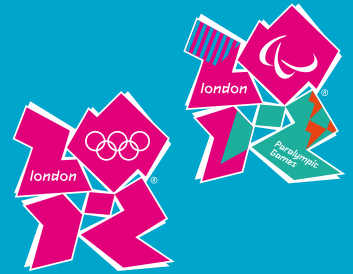


# Learning legacy



## Lessons learned from the London 2012 Games construction project

### Olympic Parklands Green Infrastructure

#### Abstract

Urban areas across the world are increasingly looking at ways to improve their environmental performance and sustainability to tackle post-industrial blight, combat the challenges of climate change and improve the quality and health of urban life. In recent years, there has been increasing interest in the role that green infrastructure can play in meeting these challenges.

The Queen Elizabeth Olympic Park is one of the largest parks to be built in the UK this century. Adopting rigorous principles of sustainable development, it provides a valuable and high profile example of how to design a green infrastructure within a dense and complex urban area. In creating a multifunctional living and working landscape, the design

will provide a stunningly beautiful backdrop for the London 2012 Olympic and Paralympic Games that will also function locally and nationally for decades to come.

This case study focuses on the strategic green infrastructure planning, design, implementation and management of the Parklands that will deliver a new suite of ecosystem services. It highlights the lessons learned by the Olympic Delivery Authority (ODA) and its partners during this process. These include the value of having established green infrastructure frameworks to work within; the benefit of taking an integrated approach to delivery; the importance of placing design at the heart of the process; and the need to adopt a long-term sustainable view to investment.

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The Queen Elizabeth Olympic Park is one of the largest parks built in the UK this century

## Introduction

Green infrastructure has increasingly been recognised as the fifth critical infrastructure alongside energy, water, waste, and transport, required in planning, building and maintaining sustainable communities. The term, first adopted in the United States of America with the work of the American Planning Association, has become an important element of strategic planning in recent years. While green infrastructure has been defined in a variety of ways by different organisations and guidance documents, current planning policy<sup>1</sup> for England provides a succinct version:

**‘Green infrastructure’** is defined as a network of multifunctional greenspace, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities.

Through proactive planning, design and management it has been shown that green infrastructure can reduce carbon, promote renewable energy, improve air quality, moderate local micro-climates, enhance biodiversity, improve water management, increase local food production, facilitate more sustainable modes of transport, promote healthy communities and contribute positively to the quality of place. It is often easiest to achieve

this in new build greenfield locations, but London 2012 provides an opportunity to demonstrate practically at a large scale how cities in the UK can include such infrastructure through the regeneration and remediation of dense and complex post-industrial urban sites.

The original bid established a suite of sustainability commitments for London 2012 under the heading of ‘Towards a One Planet Olympics’<sup>2</sup>. Creating a strong and multifunctional green infrastructure that underpinned the development of the Parklands and wider Olympic site was an integral part of the two planning applications<sup>3</sup> for site preparation, Olympic facilities and legacy transformation. The Transformation phase defines works after the London 2012 Games prior to handing the entire site over to the Olympic Park Legacy Company (OPLC). The application sought to integrate and enhance key environmental elements, systems and processes that existed within the lower Lea Valley into the development of the Parklands.

Green infrastructure has also been central to providing a high quality environment for the neighbouring mixed-use communities, establishing a setting for future economic development and making a significant contribution to education, skills, training and job opportunities.

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‘Green infrastructure’ is defined as a network of multifunctional greenspace, both new and existing, both rural and urban.

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North Park during construction July 2011 looking east to Athletes' Village

### Meeting sustainability targets

A key achievement has been the role of green infrastructure in supporting the delivery of over three-quarters of the ODA's sustainability commitments set out in the Sustainable Development Strategy<sup>4</sup>. These include:

- the reduction of carbon emissions through on-site renewables (see the Green Credentials micro report);
- managing flood risk (see the Water Management micro report);
- ensuring all buildings are completely accessible by public transport, walking and cycling;
- meeting the biodiversity and ecology targets by creating a species-rich habitat of at least 45 hectares (see the Olympic Parklands Biodiversity case study);
- constructing the Parklands with recycled aggregates and certified and legally sourced timbers; and
- conforming to all recognised inclusive design standards.

### National policy and guidance

National planning policy for parks and open spaces is set out in Planning Policy Guidance 17<sup>5</sup> which will be subsumed into one National Planning Policy Framework in late 2011. National agencies, regional organisations and professional bodies have provided further detail on planning for green infrastructure.

### Establishing standards and promoting green space connectivity

The Commission for Architecture and the Built Environment Public Space Unit, CABE Space's guide on

preparing open space strategies<sup>6</sup> emphasised the role of open space in providing 'vital green infrastructure that enables us to deal with floods or mitigate and adapt to climate change while providing wildlife habitats, sporting facilities or beautiful parks.'

Natural England has championed a national standard for accessible natural green space (ANGSt), providing a set of benchmarks for ensuring access to places near to where people live. Nature Nearby<sup>7</sup> gives a series of standards that are reflected in much of the planning and legacy aspirations for the Parklands.

Natural England's Green Infrastructure Guidance<sup>8</sup> highlights the need for strategic planning that 'goes beyond the site specifics, considering also the 'big picture' landscape context, hinterland and setting, as well as strategic links of sub-regional scale and beyond'.

This recommendation reflects many of the strategic environmental planning achievements of the Parklands, providing a valuable practical example of how to deliver the principles in the Lawton Review, Making Space for Nature<sup>9</sup>. This promoted the establishment of ecological networks as an effective response to conserve wildlife in environments that have become fragmented by human activity.

## 45 hectares

Biodiversity and ecology targets met by creating species-rich habitats.



Perspective of the central parkland within the Athletes' Village



The Landscape Institute's position statement on green infrastructure encourages greater connectivity between different green infrastructure<sup>10</sup> assets to maximise the benefits they generate. Natural England's guidance also emphasises the role of green infrastructure in providing a 'multifunctional, connected network, delivering ecosystem services'.

The value of an ecosystem service-based approach is set out in detail in The Benefits of Green Infrastructure<sup>11</sup>. One significant planning achievement of the Park has been to connect with its wider environmental context and in particular by extending the green infrastructure network of the Lea Valley, East London Green Grid and the Thames Gateway Parklands.

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Natural England emphasises the role of green infrastructure in providing a connected network, delivering ecosystem services.

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#### Fitting the Parklands into its strategic context

The London Plan<sup>12</sup> identifies the Lea Valley, and particularly its lower stretches, as one of the most strategically significant open space corridors in the capital. The Strategic Regeneration Framework (SRF)<sup>13</sup> prepared by the Host Boroughs seeks to create an economic convergence with the rest of London. It made passing reference to 'producing a high-quality physical environment', choosing to focus on securing the same social and economic chances as their neighbours across London.

Two local planning frameworks provide further detail. The Opportunity Area Planning Framework (OAPF)<sup>14</sup>, promotes the creation of a major new linear park and ecological corridor, and the East London Green Grid (ELGG)<sup>15</sup>.



Aerial photograph illustrating the location of the Park in the Lower Lea Valley

The Parklands will make a major contribution to the delivery of the East London Green Grid strategic environmental network.

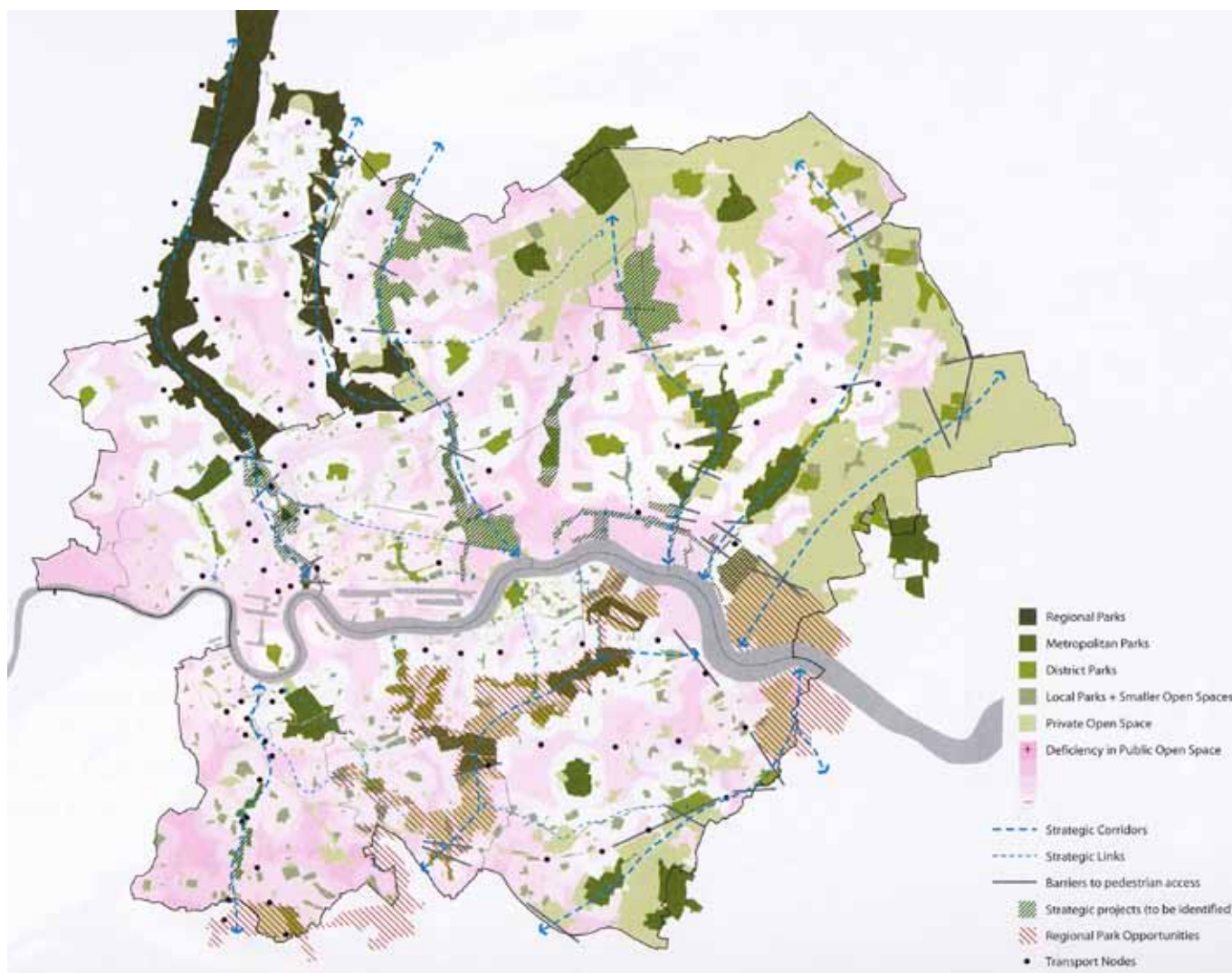
#### Delivering part of the East London Green Grid

The ELGG is the unifying green infrastructure framework which will soon be integrated within the All London Green Grid (ALGG). This will create a network of interlinked and high quality open and green spaces, guiding strategic environmental investment across the capital for the next 20–30 years. The ELGG was adopted as Supplementary Planning Guidance<sup>16</sup> in 2008 to 'help to promote healthy living and community spirit through access to recreational and cultural opportunities, while at the same time promoting biodiversity and acting as a 'green lung' for East London'.

The Parklands will be a key point of reference and make a major contribution to the delivery of this strategic environmental network, both extending the Lea Valley Regional Park south and eventually across London within the wider ALGG.

#### Extending the Lea Valley Regional Park South

Strategically, the Parklands extend the north/south route of the Lea Valley Regional Park, a key green ecological corridor for London, south towards the River Thames.



East London Green Grid with Lea Valley located on the North Western boundary, ELGG Supplementary Planning Framework, 2008



# 1967

The Lea Valley Regional Park was established by Parliament.

## The Lea Valley Regional Park

Established by Parliament in 1967 as Britain's first Regional Park, it was created to meet the recreation, leisure and nature conservation needs of London, Hertfordshire and Essex. In an early report, published by the Civic Trust in 1964<sup>17</sup>, proposals for Mill Meads and Stratford Plain included an open-plan Fun Palace where 'people of all ages and interests will find space to enjoy their leisure, to relax or be active, at any time, day or night'. Plans for these sites, now being realised for London 2012, remain uncannily true to these original aspirations.

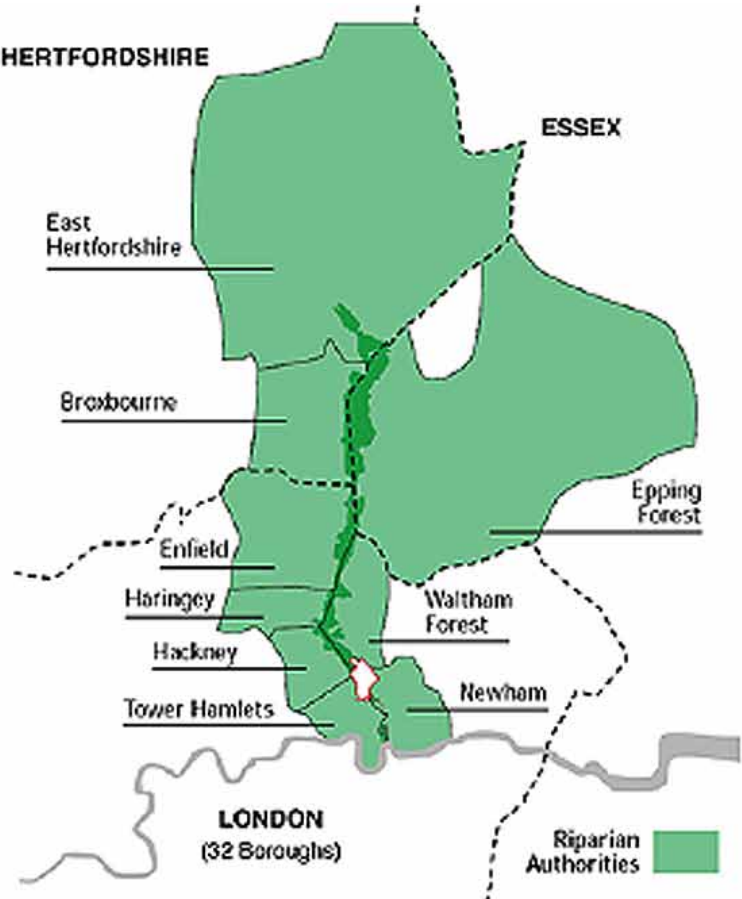


Sketch of proposals for Mill Meads in the 1967 Civic Trust report on the Lea Valley

## LEE VALLEY REGIONAL PARK



## HERTFORDSHIRE



Plan of the Lea Valley Regional Park, taken from the BAP Framework, 2007

### Integrating within the Thames Gateway Parklands

The Parklands play a further role in delivering the wider, government-led, regeneration objectives for the Thames Estuary corridor. Launched in the Thames Gateway Delivery Plan<sup>18</sup>, the Thames Gateway Parklands provide the context for a network of accessible, high-quality and sustainable landscapes and waterways, which capitalise on existing natural, built, historic and cultural assets.

Centred along the corridor of the Eastern Thames, this planning framework for the Thames Estuary bioregion seeks to create a working landscape and multifunctional environmental infrastructure to underpin truly sustainable forms of development. The Parklands, on the western edge of the Thames Gateway, provide the highest profile example yet of environmental investment.

### Green infrastructure planning and design for the Parklands

The complexity and condition of the site at the start of the project was particularly significant in the planning and design challenge. This has been described in detail in the Institution of Civil Engineers' (ICE) Journal paper

on environmental management<sup>19</sup>. The original site had high levels of contamination, poorly maintained waterways, large areas of invasive plant species and substantial stockpiles of waste.

Games and Legacy masterplans were submitted and approved through planning for the Olympic bid. These included a whole raft of environmental commitments and once London had won the bid, these were comprehensively reviewed and rationalised to address new technical requirements needed for hosting the games.

### The role of design and sustainable development

John Sorrell, then Chair of CABI, talking to the Thames Gateway Forum, in 2005, gave five key messages for the future, which were to: work with the grain, invest in the landscape to unite distinct places, lead and commit to sustainable development, get serious about benefits other than housing for the communities that live here and use good design as the springboard to the future. The Parklands have delivered on all of these 'gateway to the future' messages.

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The Parklands, on the western edge of the Thames Gateway, provide the highest profile example yet of environmental investment.

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The site of the Park before construction, May 2007

Well designed buildings and open spaces will act as a stunning backdrop in 2012 and help connect communities and instil a sense of ownership and pride.

Two key documents, the ODA's design strategy, Designing for Legacy<sup>20</sup>, and the Sustainable Development Strategy, set out how the masterplan would meet the environmental commitments. Designing for Legacy highlighted the transformational role for the Parklands.

The Chief Executive's introduction stated that 'while we are laying the foundations for the Olympic Park, we are also laying the foundations for the urban regeneration and physical transformation of the lower Lea Valley'. This was emphasised further in the design brief for the Parklands that recognised that 'well designed buildings and open spaces will not only act as a stunning backdrop in 2012 but will help connect communities and instil a sense of ownership and pride for decades to come.'

It was clear that investment in Park-wide infrastructure and utilities would be crucial for the smooth running of the London 2012 Games, ensuring that the Park 'continues to live and breathe in legacy'. The ODA extended its strong design-led approach to all elements of the site-wide masterplan, recognising that functional features and infrastructure need to be treated with the same importance as the flagship venues and character-filled settings.

#### The masterplan for the Parklands

The central approach of the masterplan was to establish an exemplary 21st century sustainable park though a strong focus on design, innovation and creativity. This has been described in detail in the ICE Journal paper on master planning<sup>21</sup>.



Parklands masterplan for the Games, 2008



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# 102

Hectares of Metropolitan Open Land in transformation.

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An early design report, prepared in May 2007, led with five succinct aims – the Parklands would be:

- well designed
- well financed
- well managed
- well maintained
- well used

These aims were followed by 10 objectives to ensure that the Parklands would celebrate the London 2012 Games, be a catalyst for economic development, restore the waterways, enhance biodiversity, promote culture and the arts, build community cohesion, encourage healthy living, develop skills and education, provide connections and integrate infrastructure.

The design concept was developed around six principal design themes reflecting the resources within and adjacent to the site. These included water, infrastructure and urban form, connectivity, topography, vegetation and biodiversity, and use and activity.

### Detailed design

As detailed design work progressed, the integration of a multifunctional green infrastructure for the Park became more explicit. The Park design enhanced the biodiversity benefits through its strategic position in the Lea Valley, and through connections to other important areas of habitat outside the Park. The design not only enhanced biodiversity, but also

provided a range of other benefits for local communities, not least creating an attractive and inspiring landscape for people.

The challenge for the design of the Parklands was to provide the different settings for the different venues and activities, create distinctive character areas, accommodate all the necessary temporary equipment and infrastructure, servicing and people movement requirements for the Games (described as the Olympic Overlay), yet ensure conversion to a more intimate landscape for the future Park.

Detailed design work satisfied the commitment to create 102 hectares of Metropolitan Open Land in transformation; to restore the waterways by protecting, enhancing and revealing their visual presence within the North Park; and promoting access and recreation within and along the existing waterways.

The functionality of the landscape was enhanced through better flood-risk management, water storage and cleansing. In terms of the biodiversity commitments in the original bid, the detail design delivered the Olympic Park Biodiversity Action Plan<sup>22</sup> (BAP) target of 45 hectares of new habitat in transformation, ensuring there was no net loss of biodiversity habitat. Detail on biodiversity is described in the Parklands biodiversity case study.

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# 45

Hectares of new habitat in transformation.

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Aerial photograph of the North Park, November 2010

For decades, the Lea Valley had suffered from very poor connectivity, particularly between communities to the east and west of the strategic north-south route of the wider Lea Valley Regional Park. The detailed proposals provided a significant number of new connections to ensure easy, safe access to and from neighbouring residential areas and transport hubs and the wider links to the ELGG.

The site had also supported a whole range of incoherent uses with little sense of place. The design of the Parklands also had to capture the essence of place-making and create somewhere grand, yet intimate, elegant yet functional, which is instantly recognisable as special.

### Delivery and implementation

The ODA established a set of rolling construction milestones<sup>23</sup> at the start of its work and the first 10 were known as 'Demolish, Dig, Design'. Milestone one focused on clearing and cleaning the majority of the Park. It targeted invasive vegetation, including the clearance and incineration of Japanese knotweed which covered around four hectares of the site. Existing woodland and waterside vegetation of high ecological value were incorporated into the Parklands design. Flora and fauna were protected, including the collection of seeds and the translocation of some species, including newts, toads and fish.

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Flora and fauna were protected, including the collection of seeds and the translocation of some species, including newts, toads and fish.

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Transformation masterplan with key connections to and through the Legacy Parklands from surrounding neighbourhoods, Design and Access Statement, 2008

Milestone five, the regeneration of the waterways, focused on improving the environment and access for the 'big build' creating new green corridors for wildlife and improving their functionality to allow construction materials to be transported to and from the site by barge.

Eight hundred metres of the Waterworks River has been widened by eight metres in the South Park adjacent to the Aquatics Centre. The majority of this extension has been planted with reeds to support ecological connectivity through the Parklands. Existing concrete river walls that had seen little attention since the 1930s were cleaned and repaired.

With one year to the Games, the ODA published its Completion Milestones to 27 July 2011<sup>24</sup>. Milestone nine explicitly described the emerging multifunctional role as well as providing a setting for the London 2012 Games. It stated that 'the Parklands will also be a working landscape' and the wetland bowls and wet woodlands in the north would help to manage floodwater. This would protect the rest of the Park and 4,000 existing homes around the Park from a one-in-a-hundred-year storm.

The environment management team had a clear role in coordinating the requirements of statutory agencies and the needs of community stake-

holders. Biodiversity Implementation Plans set out requirements for each venue and project, and on-site environment managers were assigned to all construction projects to provide technical advice to each project team.

At the peak of construction, 47 were in post meeting on a monthly basis at an Environment Managers Forum to exchange best practice and troubleshoot problems. Design team meetings were held with key stakeholders, including British Waterways, Environment Agency, Natural England and Thames Water. Joint Local Authority Regulatory Services (JLARS) meetings were also held on a regular basis to update all teams on environmental health matters, and the discharging of notifications and consents.

### Legacy and long-term management

The transformation and long-term legacy plan for the Parklands was always the primary focus for investment. Management responsibilities were clearly set out in the Parklands' planning application submitted in 2009, stating that the ODA would be responsible for operating the Parklands through to handover to OPLC by the end of 2014. A Park Operations team was established to take responsibility for these works and the Park, Towards a 10-Year Landscape Management and Maintenance Plan, set out the detailed information for the required maintenance activities until handover.

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# 4,000

Existing homes around the Park would be protected from a one-in-a-hundred-year storm, as the wetland bowls and wet woodlands would help to manage floodwater.

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Construction of the wetlands adjacent to the Athletes' Village, August 2011



New allotments and a one-mile road cycle circuit will be provided to replace those displaced from the Olympic site during the construction of the Park.

Key design principles for the permanent Parklands reinforced those set for the 2012 Games' masterplan. After London 2012, the Parklands would serve local communities, providing much needed neighbourhood-focused green spaces. One of the main green infrastructure elements of the permanent Parklands will be to maintain the focus on the unique riverine landscape created for the Games.

The permanent Parklands will meet the planning commitments to deliver 102 hectares of open space capable of designation as Metropolitan Open

Land (MOL), and the minimum of 45 hectares of new ecological habitat as identified in the BAP. In addition, new allotments and a one-mile road cycle circuit will be provided to replace those displaced from the Olympic site during the construction of the Park.

The opening of key west-east pedestrian routes will define two Park 'hubs' for the North and South Parks, providing visitor, educational and recreational facilities that will enhance the active characteristic of the Parklands, providing a key commuting and recreational thoroughfare within East London.



Parklands Transformation masterplan, 2008

### Landscape Management and Maintenance Plan

The management and maintenance plan for the Parklands was written in line with best practice published by the Heritage Lottery Fund<sup>25</sup>, who require the preparation of a 10-year conservation management plan to protect the investment of all Park restorations, and CABE Space's guide to producing park and green space management plans<sup>26</sup>. It is included as a Learning Legacy Champion Report.

The document provided a detailed description of the enhanced maintenance works to both establish the landscape infrastructure and ensure quality is maintained to a Green Flag standard. All activities are to be aligned with an annual Ecology and Habitat Monitoring Report to ensure that the maturing Parklands will be able to deliver both the aesthetic design intent and meet the predefined biodiversity targets.

Staffing requirements and governance structures were also set out in detail to ensure that there are sufficient resources to oversee and undertake the management works. The Management Plan has drawn on best practice from both the US and the UK, benchmarking the Park Proposals with Central Park in New York and Regent's Park in London.

## 4

Core green infrastructure principles, developed by Natural England, provide a useful framework to assess the long-term legacy of the Parklands.

### Promoting a multifunctional landscape

The design for the Parklands has been explicitly geared to delivering a functional, rich, productive and beautiful urban landscape. Past Olympics, including Munich 1972 Olympic and Paralympic Games and, more recently, Sydney Olympic and Paralympic Games and Beijing Olympic and Paralympic Games, have invested heavily in landscape infrastructure either providing a framework, or parkland setting, for the venues. In the case of Beijing, a new 680 hectare forest park was built as an adjunct to the Olympic venues.

London has sought to deliver a truly sustainable Games by adopting the principles of One Planet Living and a desire to host the greenest games ever. The Parklands will be a key, if not the most critical long-term element of the construction programme to support the practical and technical delivery of the original bid commitments. The added dividend is that this investment will also make a significant contribution to many of the strategic and local environmental planning policy objectives for East London.

Yet the qualities of a truly sustainable and multifunctional landscape are that it not only fulfils the environmental targets set at the outset of the design process, but also creates a truly popular and much loved urban park that is socially articulate, economically focused and beautiful. Four core green infrastructure principles, developed by Natural England with British Waterways and the Environment Agency, provide a useful framework to assess the long-term legacy of the Parklands:

- natural signature
- natural health service
- natural resilience
- natural connections

### The natural signature of the Parklands

The Parklands will ensure that, through high quality and creative design, and the comprehensive transformation of a much neglected and polluted site, a clear new green character and identity for Stratford City will emerge. London's natural signatures<sup>27</sup> are a means of encapsulating and evoking key characteristics of the Capital's natural landscape areas. For the Lea River Valley, the key natural signature is the river itself, and the marshes and wetlands within its floodplain.

North Park demonstrates what a striking place can be achieved through blending those key natural signatures with a truly creative approach to place-making. The ambience that has been created is welcoming, beautiful, alluring and distinctive. It also creates suitable habitats for many plants and animals.

To ensure this new landscape fully delivers on its ecological objectives, it will be essential that teams responsible for both transformation and legacy retain ongoing commitments to deliver the biodiversity targets set within the BAP. These are contained in the management plan that will maximise the environmental sustainability and performance of the Parklands by ensuring a set of bespoke, rather than generic, management prescriptions deliver a rich and diverse landscape.

The acid test will be when visitors and residents perceive the Parklands, and in particular the North Park, to be a truly rich, biodiverse, striking and varied landscape that they want to use. People will have the opportunity to again walk along this section of the Lea Valley and see plants and animals, and hear bird song that has not been so readily enjoyed in this part of London for many generations.

### The natural health service of the Parklands

Fair Society, Healthy Lives<sup>28</sup>, The Marmot Review into health inequalities in England has chosen to support a number of actions and events at the regional and local level, including the Host Boroughs. In addition, the SRF has specific targets to narrow the gap for people not participating in sport or physical activity, on childhood obesity and circulatory disease mortality. The Parklands provide better opportunities for physical activity, relaxation, mental well-being and healthy living through enhanced contact with the natural environment.

The Parklands will provide safe, tranquil and reflective spaces to improve mental health and encourage quiet relaxation and reflection. As well as increasing participation in active sport through the hosting of the Olympics and the legacy of world class sports venues, the Parklands will promote a large increase in regular, informal and low impact exercise for local communities. It is expected that after the 2012 Games 75 per cent of visitors to the Park will be to the Parklands.

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# 75%

Number of Park visitors expected to explore the Parklands after the 2012 Games.

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The natural signature of the wetlands in the North Park, May 2011



## The ODA supported the Greater London Authority to undertake research into tree selection for London in the face of climate change.

With improved access and connectivity, walking and cycling should become the preferred choice for making local journeys. The London 2012 active travel programme has already started to encourage more walking and cycling in the lead-up to, during, and after the London 2012 Games. In opening up the waterways for better public access and water-borne recreation, the Parklands should become a significant local resource, encouraging more active and healthy lifestyles to tackle some of the key health priorities of the capital and in particular East London.

### The natural resilience of the Parklands

The Parklands have been designed as a 'dynamic landscape' where change is expected through human use, colonisation of species and climate change. Landscape management was seen as crucial as design.

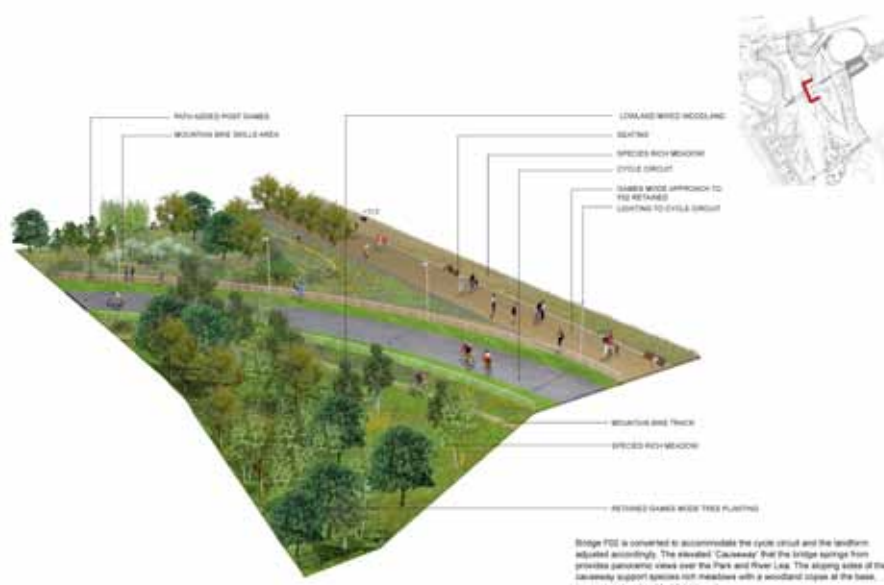
The Parklands provide a significant contribution to climate change adaptation. This has been achieved through sound landscape design and management incorporating specific environmental features including sustainable urban drainage systems, improved open spaces, green corridors and a significantly enhanced, predominately native, tree stock. Local neighbourhoods

will be better resourced to manage increased levels of peak rainfall and higher summer temperatures.

Early in the masterplanning for the Parklands, the ODA supported the Greater London Authority to undertake research into tree selection for London in the face of climate change. This created the Right Trees for a Changing Climate<sup>29</sup> web-based resource for the city and helped guide the selection of tree species for the Olympic site.

The re-engineering of the waterways running through the site, has enhanced peak flood capacity, allowing the waterways and wetlands to perform in a more dynamic and natural manner. With better porosity of hard surfaces and improved sustainable drainage channels and gullies, run-off can be absorbed to a far greater extent than previously achieved.

Better groundwater infiltration rates will also increase local recharge of the water table and improve tolerance to periods of lower rainfall and drought. Enhanced connectivity and strategic investment in greenways and green routes will aid species movement that is being triggered by changes in climate. This will allow local habitats to recharge, improve the genetic diversity of species and support annual migration routes and patterns.



Cycle routes and footpath design detail for North Park, Design and Access Statement, 2009

### The natural connections of the Parklands

Well-planned environmental networks improve the functionality and performance of local areas, encouraging greener travel patterns and enhancing the quality of experience in moving around local neighbourhoods. Early in the design process, key consideration has been given to planning policies regarding accessibility and 'Secured by Design' standards including those in the London Plan and the Host Boroughs' local plans. As a result, the masterplan for the Parklands has greatly improved the strategic connections both north-south and east-west, improving user's physical and seasonal connection with the natural environment.

In addition, local communities have been given the opportunity to participate in site clearance and tree planting programmes on the Greenway, adjacent to the Parklands. This has started to foster a better understanding and appreciation of the natural environment for local communities that will grow over time with increased opportunities for engagement and volunteering when the Parklands are fully open to the public.

Reconnecting people and nature is a central theme of the Natural Environment White Paper<sup>30</sup> that recognises the huge benefits people get from contact with nature, helping well-being through positive impact on mental and physical health, improved education and better social activity.

### Lessons learned and recommendations for future programmes

For many years, national urban green space policy has been driven by a 'Cleaner, Safer, Greener' programme. This was established through the work and recommendations of the Urban Green Spaces Taskforce, and led for several years by the Department of Communities and Local Government. The landscape planning and design challenge presented by the London 2012 Games has provided the opportunity to take this agenda one highly significant step forward.

In legacy, the investment for the London 2012 Games will create a new urban district that will certainly be much cleaner, safer and greener, but also one that includes a fully functioning green infrastructure, delivering a range of ecosystem services that have not been present for generations. While many of the lessons and innovations have been highlighted throughout the case-study, four key lessons should be emphasised for future programmes.

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Local communities have been given the opportunity to participate in site clearance and tree planting programmes on the Greenway.

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Local communities participating in planting on the Greenway, 2010

## 75 pence

Amount the ODA has spent on legacy for every £1 spent on venues, transport and infrastructure.

### Adopt a long-term sustainable view to investment

From the outset of London's Olympic bid, the long-term legacy of the Games has always been the main long-term goal for investment. For every £1 the ODA has spent on venues, transport and infrastructure, 75 pence has been on legacy.

While much of the central Parklands will be ready a year ahead of the 2012 Games, the full scheme will only be realised once the transformation and legacy works are complete. As with all landscapes, constructing a fully functional green infrastructure takes time and requires careful management to fully realise the long-term benefits. It will only be over a decade or more that the full quantum of economic, social and environmental return on investment will be fully realised and appreciated.

This project has demonstrated a significant step forward in transforming our contemporary social, economic and environmental infrastructure into one that is sustainable in perpetuity. It is clear that this process needs to be refined and accelerated if we are to live within the limits imposed by such infrastructure and the essential ecological services it provides.

### Green infrastructure planning frameworks are valuable

For more than a decade, a hierarchy of environmental planning initiatives including the London Plan, the Lower Lea Valley OAPF, the East London Green Grid and more recently the Thames Gateway Parklands, placed East London in almost a unique strategic position. This set of frameworks provided a comprehensive and agreed environmental foundation for the design of the Parklands.

An essential ingredient was that the individuals and organisations working for the ODA, directly or as consultants, had been involved in many of these initiatives and therefore clearly understood the long-term strategic environmental objectives for the Parklands. Effective green infrastructure delivery cannot be fully realised without a clear strategic framework and high-level political commitment.

### Take an integrated approach to delivery

Much of the success of the Parklands can be attributed to a design-led approach from the outset with integrated teams having the correct skills available at key times and driven by an agreed vision and fixed programme.

Delivering fully functioning green infrastructure requires the contribution and coordination of a multi-disciplinary team. For the Parklands this included skills in landscape architecture, planning, urban design, architecture, engineering, ecology, and hydrology. Clear project management was essential from the outset to ensure complex and regular partnership working between the design teams was achieved. When conflicting priorities emerged, strong leadership and swift decision making was essential to negotiate agreed solutions.

### Set design at the heart of the process

All the logistical, planning, security, health and safety, environmental constraints and requirements could have led to a robust, yet formulaic solution to the design and delivery of the Parklands. From the outset, the word 'special' was used to explain the aspiration for the place that was to be created.

This ambition was upheld through brief-writing, consultant procurement, liaison with all the necessary parties and the evolution of an acceptable scheme for the Parklands. It has needed tenacious conviction of the importance of high-quality design through the process to ensure the Park delivered all its functional green infrastructure requirements within the context of creating a place of the highest quality.



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