

A GAME OF URBAN REGENERATION

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INTRODUCTION

Urban Regeneration is the ambition to improve the deterioration of an existing area within a city. Collapses in manufacturing and industrial economies leave inner cities with high rates of unemployment and lower quality of housing, which lead to social neglect. To achieve the regeneration of an existing area, physical structures must change, and more crucially, new economic possibilities must be implemented for the current and future population. Without these two well founded ideas it is almost impossible to improve the overall standard of living in a deteriorated area. This dissertation discusses how the Olympic games can be used as a potential catalyst for urban regeneration, a city can achieve this outcome by implementing new infrastructure to the area allowing it to become better connected, by using well thought out and designed structures for the event and have in place a pre-determined afterlife for it.

LITERATURE REVIEW

When exploring the urban regeneration of Stratford in conjunction with the Olympic games, the main sources used were case studies from government departments, mainly case studies provided by the DCMS, department for culture, media and sport. The case studies 'Beyond 2012' and 'Before, during and after: Making the most of the London 2012 games' provided crucial and informative insight to what the initial Olympic bid entailed and what outcomes happened after the event had finished.

BIDDING FOR THE GAMES

A City must bid to the IOC (International Olympic Committee) in order to host the olympic games.

So far 28 summer Olympic games have been hosted by cities from 23 countries. London is the only city to have hosted it 3 times; 1908, 1948 and 2012. It would have hosted 4 times if not for the Second World War in 1944. The only other cities scheduled to host for a third time are Paris, 2024 and Los Angeles, 2028.

The Olympic games is one of, if not the biggest events a city can host. It creates huge new urban planning and infrastructure issues. The 2016 games in Rio saw 1.17 million athletes and spectators travel to take part during the summer and 6.6 million over a 12-month period. These vast number represent a huge need for re-development of airports, runways, railway, dockyards, bus routes and places for people to stay.

The most recent games in 2016 cost Brazil £15.5 billion, with the city of Rio de Janeiro spending £10.1 billion. It costs a city millions of pounds to prepare the required bid to be able to host the Olympics, which is then voted upon. The majority of bid cost is in planning,

organizing initial events, hiring consultants and necessary travel requirements. "The average cost of a city's bid is £60million for the summer Olympics. Tokyo spent £130 million for a bid for the 2016 games which was unsuccessful, but only £65million was needed for its successful bid for the 2020 summer Olympics". (U.K., 2019)

To host the games, a city generally has a need to update existing infrastructure, transportation and housing, the IOC also has stipulated a hosting city have a minimum number of hotel rooms, 40,000. In the most recent games in Rio, 15,000 new hotel rooms had to be constructed along with new roads, trainlines, with airports also needing to be upgraded. London was passed the Olympic torch by Beijing, who hosted the 2008 summer games. Its estimated cost of £30 billion dwarfs the cost of the Rio games, the majority of money spent on new permanent infrastructure, which was thought to be beneficial for the long-term economy of China. Less than a quarter of this amount would actually be built on devoted



Figure 02 - Green Way 2005



Figure 03 - Marsh Gate Land Bridge 2005

Stratford is located in London's borough of Newham and as of 2011 had one of the most diverse populations in the UK. There is wide variation in the ethnic distribution: over a third of East Ham North's population is Indian, 38%. 1 fifth of Canning Town North and Custom House is African, and the largest Bangladeshi clusters are found in Little Ilford, 20% and Manor Park, 19%. (A detailed profile of key statistics about Newham, 2017)

On the 6th July, 2005 the IOC announced London would host the 2012 event, narrowly outbidding Paris 54-50 this would be the first time London would host the games in more than 50 years. It would demand a new area,

new facilities, stadiums and infrastructure to make a successful game. As soon as the vote for London to host the games shares in British construction groups began to rise, mortgage lenders anticipated house prices in the London would rocket with the general mood of the capital increasing.

"The 2012 Olympic Games and Paralympic Games are unmatched in their scale, scope and ambition. They will bring real economic and social benefits through: the regeneration of East London; improved skills and business opportunities; the development of sporting talent; and increased tourism." (DCMS, 2008)



When the Official Development Assistance, ODA, first adopted the site at Stratford in April 2006, it had been undergoing a steady process of degeneration for many years. Although many industries and businesses were still located there, the majority of buildings were in poor condition, the overall area looked unsightly and oppressive. There were several roads passing through the site, but traffic mainly consisted of vehicles serving local businesses. There were many complications with an extensive network of overhead electric power lines, supported by massive metal pylons in the area. In addition to the factories and storage yards, there was a complex of sidings for passenger trains on the Southern side, along with railway goods yards which were no longer being used productively. Extensive rail freight handling facilities were also badly run down.



Above Figure 04 - Wharton Road 2005 , Below Figure 05 - Stratford Site

LONDON 2012 BID PROPOSAL

How do cities make a bid to the IOC and what does it entail? To begin with the city must demonstrate it is able to maintain and facilitate the needs of the events, not only able to manage the amount of athletes, but be able to transport and provide a certain amount of adequate accommodation for the enormous number of tourists, journalists, and politicians. It is also a necessity to show that you have the space to build new venues for specific sports, along with having a modern transportation system able to withstand the number of visitors. The games also require a high level of security during the short period of time, Stratford had none of these desired ideals.

Due to the expense of the games, there was to be an additional tax to the residents of London, the IOC would have to convince the local

people that the expense of hosting the games and redevelopment of the area would be beneficial for the whole of London. It would be provide new opportunities and jobs, the city would also need to begin work on the large infrastructure to start the urban regeneration of the site. It would include large projects such as the Olympic village, various sports arenas, stadiums, public walkways, bridges and an updated transportation system. All this would hopefully improve the social and economic climate in the city, boosted initially by the games, and ambitiously maintained after so that Stratford would not become like similar past Olympic games sites such as Athens, and later Rio, where the country fell into recession and with regeneration postponed, the newly developed areas became dormant and unused.

On the 25th April, 2006, the ODA (Official Development Assistance) acquired the freehold of the Stratford city Olympic land area, with the freehold transferred from English partnership and the national regeneration agency. At the time, the ODA had several major commitments:

"Deliver the Olympic park and all venues on time, within the agreed budget and to specification, minimising the call on public funds and providing for a sustainable legacy." (DCMS, 2008)

"To stage an inspirational Olympic games and Paralympic games for athletes, the Olympic family and the viewing public." (DCMS, 2008)

"Maximise the economic, social health and environmental benefits of the games for the UK, particularly through regeneration and sustainable development in East London." (DCMS, 2008)

"Achieve a sustained improvement in UK sport before, during and after the games, in both elite performances particularly in Olympic and Paralympic sports and grassroots participation." (DCMS, 2008)

By February 2010, the initial designs of the Olympic park were being praised for their inclusivity and accessibility. It was considered to potentially change the way that future developments of a similar type and scale are designed. The inclusive design strategy promoted a number of fundamental principles. Wider pathways would be used along with smooth surfaces and seating would be placed at regular intervals. Consideration should be given to the provision of disability access and use of wheelchairs around the park. A gentle gradient would allow all users better movement. Clear and easily understood signage should be displayed. There was a need for baby changing facilities and storage for baby buggies. Also a range of easily accessible toilet facilities should be made available for visitors.

RIO DE JANIERO POST GAMES



Figure 06 - Rio Olympic Park Post Games.

When Rio secured the right to host the games, Brazil's economy was thriving. After recovering from the 2007/08 global financial crisis the country's economy grew 7.5% in 2010. The total cost of their games was around £16 billion. £3.2 billion of which was spent on direct expenses such as arenas and the athlete's village, a £2.5 billion underground extension and a newly updated airport.

Jacarepaguá was the site of 2016 Olympic village for Rio, a population of 150,000 people. It needed a vast urban regeneration project similar to London's Stratford. Since the games only half of the facilities have been used; the aquatics centre has been drained and is in disrepair, the giant public park which was built during the games has now closed, and several key stadiums sit empty and unused. These were destined to be converted into public spaces but this never happened.



Figure 07 - Rio Olympic Park Before Games.



Figure 08 - Rio Athletes Village

The 31 towers in the athlete's village have been left mostly abandoned, designed to be converted into luxury apartments for residents after the games to regenerate the local area, similar to Stratford's Olympic Village. The huge Olympic Park which was built in the South zone of Rio, was planned to be repurposed and running as a centre of excellence for Brazilian sport much like Queen Elizabeth park in Stratford. Similar to London, Rio had plans to regenerate the area by rebuilding venues into schools for the city, and repurposing park space into public space. Empty venues are now scattered around the Olympic Park. Venue entrances have been obstructed, the handball arena has been blocked with metal bars and the broadcast centre remains half dismantled. The white-water course and venue, which was built for nearly a week of competition had plans to be transformed into an open-air swimming pool for locals after the event, but unfortunately never happened.

WHAT HAPPENED TO THE OLYMPIC PARK?

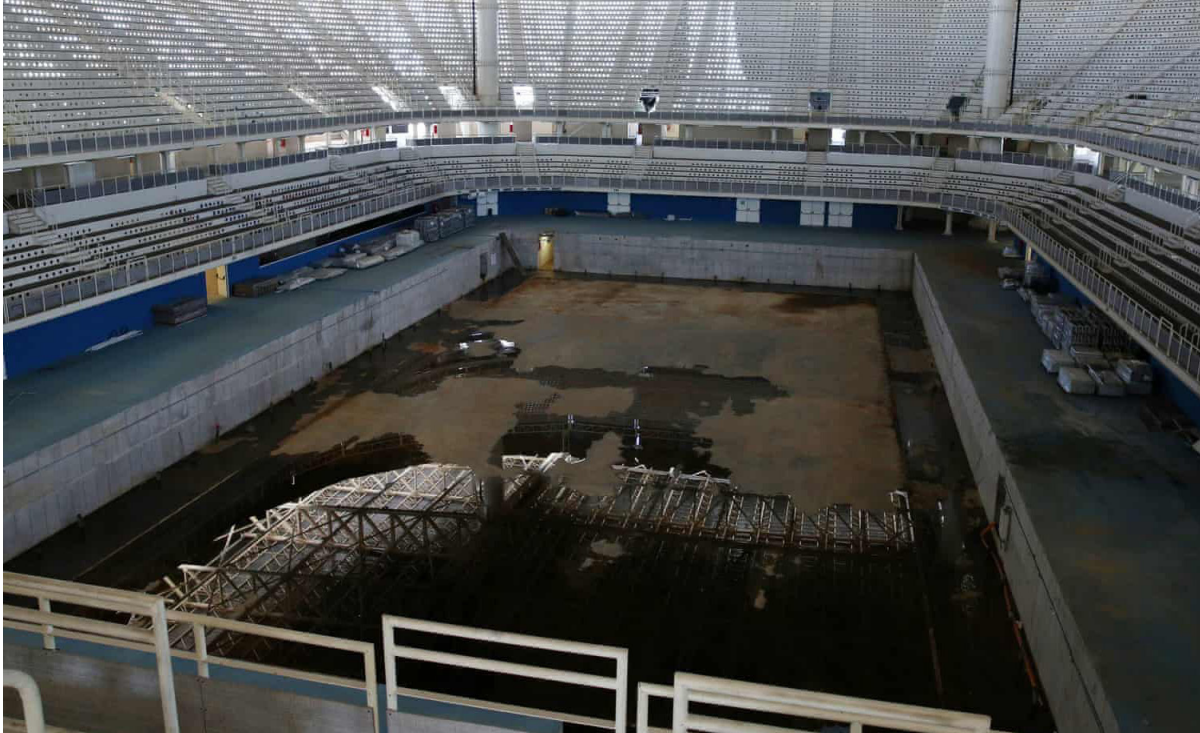


Figure 09 - Rio Aquatics Centre 2018

Deodoro, a poorer neighbourhood in Rio, is the site with the second-largest number of Olympic venues. Similar to the white-water course, the canoe slalom course was to be converted into another public swimming pool. Due to the overwhelming financial crisis the Olympic Park and Village have been left to decay because of spending restrictions by the Federal, State and Municipal Governments.

The Maracanã was built to hold both the FIFA 2014 world cup and be the host of the opening and closing ceremonies for the 2016 Summer Olympic Games. Post games have seen the stadium fall into disrepair, the pitch has turned from green to brown and thousands of seats have been uprooted.

It was also the scene of protest on the build-up to both the world cup and Olympics as demonstrators voiced their unhappiness with the vast amount of funds being spent on both events, rather than necessities such as education, health care and housing.

However, Rio has some positive aspects from hosting the games, a newly regenerated Porto Maravilha and connecting tram service, a new and vibrant waterfront walkway approaches a new 'Museum of Tomorrow' and a pedestrianised square. This new public square has proved vastly popular with all social classes in Brazil, providing a safe area to meet and gather for activities.

Figure 10 - Rio Diving Pool



Figure 11 - Rio Maracana Stadium



ATHENS POST GAMES

Greece is the smallest country ever to have undertaken organising the Olympic Games. The people of Greece like any other country were thrilled to be selected to host the games, but the aftermath is now a source of huge debate and anger amongst its citizens, there has been a long period of depression, vast numbers of unemployment and homelessness is on the rise in the capital of Athens. Between 1995 and 2005 Greece had one of the highest economic growth rates in the entire European union, the 2004 games were a culmination of the boom which largely benefited the banking and construction sectors. According to, "This period saw the construction of new mega-infrastructure in Athens. Parnitha is an area situated in Northeast Athens, bordering Maroussi, which was the part of the city where the main Olympic complex

was built - the Olympic athletics centre of Athens, 'OAKA.'" (Papanikolaou, 2013)

The huge event was a pivotal turning point for remaining public space and land within the capital, the government thought it was necessary for large amounts of building work to commence on land that belonged to Greece, the selected plots were some of the last few remaining sections of available land that were still unbuilt upon in Athens. The city was forced to sprawl in all directions, due to the enormous task of hosting the Olympics. This has led to undesirable effects such as, loss of agricultural areas, a greater dependency on vehicles, increased traffic jams and a huge effect on human health due to the high levels of air and water pollution.



Figure 12 -Athens Outdoor Pool Unused

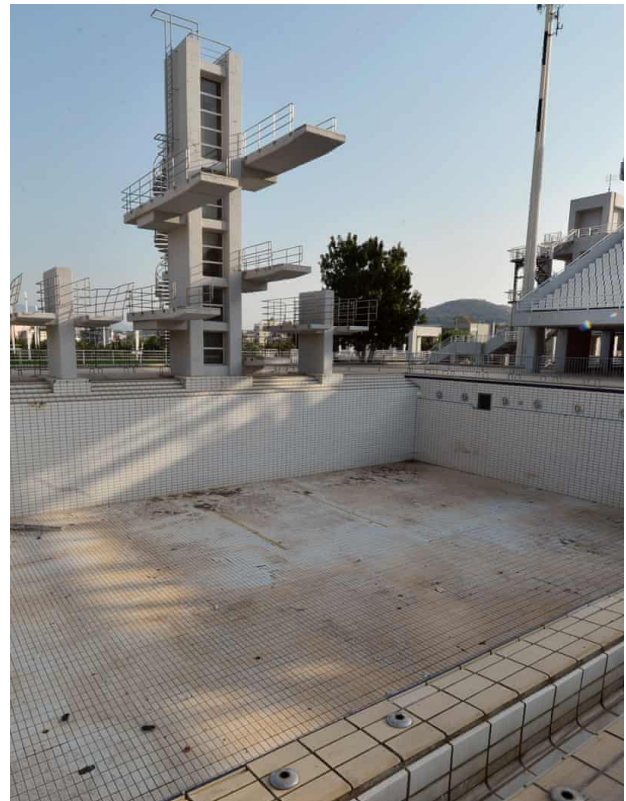


Figure 13 -Athens Olympic Diving Pool Unused

The games started to establish the ideology of 'great Greece' and to display what you have, rather than think of the potential long-term urban regeneration that could have taken place for the locals. This attempt to make Athens competitive with megacities in Europe saw the privatisation of public and state-owned assets, during this time a new airport was built outside the city, eventually leaving the old airport of Elliniko in the hands of 'TAIPED', the Hellenic republic asset development fund. According to "Elliniko is in the South of Athens, and was one of the most desirable locations in Athens and the entire eastern Mediterranean, it was the first wave of privatisation and presented lucrative investment. It was sold for half a billion Euros, whilst public debt in Greece at the time was over €300 billion." (Papanikolaou, 2013)

Athen's Taekwondo Olympic Stadium, located in Falirio south Athens, the 13th of August 2004 was the start of the 2004 Summer Olympics in Greece, most of the Stadiums were purpose built venues and stadiums for this event. After the games Greece was hit by a long period of depression, poverty and home-

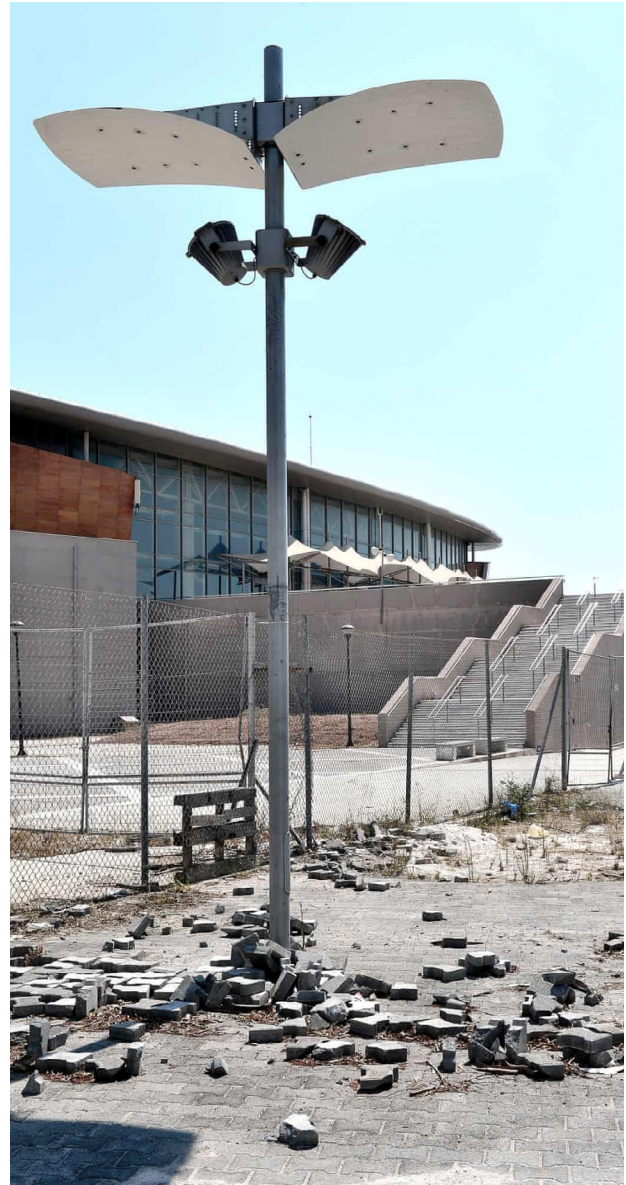
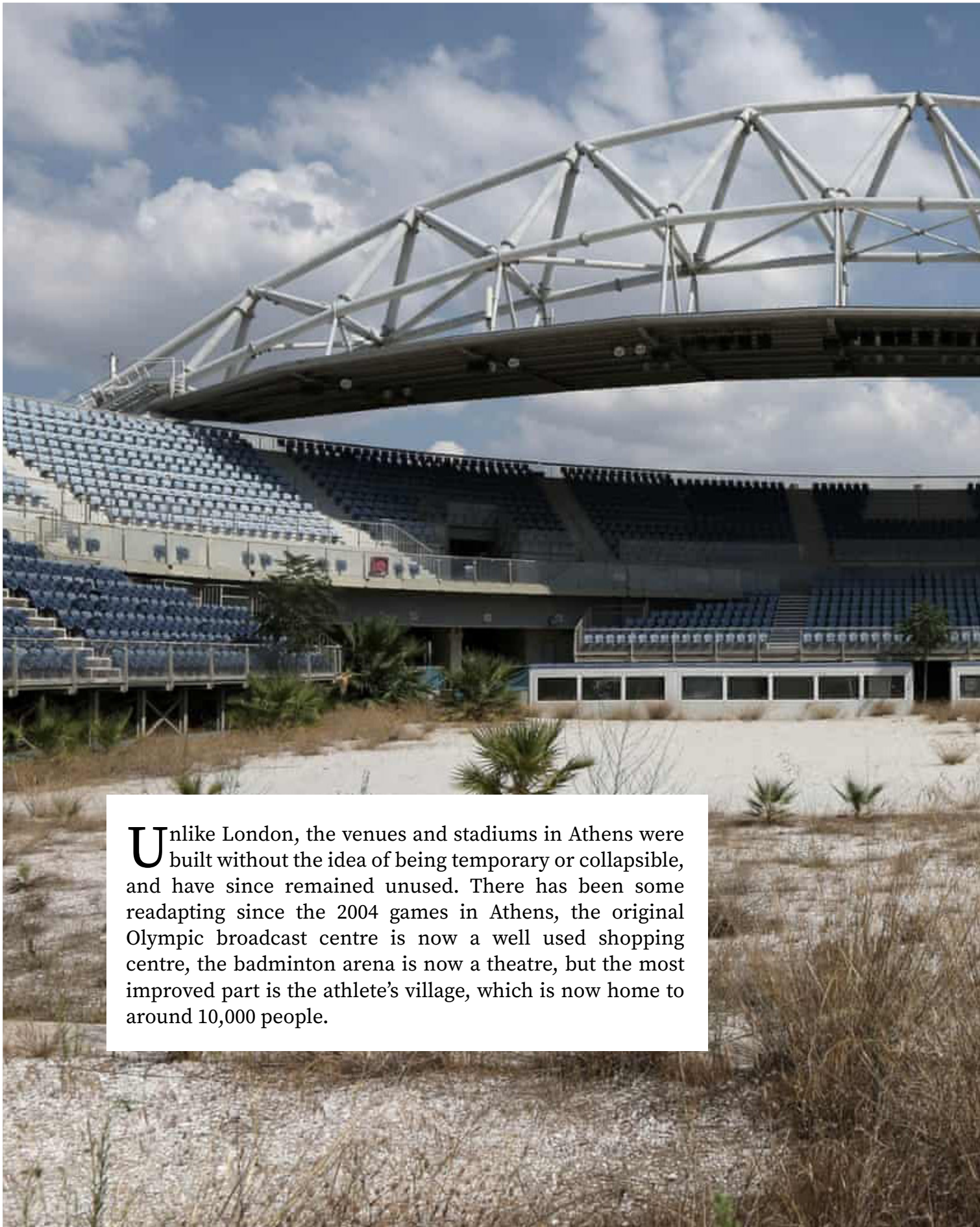


Figure 14 - Athens Olympic Park Rubble



Unlike London, the venues and stadiums in Athens were built without the idea of being temporary or collapsible, and have since remained unused. There has been some readapting since the 2004 games in Athens, the original Olympic broadcast centre is now a well used shopping centre, the badminton arena is now a theatre, but the most improved part is the athlete's village, which is now home to around 10,000 people.



Figure 15 - An Abandoned Outdoor volleyball venue in Neo Faliro, Greece.

STRATFORD DURING THE GAMES

A key focus of London's 2012 Olympic bid was focused on 'legacy' this was the hope that the Olympic games could regenerate an area of London that could be sustained over a generation.

Developing new roads and bridges, because the Stratford site had so many forms of division including waterways, railway lines, and major roads. It was necessary for many bridges to be built. These have allowed essential access to works vehicles during the construction of the Olympic Park, as well as providing a valuable service for the future. There are already 13 footbridges, 5 land bridges, 14 road bridges, and 5 underpasses.

As well, around 20 kilometres of loop, primary and secondary roads have been built in and around the Olympic Park. Other essential infrastructure works included retaining walls, security fencing and various ancillary structures such as road signage, road, bridge and underpass lighting.

A plan was implemented to use the existing and developed waterways for the transportation of construction materials during the Games, reducing the need to use small and narrow roads. Major work was undertaken to replace

dilapidated river walls along an 800 metre stretch of the River Lea which is close to the Aquatic Centre. During this time the opportunity was taken to widen this branch of the river by 8 metres, allowing much easier access by vessels using the Lea river. This will be achieved by placing 700 steel piles into the ground alongside the banks of the riverbanks. Once the new riverbanks are in place, the previous crumbling 1930's concrete river walls will be removed. The new riverbanks had been designed so they can become habitats for various animals and plants.

The venues included the Olympic Stadium, Aquatic Centre, Velodrome, a handball arena and various other sports venues have been developed. Temporary venues for the park included the water polo and basketball arena's, as well as the hockey pitches. When preparing for a major event such as the Olympics, various other developments are crucial the Athletes Village was built to accommodate around 17,000 athletes and supporting officials. The Press Centre, where the majority of the journalists, numbering between 10,000 to 20,000, also played a huge role in helping meet the demands of the games.

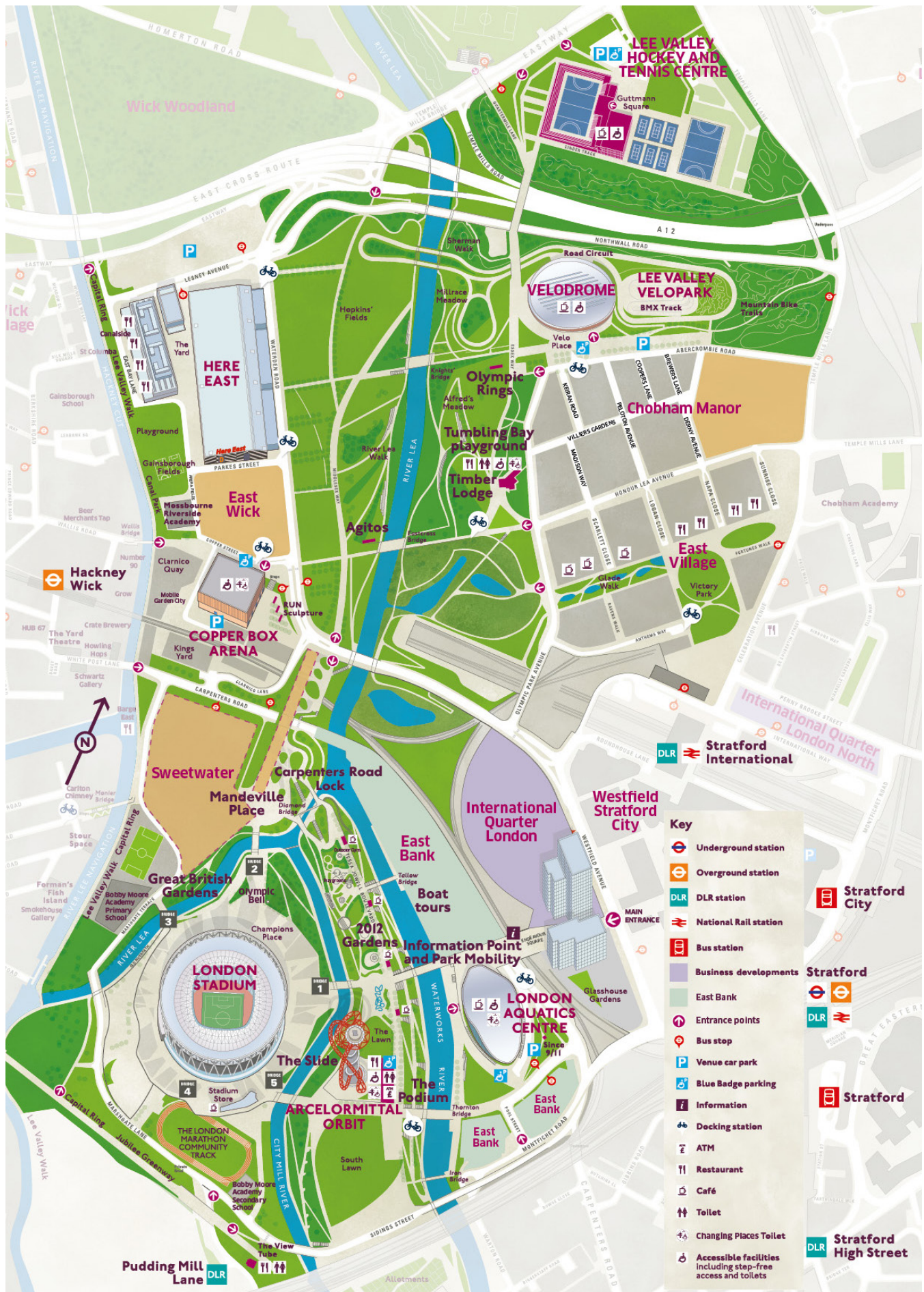


Figure 16 -Stratford Site Olympic Park Map

Transport – The redevelopment of new public transport with updating the existing system, will provide locals greater freedom of movement to live and work, it will also reduce vehicle congestion, London's plan already extended the jubilee line and seeks to encourage more public transport use.

Socially – 2030 will bring an estimated 10,000 new homes to the park, five new neighbouring districts with public parks and spaces are planned. One third of these houses are going to be 'affordable' and a new public school is to be built to provide education to more than 1500 pupils up to 18 years of age.

Economically – Stratford will become one of the most well-connected areas in London, it will allow its new future commuters to work easily within the capital, the new jobs in tourism and construction are to be maintained. Over 20,000 jobs are set to be created by 2030 securing more than £5 billions into the local area.

Environmentally – The IOC bid was successful due to various factors, one reason was the focus on sustainability, the planners decided to create a number of ways to achieve this, new walking and cycling routes were planned, new arrangement of public transport, and also designing water efficient new homes along with protecting the existing green spaces and its current natural inhabitants.

Smart Technologies – A wide range of modern technologies will allow locals and tourists to travel around the capital, oyster and contactless cards make using tubes, buses and trains more efficient, the bike sharing scheme dubbed 'Boris bikes' are able to be self-hired by accessing an app on smartphones and cost a minimal amount for short journeys. Hoping to encourage more people to cycle and in return, reducing the need for vehicles in an already over congested city.





Figure 17 - Stratford Olympic Park , Aerial Shot

STRATFORD POST GAMES



Above, Figure 18 - Pudding mill Before. Below Figure 19 - Pudding Mill After

London wanted to integrate the vast area of the games into the city after the event, so they designed temporary and demountable venues, creating lasting jobs, with the ambition to commit to transforming the Olympic park into a public space, larger than the country of Monaco, as soon as the games was over. "The redeveloped regenerated area is well used by local people, it attracts over 3.9millions visitors a year, this regenerated a 2.5km stretch of parkland, hosts numerous events, including various national and international sporting events, concerts, conferences, exhibitions, and many more."(DCMS, 2012)

Many previous Olympic parks have become deserted wastelands, particularly Rio in 2016, Athens in 2004, in contrast the urban regeneration plan from the start of the Olympic bid has helped adapt the Olympic Park to become the Queen Elizabeth park, after 1 year since the end of the games in 2012 it had opened venues to the public and progressed into one of London's most desirable up and coming regenerated community.

London was mindful not to replicate the previous cities before it and wanted to change the way the summer Olympic games could be hosted and used as a Kickstarter to regenerate an urban area, this would be Stratford. The term 'legacy' was used in a way to describe what would happen post games, clear and well planned ideas were put in for the majority of venues, many of which were designed to be demountable or temporary. A clear plan to build new housing districts and create new jobs in the area was devised.



Figure 20 - Westham United London Stadium



Left, Figure 21 - Water polo Arena. Right, Figure 22 Aquatics Centre With Wings.



Left, Figure 23 - London Stadium. Right, Figure 24 - London Stadium MLB Pitch



Left, Figure 25 - Greenway 2005. Right, Figure 26 - Greenway 2012



QUEEN ELIZABETH PARK

To achieve a more useable space there were two temporary venues designed for the park, the water polo arena was later removed from the site it was disassembled and parts were placed back into the factory supply chain. The basketball arena was made out of robust separate components that could be dismantled and re-used elsewhere after the summer Olympic and Paralympic games, over two thirds of the materials and parts were recycled. Seating from the arena was removed and used in a new venue for the Lea valley hockey and tennis center to the north of the Queen Elizabeth park.



LONDON STADIUM

All of the 8 permanent venues have been re-purposed and are all currently operational. The centerpiece of the games, the Olympic stadium, designed by architecture firm Populous, was meant to be the new home to UK athletics, but after numerous bids from various private and national sports teams the newly named London stadium became the home to West Ham football club, generating £2million a year for use during the season. It has also hosted various sports including 5 rugby WC matches, athletics, Premiership rugby, Essex county cricket club and regular MLB season game.



GREENWAY BEFORE & AFTER

Renovation of Olympic stadium cost an additional £323m, it reduced the capacity from 80,000 to 54,000. The original roof and light panels which had been used for the Olympics were inverted and a new permanent roof to cover every seat in the venue was installed, a new additional innovative retractable seating system was installed, this allowed the venue to be used for different events during the year, giving it a multi-disciplinary usage. 5000 people were employed for two million hours to secure the long-term viability of the stadium, and a dedicated home to UK athletics.

The Copper box arena, which hosted modern fencing and handball during the games, was designed to be a flexible venue from the beginning by lead designers, Make Architects. It was the first venue to open, after the park's redevelopment, it has 7500 retractable seats and is London's 3rd largest arena, making it ideal for national and international sporting events, shows, exhibits, conferences and various concerts. In 2014 it was opened to the public as a brand new gym, it is now the permanent home ground to the London Lion's basketball team.

The aquatics centre was designed by architect Zaha Hadid, It was one of the most noticeable venues at the park, the external wings of the structure which held the spectator seating during the games has been removed reducing capacity from 17500 to a more manageable 2500, it reopened in March 2014.

Over 2.5 million people have revisited one of the world's most recognizable pools. (DCMS, 2012)

The Olympic velodrome, designed by Hopkins Architects, re-opened as a focal point for the new lee valley velopark in 2014, after the Eastway cycle circuit was demolished. It regularly hosts international

and national cycling events, such as the UCI track cycling and Revolution series cycling. The Velopark is also open to the public for road and track racing, BMX and mountain biking.

During the Construction of the venues in the park, 10,000 workers have been employed and over 54 new apprenticeships have been created by employers that now use the parks facilities, with over 90% of them being local to Stratford. The former athlete's village now known as 'East Village' is home to 4500 people. Economically, an additional 3.5 million tourists have visited since 2012, as a result of post games related activities there has been £2.1 billion in further spending. Post 2012 UK business have secured over £60 million worth of contracts for the Rio summer Olympics in 2016. (London 2012 Facts & Figures, 2013)

A dedicated legacy plan from the start has helped regenerate Stratford and its community into a refreshed and desirable place to live in London, the newly named Queen Elizabeth park has become a centre of excellence for sports and recreation, its main structures; London stadium, copper box, velodrome and aquatics centre are all now publicly used spaces that attracts millions of visitors each year, bringing huge amounts of tourism to Stratford.



Figure 27 - Copper Box Arena



Figure 28 - London Velodrome

Figure 29 - Aquatics Centre With Wings



Figure 30 - Aquatics Centre Without Wings





Figure 31 - East Village



Figure 32 - Stratford Waterfront Render

The wider park is set to see the 5 new neighbourhoods established, with planning permission already granted for 6800 homes. The first district which has been completed is in the Northeast, Chobham manor, has over 800 new homes of which $\frac{3}{4}$ are purpose built for families, and $\frac{1}{3}$ designated as 'Affordable'. A new school has been built from the existing security/gym hub for the games. Chobham Manor is to be followed by 650 homes at Sweet Water, and over 850 homes at East Wick with construction already taking place, residents are set to move in by 2023. "Pudding Mill will see the development of 1300 homes, and Stratford waterfront will see 780 homes in place, not too far from the Aquatics centre." (London 2012 Facts & Figures, 2013)

Housing was aspect in the urban regeneration outcome for Stratford, plans were devised to create 5 new residential districts, these were to be; Chobham Manor in Newham, East Wick in Hackney, Sweetwater in Tower Hamlets, Pudding Mill in Newham, and Marshgate Wharf also in

Newham. "The first set of completed homes have already been delivered as the athlete's village has now become 'East Village' it was home to over 10,000 athletes during the games and now has been repurposed into over 2800 homes, with 1400 classed as 'Affordable'." (DCMS, 2012)

A Business community has been established called 'Here East'. It has been developed from the former media centre at the games, the IT infrastructure and connectivity needed during the games makes it a new and desirable digital hub in East London, it is one of the capitals largest data centres. Big name companies such as BT sports use the facility and smaller tech start-ups are encouraged. If not for the initial bid of London to focus regenerating Stratford as a post games legacy, this redevelopment would have taken 30-40 years, the Summer Olympics have allowed this change to happen in less than half the amount of time, meaning the games legacy plan was a huge success, so much so that the city plans to bid for 2036 Summer games.



Above, Figure 33 - Former Press Centre from Lea Canal. Below, Figure 34 - HereEast Business Park.



CONCLUSION

Through the research and investigation of the Olympic sites in London, Rio and Athens, one has been able to examine whether previously deteriorated urban areas can be regenerated successfully whilst bidding planning and hosting the Olympics games. How the world's largest event can be used as a catalyst for positive long term social, economic and sustainable outcomes.

Fundamental infrastructure changes has been a key part of many cities IOC bid for hosting the games, almost all of them which has hosted the Olympics has had to build, replace or update existing transportation services, hospitality and other fundamental facilities to deal with the influx of athletes, tourists and workers during and along the build-up of the event.

It is clear to see that Stratford, London has so far left a successful legacy post games, this is due to the vast amounts of planning and design that were implemented on the lead up to the event. More than a million people have visited the Olympic park since its reopening to the public, 2800 have been created after the athletes villages was converted into residential housing. The numbers of people participating in sporting activities have increased by 1.7 million people taking part in sport at least once a week since the initial bid in 2005, at the time there were already 13.8 million people taking part.

However there has been some success in Rio in recent years, against the backdrop of hard economic, political and social challenges post games there has been a huge demand for media and IT jobs due to the vast global audience.

During the process, considerations were in place for four zones, two of which that had been identified around the city were areas that were expanding rapidly and most in demand of infrastructure and housing with the same hope as London that the games could provide a catalyst.

Plans were developed for the Maracanã zone to renovate the port and surrounding areas. Before the games were announced , plans were in place for the eventual Barra Olympic park to be transformed into an Olympic training centre in the hope to produce future Olympians from poor surrounding neighbourhoods.

Post 2016, Public transport infrastructure has increased dramatically, there has been a 18% increase in the public that have access to large capacity and affordable public transport routes.

This is due to 4 new bus lines that have created important transport links across the city. As wells as a new metro connection between Zona Sul and Barra da Tijuca, these two areas were only previously connected by a densely congested road.

Expansion to the light rail network in the centre of the city, and new and refurbished road network.

Perhaps over a longer time period more post benefits to the Rio games will be discovered, when it was awarded the games for 2016, Brazil's economy was thriving, however in 2014, Brazil as a country was to host the FIFA world cup. The cost of the Olympics is currently at £11.2 billion and the world cup at £13 billion, meaning a huge financial strain on the country in a short time frame. During the games, the economy started to decline leaving huge financial problems for the government, causing the Olympic legacy plan to be pushed the back of the line. This had been the closest period of time for a country and one of its major cities to host both events in quick succession and the huge cost implications have developed into a recession for Brazil. Hopefully in the future some of the previously thought out plans will be realised and regeneration of the surrounding area will be on the incline.

Athens games also accelerate key urban infrastructure programmes in the city, including an extension to the existing public transport system, over 100km of new road were constructed to reduce congestion, as well as the main motorway, Attica road, which was redeveloped into a 'modern' motorway of more than 60km passing through 30 districts of Attica, the metropolitan area of Athens.

In contrast to Stratford the Olympic and media villages were sold off to private investors. The Phaleron sports pavilion which was built to host taekwondo and handball has now become a assembly centre. The karaiskaki stadium which was

redeveloped for the games is now the home ground to Olympiacos, a Greek football team, similar to the 2012 Olympic stadium which is also home to a football team.

Unfortunately, other venues have not fared so well, with eight venues failing to obtain crucial funding and so lack of redevelopment means they have become largely unused.

One of the largest pushes towards urban regeneration for the surrounding Athens was the Olympic education programme, it linked Greek schools to the local community and wider institutions promoted the cultural integration of the world's nations, over 150 international researchers and educators from a wide range of fields collaborated with ministry of education to arrange the programme.

One of the main reasons we see London as a successful catalyst for urban regeneration is due to the innovative design and construction principles. Stadiums were designed and built to be easily adapted post games and some fully deconstructed with parts and components placed back into factory supply lines or recycled, Athens design and construction ideas were not similar to this meaning they could not be easily adapted and repurposed, and dismantling them would not be financially viable.

Future host cities will be more confident using the games as a catalyst for urban regeneration knowing that with the right design and construction principles, as seen during 2012, they can successfully improve and reverse the deterioration of an existing area within that city.

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