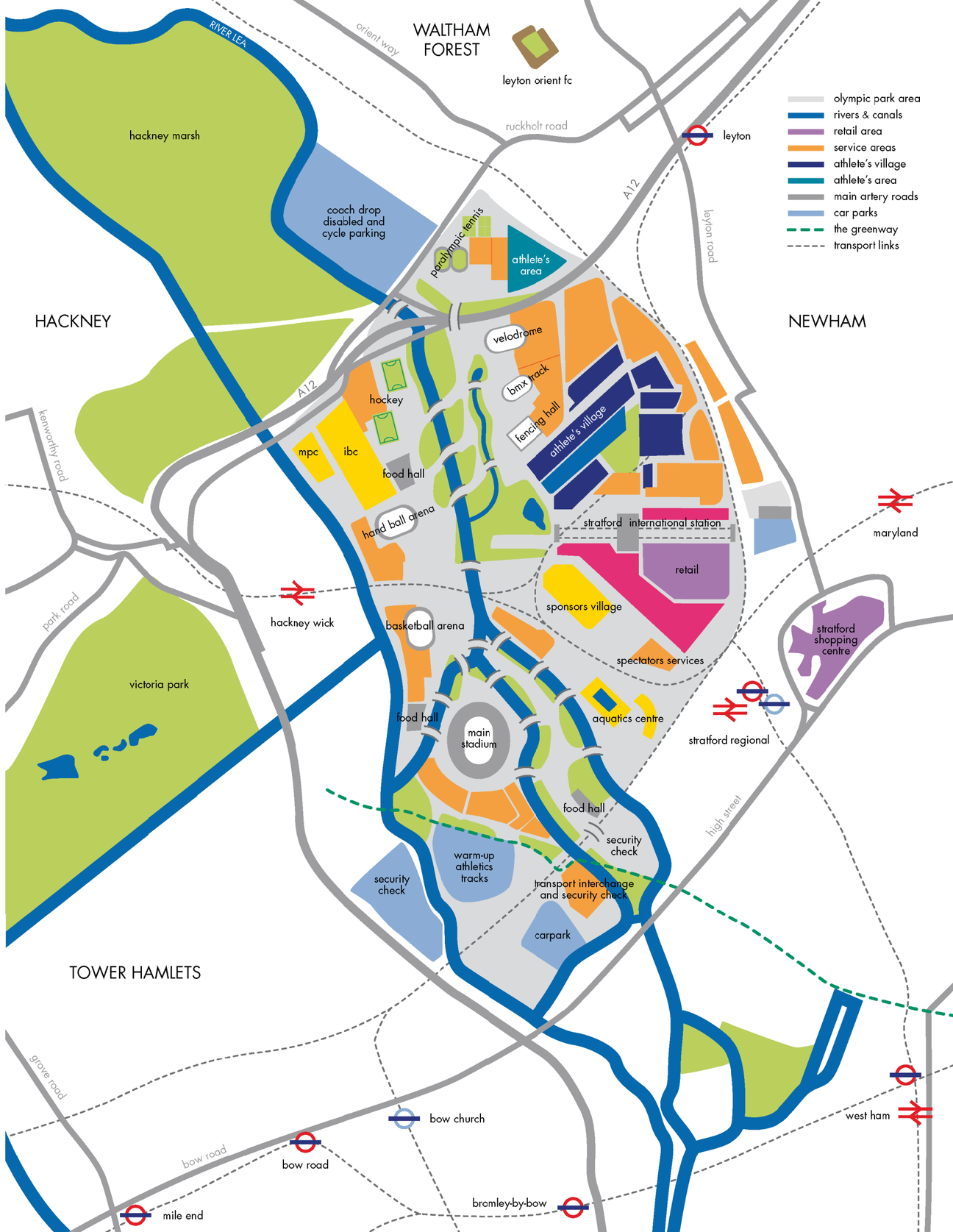
During this phase, sustainability was incorporated into the design and construction of the Olympic Park, other permanent venues and infrastructure

2011-2012
Staging the Games

This phase focuses on preparing for and staging the world's first truly sustainable Olympic and Paralympic Games

2013+
A sustainable and lasting legacy

The Games must secure an ambitious and sustainable physical, environmental and social legacy for the Olympic Park area and around the UK



green build on track

1) Olympic Stadium
- Lightest Olympic Stadium to date – minimising use of steel and reducing carbon footprint
- Unwanted gas pipelines used for the roof truss
- Recycled granite from King Gorge V docks was used for the Stadium's river banks
- High recycled content used for concrete foundations
- Bird and bat boxes built-in

2) Aquatics Centre
- High recycled content used for concrete foundations
- Water used to clean the swimming pool filters will be recycled for toilet flushing
- "Living wall" – biodiversity space for wildlife
- Sustainable timber used for cladding
- Bird and bat boxes built into Aquatics Centre bridge

3) Velodromo
- Light-weight venue design lowers carbon footprint
- Strategically placet roof lights will reduce the need artifical light
- Almost 100% naturally ventilated
- Designed to reduce water consumption by over 70%
- Rainwater harvesting for to flushing and landscape irrigation

4) Handball Arena
- 100% recycled aggregate for piling
- Rainwater harvesting to reduce potable water demani
- 88 light pipes in the ceiling to allow natural light into the venue
- working with the supplì chain to ensure that the copper used will be from a responsible source

5) Olympic Village
- Will achieve the Government's new "Code for Sustainable Homes Level Four" which is a national environmental standard, resulting in a 44% reduction in carbon emissione and 30% reduction in water use
- 40% of the roof space will be "green roofs"

6) IBC/MPC
- "Living roof" – biodiversity space for wildlife that will use materials reclaimed from site ie logs and seeds
- Bird and bat boxes
- Use of recycled water to flush the toilets and for other non-potable uses
- Off-site manufacture to minimise waste on site

7) Energy Centre
- Will provide efficient and low-carbon power to the Olympic Park
- Use new technology includine biomass boilers and a Combined Cooling Heat and Power (CCHP) plant which captures the heat generated as a by-product of electricity production

8) Waterways
- Dredging has removed 30.000 tonnes of silt, gravel and rubale as well as tyres, shopping trolleys, timber and at least one car.
- Wetland bowls and rare wet woodlands already being formed in the north of the Park to create habitat and help mandage floodwater
- More than 4.000 properties will benefit from a significantly reduced risk of flooding

9) Rail
- Over 50% of materials by weight are delivered by train includine aggregate, kerbs and drainage units
- Waste removed from site via railways
- 500 tonnes of plasterboard and 100 pre-fabricated toilet pods have been delivered to the IBC/MPC site by rail
- 1.8 million tonnes of material delivered to the Olympic Park

10) Soil-washing
- One of the biggest clean-up operations of its kind
- Cleaning and reusing hundreds of thousands of tonnes of soil which would otherwise have to be transported off site
- A "soil hospital" produced material suitable for reuse within the construction works

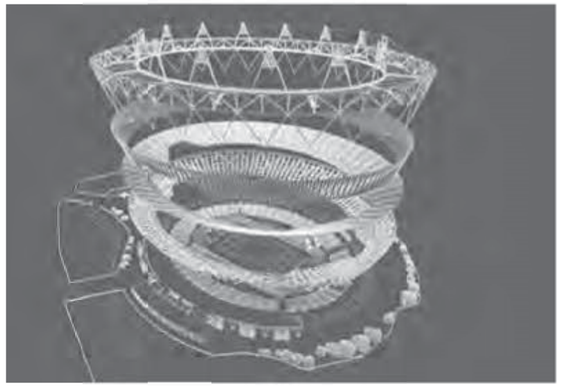
11) Concrete batching plant
- Supplies low carbon concrete to all projects on the Park
- Helps reduce the embodied carbon of venues and infrastructure on the Park
- Raw materials are substituted with secondary or recycled materials such as by-products from coal power stations and steel manufacture

12) Parklands
- A new 100 hectare urban park that will provide a green space for people and wildlife
- More than 4.000 trees, 74.000 plants, 60.000 bulbs and 300.000 wetlands plants; one of the largest planting projects undertaken in the UK
- Also creating wildlife habitats includine reedbeds, grasslands, ponds, woodlands, 525 bird boxes, 150 bat boxes and artificial otter holts

London Olympic Stadium

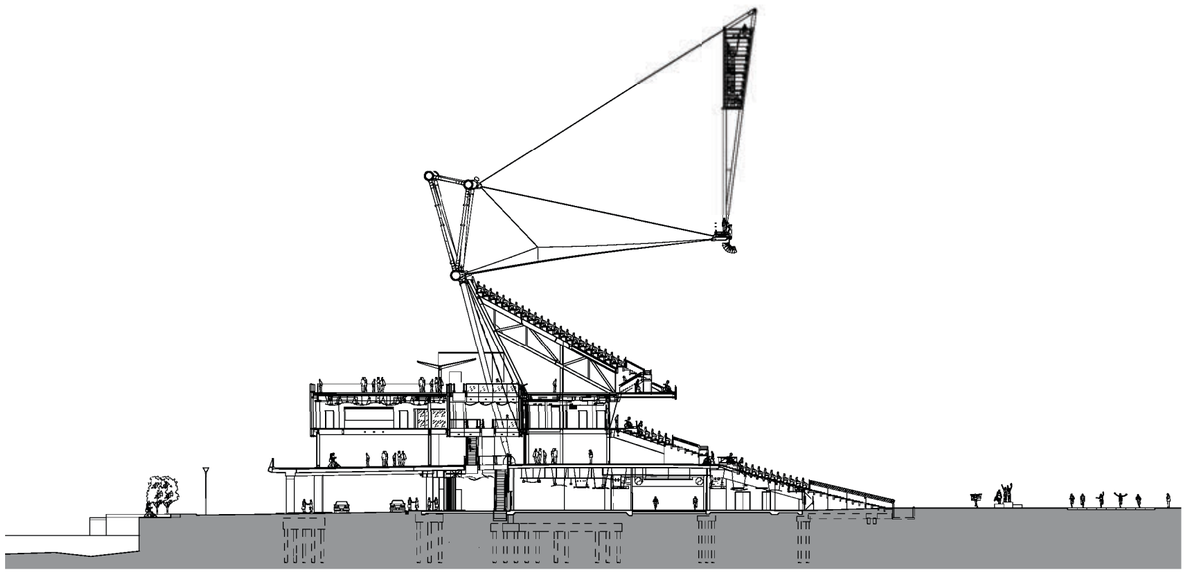
Populous

client: The Olympic Delivery Authority
coletion date:
Summer 2011
capacity:
80,000 games mode,
25,000 legacy mode



Lo Stadio Olimpico è situato su un'isola a forma di diamante circondata da due corsi d'acqua all'estremità meridionale del nuovo Parco Olimpico. Il progetto sfrutta al massimo il concetto di "isola", collocando lo stadio su un podio che funge da grande viale circolare per gli spettatori, collegato da ponti al parco principale.
Il design si ispira a criteri di sostenibilità, ridurre-riutilizzare-riciclare, andando a creare una struttura compatta, flessibile e leggera. Il corpo centrale dello Stadio è lieve ed elegante, messo in risalto dall'articolazione diagonale esterna dei tubolari in acciaio bianco posti sul tetto e dall'agile intelaiatura interna in acciaio nero che sostiene le gradinate superiori temporanee. Tra questi due elementi si colloca la facciata a vista, costituita da un fondale in tessuto a piena altezza. I sedili bianchi e neri offrono una scenografia neutra sulla quale si stagliano i colori interni delle strutture e dei camminamenti riservati agli spettatori, che animeranno ulteriormente lo scenario durante i giochi.

The London Olympic Stadium is sited on a diamond-shaped island between two existing waterways, located within the southern section of the new Olympic Park. The design makes full use of the site's island situation, providing a complete circuit of spectator podium concourse around the stadium, connected by bridges to the main park.
The key sustainability criteria of reduce, reuse and recycle were adopted to create a compact, flexible and lightweight design. The main Stadium structure is light and elegant, clearly expressed by the external diagonal articulation of the white tubular steel of the roof and the internal slender black steel supporting the temporary upper seating tier. Between these two frames lies the concourse façade, the full height ribbon sections of the fabric 'wrap'. The black and white seats provide a neutral backdrop for the interior colour of the spectator facilities and pathways, and the animation that spectators will bring to the event.



west section

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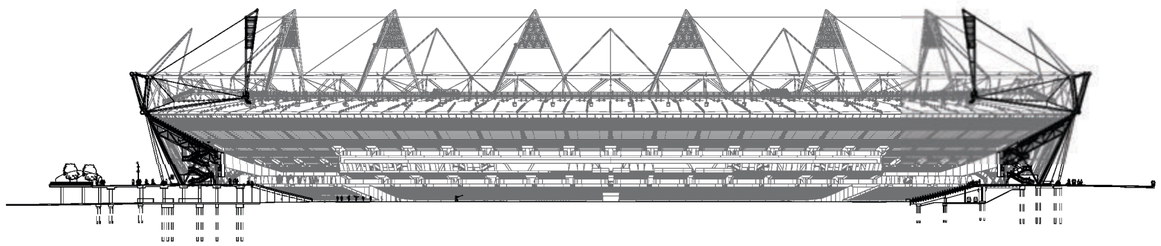
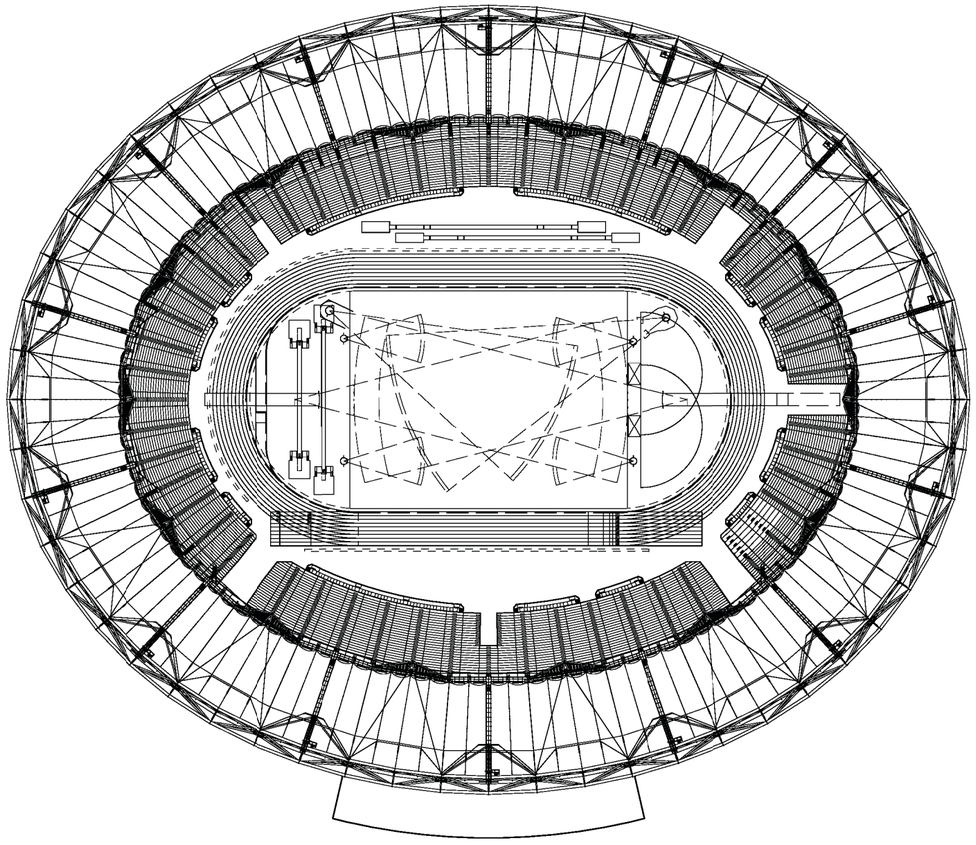
seating bowl



longitudinal section



roof plan

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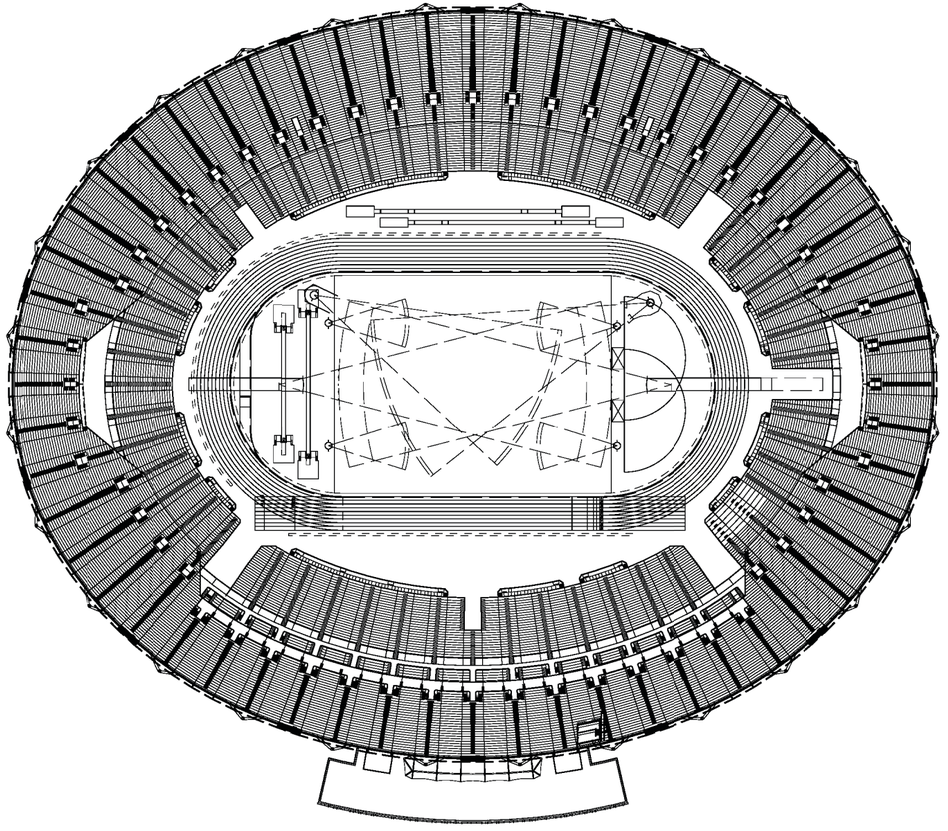


bowl plan

0 5 10

London Aquatic Center

Zaha Hadid Architects

capacity: 17,500 hosting swimming, diving, synchronised swimming, water polo finals and the swimming element of the Modern Pentathlon.
After the Games, the venue is reduced to a maximum of 2,500.
materials: 100% recycled aggregate used on almost all of the concrete within the centre and the use of GGBS (Ground granulated blast furnace slag) reduced the cement requirement by 50%. Hardwood veneers on plywood has substantially reduced the amount of solid timber required to clad the ceiling. The plywood comes from a renewable source. The overflow pool water is reused to in flushing the toilets.

Il progetto
Il progetto architettonico del Centro Acquatico di Londra è ispirato alle geometrie fluide dell'acqua in movimento, creando spazi e un ambiente circostante in armonia con il paesaggio fluviale del Parco Olimpico. La copertura ondulata si eleva da terra e avvolge il Centro in una continuità sinuosa, descrivendo il volume delle piscine per il nuoto e per i tuffi.
Il Centro Acquatico è stato progettato per avere la flessibilità necessaria ad accogliere 17.500 spettatori in occasione delle Olimpiadi di Londra 2012, fornendo allo stesso tempo la capacità ideale pari a 2.000 spettatori per l'utilizzo in modalità legacy, dopo i giochi olimpici.

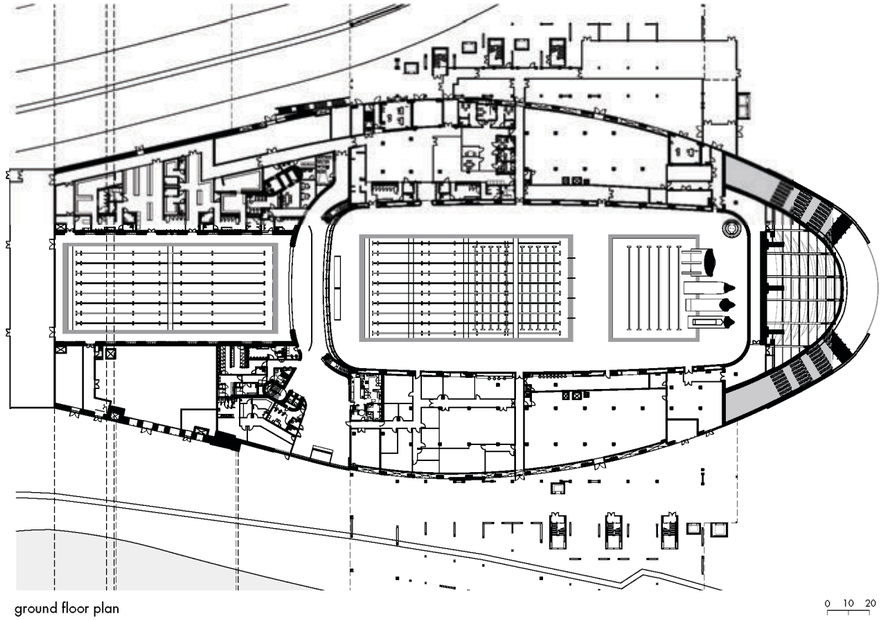
Il sito
Il Centro Acquatico rientra nel piano generale del Parco Olimpico. È ubicato all'estremità sud-orientale del Parco, in prossimità di Stratford, e dotato di un nuovo accesso pedonale al resto degli impianti tramite un ponte che segue la direttrice est-ovest (lo Stratford City Bridge), il quale passa direttamente sopra il Centro fungendo da entrata principale al Parco. Altri ponti pedonali più piccoli collegheranno il sito al Parco Olimpico sormontando il canale esistente. Il Centro Acquatico si pone in comunicazione con i principali spazi pubblici previsti dalle strategie urbanistiche del Parco Olimpico e del comprensorio di Stratford: la direttrice est-ovest dello Stratford City Bridge e la prosecuzione del Parco Olimpico lungo il canale.

La configurazione
Il Centro Acquatico insiste su un'asse ortogonale, perpendicolare allo Stratford City Bridge. Lungo questo asse, si dispongono le tre piscine. Quella dedicata agli allenamenti si trova sotto il ponte, mentre le vasche per le competizioni e i tuffi sono inquadrate nella grande sala provvista di copertura. La strategia generale consiste nell'incorniciare la base della sala come se fosse un podio, collegato allo Stratford City Bridge.
Questa sorta di basamento si compone di elementi modulari differenziati che concorrono a creare un singolo volume architettonico, in completa sinergia con il ponte. Il podio stesso emerge dal ponte per poi ridiscendere verso il livello inferiore del canale avvolgendo la sala delle piscine.
La sala interna si erge al di sopra del podio, sottolineata da un grande tetto che s'inarca lungo il medesimo asse delle piscine. La sua forma è generata dal punto di vista dei 17.500 spettatori che assisteranno alle gare olimpiche. Per gli archi parabolici è stata utilizzata una doppia curvatura per generare le peculiari caratteristiche geometriche del tetto. Il tetto s'incurva differenziando i volumi della piscina olimpionica e di quella per i tuffi. Proseguendo oltre la volumetria della sala, il tetto si proietta verso le aree esterne e l'ingresso principale al ponte che costituirà l'accesso primario all'indomani dei giochi olimpici. In termini strutturali, il tetto ha 3 punti principali di appoggio a terra e nello spazio tra la copertura e il podio trovano posto gradinate aggiuntive per accogliere spettatori durante le Olimpiadi, spazio che verrà in seguito chiuso con una parete a vetri.

Design Concept
The architectural concept of the London Aquatic Centre is inspired by the fluid geometries of water in motion, creating spaces and a surrounding environment that reflect the riverside landscapes of the Olympic Park. An undulating roof sweeps up from the ground as a wave - enclosing the pools of the Centre with a unifying gesture of fluidity, while also describing the volume of the swimming and diving pools.
The Aquatics Centre is designed with an inherent flexibility to accommodate 17,500 spectators for the London 2012 Games in 'Olympic' mode while also providing the optimum spectator capacity of 2000 for use in 'Legacy' mode after the Games.

Site Context
The Aquatics Centre is within the Olympic Park Masterplan. Positioned on the south eastern edge of the Olympic Park with direct proximity to Stratford, a new pedestrian access to the Olympic Park via the east-west bridge (called the Stratford City Bridge) passes directly over the Centre as a primary gateway to the Park. Several smaller pedestrian bridges will also connect the site to the Olympic Park over the existing canal.
The Aquatic Centre addresses the main public spaces implicit within the Olympic Park and Stratford City planning strategies: the east-west connection of the Stratford City Bridge and the continuation of the Olympic Park along the canal.

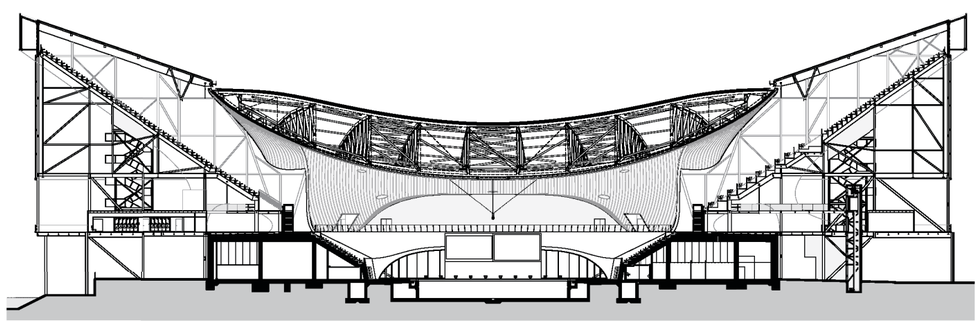
Layout
The Aquatics Centre is planned on an orthogonal axis that is perpendicular to the Stratford City Bridge. All three pools are aligned on this axis. The training pool is located under the bridge with the competition and diving pools located within the large pool hall enclosed by the roof. The overall strategy is to frame the base of the pool hall as a podium connected to the Stratford City Bridge.
This podium element contains of a variety of differentiated and cellular programmes within a single architectural volume which is seen to be completely assimilated with the bridge. The podium emerges from the bridge to cascade around the pool hall to the lower level of the canal.
The pool hall is expressed above the podium by a large roof which arches along the same axis as the pools. Its form is generated by the sightlines of the 17,500 spectators in its Olympic mode. Double-curvature geometry has been used to generate a parabolic arch structure that creates the unique characteristics of the roof. The roof undulates to differentiate between the volumes of competition pool and the diving pool. Projecting beyond the pool hall envelope, the roof extends to the external areas and to the main entrance on the bridge that will be the primary access in Legacy mode. Structurally, the roof is grounded at 3 primary positions with the opening between the roof and podium used for the additional spectator seating in Olympic mode, then in-filled with a glass façade in Legacy mode.



ground floor plan

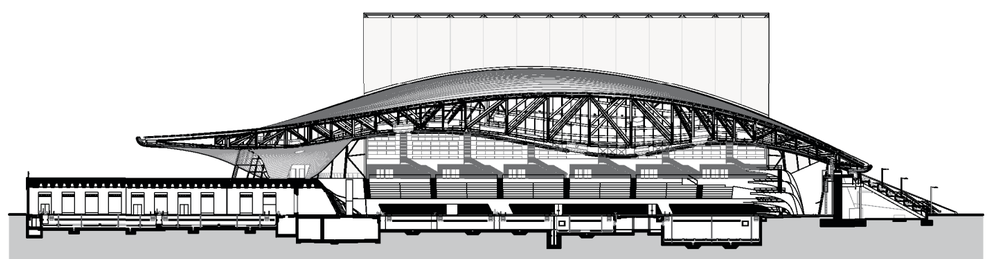
0 10 20

Hufton + Crow



cross section

0 5 10



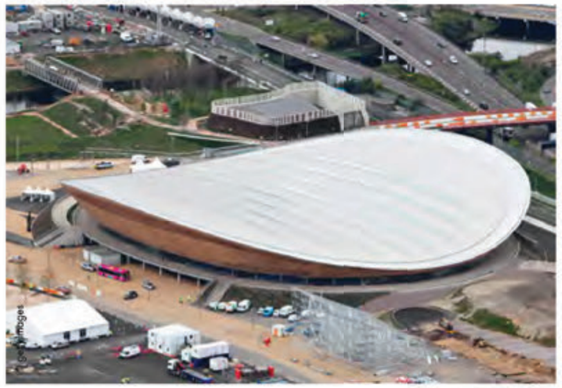
longitudinal section

0 5 10

London Velodrome

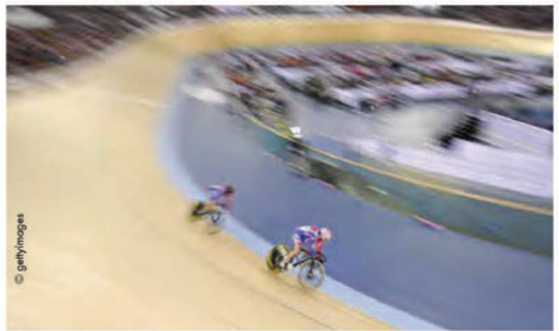
Hopkins Architects

gross floor area:
21,700 sqm
treated floor area:
16,740 sqm
total steel weight:
1,029 tonnes
environmental rating
BREEAM Excellent
total project cost:
£95 million
structural engineer:
Expedition Engineering
M&E consultant: BDSP
track designer: Ron Webb
main contractor: ISG
quantity surveyor: CLM
annual energy/CO_2
consumption for space
and water heating:
58 kWhrs
annual energy/CO_2
consumption for electrical
usage: 218 kWhrs

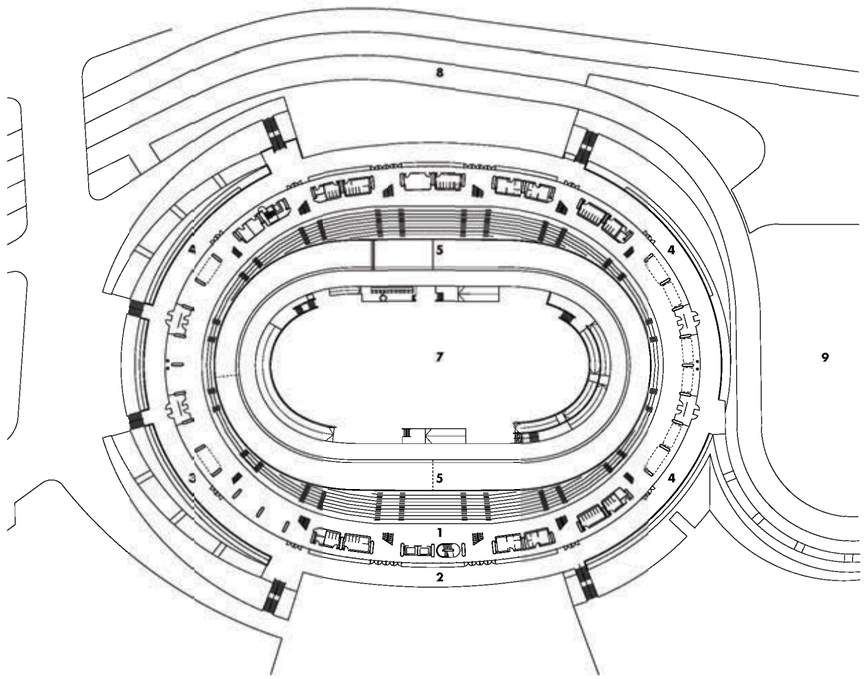


Il progetto si è posto l'obiettivo di minimizzare il fabbisogno energetico e idrico, realizzando una simbiosi con la struttura stessa dell'edificio per ridurre la dipendenza da sistemi e infrastrutture. La strategia di sfruttamento della luce diurna nell'arena principale esemplifica questo approccio. Invece di installare pannelli fotovoltaici sul tetto del velodromo o altre tecnologie ad integrazione, si è optato per una soluzione più economica ossia progettare l'edificio ottimizzando l'apporto della luce diurna, il che ha incrementato notevolmente i benefici prodotti per quanto riguarda la riduzione delle emissioni di carbonio. Grande attenzione è stata dedicata allo sviluppo e razionalizzazione dei lucernari nell'arena principale al fine di garantire un'illuminazione naturale sufficiente a consentire gli allenamenti per la maggior parte dell'anno. Sono stati utilizzati speciali vetri diffusori per impedire la comparsa di chiazze luminose sulla pista e offrire un livello elevato di luce diffusa all'interno dell'edificio. È possibile utilizzare un sistema di illuminazione artificiale a risparmio energetico con dispositivo di controllo intelligente per aumentare la luminosità durante gli eventi più importanti. Ciò permette di conseguire un equilibrio ottimale tra risparmio energetico e illuminazione naturale senza prevedere una vetratura eccessiva che comprometterebbe le prestazioni termiche dell'edificio. L'arena principale vanta un livello elevato di isolamento. Inoltre, in estate e nelle mezze stagioni, gode di una ventilazione completamente naturale che riduce in misura significativa il fabbisogno energetico. Il tetto del velodromo funge da bacino di raccolta dell'acqua piovana, che viene conservata nel sotterraneo all'estremità occidentale dell'edificio dietro la berma. L'impianto idrico di acqua non potabile del parco viene utilizzato solo come integrazione del sistema di acqua piovana in periodi con precipitazioni scarse o fabbisogno idrico elevato. Con questo accorgimento, e l'uso di attrezzature a risparmio idrico, l'edificio del Velodromo dovrebbe conseguire una riduzione del fabbisogno di acqua potabile pari al 75%. In linea con la sua vocazione alla sostenibilità, la Olympic Delivery Authority aveva stabilito una serie di obiettivi ambiziosi conseguito e in alcuni casi superato.

The design strategy focused on minimizing demand for energy and water and integrating this into the fabric of the building to reduce reliance on systems and infrastructure.
The daylighting strategy applied to the main cycling arena exemplifies this approach. Rather than investing in PVs on the roof of the Velodrome or other 'bolt-on' technologies, designing for maximum daylight proved to be a much more economical solution which yielded far greater benefits in terms of reducing carbon emissions. A great deal of effort was put into developing and optimizing rooflights in the main arena to provide sufficient daylight for training purposes for most of the year.
Special diffusing glass was used to prevent patches of sunlight appearing on the track and to give a high level of diffuse light inside the building. Energy efficient artificial lighting linked to an intelligent control system can be used to provide elevated lighting levels for major events. This achieves the best balance between energy savings due to daylight use without incurring excessive glazing areas, which would compromise the thermal strategy of the building. The main arena is highly insulated and fully naturally ventilated in mid-season and summer, significantly reducing energy demand. Rainwater is harvested from the Velodrome roof and stored in the undercroft at the west end of the building behind the berm. Recycled rainwater is used to supply the WC/Urinal flushing and any wash down points, along with irrigation of the Velopark when completed post–Games. Using the park-wide non-potable water only as top-up for the rainwater system in periods of low rainfall or high water demand and the use of water saving fittings throughout the building the Velodrome is predicted to achieve an annual reduction of 75% in potable water demand.
Due to their high sustainability aspirations the Olympic Delivery Authority has set a number of sustainability targets. Through carefully consideration and integration of the architecture, structure and building services the design has met or exceeded these requirements.



1- internal concourse
2- external concourse
3- legacy café
4- possible concession spaces
5- track
6- judge's platform
7- infield
8- legacy road circuit
9- BMX

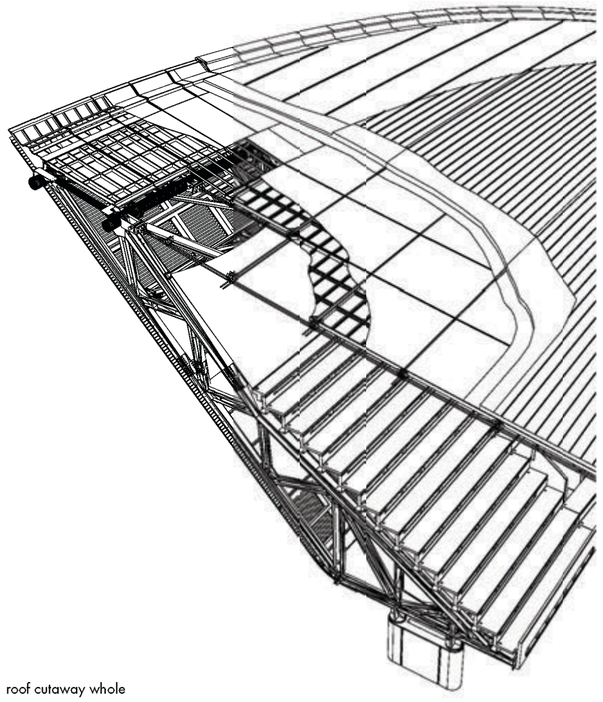


arena level plan

0 5 10

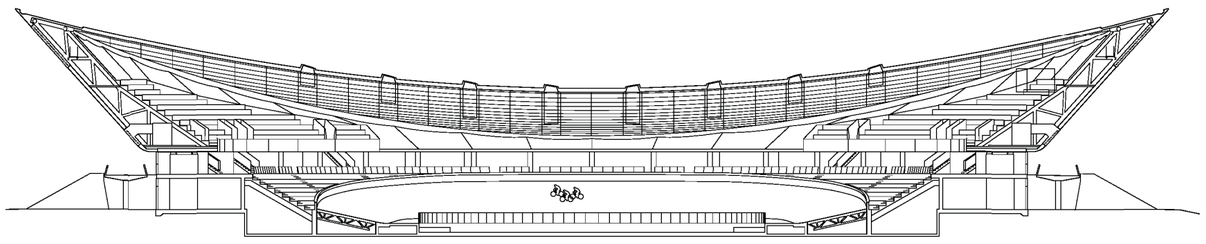
Hopkins Architects

Hopkins Architects

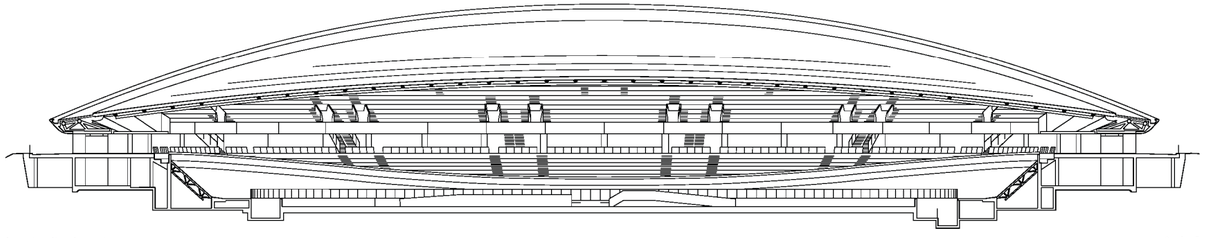


roof cutaway whole

A great deal of effort was put into developing and optimizing rooflights in the main arena to provide sufficient daylight for training purposes for most of the year.



cross section



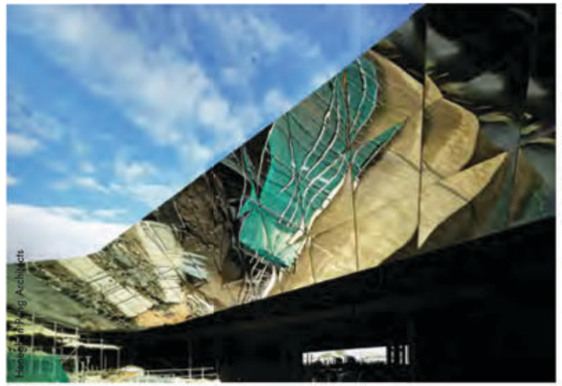
longitudinal section

0 1 2

Central Park Bridge

Heneghan Peng Architects

client: Olympic Delivery Authority
date: 2007 (Competition)
location: London 2012 Olympic Park, UK
structures/civil:
Adams Kara Taylor
structural steel specialist:
Waagnar Biro
cladding specialist:
Waagnar Biro



Nel luglio 2007, la Olympic Delivery Authority ha indetto un concorso internazionale di architettura per la progettazione del Central Park Bridge (F06) nel Parco Olimpico che accoglierà i giochi nel 2012 a Londra.
Il ponte costituisce il fulcro del Parco Olimpico di Londra 2012 ed è ubicato tra lo Stadio Olimpico e il Centro Acquatico, all'intersezione tra la zona nord e quella sud del Parco.
Dal ponte è ben visibile lo storico Carpenters Lock con le sue splendide e rare paratoie radiali, vestigia del passato industriale dell'area.
Il progetto per il ponte dello studio di architettura Heneghan Peng, che ha vinto il concorso, coniuga le due anime del sito, quella a vocazione olimpica e quella post-olimpica, in una struttura unica e caratteristica. Per la durata dei Giochi, i passaggi permanenti del ponte, con il loro agile andamento diagonale che conduce i visitatori direttamente sopra le chiuse attraverso il Legacy Park, sono collegate da una passerella colorata di "Confetti" olimpici. Questo elemento aggiuntivo temporaneo tra le campate permanenti celebra lo spirito dell'evento e consente di accogliere il flusso di visitatori previsto per i Giochi. Al termine delle Olimpiadi, le due superfici con i "Confetti" potranno essere ripiegate a formare un passaggio panoramico con due anfiteatri contrapposti, a nord e a sud, che conducono verso il livello inferiore. Con la struttura che si ritrae, il Carpenters Lock non sarà più nascosto ma piuttosto inquadrato dai due anfiteatri e dalla sottile passerella diagonale sovrastante.

In July 2007 the Olympic Delivery Authority launched an international Architectural Design Competition for the design of the Central Park Bridge (F06) in the Olympic park for the 2012 games in London.
The Bridge forms the centrepiece of the London 2012 Olympic Parklands, being located between the Olympic Stadium and the Aquatic Centre in the interface between North and South Park. Located within the site for the bridge is the historical Carpenters Lock with its beautiful and rare radial gates – a reminder of the site's industrial past.
heneghan peng architects' winning design for F06 achieves a symbiosis of both, Games and Legacy use, into one singular iconic structure. For the duration of the Games, the permanent main spans of the bridge with their slender diagonal gallery element that carries the visitors directly above the lock through the Legacy Park are joined by an immediate and colourful deck of 'Olympic Confetti'. This temporary 'infill' element between the permanent spans captures the spirit of the festivities and accommodates the required visitor flow of the Games. In Legacy Mode, the 2 surfaces that form the 'Olympic Confetti', fold away to form a landscaped passage of two opposing amphitheatres - north and south-that lead you to the lower level. With the landscape folding away, Carpenters Lock is no longer hidden but framed by the two amphitheatres and the thin diagonal span overhead.