PLACE

BIODIVERSITY & NATURAL CAPITAL

OUR OBJECTIVES

The natural world provides many services that we rely on, from purifying the air we breathe, to pollinating our plants.

We are increasingly aware of the need to preserve, protect and improve biodiversity across our developments, and are committed to ensuring that the benefits of the natural environment are available to all, now and in future generations.

BIODIVERSITY

Objective: To adopt a holistic approach in order to maintain and enhance biodiversity across all our developments, through the selection of appropriate species, the provision of linkages to existing areas of biodiversity value and the adoption of best practice approaches to ongoing management.

NATURAL CAPITAL

Objective: To understand, measure, improve and communicate the value of nature across our developments.

POLLUTION PREVENTION

Objective: To prevent damage to the natural environment through measures at design, construction and operational phases to reduce pollution to air, water and soil.

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BIODIVERSITY

Our objective is to adopt a holistic approach in order to maintain and enhance biodiversity across all our developments, through the selection of appropriate species, the provision of linkages to existing areas of biodiversity value, and the adoption of best practice approaches to ongoing management. Through the sensitive regeneration of brownfield and former industrial land, we are able to deliver ecological improvement that incorporates a variety of different habitat sites, resulting in significant improvements in species value and improved ecological connectivity.

WEMBLEY PARK

Our landscaping strategy pays homage to Repton's English Landscape Movement, reconnecting with the surrounding network of natural ecosystems and wildlife corridors and providing open space within the heart of Wembley.

Wembley Park is a unique location, requiring a robust landscape that can withstand the vast crowds of event days whilst also providing tranquil spaces for people to enjoy and wildlife to thrive.

Our dedicated Landscape Management Team, led by our Landscape Manager David Hughes, oversees the planning and management of our green infrastructure and ensures that the health of all species on site is maintained.

WEMBLEY PARK

Urban trees play an important role in increasing urban biodiversity, providing plants and animals with a favourable habitat, food and protection. Our award-winning, site-wide tree planting strategy has been in place since 2005 and has been developed in recognition of the heritage and the value trees provide for biodiversity, nature, health and memory; the provision of shade, pollution and dust reduction, erosion control and flood attenuation; and for creating identity, sense of place and legibility within the placemaking context.

In order to better care for our trees, we use an online tree inventory system, Curio, which allows us to map and record information about individual trees, upload photographs of tree condition, and send links to our maintenance teams regarding specific trees on which works need to be carried out.

Our use of Curio also allows us to make our tree data publicly available; either directly via their website, or indirectly through linking to many freely available public apps.

Curio details individual trees, providing a range of information and interactive features to help people to explore their local area and learn more about local biodiversity. Local people can also record their own photos, observations and stories about our trees and other features, highlighting the cultural importance of greenspace and maintaining the sense of community ownership of these important amenities.

Tree canopy cover can reduce urban heat gain. The increased tree canopy cover plays a vital role in reducing urban heat gain. The total public realm delivered at Wembley to date is 98,324 sqm. Total Trees Planted in the Public Realm to date 728. Average tree canopy size 20 sqm (diameter of 5m). Total tree cover in Public Realm 14,560 sqm + 20%.

Wembley is synonymous as a place that welcomes the world and our Avenue of Champions along Olympic Way celebrates this using matched pairs of trees arranged according to their order of longitude; starting at Wembley Park Station we are transported to the West Coast of America, ending on the East Coast of Japan at Wembley Stadium

The concept of the avenue of champion trees of the world is effectively an Urban Arboretum. This concept is now finding favour as part of a Pan-London Arboretum in association with the Mayor of London and the London National Park City.

BROWN & GREEN ROOFS

Brown and green roofs have been installed on a number of properties and have successfully flourished across Wembley Park. Green and brown roofs form 19% of the total planting area at Wembley Park.

Sisk apprentices made Bug Hotels as part of a site setup at Wembley Park. These were so well appreciated they were then transported into the permanent works for Union Park South. Following the designs of the Sisk apprentices and using the same design principles to create the bug hotels which were used to conceal the utility cabinets and further enhance the biodiversity of the park overall.

New trees planted to date

1,017

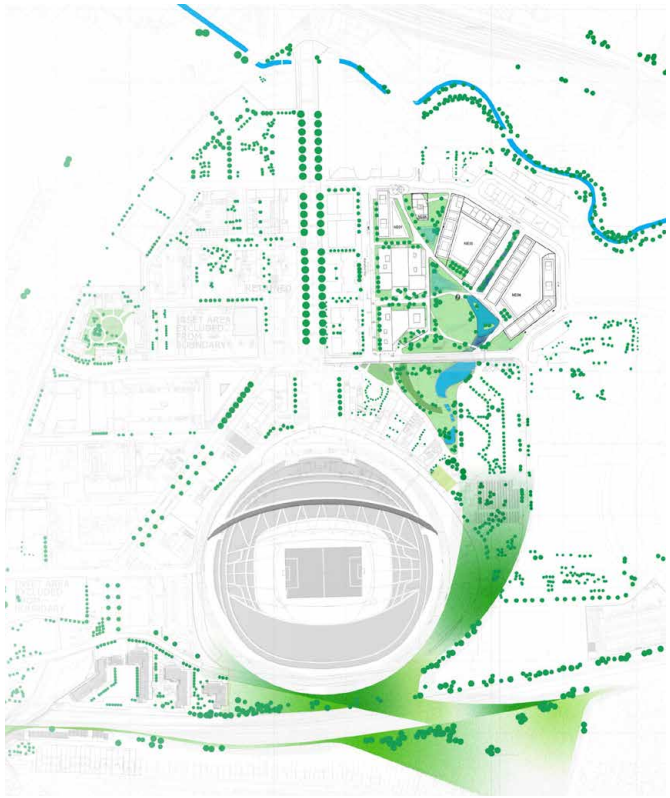
Green and brown roof area to date

3acres

CONNECTION TO WILDLIFE CORRIDORS

Wildlife corridors allow species to move between areas that would otherwise be fragmented, which in tune supports the viability of animal and plant species through enlarging habitat.

Much of Wembley is defined as an area of wildlife deficiency, with the most substantial area of habitat located along the embankments of the Chiltern railway line; a continuous strip of woodland is designated for its conservation value. The landscaping of our Ferrum residential building was designed to extend this Site of Importance for Nature Conservation (SINC) along the railway frontage of the buildings, improving the wildlife corridor in this area.



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BIODIVERSITY & NATURAL CAPITAL

THE PARK

Currently under construction, with the Southern section now complete, Union Park will provide over 7-acres of new parkland for the local area, comprising of a mixture of landscape types that respond to the local context.

The Park is the principal organizing space for the lands east of Wembley Stadium, and an essential part of both the urban design of the area, and to the creation of a rich, biodiverse and sustainable landscape.

BLUE SPACE

A key feature of the park is the pond and reed beds, combining to visually link the water features in the South Park through to the North Park. The pond has an important amenity value, as well as increasing the opportunity for biodiversity through the introduction of aquatic and marginal water plants. The reed beds clean and filter the water before it enters the pond, reducing reliance on mechanical filters. Marginal and water-edge plantings fill the damp soil that is not covered by water or is only periodically inundated. This includes a matrix of grasses and rushes, some evergreens and coppiced shrubs. Reed bed planting is both ornamental, designed for visual delight and to allow a greater diversity of flowering plants to co-exist with them, but also to provide water-cleansing services.

There is also a swale which caters for daily rainwater runoff from the adjacent hard landscaped areas. The selection of swale planting is carefully considered for the challenging location – in shade for much of the time, most likely exposed to wind, and for most of the time dry, but able to withstand periodic inundation following rainstorms; therefore, a range of robust, drought-tolerant and/ or shade tolerant species have been included to withstand different climatic conditions throughout the year.

PLANTING

The specification and management of urban green spaces can directly influence their micro-environment, creating conditions that are favourable to a range of plants, which in turn create habitats for other species.

The park will include planting that responds to the change in conditions from north-west to south, creating a 'String of Gardens'. Herbaceous planting, including swathes of robust, naturalistic

perennials, will provide year-round interest along the edges of the rain gardens and meadows, with a variety of species selected to attract beneficial insects and pollinators. This will be further enhanced by very low-maintenance wildflower planting that will be cut back in autumn, maintained as short grass until the end of winter, and then allowed to develop as meadow for the rest of the year.

Planting will be enhanced by the addition of trees, with species tolerant as far as possible to climate change, and in the area in proximity to the swale, with species tolerant to water.

Existing trees that have been relocated from areas of the site where development has already taken place are currently residing in the tree nursery, and for the most part will be relocated into the park.

PARKS AND GARDENS

The places and spaces at Wembley Park are designed at a variety of scales from the large Union Park down to the smaller Pocket Parks. The spaces are managed in such a way to ensure that even on the busiest major event days at the neighbouring National Stadium people can still enjoy the calm and solitude of the natural environment.

Resident's gardens often sit at podium level and immediately above other very public uses. A particular case study is the residents garden for Canada Gardens that sits immediately above one of the main coach parking areas.

In partnership with the National Park City development forum, a new system of Wayfinding was installed at Union Park South to direct people to the next and nearest natural open green or blue space.

> *"Union Park is successfully managed to ensure that everyone can still enjoy the park on major event days and find some peace and solitude away from the event day crowds."*
>
> **JULIAN TOLLAST**
> Head of Masterplanning & Design

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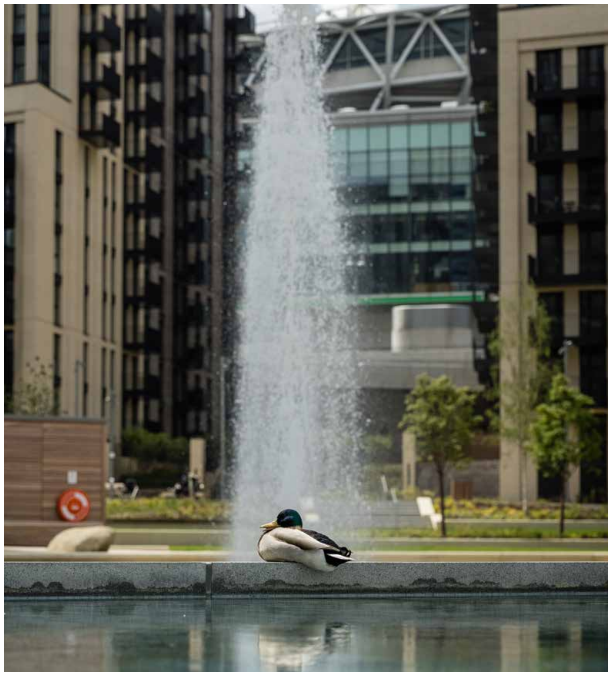
728 trees planted in public realm
to date

>10% Biodiversity Net Gain Target for new developments

19% of total planting area is green/brown roof



289 trees planted in podium / residential areas
to date

5% of podium areas is tree coverage
(5,720 m2)

20% of public realm is tree coverage
(14,560 m2)

CASE STUDY

LONDON NATIONAL PARK CITY

National Parks across the world include iconic, picturesque sights like the USA's Yosemite and New Zealand's Fiordland. Two years ago, another name was added to this list... London: the world's first National Park City.

Naming a city as a National Park is an entirely new concept and one which Quintain has tangibly supported within Wembley Park's public realm in addition to the business' financial support for the London National Park City (LNPC) scheme.

A major aspect of the LNPC scheme is to transform London's built environment. The aim is to turn buildings and their immediate surroundings into something wilder and more plant friendly. It's a key focus for the LNPC Development Forum, of which Quintain is a member.

Julian Tollast, our Head of Masterplanning and Design at Quintain, leads our involvement with the scheme, of which he has been a Trustee for over five years. "London National Park City aims to connect people to their landscape, and that's exactly what we want to achieve at Wembley Park."

To celebrate LNPC's second birthday and to show our support for the scheme, we installed the first of a National Park City branded wayfinding system in Union Park South when it opened in summer 2021. It is hoped that similar wayfinding assets will be replicated at other existing and new open spaces across London, connecting these 'green' and 'blue' public spaces and amplifying the significance of LNPC's work across the capital.

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NATURAL CAPITAL

Our objective is to understand, measure, improve and communicate the value of nature across our developments.

We are reliant on nature to provide many services that we take for granted: our food-chain is reliant on the activity of pollinators; the soil, plants and trees store carbon and convert pollutants, helping to absorb greenhouse gas emissions, and clean our air and water; and a human connection to nature has significant positive impacts on our physical and mental health by creating opportunities to exercise and socialise.

VALUING NATURE'S SERVICES

Whilst some people are offended by the concept of 'putting a price on nature', we feel that it can be helpful to improve decision-making and provide the justification that may be needed to invest in green infrastructure based on the benefits it can provide.

It can also help to steer landscaping strategies, incentivising the provision of natural features or certain species in preference to alternatives to deliver the greatest societal gain.

This approach is adopted by the National Park City Foundation and in London, is supported by the Greater London Authority, who in 2017 published their own study which calculated aspects of the economic value as a result of the city's parks and green spaces.

Natural capital also underpins the UK Government's 25 Year Environment Plan, stating that the "UK intends to use 'natural capital' as a tool to help us make key choices and long-term decisions". The Natural Capital Committee (NCC), an independent advisory committee that helped develop the plan, published guidance in 2020 on embedding natural capital into the HM Treasury Green Book, which sets out the Government's guidance for appraisal and evaluation of public spending policies; incorporation in the Green Book will lead to a much more widespread use of this approach in the future.

CARBON DIOXIDE & AIR QUALITY

Trees can take up substantial amounts of CO2 and vegetation can act as a natural filter, removing particulate matter from the air via the surface of leaves.

Modelling led by the UK Centre for Ecology & Hydrology (UKCEA) estimates that vegetation (including trees as well as other natural habitats and cropland) removed over 1,325,000 tonnes of pollutants from the air in the UK in 2015, but the national benefit is not distributed uniformly across the country, varying according to the amount and typeof pollution in the air; vegetation cover and mix of species within; and population size and composition and climate. For example, trees remove more particulate matter than other types of vegetation, and the benefits are greater in urban areas where there is more pollution and more people who benefit.

The Pollution Removal by Vegetation tool produced by UKCEA estimates that 6.2kg of PM2.5 are removed each year per hectare of woodland planting in the London Borough of Brent, with a value of £1,053,338 per hectare over the next 100 years at present value in avoided health costs.

The type of species is an important factor in the quantity of emissions and particulates that can be removed from the atmosphere, so we are closely following research in this area in order to guide our species selection. In particular, certain species of tree may have a negative impact on the environment – the London Plane for example is a high emitter of biogenic volatile organic compounds (BVOCs), which play a role in ozone formation, and therefore have a negative impact on air quality.

FLOODING & WATER FILTRATION

With increasingly intense periods of rainfall, flooding as a result of surface water is a risk we have to manage across our public realm. Our approach to this has shifted over time, and whereas historically we adopted a more physical and mechanical approach to stormwater attenuation and storage, for example through the use of storage crates, we now utilise our landscaping areas to carry out a significant proportion of this work. The new park has been designed to incorporate a swale to manage daily rainwater runoff, alongside a series of rain gardens, profiled to accommodate storm water from the park and adjacent buildings for a 1 in 100-year event. The pond also features a 300mm freeboard to accommodate and attenuate storm water runoff.

Additionally, the water filtration benefits of reed beds will be utilised to naturally clean water before it enters the pond, resulting in energy, GHG emission and financial savings through reduced mechanical filtration.

HEALTH

There are an increasing number of scientific studies being undertaken across the globe relating to the physical and mental health benefits of proximity to parks, trees and nature in general.

A Canadian study comparing neighbourhoods with different densities of trees in Toronto with high-quality data sets on public health and demographics found that higher tree density correlated with higher perceptions of health and lower incidence of heart and metabolic disease; the authors estimated that planting just 10 additional trees per city block has a benefit equivalent to more than $10,000 Canadian dollars per household in health-related costs.

A study analysing the effects of the loss of city trees comparing health data before and after the loss of 100 million ash trees across the USA due to the infestation by the emerald ash borer between 1990 and 2007 found statistically significant increases in mortality related to cardiovascular and lower-level respiratory tract illness, the magnitude of which increased as the infestation progressed.

The 2017 Natural Capital Accounts for Public Green Space in London study for the GLA estimates that for populations with access to a park, the probability of being physically inactive is 20 per cent lower. This study goes on to estimate the physical per person benefit of proximity to a park in London is estimated to be £67 per year. Similarly, the relationship between mental health outcomes has been studied and is estimated to result in a per person benefit of £42 per year. On completion, Wembley Park itself will accommodate circa 20,000 residents, equating to a total annual health benefit of £1.6 million. In addition, there are several thousands more existing residents in close proximity who will benefit from our green space.

Physical & mental health benefit of Wembley Park green space on completion

£1,635,000/year

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POLLUTION PREVENTION

Our objective is to prevent damage to the natural environment through measures at design, construction and operational phases to reduce pollution to air, water and soil.

CONSTRUCTION MEASURES

We require our contractors to adopt best practice measures in the prevention of pollution from our sites in order to reduce noise, protect the soil and ensure better air quality.

Wembley Park has developed significantly over the years and continues to grow. Construction activities have the potential to create pollution and disturbance to our neighbourhood and residents. We strive to ensure that our contractors are adhering to the highest industry standards and best practice and we aim to strike a balance between the needs of our existing residents and customers and the need to deliver high quality construction.

Our contractors are instructed to produce Environmental Management Plans and sign up to the Considerate Constructors Scheme (CCS). Our contractors are part of our supply chain framework and report quarterly on best practice and emissions. Environmental impacts are recorded and reported throughout their contract to ensure our works are following and exceeding industry best practice.

AIR QUALITY

During construction, Air Quality Management Plans are prepared and supported by continuous monitoring to ensure that levels of particulates do not exceed agreed best practice levels. Air quality monitoring stations have been installed around Wembley Park to not only monitor construction activity but also to monitor the benefits of a low traffic neighbourhood and the increase in planted nature areas. Site vehicles are required to comply with the Non Road Mobile Machinery (NRMM) standards which limits emissions from engines. Deliveries were routed to our off-site consolidation centre to reduce the number and size of vehicles entering Wembley Park and therefore reducing emissions.

NOISE & VIBRATION

Wembley Park is a busy place with deliveries for the commercial and retail customers, resident traffic and construction activity. We understand that some of our activities will cause disturbance to our residents and our management plans set out the means and control measures to ensure we can all work and live collaboratively and in harmony.

Noise and Vibration effects are considered during design and in the construction methodology. We try to design out nuisance as far as possible before the start of works on site. Plans for control of Noise and Vibration are submitted by our contractors and our checked during regular compliance audits.

We also request that noise and vibration monitoring is undertaken at the live construction site order to mitigate potential nuisance. Live and reported data is analysed by the site teams and Environmental Professionals working within Wembley Park. We ensure that contractors have available and advertised lines of communication for our residents and visitors to make enquiries regarding the construction impacts.

Further details of air quality measures can be found in the Sustainable Infrastructure and Logistics sections of this report.

WATER

Water run off or collected water on site has the potential to cause pollution if not managed correctly. Our construction sites design water management for rain and surface water and for wash water from equipment. Connections to drainage and sewage systems are obtained under licence to manage water run off and excess water collection. Pollution prevention means are detailed in contractor emergency management plans with provisions for dealing with any water pollution event stored on site. These plans and considerations are audited regularly.

Water management for our operational buildings and structures makes use of our landscaping areas for attenuation, storage and filtration. Union Park South, completed in 2021 by our Canada Gardens building, has been designed to incorporate a swale to manage daily rainwater runoff, alongside a series of rain gardens. These have been profiled to accommodate storm water from the park and the adjacent buildings for a 1 in 100 year event. The pond and swale also features a 300m freeboard to accommodate further storm water run off. Reed beds provide filtration benefits which naturally clean water before entering the water drainage system. This natural solution reduces the reliance on mechanical and physical means, resulting in less energy, carbon emissions and financial savings.

Interpretive signage has been installed to explain the sustainable drainage system to members of the public and explain why the main pond water quality varies depending on the level of the water and recent rainfall.