Newham London

Newham Green and Water Infrastructure Strategy

London Borough of Newham
Technical Report

Arkwood

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Foreword from Newham Council

Green and water infrastructure is essential to the successful development of Newham and the health and wellbeing of people living and working in the Borough. This infrastructure provides a significant range of benefits (often described as 'ecosystem services'), enhancing the health and wellbeing of people living in the Borough, supporting Newham's economy by making the Borough an attractive place to live and work and helping to address the twin challenges of the climate change and biodiversity emergencies.

Newham will undergo significant change over the life of this Green and Water Infrastructure Strategy (G&W Strategy). The Borough's population will increase from 364,878 in 2023 to 456,462 in 2038 (a rise of 25% - previous calculations based on 2022 numbers showed an increase of 27%). Newham is already very densely populated. In 2021, it was the 8th most densely populated Borough in London with 69 people living on each football pitch-sized area of land. By 2038, this will have increased to 87 people. Most of these new residents will be living in seven out of the Borough's 24 Wards: Beckton, Canning Town North, Canning Town South, Royal Albert, Royal Victoria, Stratford and Stratford Olympic Park . This will inevitably mean that levels of demand for public green space and access to water space will rise. The G&W Strategy will provide evidence for the new Local Plan for Newham and provide an Action Plan that will demonstrate how Newham can adapt to this significant demographic change and tackle the climate and biodiversity crisis.

Recent work being undertaken to initiate nature recovery across the Borough, improve active travel infrastructure and design sustainable solutions to manage and protect our parks and green spaces for future generations, demonstrates our commitment to improving the environment and in turn the quality of life for our residents. The G&W Strategy presents an organisational approach that deepens this commitment.

Implementation of the G&W Strategy will help Newham meet the challenges ahead and achieve a series of long-term outcomes for the Borough:

- Conserving green and water infrastructure across Newham to ensure that there is sufficient capacity to meet the needs of people living and working in the Borough now and in the future
- Taking the opportunity to provide new capacity where possible and making sure that this delivers as many benefits as possible
- Considering how capacity can be increased by enhancing the connections between different green and water spaces
- Driving up the quality of the Borough's green and water spaces so that they can meet their potential to deliver high quality leisure and ecosystem services for the Borough
- Making sure that Newham's green and water infrastructure meets the challenges of the climate change and biodiversity emergencies
- Harnessing the energy and commitment for positive change demonstrated by people living and working in the Borough to protect and enhance Newham's green and water infrastructure

Councillor Miraj Patel
Deputy Cabinet Member for Environment
May 2024

Part 1
Introduction

1. Introduction
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3. Why is green and gater infrastructure important

1. Introduction

Newham has significant areas of both public and privately-owned green infrastructure. Understanding the current condition of our green and water spaces will help enable decision making about how these assets should be managed, enhanced or supported by the provision of new space in the future.

What do we mean by green and water infrastructure?

1.1. The London Plan defines green infrastructure as 'an overarching term for a number of discrete elements (parks, street trees, green roofs etc.) that go to make up a functional network of green spaces and green features. These are important in their own right but, by considering their design and management together they can deliver benefits that are greater than the sum of their parts.'[1]

1.2. The London Plan Green Infrastructure (GI) Policy[2] also supports creation of new green infrastructure in areas of deficiency for Regional and Metropolitan Parks, as well as promoting connectivity and creation of a Green Grid.

1.3. Continuous green infrastructure and green infrastructure connectivity are defined as geographically continuous green infrastructure assets that are relatively uninterrupted by buildings or built infrastructure.

1.4. Green and water infrastructure is a network of spaces; not just nature reserves, parks, and rivers but also playgrounds, playing pitches, allotments, gardens, hedges, green walls, green/ brown roofs, cycle and footpaths, street trees, docks, lakes, and ponds.

1.5. These spaces are planned, designed and managed to:

- promote healthier living, providing spaces for physical activity and relaxation
- cool the city and absorb stormwater to lessen the impacts of climate change
- filter pollutants to improve air and water quality
- make streets clean, comfortable and more attractive to encourage walking and cycling
- store carbon in soils and woodlands
- create better quality and better connected habitats to improve biodiversity and ecological resilience

Green and water spaces

1.6. In this Strategy, we differentiate between green spaces and water spaces.

Green spaces

1.7. Green spaces are areas of vegetated open space of public value (whether publicly or privately owned) within urban areas that include:

- parks
- woodlands
- nature reserves and other natural areas
- gardens
- sports fields
- play space
- grassed areas
- cemeteries
- growing space (including allotments, community gardens and meanwhile community growing spaces)
- green corridors (paths, rivers, railway embankments and cuttings, roadside verges, canals, parks, playing fields and extensive areas of private gardens)
- derelict, vacant and contaminated land which has the potential to be transformed

1 GLA – London Plan Definition of Green Infrastructure 2.88
2 Policy 2.18 Green Infrastructure

Water spaces

1.8. Water spaces are outdoor environments within an urban area (either natural or man-made) that prominently feature water, many of which are accessible to people. In Newham these can include:

- rivers (River Thames, River Roding and River Lea) and streams
- lakes and ponds
- docks (Royal Albert, Royal Victoria and King George V)

1.9. The G&W Strategy adopts the London Plan (2021) definition of open space which is: 'All land in London that is predominantly undeveloped other than by buildings or structures that are ancillary to the open space use. The definition covers the broad range of types of open space within London, whether in public or private ownership and whether public access is unrestricted, limited or restricted.'

West Ham Park - Ornamental garden

Purpose of the Green and Water Infrastructure Strategy

1.10. The Council has adopted a Community Wealth Building (CWB) agenda with an aim that the benefits of growth in the Borough are shared locally, fairly and democratically, leading to long-term prosperity, well-being and fairness for Newham's community. Newham has identified the need to balance the demand for increased housing supply with green and water infrastructure needs, so that the right mix of development in the right places is sought going forward.

1.11. As the population grows it will put increasing pressure on Newham's existing green and water spaces, which need to be able to adapt to increased demand and local need. The G&W Strategy aims to address and balance the aims and objectives of national, regional and local policy to support the protection, enhancement and delivery of green and water spaces. Such spaces are integral to achieving and maintaining sustainable and inclusive communities.

Beckton District Park Lake

1.12. In May 2022, Arkwood, in partnership with London Wildlife Trust, were appointed by the London Borough of Newham (LBN) to produce a Green and Water Infrastructure Strategy (G&W Strategy). The G&W Strategy covers the whole of the Borough, including the area currently covered by the London Legacy Development Corporation (LLDC), and forms an evidence base and set of recommendations to inform the Local Plan review, specifically policies SC4: Biodiversity, INF6: Green Infrastructure and the Blue Ribbon Network, INF7: Open Space and Outdoor Recreation and to inform Strategic Site Allocations and open space designations.

1.13. This G&W Strategy will also inform other key LBN strategies and importantly, the accompanying Appendix 5 Action Plan will help the delivery and prioritisation of work undertaken by Council departments.

Figure 1.1: Newham Green and Water Space Grid

1.14. Newham has significant areas of both public and privately-owned green infrastructure. Understanding the current condition of our green and water spaces will help enable decision making about how these assets should be managed, enhanced or supported by the provision of new space in the future.

1.15. The work to prepare the Strategy has been based on 10 key objectives:

Objective 1:
Baseline and needs assessment

Objective 2:
Baseline: Quantity and accessibility assessment

Objective 3:
Quality and value assessment

Objective 4:
Development of open space standards for new and enhancement of existing open space (green and water spaces)

Objective 5:
Analysis of open space (green and water spaces) and a spatial framework of delivery

Objective 6:
Open space functionality

Objective 7:
Baseline: Provide an understanding of Newham's food growing environment

Objective 8:
Understanding Newham biodiversity (to inform future Local Nature Recovery Plan)

Objective 9:
Biodiversity Net Gain and Newham Urban Greening Factor. How do they work together and what should we take forward?

Objective 10:
Delivery of a public facing Green and Water Spaces Infrastructure Strategy

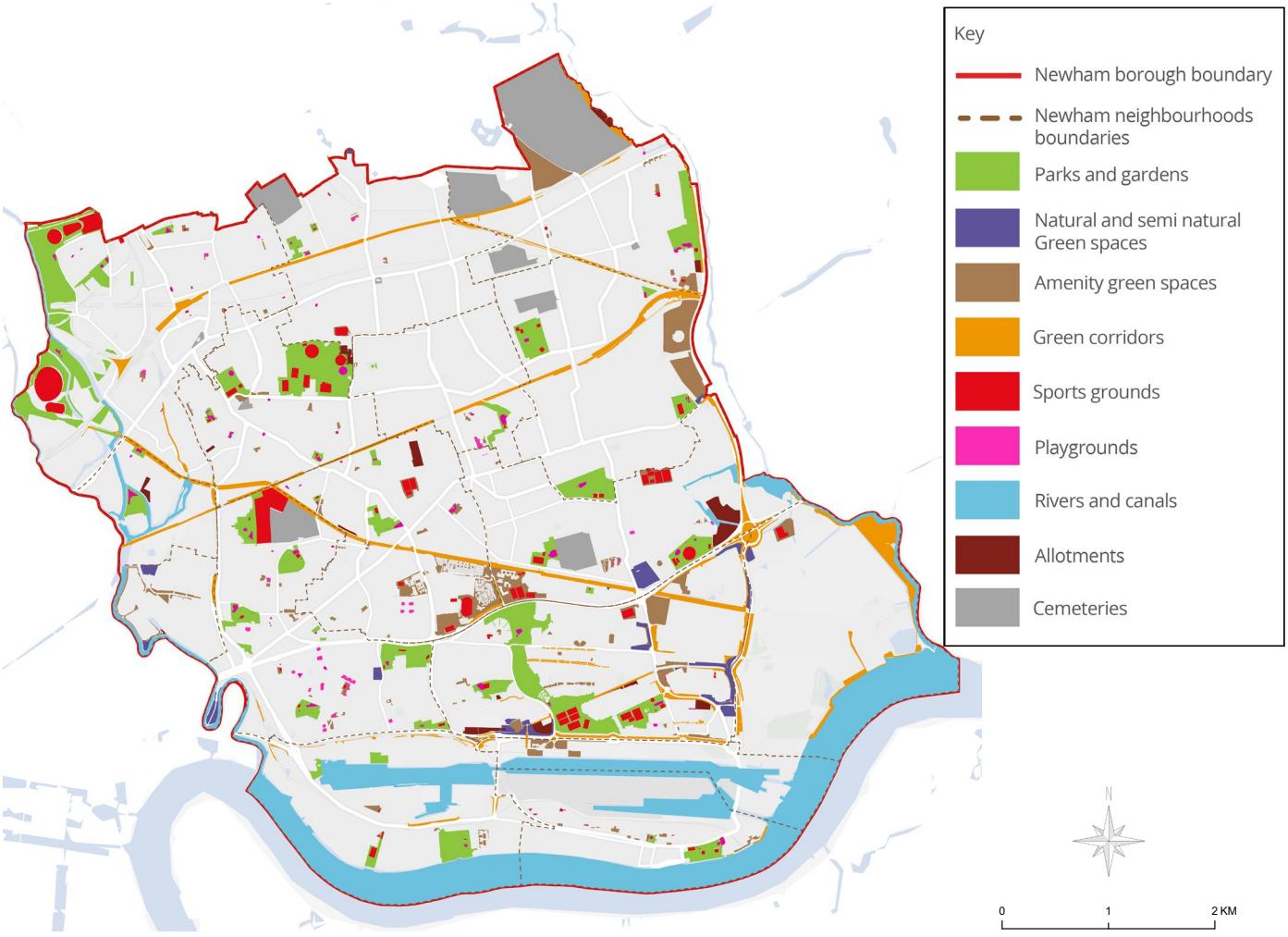


Figure 1.2: All green and water infrastructure across Newham (publicly accessible and not publicly accessible)

2. Methodology

2.1. The G&W Strategy is based on comprehensive information on Newham's green and water spaces gathered from a variety of sources and using different methodologies. Over a period of 12 months this has included a policy and contextual information review, baseline mapping through desktop research, reviews of existing datasets and on-site surveys; bespoke assessments of various typologies and aspects of Newham's G&W spaces; engagement with Newham Council Officers (across numerous departments) and workshops and interviews with wider community stakeholders and residents.

Policy review

2.2. The G&W Strategy is influenced by local (Newham), regional (London) and national (UK) policies and strategies and will work to inform new policies and strategies developed by Newham Council. Recent changes in legislation (especially the Environment Act of 2021) are significant in shaping policy for green and water spaces. In addition, the G&W Strategy references best practice within the sector so that emerging planning policy for Newham and the G&W Action Plan draw on success elsewhere in the UK.

Quantity assessment

Mapping review

2.3. Green space Information for Greater London (GiGL) holds green and water space information for the whole of London, including for Newham. This includes information on the total area of green and water space across the Borough, with each individual space allocated to an open space category (typology) that is based on categories set out in the London Plan. GiGL's data provided a useful mapping baseline for the G&W Strategy, but the data needed to be verified through a comprehensive desktop review and survey of sites. At the end of the project, a revised set of green space data will be issued to GiGL so that its records are up to date.

2.4. The purpose of the desktop review of mapping data was to:

- Review and update GiGL's data
- Accurately categorise green and water spaces across Newham into correct typologies so that overall levels of provision for each typology could be assessed
- Provide a database of mapping that could be used during site surveys
- Provide a digital mapping baseline of Newham's spaces that could be used to illustrate new Local Plan policies and the proposals that are set out in this Strategy

2.5. This report assesses the level of provision of publicly accessible green space across Newham to Ward level, using 2020-based population projections developed by GLA City Intelligence for Newham's pre-2022 Ward boundaries. Newham updated its Ward boundaries in 2022 but demographic data is not currently available for these revised Ward boundaries. As a consequence, provision calculations are not possible for the new Ward boundaries. Calculations can be repeated when demographic data becomes available.

Site surveys

2.6. Site surveys of Newham's green infrastructure assets were undertaken in the summer of 2022 to provide current information on the extent and condition of these assets. Different typology-specific criteria were used to assess the assets and the criteria used and the outcomes of the surveys are described in more detail in the sections below. This data provides evidence on which to base the emerging green space policies that appear in the new Local Plan and the Action Plan that has been developed for this Strategy. Site surveys have been complemented by data gathered from other sources including GiGL and aerial photography of the Borough.

Quality assessment

Sites of Importance for Nature Conversation Review

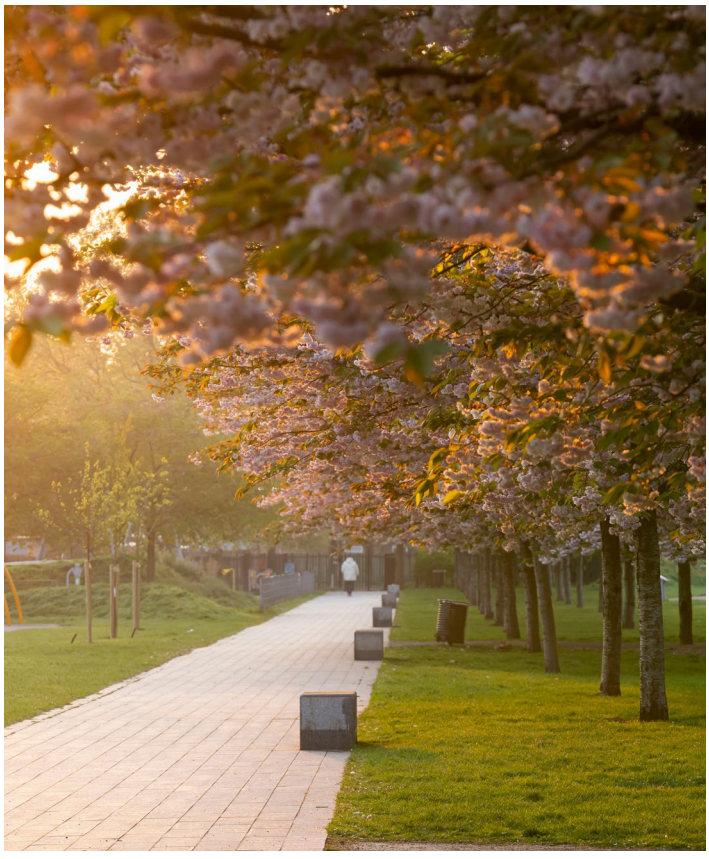
2.7. A full review of all of Newham's SINCs was carried out in June and July 2022. The review followed a standard approach and a methodology recommended by the Greater London Authority, involving:

- Data collection (including published reports and records, GIS and aerial imagery, field survey and additional information obtained from local experts and stakeholders).
- Identification of sites for review and consideration.
- Evaluation of existing sites and proposed new sites, including recommended grading.
- Mapping of site boundaries and drafting of new or updated citations.
- Site visits 'ground truthed' data and information obtained through desk-top data collection.

Parks and gardens

2.8. A quality assessment of 38 parks and gardens across Newham was carried out in August and September of 2022. The survey team used a set of quality criteria that are based on the 'Green Flag' standard, which is the accepted process for assessing the quality of parks and gardens across England. The survey considered the following attributes of Newham's parks and gardens:

- Is the park or garden a 'welcoming place'?
- Is the park or garden 'healthy, safe and secure'?
- Is the park or garden 'clean and well-maintained'?
- Does the park or garden protect 'conservation and heritage features'?
- Does the park or garden provide 'appropriate educational and interpretive information'?



Keir Hardie Recreation Ground

Open Space categorisation	Description	Size guideline	Distance from homes
Regional Parks	These are large areas, corridors or networks of open space, the majority of which will be publicly-accessible and provide a range of facilities and features offering recreational, ecological, landscape, cultural or green infrastructure benefits. They offer a combination of facilities and features that are unique within London, are readily accessible by public transport and are managed to meet best practice quality standards.	400 ha	3.2 to 8 km
Metropolitan Parks	These are large areas of open space that provide a similar range of benefits to Regional Parks and offer a combination of facilities at a sub-regional level. They are readily accessible by public transport and are managed to meet best practice quality standards.	60 ha	3.2 km
District Parks	These are large areas of open space that provide a landscape setting with a variety of natural features. They provide a wide range of activities, including outdoor sports facilities and playing fields, children's play for different age groups and informal recreation pursuits.	20 ha	1.2 km
Local Parks and Open Spaces	These provide for court games, children's play, sitting out areas and nature conservation areas.	2 ha	400 m
Small Open Spaces	These include public gardens, sitting out areas, children's play spaces or other areas of a specialist nature, including nature conservation areas.	under 2 ha	less than 400 m
Pocket Parks	These are small areas of open space that provide natural surfaces and shaded areas for informal play and passive recreation that sometimes have seating and play equipment.	under 0.4 ha	less than 400 m
Linear Open Spaces	These are open spaces and towpaths alongside the Thames, canals and other waterways, paths, disused railways, nature conservation areas and other routes that provide opportunities for informal recreation. They can often be characterised by elements that are not public open space but that contribute to the enjoyment of the space.	N/A	N/A

Figure 2.1 London Plan's open space typologies

Play space

2.9. Desktop analysis confirmed that Newham has 85 publicly accessible playgrounds. These have been assigned to categories set out in Guidance for Outdoor Sport and Play published by Fields in Trust which is commonly accepted as a standard in England for categorising outdoor playgrounds. The following typologies from this standard have been used to categorise Newham's playgrounds:

- Local Area for Play: (LAP) – 0.01 Ha in area.
- Local Equipped Area for Play (LEAP) - 0.04 Ha in area.
- Neighbourhood Equipped Area for Play (NEAP) – 0.1 Ha in area.

2.10. 79 publicly accessible playgrounds were assessed for quality using the Play England Quality Assessment Tool, which is a commonly accepted standard for the assessment of the quality of playgrounds in England. The standard assesses playgrounds against three overall criteria:

- Location
- Play value
- Care and maintenance

2.11. Based on the site assessments, Newham's playgrounds were categorised as either 'very poor', 'poor', 'fair', good', or 'excellent'.

Community growing space

2.12. There is no best practice standard for allotments and growing spaces and the survey of quality for these spaces was not carried out.

Natural Capital Account

2.13. A Natural Capital Account (NCA) for Newham has been produced to inform the Strategy. All Newham's parks were characterised in respect of habitat types and the condition of these habitats assessed. This data was used to estimate the economic value of ecosystem services that the Borough's parks and open spaces provide in respect of health, recreational value, carbon sequestration and air quality. The total value of these benefits is compared with the costs of maintaining these assets, providing a Natural Capital balance sheet for the Borough.

2.14. One of the objectives of the Strategy is to propose measures to ensure that ecosystem service flows continue in the face of increasing demand for green space that will follow from an increase in the Borough's population. The Natural Capital Account provides baseline data in respect of the value of current benefit flows and a business case for investment in green and water infrastructure to ensure that these benefit flows continue.

Mapping green and water infrastructure provision

2.15. The information gathered through desktop analysis and site survey was used to develop mapping of quantity, quality and accessibility of parks, playgrounds and growing sites across Newham.

2.16. The London Plan (2021) defines different categories (typologies) of parks and gardens for the whole of London. These green space definitions have been adopted for this Strategy. Each typology of park has a catchment area. Mapping the catchment areas of different typologies can help to identify where there are deficits in current provision. Using this information, the G&W Strategy sets out how these deficits can be addressed.

2.17. The catchment areas defined for different typologies in the London Plan are usually based on the distance from each park edge. However, in practice, major physical barriers (such as major roads, railway lines and rivers and other water bodies) can limit the accessibility of an individual park. The catchments of Newham's parks and gardens have been modified to take account of these barriers to develop a more

Table 2.1 Newham physical flow and monetary flow account

	Physical flow (unit/yr)		Monetary value			
	2022	**Units**	**Valuation metric**	**Annual value (2022 £m)**	***PV 60 (£m)**	**Confidence**
Key monetised benefits						
Air quality	183	PM2.5 removal by woodland (kg/yr)	Value of PM2.5 removal by woodland	0.8	23.7	●
Carbon sequestration	175	CO_2e sequestered by habitats (tCO_2e/yr)	Value of CO_2e sequestered by habitats	0.04	1.6	●
Recreation	3,420,000	Adult recreation visits per year	Adult recreation welfare value	10.6	278.0	●
Physical health	1,760,000	Active visits per year	Avoided medical treatment costs	6.1	246.6	●
Total				**17.6**	**549.9**	

Low ● Medium ● High ●

*PV 60: Present value over 60 years using a variable discount rate as suggested by Green Book Guidance (2003 & updated 2011).

accurate assessment of the accessibility of individual parks in Newham.

2.18. Figures 1.18 to 1.24 in Appendix 1 show the catchments for each typology of park across Newham and identify where there are deficiencies for each typology. These are discussed in greater detail in Section 5 of the Strategy.

2.19. Fields in Trust's 'Guidance for Outdoor Sport and Play' defines catchments for the three playground typologies that are defined in Section 2.9 above. Figures 1.26 to 1.29 in Appendix 1 show the catchments for each typology of playground across Newham and identify where there are deficiencies for each typology. Deficiencies in different typologies of play are also discussed in Section 5.

2.20. The National Allotment Society recommends a 0.5 kilometre catchment area for allotments and growing sites. Map 1.30 in Appendix 1 shows the catchments for allotments and growing sites across Newham and identifies where there is a deficiency. Deficiencies in community growing spaces are also discussed in Section 5 of the Strategy.

Initial analysis and mapping with Regulation 18 Local Plan

2.21. Having completed the desktop assessment and site survey process, an interim set of findings was presented in a report that formed part of Newham Council's Local Plan Regulation 18 process (public consultation on the proposals contained within the new Local Plan).

2.22. The Regulation 18 report for Newham's green and water infrastructure consisted of the following:

- An analysis of demographic change in Newham between 2023 and 2038 (and specifically, a projected 25% increase in population over this period), with some Wards in the Borough seeing particular increases in population
- An analysis of Newham's population by age and by cultural heritage
- Analysis of deprivation across Newham.
- Data on the total quantity of green and water infrastructure of different typologies across Newham
- Data on the total provision of publicly accessible green and water spaces infrastructure of different typologies across Newham (including the provision of playgrounds and food growing spaces)
- An assessment of deficits in provision of different typologies in 2023 and in 2038 (given a 25% increase in the Borough's population, unevenly distributed within the Borough)
- An assessment of the Borough's current and potential new SINC sites (see Section 5.59 below)

Epping Forest

Engagement

2.23. A series of meetings and conversations took place between August 2022 and February 2023 with Newham Council officers and members to discuss and establish knowledge within the council about Newham's green and water spaces and any committed or future projects which may inform the principles of the G&W Strategy and Action Plan.

2.24. Officers from the following departments were consulted over this period:

- LB Newham Development Managers
- LB Newham Education
- LB Newham Health Promotion and Community Engagement
- LB Newham Leisure & Sport
- LB Newham Community Neighbourhoods
- LB Newham Parks and Green Assets
- LB Newham Planning Policy
- LB Newham Property Team
- LB Newham Regeneration
- LB Newham Youth Empowerment

2.25. In addition, views were gathered from discussions and workshops with residents and external stakeholders as follows:

One no. Newham client team workshops

Two no. 'Newham Unlocked' events

Four no. workshop events covering all community assembly areas

One no. neighbourhood design workshop

One no. Citizens' Assembly workshop online

One no. online survey with 249 respondents

This consultation process and outcomes are summarised in Appendix 4: Green and Water Infrastructure Strategy engagement.

Summary

2.26. In this section we have described the methods that we have used to develop the proposals for Newham's G&W Strategy. These include:

- reviewing of national legislation and policy, regional and local policy
- reviewing national best practice
- desktop analysis of demographics, mapping and other data
- fieldwork to assess the quality of green infrastructure
- reviewing environmental economics metrics
- engagement with members and officers from Newham Council and external stakeholders

3. Why is green and water infrastructure important?

3.1. Newham's green and water spaces provide a range of beneficial services to the Borough and the people who live and work there. One of the functions of the G&W Strategy will be to ensure that these service flows will continue to be protected and enhanced. This will be achieved by:

- Protecting existing green space from development
- Generating additional ecosystem service flows by creating new green space and forging more effective green links between different green spaces
- Regularly auditing green space quality to ensure that ecosystem services flow from high quality green space
- Improving the quality of Newham's green space to ensure that green infrastructure is at least sustained if not increased
- Adjusting management and maintenance regimes

3.2. Local communities have always valued green and water infrastructure such as parks but there is now a lot of evidence that green space can contribute significantly to the quality of urban life in many different ways. Parks and other green spaces are no longer seen as isolated entities but as part of an integrated and mixed-use economic, social, and environmental structure that binds a city together, making individual places distinctive and contributing to the quality of life for communities.

Health and wellbeing

3.3. The natural environment has a significant impact on the health and wellbeing of people in the UK, particularly related to serious health conditions such as coronary heart disease, Type II diabetes, stroke, and clinical depression. Evidence suggests that quality green and water spaces have a range of positive health outcomes for both individuals and communities, which leads to cost savings for health services addressing chronic physical and mental health problems, as well as the challenges of an ageing and sedentary population.

3.4. Defra has estimated that the NHS could save £2.1 billion annually if parks and open spaces encouraged people to adopt more active lifestyles, with a 24% increase in physical activity for those with good access to green space. Daily walks in parks can reduce the risk of heart attack, stroke, diabetes, and Alzheimer's, while access to green spaces also improves mood and self-esteem. Green exercise has been shown to have positive effects on mental health, with over 90% of participants reporting improvements.

3.5. During the COVID-19 pandemic, public green spaces were crucial for maintaining physical and mental health during lockdowns. A recent study found that people with access to public or private green spaces reported better health and wellbeing during and after the first lockdown[3]. Those living more than five minutes away from public green spaces had lower levels of subjective wellbeing, while those with access to private gardens had higher levels of wellbeing than those without. This highlights the importance of green spaces as an essential health resource, particularly in times of crisis.

3 The role of perceived public and private green space in subjective health and wellbeing during and after the first peak of the COVID-19 outbreak by Poortinga et al, Landscape and Urban Planning - Volume 211, July 2021, 104092

3.6. The Natural Capital Account prepared for Newham as part of this Strategy concludes that the Borough's green and water infrastructure provides annual health benefits of £6.1 million.

3.7. 50 Steps to a Healthier Newham 2024-2027 is the Borough's health and wellbeing strategy, aiming to improve health and wellbeing for everyone in Newham and reduce health inequalities. The Strategy addresses the broad range of factors which have an impact on people's health and wellbeing (the wider determinants of health). Each step also considers the contribution it can make to the three 'golden threads' which run through the Strategy: equity, climate and inclusive economy (including cost of living). The following themes in the Strategy address green and water space:

Creating a healthier food environment

- Increase the number of spaces available to residents to participate in food growing
- Prioritise areas with least access to private green spaces for new growing spaces.

Making Newham a place for people and planet

- Coordinate action on climate, clean air, sustainable food and green space across the Newham Health and Care Partnership.
- Increase the quality and quantity of green and water space in Newham

Housing

- Strengthen the use of Social Value Health Impact Assessments as part of major housing developments and other relevant planning applications

Increasing participation in leisure and sport

- Develop and activate a variety of new and refurbished sports, leisure and play facilities across the Borough

Gandhi Chaplin Peace Garden - allotments

Climate emergency

Flooding

3.8. Open spaces play a vital role in absorbing localised flooding during rain events. Even the smallest open spaces within urban areas can offer storage of rainwater and prevent or reduce burden on streams and watercourses. Sustainable urban Drainage Systems (SuDS), rain gardens and other flood mitigation measures can help with cleaning and filtering rainwater as well as mitigating excess water during storm events.

3.9. Climate change and global warming trends threaten an ever-increasing risk of flooding. Higher atmospheric temperatures introduce volatility into weather systems, increasing the risk of sudden and extreme precipitation episodes. Dense urban and built-up environments are not always able to cope with sudden storm surges, which can lead to economically and socially damaging flood episodes. Where river valleys and parks intersect, there is great opportunity to address the risk of flooding by providing attenuation and water storage capacity. Flood plains can be preserved and regenerated as natural systems to absorb rainwater. Naturalising channelled water courses can also reduce pressure on engineered urban drainage systems.

3.10. Episodes of extreme precipitation bring an increased risk of flooding and the capacity of engineered drainage systems to cope with surcharging are limited. Permeable soil systems and vegetation are capable of absorbing significant quantities of precipitation. Hard landscaped urban areas have a dramatically higher run off rate than ground surfaces consisting of trees and grass. Trees also provide natural filtration and prevent soil erosion, improving water quality.

3.11. In Newham, the Local Flood Risk Management Strategy 2024 outlines the challenges and response to managing flooding from these sources, including reducing the likelihood and impact of flooding across the Borough. Flood risk is strongly linked to Victorian drainage infrastructure which is increasingly under pressure from climate change and development demands. There have been six major flood incidents in seven years, mainly concentrated in 13 critical drainage areas. The opportunity for green space to store surface water and precipitation is understood but the impact of this on the overall functionality of green space needs to be taken into account when developing proposals.

Carbon sequestration

3.12. Trees and other plants absorb CO^2 from the atmosphere as part of photosynthesis, sequestering carbon and thereby moderating the impacts of global warming. A tree's capacity to offset carbon emissions is determined by its size, canopy cover, health and age. Large trees can help to lower carbon emissions in the atmosphere by several percentage points. One square metre of green space in an urban environment stores 3.16 kilograms of CO^2 and a single tree can compensate for 3,000-10,000 car kilometres a year in carbon and nitrogen emissions[4] according to UK research.

Temperature

3.13. Heat island effect and urban warming are caused in part by elevated gaseous pollution. Green space has been demonstrated to have a cooling effect on urban temperatures. Temperatures in parks during daylight are typically two or three degrees lower than surrounding streets and this effect can be observed up to 100m from the park edge. Open spaces generally, and particularly areas with trees have a significant effect on moderating temperatures resulting from heat island effect. An increase in tree volume by 10% can reduce ambient temperature rises by 3 - 5 ^oC on hot summer days. Removal of hard surfaces and substitution with green surfaces can significantly lower average surface temperatures.

3.14. The effects of global warming on climate conditions have been well documented and occurrences of extreme weather events are modelled as significant outcomes.

Biodiversity crises

3.15. Across the whole of the UK, evidence points to a significant decline in biodiversity over a protracted period. Overall, species diversity has declined by 13% since 1970. Over the same period, the average species distribution has declined by 5% while 41% of species have declined in abundance[5].

3.16. Urban environments can support high levels of biodiversity and offer opportunities for some species. Low and intermediate levels of ecosystem service delivery can increase species' richness for some groups, which has been associated with the mosaic of habitats available.

4 Trees and Design Action Group: 2010
5 The State of Nature: RSPB (2019)

3.17. Designed green and water spaces in Newham provide an opportunity to enable significant ecological diversity and hold potential to provide shelter to a large number of species. The development of habitats and biodiversity potential in urban spaces can be supported by creating green and water corridors that offer animals and plants more opportunities to migrate and engage in genetic exchange. Additional prospects for increasing biodiversity can be found along the interface between urban and rural areas, where a diverse range of habitats can be discovered.

3.18. As described in Section 2.2, the Environment Act of 2021 has enshrined the concept of net gains for biodiversity through development. This reflects a wider recognition that strategies for green and water infrastructure need to provide maximum benefit for multiple aims; for biodiversity, for wider ecosystem service delivery and for the health and wellbeing needs of people who use these urban spaces.

3.19. Unsurprisingly, the UK's urban areas are where most people make a connection with nature. A number of separate studies[6] have shown a significant correlation between nature connectedness in general and psychological and social wellbeing.

3.20. Although Newham has 42 SINCs and potentially a further 11 sites that could be added to its portfolio, the Borough has a significantly constrained area of publicly accessible green space (making up only 7% of the overall area of the Borough). Given a projected 25% increase in Newham's population by 2038, demand for access to green and water spaces will significantly increase, potentially impacting on the capacity of these spaces to deliver biodiversity capacity and resilience. Careful consideration will have to be given to protecting the Borough's existing SINCs from adverse impacts and to considering how green and water infrastructure sites can be multi-functional, with park facilities (e.g. for play, growing space, cultural uses, sport and informal recreation) co-existing alongside areas dedicated to biodiversity.

6 Howell et al., 2011; Kamitsis and Francis, 2013; Nisbet, Zelenski and Murphy
7 https://www.heritagefund.org.uk/news/everyones-winner
8 Huang: 2010

Place making and culture

3.21. Most people strongly identify with their local green space and consider it an essential part of their neighbourhood. Substantial research has identified the capacity of parks to instil a sense of place and to increase residents' affinity with their neighbourhood, building social cohesion and promoting sustainable communities. A 2009 survey by the Heritage Lottery Fund suggested that between four and five billion visits are made to the UK's parks each year and 50% of the population visit a park at least once a week[7]. The survey suggests that:

- 95% of park visits are enjoyable, peaceful and relaxing
- 60% of visitors take more physical exercise because they use parks
- 80% say the park helps make their area more attractive and a better place to live

3.22. A poorly maintained or otherwise neglected park can reflect negatively on residents and take away their capacity for connecting to the space or taking pride in living within its proximity. A study in Taiwan[8] found that emotional attachments to nature were stronger in 'improved' parks than they were in green spaces that had not been improved.

East Ham - High Street

3.23. Newham's 2022 Characterisation Study identifies 16 Neighbourhoods across the Borough[9]. Within some of these neighbourhoods, green and water spaces are a prominent component of character – the docks significantly influence the character of Royal Albert North and Royal Victoria while West Ham (and to a lesser extent, Stratford Park) are significant green spaces in the West Ham neighbourhood. Priory Park is possibly of greater significance to the adjoining Green Street neighbourhood as this is the only publicly accessible green space in this part of the Borough. As the evidence cited above suggests, the extent to which green and water infrastructure reinforces sense of place is strongly connected with its quality. Quality mapping in Appendix 1 identifies where poor quality might be undermining a sense of place at a neighbourhood level.

3.24. Parks are by their very nature diverse, democratic spaces, typically encouraging people of all ages and from many cultural, ethnic and social backgrounds to meet and interact. This is particularly the case where communities participate in the planning and management of their public spaces or where they contribute to cultural and sporting activities. In particular, residents in urban areas with mobility difficulties such as the elderly, people with physical, intellectual disabilities or mental illness, children and mothers find green public spaces an essential element of their life quality[10].

3.25. Newham is an extremely diverse Borough and the overall objective of the Strategy should be to create a culturally rich and inclusive environment in all the open spaces within Newham.

3.26. However, further studies[11] have noted that connections with the natural environment are not always shared between different cultural groups. The G&W Strategy acknowledges this as part of promoting a multi-functional character for public spaces that caters for this diversity of experience.

Summary

3.27. Newham's green and water infrastructure assets deliver a range of economic, social and environmental benefits that can be described as ecosystem services.

3.28. In later sections of the Strategy, we will discuss how the supply of green and water infrastructure and its condition affects the capacity to provide ecosystem services for Newham.

9 Since completing the G&W Strategy Newham has further refined the approach to its neighborhoods. Please see the 'Newham Neighborhoods Addendum' for further information and mapping on changes to the boundaries, including the increase from 16 to 17 neighborhoods
10 Błaszczyk, M., Suchocka, M., Wojnowska-Heciak, M., & Muszyńska, M. (2020). Quality of urban parks in the perception of city residents with mobility difficulties. PeerJ, 8, e10570.
11 Agustina, I. and Beilin, R: 2012. Community gardens: Space for interactions and adaptations