City of London

Proposed Submission Draft City Plan 2040

Infrastructure Delivery Plan

March 2024

Contents

1. Introduction

1.1 What is the Infrastructure Delivery Plan (IDP)?

The Infrastructure Delivery Plan (IDP) is an evidence base report produced to support the Proposed Submission Draft City Plan 2040. Infrastructure is vital to ensure that the City can continue to maintain its economic role and provide services to its workers, residents, visitors, and students. It is an essential part of sustainable development supporting growth, mitigating against climate change, delivering climate resilience and continuing to support a high quality of life for residents, businesses and visitors.

Infrastructure in the City of London supports the business and resident functions of the City. The improvements required facilitate a more resilient, energy efficient, safe and inclusive City.

The IDP seeks to bring together infrastructure requirements across a range of infrastructure types to provide a comprehensive statement of infrastructure needed to deliver the City Plan 2040.

The IDP's purpose is to:

- identify the infrastructure that is needed to support future growth in the City;
- identify the infrastructure required to deliver the City Plan 2040; and,
- consider the investment plans of a range of providers to identify potential gaps in funding of infrastructure necessary to implement the City Plan 2040.

The IDP is an iterative document, which means that it will be regularly updated to take account of infrastructure delivery and emerging requirements.

The IDP sets out the different types of infrastructure, where and when it is required, why it is needed and provides an update on the delivery of the types of infrastructure to date.

The IDP aims to:

- Support the delivery of the City Plan's policies, vision, and objectives across the plan period.
- Highlight existing funding gaps.
- Provide evidence on how infrastructure needs in the City can be met and what the costs will be.

- Inform the delivery of funding through the City of London Community Infrastructure Levy (CIL), s106 planning obligations and s278 highways contributions.

The importance of robust infrastructure planning is emphasised in the National Planning Policy Framework (NPPF) 2023, which states that: plans should set out the contributions expected from development.[1]

The NPPF emphasises the importance of identifying and co-ordinating development requirements, including the provision of infrastructure. Planned infrastructure should be delivered in a timely manner and local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development.

1.2 Types of Infrastructure

The types of infrastructure considered in this IDP aligns with strategic priorities identified in the NPPF and the relevant legislation, as well as local priorities identified in the City Plan 2040. Any update of this IDP may include additional types of infrastructure, as strategic priorities will be kept under review.

Infrastructure types addressed in this report are:

- Community Services
    - Health and Wellbeing
    - Safety
    - Affordable Housing
    - Culture
- Public Realm and Streets
    - Walking and Cycling
    - Public Realm
    - Public Transport
    - Freight and Servicing
- Parks, Open Spaces and Recreation
    - Sports, Play and Recreation
    - Open Spaces
    - Roof terraces

[1] National Planning Policy Framework, 2023.

- Infrastructure and Utilities
    - Sewer capacity
    - Energy
    - Broadband
    - Light
    - Noise

1.3 How has the Infrastructure Delivery Plan been produced?

The IDP has been produced through ongoing engagement and dialogue with key stakeholders including City Corporation officers and external stakeholders including utility providers, NHS, Transport for London, bus and rail providers and City of London Police.

1.4 Infrastructure planning context

The IDP forms part of the evidence base underpinning the City Plan 2040 and the implementation of the Community Infrastructure Levy (CIL). Whilst it does not form part of the plan itself, it helps to identify the infrastructure that will be needed to support future growth in the City. The CIL is a charge levied on development according to floor area and is intended to help fund the infrastructure necessary to support delivery of the Local Plan.

Affordable housing is an important form of infrastructure and the City Corporation's Strategic Housing Market Assessment and the Mayor of London's Strategic Housing Market Assessment demonstrate need for affordable housing both within the Square Mile and more widely across the Capital. While the Community Infrastructure Levy Regulations make clear that CIL cannot be used to fund affordable housing, it can be secured through Section 106 agreements. The City Corporation will continue to seek appropriate contributions through s106 planning obligations, as per Policy S26 of City Plan 2040 and adopted Policy CS4 in the Local Plan 2015.

Financial contributions towards training, education and skills provision within the City are required through s106 planning obligations.

The legislative basis for the Community Infrastructure Levy (CIL) is set out in the Planning Act 2008, amended by the Localism Act 2011. Detailed provisions for

the setting, collection, and spending of CIL are contained in the Community Infrastructure Levy Regulations 2010 (as amended). Regulations also prescribe the process for continued use of s106 Planning Obligations.

The Mayoral Community Infrastructure Levy 2 (MCIL2) came into effect on 1 April 2019 and superseded the earlier Mayoral Community Infrastructure Levy and Mayoral Crossrail s106 Planning Obligations. MCIL2 is used to fund the delivery of the Elizabeth Line (Crossrail 1) and will, in future, be used for other strategic transport infrastructure as set out in London Plan 2021 policies T1: Strategic approach to transport and DF1: delivery of the Plan and Planning Obligations.

The adopted City of London planning policy framework is contained in the Local Plan 2015, Policy CS4 Planning Contributions:

'To manage the impact of development, seeking appropriate developer contributions:

1. Requiring contributions through the Community Infrastructure Levy to assist in the delivery of the infrastructure necessary to support implementation of the Local Plan.
2. Requiring s106 planning obligations, having regard to the impact of the obligation on the viability of development, for:
    a. Site specific mitigation meeting statutory tests.
    b. Affordable housing
    c. Local training, skills, and job brokerage
    d. Local procurement in the City and the City Fringe
3. Requiring qualifying development to make an additional contribution to meet the costs of Crossrail construction in accordance with the provisions of the London Plan.'

The proposed Submission Draft City Plan 2040 will eventually replace the 2015 Local Plan. This IDP forms part of the evidence base for the draft City Plan.

Strategic Policy S26 Planning Contributions, in City Plan 2040 states that: 'The City Corporation will seek appropriate contributions from developers to manage and mitigate the impact of development:

1. Requiring contributions through the Community Infrastructure Levy to:
    - assist in the delivery of the infrastructure necessary to support implementation of the City Plan and the City's Transport Strategy; and

- contribute towards the costs of Crossrail or other strategic infrastructure, in accordance with the provisions of the Mayor of London Community Infrastructure Levy 2.

2. Requiring s106 planning obligations, having regard to the impact of the obligation on the viability of development, for:
   - Site specific mitigation meeting statutory tests.
   - Affordable housing.
   - Training, skills, and job brokerage.
   - Carbon offsetting.
   - Cultural provision;
   - Highways and public realm enhancements including commuted sums for maintenance;
   - Local procurement in the City and neighbouring boroughs; and
   - Measures to enhance area-wide security, where appropriate.
3. Use of the Vacant Building Credit is not considered to be appropriate in the City of London.
4. Evidence supporting proposed infrastructure provision and improvements has been derived from a wide range of sources, key elements of which are set out below. The audits and evidence documents are supplemented by individual service plans and capital investment plans prepared by service providers and by annual development trend monitoring within the City Corporation.

A number of plans and evidence have informed the writing of this plan:

- Infrastructure and utilities
  - London Infrastructure Plan 2050
  - Lighting Strategy 2023
  - City of London Riverside Strategy 2021
  - City of London Strategic Flood Risk Assessment 2023
  - City of London Local Flood Risk Management Strategy 2021-2027
  - City of London Waste Arisings and Waste Management Capacity Study review 2016
  - Thames Water Resources Management Plan 2015 – 2040 and
  - Thames Estuary 2100 Plan
  - City of London Thames Strategy SPD 2015
  - City of London Climate Action Strategy 2020-2027
  - City of London Local Area Energy Plan 2023
  - City of London Air Quality Strategy 2019-2024
  - City of London Air Quality SPD 2017
  - UKPN London Network Business Plan 2015-2023

    - UKPN Central London Plan Update 2019
    - City of London Digital Skills Strategy 2018-2023
    - Safer City Partnership Strategic Plan 2019-2022
- Transport and Public Realm
    - Draft City of London Transport Strategy 2023
    - City of London Annual Report 2023-24 5yr Delivery Plan
    - City Streets 2023 Summary Report
    - City of London Road Danger Reduction and Active Travel Plan 2018-2023
    - City of London Public Realm Enhancement Strategies
- Parks, Open Space and Recreation
    - City of London Open Spaces and Recreation Audit 2023
    - City of London Monitoring Report – Roof Terraces and Green Roofs 2023
    - City of London Open Spaces Strategy 2015
    - City of London Urban Greening Factor Study 2018
    - City of London Open Spaces Act 2018
    - City of London Biodiversity Action Plan 2021-2026
- Community
    - City of London Joint Health and Wellbeing Strategy 2017-2020
    - City and Hackney Joint Strategic Needs Assessment 2023-2027
    - Public Health England City of London Health Profile 2016
    - City of London Historic Environment Strategy 2017
    - City of London Conservation Area Character Appraisals and Management Strategies
    - English Heritage At Risk Register (Annual)
    - Tower of London World Heritage Site Management Plan 2016
    - City of London Cultural Strategy 2018-2022
    - City of London Policing Plan 2022-2025
    - Safer City Partnership Strategic Plan 2019-2022
    - GLA Cultural Infrastructure Plan March 2019
    - Sport and Physical Activity Strategy 2019-2023

1.5 Planned development in the City

The draft City Plan 2040 sets out how the City Corporation expects the City to develop in the period up to 2040. It plans for significant growth in employment and addresses changes required to mitigate and adapt to the impacts of climate change.

The City Plan plans for growth and phasing of development over the period to 2040 as set out in Table 2.

Table 1: Indicative scale and phasing of growth of main land uses 2021-2040

Land Use	**2021-2026**	**2026-2031**	**2031-2036**	**2036-2040**	**Total**
Offices	500,000m²	400,000m²	200,000m²	100,000m²	1,200,000m²
Retailing					192,200m²
Housing	146pa 2025-2030	686	510	510	1,706
Hotels	There is a forecast pipeline up to 2030, then an additional average 350pa until 2037	N/A	N/A	N/A	4,012 rooms

Table 2A: Current Spatial Distribution of Office and Retail Land Uses February 2022 (Development Monitoring Report)

Key Areas of Change	**Offices floorspace (Gross Internal Area)**	**Percentage (Offices)**	**Retail floor space**	**% of total Retail floorspace**	**Number of retail units**	**% total of Retail Units**
Fleet Street and Ludgate	478,809	5.1	50,615	8.8	190	9.5
Blackfriars	126,272	1.3	172	0	5	0.3
Smithfield and Barbican	718,994	7.6	74,710	13	182	9.1
Liverpool Street	712,357	7.5	29,351	5.1	199	10
City Cluster	1,324,083	14	66,214	11.5	184	9.2
Pool of London	128,913	1.4	8,423	1.5	14	0.7
Aldgate, Tower and Portsoken	168,501	1.8	14,240	2.5	70	3.5
Rest of City	*5,793,434*	*61.3*	*331,914*	*57.7*	*1,148*	*57.6*
CITY TOTAL	**9,451,363**	**100**	**575,640**	**100**	**1,992**	**100**

Table 2A: Current Spatial Distribution of Housing and Hotels Land Uses February 2022 (Development Monitoring Report)

Key Areas of Change	Hotels No. of rooms	Hotels % of total rooms	Housing No. of units	Housing % of total units
Smithfield and Barbican	565	8.1	4,273	50.7
Fleet Street and Ludgate	653	9.3	649	7.7
Liverpool Street	267	3.8	17	0.2
Aldgate, Tower & Portsoken	1163	16.6	683	8.1
City Cluster	50	0.7	14	0.2
Pool of London	77	1.1	326	3.9
Blackfriars	212	3	1	0
Rest of the City	4,026	57.4	2,458	29.2
Total	7013	100	8,421	100

Table 3: City of London Projected Employment Growth

Year	Employment
2021	667,000
2026	696,000
2031	728,000
2036	729,000
2041	733,000
2046	733,000
2051	731,000

Source: London Long Term Labour Market Projections, 2022, GLA

GLA employment projections suggest a growth in employment in the City between 2021-2046 of 66,000. Employment growth is expected to follow the planned growth in office floorspace, with the greatest increase in the City Cluster.

Table 4: Actual Employment Change 2016-2022

Year	Employment
2016	484,356
2017	511,505

2018	522,485
2019	541,375
2020	549,400
2021	586,800
2022	614,500

Table 4 shows estimates of employment in the City of London, as published in the Office for National Statistics Business Register Employment Survey from 2016 to 2022.

Table 5: City of London Resident Population Projections

Year	**Resident**
2021	8,600
2040	11,412

Source: Census 2021, GLA Demography 2020-based Population Projections

The residential population of the City of London as defined by the 2021 Census is 8,600. In estimating and projecting population in the City, a factor which provides a high level of uncertainty is the 1,713 persons who at the time of the 2021 Census, were residents in the UK and had a second home in the City. 1,714 of the 7,636 homes in the City are second homes (around 22.5%).[2] This is an increase of 22.3% from 2011 to 2021, compared to the resident population increasing by 16.2% within the same time span. This demonstrates the trend towards second homes in the City as well as population increase in the City of London. In producing estimates and projections for future years it is difficult to assess whether there will be changes in the proportion of persons who are permanent residents or those who have a second home in the City.

The majority of residential development is concentrated around the edge of the City in four estates (the Barbican, Golden Lane, Middlesex Street and Mansell Street). Other residential clusters are located in Smithfield, the Temples, parts of river (Queenhithe), Fleet Street (City West), Carter Lane and around Botolph Lane. These areas are, therefore, a prime consideration in the location of social and community infrastructure serving the residential population.

Between the last two censuses, the average (median) age of the City of London decreased by two years, from 39 to 37 years of age.[3]

[2] ONS. 2021. Census.
[3] ONS. 2021. How life has changed in City of London: Census 2021 (ons.gov.uk)

This area had a higher average (median) age than London as a whole in 2021 (35 years) but a lower average (median) age than England (40 years).

The number of people aged 25 to 34 years rose by just under 450 (an increase of 24.6%), while the number of residents aged 4 years and under fell by fewer than 50 (9.3% decrease).

The majority of City residents are aged between 20 and 44 (33.1%) and 45 and 64 (29.8%). Compared with the London average, the City has a higher proportion of its population in older age groups (45-64 and 65+), according to 2018 data from Public Health England, and compared with 2016 figures, there has been an increase in those aged below 20 and over 65. Life expectancy in the City of London remains considerably higher than the London and England averages. This general age profile moves through to 240 although projections suggest an ageing population with a greater proportion of the population being in the 65 years and over age groups in 2040.[4]

1.6 Phasing funding and delivery

Infrastructure can be privately or publicly funded and includes provision funded by central government, local government and by the local community and the voluntary sector.

Where possible the specific infrastructure needs identified have been broken down into 5-year time periods, reflecting the greater certainty of funding and delivery in the first 5 years and less certainty over the remainder of the City Plan period. Delivery will be monitored on an annual basis against the requirement identified within the plan.

- Phase 1 2021-2026
- Phase 2 2026-2031
- Phase 3 2031-2036
- Phase 4 2036-2040

Delivery Mechanisms

Delivery of required infrastructure will be through the capital investment and management plans of a range of service providers, including those of statutory utility providers, transport providers and health and education providers. These will be supplemented by the activities of the City of London Corporation,

[4] ONS. 2021. How life has changed in City of London: Census 2021 (ons.gov.uk)

utilising its own funding and funding provided through contributions from developers, and through provision by developers themselves.

Funding Mechanisms

S106 Planning Obligations

S106 Planning Obligations: Developer contributions under s106 of the Town and Country Planning Act 1990 have been a significant source of funds in the delivery of infrastructure in the City.

Regulation 122 of the Community Infrastructure Levy (Amendment) Regulations 2019 provides the statutory provision for the use of s106, indicating that:

'A planning obligation may only constitute a reason from granting planning permission for the development if the obligation is-

a) Necessary to make the development acceptable in planning terms.

b) Directly related to the development; and

c) Fairly and reasonably related in scale and kind to the development.

The City of London Infrastructure Funding Statement 2021/22 is published on the City of London Corporation website and sets out detailed information on developer contributions from s106 planning obligations and the Community Infrastructure Levy.

The table below sets out details of total s106 funding received and unspent allocations at 31 March 2022.

Table 6: Details of Section 106 Allocated but not Spent in 2021/22

Infrastructure Project	**Total s106 Allocations (as at 31 March 2022)**	**Unspent s106 Allocations (as at 31 March 2022)**
Grand Totals	**£ 202,284,903**	**£ 77,486,057**
Local Training, Skills and Job Brokerage Initiatives Total	£6,412,624	£1,247,305
S106 Monitoring and Admin Total	£1,412,567	£1,283,644
Affordable Housing Schemes Total	£102,940,306	£45,817,529
Local Community Environment and Transport Improvements Total	£91,519,406	£29,137,579

Community Infrastructure Levy

The Community Infrastructure Levy is a statutory charge on new development intended to part fund the infrastructure needed to support the implementation of the Local Plan.

The Planning Practice Guidance provides a list of what types of infrastructure can be funded by CIL, including:

- Play areas
- Open spaces
- Parks and greenspaces
- Cultural and sports facilities
- Healthcare facilities
- Academies and free schools
- District heating schemes
- Police stations and other community safety facilities

The Localism Act 2011 (section 115(5)) allows for the levy to be used for the provision, improvement, replacement, operation, or maintenance of infrastructure.

City of London Community Infrastructure Levy

CIL charging authorities are required to set out the CIL and s106 funds received, spent and outstanding, plus indicate how they intend to spend CIL on an annual basis through the annual Infrastructure Funding Statement. The most recent City of London Infrastructure Funding Statement covers the year up to 31 March 2022.

Table 7: City CIL Highlights 2021/22[5]

City CIL	CIL Funds
City CIL receipts	£ 9,782,408.11
Outstanding Demand Notices (City CIL) at 31 March 2021	£1,629,797.01
Potential City CIL Receipts (Liability Notices issued for planning permissions granted in 2021/22)	£ 42,034,958.66
CIL allocated to identified agreed projects	£ 1,857,668
CIL Spend	£4,616,591.64

S106 planning obligations are used in the City of London to fund affordable housing and to fund revenue projects, such as the provision of training and skills projects in the City and central London boroughs. Detailed requirements for retained s106 contributions are set out in Planning Obligations Supplementary Planning Document 2020. S106 will also be used to deliver site specific mitigation of development and deliver contributions for carbon offsetting.

CIL Regulations require that 15% of CIL receipts to be used to assist delivery of infrastructure to support neighbourhood priorities. In the City of London this is delivered through the CIL Neighbourhood Fund.

Table 8: Neighbourhood CIL 2022/2023

Unspent Neighbourhood CIL Receipts at 31 March 2022	£5,562,126.04
Neighbourhood CIL Receipts for 2021/22	£1,540,228.43
Neighbourhood CIL Expenditure 2021/22	£623,608
Neighbourhood CIL Retained (Unspent)	£5,562,126.04

[5] City of London Corporation. 10 January 2023. *Infrastructure Funding Statement CIL/S106.*

Mayor of London – Funding for Crossrail

From 1 April 2019, the Mayor has implemented the Mayoral Community Infrastructure Levy 2.[6] Funding from MCIL2 will contribute towards the cost of Crossrail, or towards other strategic transport infrastructure. Under MCIL2, development in the City of London is charged at the following rates:

- Offices £185 per sqm
- Retail £165 per sqm
- Hotel £140 per sqm

All other development is charged at £80 per sqm across the City except for education and health development which is charged a Nil rate.

S278 Highways Contributions

The IDP does include some schemes that are solely funded through s278 of the Highways Act 1980. S278 covers improvements to a public highway necessary to make a scheme acceptable as part of a planning approval. These schemes will deliver infrastructure improvements in response to specific development.

[6] Greater London Authority. 2012. Mayoral Community Infrastructure Levy | London City Hall

2. The City's Infrastructure requirements

2.1 Community Services

2.1.1 Housing

The City Corporation has a number of roles in relation to housing:

1) As a planning authority, the City Corporation has to make provision in the Local Plan for new housing within the City of London to meet the targets set out in the London Plan and ensure that sufficient new affordable housing is provided to meet local needs.
2) As a housing authority, the City Corporation is responsible for 1,860 social tenanted properties and 937 leaseholder properties across the City and on housing estates in a number of other London boroughs.
3) As a significant landowner and a champion for the UK's financial and professional services, the City Corporation has recognised that the housing shortage is one of the most pressing economic and social issues in London and has set out plans to deliver new housing for Londoners across its land ownership.

The City Corporation has produced a Housing Strategy 2019-2023 which sets an ambition to create 700 new social homes and £55 million major works programme to renew its existing housing stock on its own housing estates, both within and outside of the City.[7] It has also set out an ambition to deliver a significant number of mixed tenure homes as a contribution to meeting London's wider housing needs, through use of its wider land holdings. The strategy also seeks to adapt housing for residents with mobility, sensory or memory impairments and provide tenancy support for preventing homelessness.

The City of London Brownfield Land Register is a statutory register required to identify potential sites appropriate for residential development. In 2021 no suitable sites were identified on the register.[8]

Within the City, most residents live within four estates, the Barbican, Golden Lane, Middlesex Street and Mansell Street estates. Three quarters of City of London social

[7] City of London Corporation. 2019. *Healthy Homes: Vibrant Communities*. healthy Homes; Vibrant Communities (cityoflondon.gov.uk)
[8] City of London Corporation. 2023. *Brownfield Register*. Development and land use statistics - City of London

housing, over 1,500 units, is provided on 11 estates outside the Square Mile in Southwark, Islington, Lewisham, Lambeth, Hackney and Tower Hamlets. The City of London has a higher proportion of older residents which is growing faster than the general population. In May 2023, there were 920 applicants on the City's housing register of which two-thirds were seeking a studio or one bed.[9] There is a need to build and adapt homes to support people with age related health problems and that better meets the needs of disabled persons. Further development on City estates will ensure more applicants on the housing register can be provided with appropriate housing.

Affordable housing contributions have enabled the funding of schemes within housing estates located primarily in Islington and Southwark. As of 29 June 2023, the closing balance of funds for affordable housing was £60,593,960.[10] Land in the City is expensive and therefore the City Corporation works with housing partners to deliver sites on the City fringe.

Table 9: Affordable Housing Schemes in progress, June 2023

Scheme	**Number of Units**
COLPAI (Richard Cloudesley School) *Islington*	66 (Completed July 2023)
York Way Estate *Islington*	91 (Started June 2023)
Sydenham Hill *Lewisham*	110 (End date June 2025)

Source: Housing New Developments and Special Projects, June 2023

There are two schemes currently progressing through the gateway system which will deliver 157 new homes by 2023. This includes 66 flats adjacent to the City of London Primary Academy in Islington, 110 flats at Sydenham Hill (formerly Mais House) in Lewisham and 91 flats at York Way in Islington.[11]

Homelessness

The City of London has the 7th highest number of rough sleepers in London. The City Corporation has a legal duty to prevent and relieve homelessness for some groups, and to secure a home for others. The City Corporation has produced a Homelessness Strategy 2023-2027 which seeks to ensure rapid, effective and tailored interventions to minimise the duration of and prevent homelessness.[12] The strategy

[9] City of London Corporation Housing Allocations. 2023 August. *Housing Waiting List.*
[10] City of London Corporation. 29 June 2023. *Housing Delivery Programme*.
[11] City of London Corporation. 29 June 2023. *Housing Delivery Programme*.
[12] City of London Corporation. 2023. Strategy, facts and figures - City of London

aims to increase access to suitable and affordable accommodation. The strategy will aim to provide support beyond accommodation that secures wellbeing, improves employability and supports recovery. One of the key projects is to open a dedicated Rough Sleeping Assessment Centre to provide emergency accommodation, and a safe place of rapid intervention and assessment. Access to housing in a range of tenures, availability of and access to a range of accommodation to prevent homelessness, accommodation pathways including move on options and commissioning of temporary accommodation are all listed as outcomes within the Homelessness Strategy. Implementation will be overseen by the Rough Sleeping Strategy Group. Support is provided through the City Lodge in Middle Street – managed by St Mungos.

Risks and Mitigation

Competition from commercial uses; high residential land values and high residential build costs; funding shortfalls as a result of the downturn in private residential development activity in central London are risks to delivery. Failure to provide sufficient housing can lead to worsening housing affordability issues, overcrowding, staff retention issues and longer commutes.

Affordable housing contributions enable housing delivery in conjunction with partnerships with neighbouring local authorities.

2.1.2 Health facilities

Health includes primary care services (i.e., the first point of contact in the healthcare system and the "front door" of the NHS), such as General Practitioner practices and community pharmacies. It also includes secondary healthcare; Accident and Emergency services and those services provided by health professionals who generally do not have the first contact with the patient, i.e., specialist services requiring a referral. The concept of "health" can also refer to a "Health in All Policies" approach, which looks at how everything a local authority body does, from planning to transportation, presents opportunities to influence positive mental, physical, and social health.

Health and social infrastructure need to be planned to ensure communities are liveable. The City Corporation's statutory responsibilities on health and wellbeing cover residents, workers, and rough sleepers. The most relevant priority of the Joint Health and Wellbeing Strategy to the Infrastructure Delivery Plan is "a healthy urban environment," addressing air and noise issues, green and open spaces,

community spaces and social facilities, housing stock and improved pedestrian and road safety and active travel.[13] However, there are also more indirect considerations for the IDP relating to health, such as promoting healthy behaviours through improved food and drink retail offerings, encouraging active travel through making the City's streets safer and supporting healthy building standards and health impact assessments.

The City of London has the highest daytime population of any local authority area in the UK, with hundreds of thousands of workers, together with residents, students, and visitors packed into just over a square mile of densely developed space. There has been a number of suicides in recent years and the Corporation is working to deal with this issue. There are three population groups who are potentially at risk of suicide: residents who live in the City; those who work in the City; and those who travel to the City with the intention of completing suicide from a City site.[14]

In response to the recognition of the increased need for suicide prevention measures in the City of London, a Planning Advice Note (PAN) "Preventing Suicide in High-rise Buildings and Structures" was developed to embed prevention measures into development proposals and planning applications. The PAN has been successful in enabling developers to liaise with officers and police colleagues at an early stage of the planning process to consider and implement design measures to help prevent suicide attempts.

Mapped defibrillator data from the British Heart Foundation shows that, in terms of defibrillator density, central London is the 'safest place' in the UK to suffer an out-of-hospital cardiac arrest with readily available defibrillator units positioned in key areas. There are 43 corporate defibrillators across all City Corporation sites.[15]

The City borders seven London boroughs and residents often access services that are delivered outside the Square Mile.

The standard for GPs is currently being met. There is one NHS GP practice located in the City, the Neaman Practice at Half Moon Court with 10 GPs and, in May 2019, 9,238 registered patients. As of June 2019, all City residents can register at The Hoxton Surgery, 12 Rushton Street London. The Community and Children's Services

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[13] City of London Corporation. 2017. *Joint Health and Wellbeing Strategy.* City of London Joint Health and Wellbeing Strategy

[14] City of London Corporation. 2022. *Preventing Suicides in High Rise Buildings and Structures Planning Advice Note.* Preventing suicides in high rise buildings and structures PT 26.04.22.pdf (cityoflondon.gov.uk)

[15] Dr Andy Liggans. 2020 February 28. *Access to defibrillators in the City of London.* Health and Wellbeing Board.

Department have confirmed that all residents of the City of London who want to be registered with a GP have successfully done so.

The catchment area of the City's GP practice does not cover the whole City, residents in the east access primary care services through Tower Hamlets GPs. GP services are provided through the North East London Health & Care Partnership. The City is a member of the North-East London Integrated Care Board (ICB). ICBs are responsible for planning and commissioning health services across north-east London and is accountable for NHS spend and performance.

The Neaman Practice offers extended hours and a number of on-line services. It is a member practice of the Shoreditch Park and the City Primary Care Network which will offer a wider range of services and plans to integrate health and social care. City residents can also register at the Shoreditch Park Surgery.

The Neaman Practice does not register City workers however if they come through the door as urgent the practice sees them as immediate and necessary, in line with the national GP contract. In a recent study on the health and wellbeing needs of City workers it was reported that City workers would welcome greater access to NHS services in the City for minor or urgent issues, such as walk-in clinics for general health issues but would prefer to see their own GP for more serious or repeat issues. From 2021 all patients across the country benefit from online consultations.

The City's large worker population tend to access primary care near where they live, though they are able to access a minor injuries unit, located at St Bartholomew's Hospital in the City, which provides national as well as local facilities and services, and which has recently undergone a redevelopment providing improved cancer care facilities and a cardiac centre. NHS services are generally accessed through the GP practice they are registered with and tend to be provided in their area of residence. In addition to open-access IAPT (Improving Access to Psychological Therapies) services, the City Corporation supports City Wellbeing Centre on Middlesex Street to provide greater access to mental health support for people who live or work in and around the City. Other limited primary health care settings in the City include a sexual health clinic at 80 Leadenhall.

In addition to the publicly funded provision, there are a number of private healthcare facilities both offered independently and on-site by employers, principally addressing the needs of the working population. A private hospital operated by Nuffield Health opened at St Bartholomew's Hospital in 2021.

There is one dental practice in the City that accepts referred NHS patients – the Barbican Orthodontic Practice.

There are 14 community pharmacies in the City, which provide enhanced access to health education and advice, as well as dispensing NHS prescriptions.[16] The level of pharmacies is consistent with the size and type of primary care provision in the City.

Existing community spaces, such as the City's libraries and Aldgate Children's Centre, provide important settings for health promotion and opportunities for residents, workers, and rough sleepers to engage with their health and wellbeing. The Dragon Café in Shoe Lane library provides support for mental health.[17] The City of London Corporation supports employers to improve the health and wellbeing of their workforce, through the Public Health-funded Business Healthy programme.

Risks and Mitigation

Looking to the future, ongoing trends may impact on the need for and provision of primary and secondary healthcare facilities in the City of London. The population of the City of London of residents over 65 years of age is 12%.[18] The resident population is set to get older and as a result may become more dependent on health services in the future.

As of 2021, there were an estimated 591,000 people working in the City of London.[19] Changes in the way that people work, particularly following the Covid-19 pandemic, might mean more workers working remotely for some of the week making it increasingly easier for workers to access health services where they live.

2.1.3 Cultural facilities

Cultural infrastructure is important to the City's character and within a globalised context supporting a world class destination for tourism. It is an increasingly important complement to the City of London's business offer and supports its status as a world leading financial and professional services centre and contributes to the City's ambitions to be a centre of culture and commerce. It supports local culture and

[16] City of London Interactive Mapping. 2023. *Pharmacy and Smoking Cessation*. City of London Web Mapping
[17] Mental Health Fight Club. 2023. Mental Fight Club
[18] Office for National Statistics. 2023. How life has changed in City of London: Census 2021 (ons.gov.uk)
[19] Business Register and Employment Survey (BRES). 2023. https://www.nomisweb.co.uk/datasets/newbres6pub

identity, enabling people to meet and socialise, increases wellbeing, and offers opportunities for skills and training and employment.

Destination City is the Vision for the future of the Square Mile which responds to effects of the pandemic.[20] The Vision is to create a truly vibrant and exciting place which people will keep coming back for more and will attract and retain worker talent. It aims to transform the perception of the City with a new brand, drive footfall that encourages spend, new ways to enjoy the City and to make the most of what it has to offer.

The Barbican is identified as night-time location of national or international significance, while Cheapside and Liverpool Street are identified as night-time areas of more local significance. The City has seen strong demand for hotel accommodation, which will increase as office floorspace increases, to cater for business accommodation alongside increased visitor numbers.

The GLA Cultural Infrastructure Plan March 2019 describes culture infrastructure as buildings, structures, and places such as museums, galleries, theatres, cinemas, libraries, music venues and historic cultural sites where culture is consumed or spaces of creative production where creative work is produced for example creative workspaces, music recording studios, film studios or performance spaces.[21] Cultural infrastructure has been mapped in the Cultural Planning Framework in order to understand where it is located, to plan for and create new infrastructure, to support those at risk and to support investment. The City contains a significant cluster of world class cultural organisations including the Barbican Centre, the Museum of London, and the Guildhall School of Music & Drama.

The City Corporation has ambition for large scale cultural and social infrastructure including the relocation of the Museum of London to Smithfield, the upgrading of Barbican facilities and the consolidation of the City Corporation's three wholesale food markets onto a new site in Barking and Dagenham.

There is an established Sculpture in the City programme and a number of small-scale spaces in the City that could be used for meanwhile cultural uses.

Risks and Mitigation

While many aspects of the City Corporation's Destination City ambitions are funded by the City Corporation, other aspects will require funding contributions or the

[20] City of London Corporation. 2023. *Destination City.* Destination City - City of London
[21] Greater London Authority. 2019. *Cultural Infrastructure Plan and Toolbox.* Cultural Infrastructure Plan and Toolbox | London City Hall

provision of spaces through developer contributions. The cultural sector also receives funding through philanthropic donations and grant funding, as well as sponsorship and entry fees, and it is expected that many cultural institutions that become established in the City will seek blended approaches to funding their activities.

While the City has several premier performance venues, there are no rehearsal spaces. The cultural offer is for consumption, there is little infrastructure to support the production of cultural events.

Since 2016, 16 spaces have been secured for affordable workspace to provide start up and incubator space and space for SMEs.[22]

The Mayor of London has produced guidance on creating new cultural infrastructure and cultural infrastructure map. The Mayor is investing £70 million into the relocation of the Museum of London to Smithfield. The requirement in the draft City Plan 2040 for new development to submit cultural plans will ensure existing culture infrastructure is considered in planning applications.

2.1.5 Education

To ensure high quality learning opportunities are accessible to all and ensure that City residents and those in neighbouring boroughs develop the skills they need to take up careers in the City.

Early Years education: facilities for children between birth-5 years old

Local authorities are required to provide nursery places for all three and four-year olds and some disadvantaged 2-year-olds. The City has a good supply of childcare provision for the under-five age group. There are 6 childcare facilities, 1 maintained nursery class, 1 workplace nursery within the City and 1 childcare facility based in a children's centre.

- Maintained nursery class: based at the Aldgate School (from 3 years old)
- Children's centre (including childcare for children 0- rising 3): Aldgate child and family centre.
- Playgroup: Barbican playgroup (for 2-5-year-olds)

[22] City of London Corporation. 2017 to 2023. *S106 Agreements*.

- Nursery within an independent school: Charterhouse Square School (from 3 years old)
- Private day nurseries (for 0-5 years old): Bright Horizons City Child, Hatching Dragons Nursery, Newpark Childcare, Smithfield House Nursery
- Workplace childcare: Various occupiers provide childcare facilities for employees, including at Goldman Sachs (only for employees' children)

Primary education school children up to 11 years old

There is one maintained primary school located in the City of London and two independent schools that cater for children of primary school age. The City of London School for Girls, although primarily catering for children of secondary school age, admits children from age eight onwards and the City of London School admits children from age 10 onwards.

- The Aldgate School is voluntary aided Church of England school located in Aldgate, to the east of the City of London. This is a state funded primary school with approximately 240 children from Reception until Year 6, most of whom are resident in the neighbouring area of Tower Hamlets.[23]
- Charterhouse Square School is located near the Barbican. It is an independent co-educational school, with approximately 200 pupils aged 3 to 11 years.
- St Paul's Cathedral School an independent co-educational school with approximately 260 pupils aged 4 to 13 years.

Trends over the last seven years indicate the number of primary school applications has remained consistent and, although there is a projected increase in population, this is not being reflected in the number of applications to maintained schools. In the 2011/12 entry year the City processed a total of 27 Primary school applications.[24] In the 2015/16 entry year, this number was 31. For 2022/2023 admissions the City processed 34 primary school applications. Out of the 34 primary applications received, 13 were from the Afghan refugee families who are being housed in temporary accommodation. Therefore, the City received 21 applications from the usual City cohort of families who are permanent residents.[25] The Aldgate School has always been popular with City families living in the east of the City, given its Outstanding status and the only maintained primary school in the locality. Currently, two-thirds of the children attending the school live outside the City, with a third living in the City.

[23] City of London Corporation. 2023. *Schools Capacity Survey.*
[24] City of London Corporation. 2023. *Schools Capacity Survey.*
[25] City of London Corporation. 2023. *Schools Capacity Survey.*

Therefore, for children living in the north-west area of the City (mainly in the Barbican and Golden Lane area), there is little chance of a place being offered.

Prior Weston Primary School in Islington has always been a popular school for these families. The opening of the City of London Primary Academy Islington (COLPAI) in September 2017 has proved a popular choice for City families too. During the 2022/23 entry year, ten City-based families applied for places at COLPAI, whereas one applied for Prior Weston.[26] COLPAI is housed in a new purpose-built school immediately north of the Golden Lane Estate in the City.

Families also apply to schools in the neighbouring local authorities such as Camden, Westminster, Islington, and Hackney. In 2023, data collected by the Children's Services team determined that 116 City of London resident children attend primary schools located outside of the City.[27]

Secondary education

There are no maintained secondary schools located in the City of London. There are two independent schools and one independent college providing secondary school education:

- City of London School on the riverside close to Millennium Bridge provides secondary education for 900 boys aged 10-18 years old.
- City of London School for Girls in the Barbican which provides education for approximately 750 girls aged 7-18 years old.
- David Game College located in Jewry Street and is a co-educational college, admitting students between the ages of 13-22

As there are no maintained secondary schools in the City, all applications are made to schools located in other boroughs. City families have priority places available at three City Corporation sponsored academies: The City Academy, Hackney, City of London Academy Islington, and City of London Academy in Southwark.

Application preferences for secondary schools vary from year to year; schools located within the London Borough of Islington and London Borough of Hackney are most popular with residents, however families will send their children further afield. As of May 2023, it was determined that City of London resident children attended a total of 39 secondary schools located outside of the City.

[26] City of London Corporation. 2023. *Schools Capacity Survey.*
[27] City of London Corporation. 2023. *Schools Capacity Survey.*

Adult learning

There is no standard for provision of adult care. Population growth will generate increased need for further education and adult learning places, although the need will be met on a London wide basis. The City Corporation's Adult Skills and Education Team run a programme of adult skills and training programmes in the City from the Golden Lane Community Centre and the City of London Business Library.

Higher education

Again, there is no standard for provision of higher education. The level of provision in the City will be determined by both student demand and the availability of funding. The London Metropolitan University has 3 campuses located just outside of the City in Aldgate (Tower Hamlets), Shoreditch (Hackney) and Holloway (Islington). In 2020/2021 the university had approximately 12,525 students across all its campus.[28] The City University of London and the Business School also lie just north of the City in Islington. The Guildhall School of Music and Drama in the Barbican is a leading conservatoire and drama school for over 600 students aged 18 and above.[29]

Within the City, there are a number of satellite campuses of universities based elsewhere in the UK and internationally, including the University of Chicago Booth School of Business, Coventry University London, Newcastle University London, and Northumbria University London.

There are almost 2.5 million students in England in Higher Education (HE), and the presence of HE establishments brings in concentrated pockets of young people.[30] Around 70% of students in England are under 24 and more than half of these are 20 and under. The majority of students (over 80% of undergraduates) live away from home. The London Plan (2021) states that boroughs should seek to ensure that local and strategic need for purpose-built student accommodation is addressed.

The City has a number of schemes for student housing both completed and those having been consented, such as 619 student flats delivered at 35 Vine St, 151 student flats delivered at 52 Minories, 644 student flats at 61-65 High Holborn to be completed around 2024/25 and 769 student flats projected for Friary Court, 65

[28] London Metropolitan University. Key statistics - London Metropolitan University
[29] Guildhall School of Music and Drama. 2021. *Annual Report.*
[30] City of London Corporation. 2023. *Strategic Housing Market Assessment.*

Crutched Friars.[31] There is currently no university campus within the City boundary but the nature of London, with its rich network of transport options provides no compelling reason for students to live in the same borough as their chosen campus.

Training and skills programmes

The City of London Skills Strategy 2019-2023 provides, enables, and supports lifelong learning through development and practical application of talents and skills, urgently needed for success. Projects include the City of London Apprentice Programme, traineeship opportunities in open space in conjunction with the City Corporation's Adult Skills and Education Service and adult courses in Golden Lane Community Centre.

Risks and Mitigation

Developers contribute to the cost of new infrastructure, including schools, through section 106 agreements and Community Infrastructure Levy (CIL) payments. National Planning Policy Guidance enables local authorities to negotiate funding from housing developers so they can provide for the school places required where new development puts pressure on existing schools. The Education and Skills Funding Agency is the government funding agency for schools providing revenue and capital funding for 3–19-year-olds and 3–25-year-olds with learning difficulties. The Office for Students and UK Research and Innovation provide capital funding for university building and refurbishment. Funding also comes from pupil fees for independent schools and university tuition fees, City Corporation direct funding and sponsorship, business funding and sponsorship, charitable organisation funding and sponsorship and through the National Government apprentice scheme for training and assessing apprentices.

2.1.6 Emergency services

The safety of people in the City and its ability to respond to emergencies is a fundamental role of the blue light services and the City Corporation. As a leading financial and professional services centre, there are potential risks from fraud, terrorism and cybercrime which impacts on the reputation in the City as an attractive place to do business. Alongside human disease and civilian disorder, terrorism and cybercrime are amongst the top risks to the Corporation.

[31] City of London Corporation. 2023. *Strategic Housing Market Assessment.*

The City of London is a centre for the legal profession and justice. The Old Bailey Central Criminal Court, the Rolls Building court complex, the Mayor's and City of London Court, the City of London Magistrates Court and the Inner and Middle Temples Inns of Court all lie within the City. The City Corporation is building a new court complex, specialising in cybercrime, and City of London Police HQ on Fleet Street called Salisbury Square.

The City of London Police priorities are counter terrorism, cybercrime, fraud, vulnerable people, roads policing, public order, violent and acquisitive crime, and antisocial behaviour. The Safer City Partnership Strategic Plan 2019-2022 echo these priorities.[32] The Secure City Programme is an initiative to meet challenges of protecting new crowded places and integrating with smart city technology, the transport strategy and supporting cultural programming. The City of London Police are currently developing a 2023-2025 strategy. The City of London Police currently operate out of one police station, Bishopsgate Police Station, with further office functions within the Guildhall complex. Both Snow Hill and Wood Street Police Station buildings closed during 2021. The City Corporation is consolidating police functions into a new headquarters building alongside the proposed new court building on Fleet Street. Digital Police Boxes are being considered around the City to provide information and assistance.[33]

Terror attacks have demonstrated a need for more widespread hostile vehicle mitigation by designing out potential for crime and anti-social behaviour and planning resilience in developments. The City Traffic and Environmental Zone can restrict or rationalise vehicles through road barriers, checkpoints, and CCTV.

Area-wide security measures are proposed within the City Cluster to ensure that businesses, workers, residents, and visitors in this high growth area are protected by implementing measures such as dispersal routes, emergency clearance in pedestrian areas and emergency planning procedures. In all parts of the City developers will be expected to contribute towards the funding of security measures through S106 planning obligations and major development will be expected to be accompanied by a risk assessment to ensure resilience in light of any disaster. The City have recently invested in a new joint control room and will be undertaking a review to replace the CCTV in the public realm under the security programme.

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[32] City of London Police. 2019. *Safer City Partnership Strategic Plan 2019-2022*
[33] City of London Corporation. 2021. Winning design for 21st Century City Police Boxes unveiled (cityoflondon.gov.uk)

Guildhall Yard is the sole helipad for emergencies in the City and additional helipads would only be permitted where these were essential for emergency or security purposes.

The is one London Fire Brigade station in the City at Dowgate, Upper Thames Street.

Risks and Mitigation

Policing costs are rising and there is uncertain funding from central government.

The City of London is a member of the London Resilience Partnership alongside emergency services, health bodies, utility and transport providers and other government agencies.

2.2 Public Realm and Streets

2.2.1 Public realm

With growth and change in the City, there is a need to maximise the attractiveness and use of its existing limited public space and to create new space whenever possible. There is a clear and developing understanding of the importance of public realm and access to open public space to enhance well-being, strengthen mental health and attract the best global talent the City. Linked to this is the need for diverse activity on the street and accessibility to informal and formal leisure and cultural opportunities.

The number of people arriving in the City will increase, resulting in pressure on the streets and public realm, particularly around areas of transport interchanges, within the City Cluster and surrounding the proposed major infrastructure developments within the St Paul's and Court complex. There are a number of public realm enhancement strategies for the City streets and spaces and complimentary projects that can lead to enjoyment of the City. Healthy Streets plans will be delivered across the City in line with the Transport Strategy.

In June 2023, the Court of Common Council approved the proposal to transform St Paul's Gyratory. The square between St. Paul's Underground station and the old Museum of London site will see the creation of a 3,000sqm new public square.[34] The key changes that will facilitate a significant increase in the public space at the closure of the southern section of King Edward Street, and the partial removal of the

[34] City of London Corporation. 2023. St Paul's Gyratory Transformation Project - City of London

gyratory system and subsequent introduction of a two-way lane for all vehicles on Newgate Street and St Martin Le Grand.

The Sculpture in the City programme demonstrates the attractiveness of how public space can be animated with arts which can be multi-functional, providing sensory elements, play opportunities and shelter from elements. The Corporation has invested in a world leading gigabit Wi-Fi network with approximately 200 access points available across the City enhancing connectivity within the City's streets and public realm using street furniture.

The City has a rich heritage of traditional markets and an increasing demand for pop-ups and street food markets. The City of London is working with the Borough of Tower Hamlets to deliver public realm works to Petticoat Lane and the surrounding area to complement improvements to the operations of the market and facilities to serve its customers and visitors.

Temporary projects such as Lunchtime Streets have taken place whilst road improvements were underway, to create small parklets for activities, street markets and seats so that people can enjoy lunch in a safer and pleasant environment as open space is at a premium. Public realm is being enhanced through the provision of terraces and viewing galleries as an opportunity to provide inclusive spaces which can facilitate positive social interaction and enjoy viewpoints of the City's historic and cultural attractions.

Risks and Mitigation

As more people are expected to arrive to the City, with an increase in over 60,000 workers coming to the City of the City Plan period, there is a risk for crowded streets and public realm. A busier City also puts the pressure of development on heritage and unique identity.

There is insufficient funding allocated to deliver necessary public realm improvements over the entire City Plan period. There is a risk for reduced funding available from TfL due to financial constraints.

The Riverside walk improvements at Blackfriars Bridge has been incorporated in the Thames Tideway Tunnel public realm works. Moorgate (Crossrail urban integration) transportation and public realm works to integrate pedestrians using the Crossrail station will benefit from funding. Where necessary, developer funding, through CIL and s106 planning obligations, will be used to fund the delivery of priority public realm schemes.

2.2.2 Walking and cycling

Increasing numbers of workers and visitors into the City have resulted in significant and increasing pressure on the pavements and pedestrian movements and therefore improvements are necessary. The Congestion Charging Zone, the ULEZ low emission zone, cycleways and ongoing transport and public realm projects (including those to address the Covid-19 pandemic) have reduced volumes of traffic and facilitated increasing cycling volumes across the City.

The City of London Transport Strategy update has reinforced the principle of streets being designed with the priority of inclusion in mind which is increasingly being put into practice in the City.[35] The Transport Strategy seeks to increase the number of pedestrianised or pedestrian priority streets from 26.3km to 55km by 2044.[36] Improving access around stations and key destinations to provide safe and comfortable walking and wheeling is supported through a number of healthy street plans. Increasing signage and wayfinding in the City has already commenced and new developments that create new pedestrian routes through buildings, that maximise permeability and safeguard historic routes are supported. The City Plan 2040 and the Transport Plan support the accessibility of the Barbican high walks although there no planned projects. City Plan 2040 supports expansion of the cycle network with the aim to ensure that nearly all property entrances are within 250m of the network and that new developments cater for cyclists.[37] Work has commenced on the city cycle network routes and this work is planned to continue until 2028. The streets accessibility programme ensures that people of all abilities have an environment where they can travel comfortably and confidently. Measures to provide safe access through and within the City during the Covid-19 pandemic have resulted in road space being converted for pedestrian and cycle use.

Risks and Mitigation

Funding constraints on the City Corporation may reduce the capacity to deliver projects.

The Healthy Streets Plans will identify the scope to increase space available for walking and cycling.

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[35] City of London Corporation. 2023. *Transport Strategy update.*
[36] City of London Corporation. 2019. *Transport Strategy.*
[37] City of London Corporation. 2023. *City Plan 2040.*

Developers are required to provide increased levels of on and off-site cycle parking and contribute towards the improvement of the City's cycle network through s106 planning obligations and CIL payments.

2.2.3 Public transport

Public transport is a more sustainable mode of transport. Demands on the City's transport network are increasing due to significant growth, fast moving technological development, and changing travel habits. Public transport can enhance accessibility and increase social inclusion.

The City is served by an extensive transport network with significant improvements occurring with the arrival of the Elizabeth Line into the City at Farringdon and Liverpool Street/Moorgate. The City Corporation has contributed £200m in funding towards the delivery of the Elizabeth Line.[38]

There is also delivery of increased capacity from the Northern Line/ Bank Station upgrade.[39]

The City Corporation supports further improvement to the Tube network and delivery of step-free access to stations.

Risks and Mitigation

TfL budget pressures may reduce the potential for further investment in public transport improvements in the City.

2.2.4 Electric Vehicle Charging

With the increased uptake in electric vehicles, there needs to be better infrastructure in place to support this shift. A shift from petrol/diesel vehicles to electric or active travel modes can help to deliver air quality improvements. The City Plan and Transport Strategy seek to reduce vehicle movements into the City and commuter parking.

[38] City of London Corporation. 2022. City Corporation celebrates opening of the Elizabeth line in major milestone for the capital's recovery (cityoflondon.gov.uk)
[39] Transport for London. 2023. Bank & Monument - Transport for London (tfl.gov.uk)

There are electric vehicle charging points are available in the Barbican for residents, with power outputs ranging from 3kW to 22kW. A rapid charging point for taxis has been installed at Noble Street and further charge points are planned at Baynard House car park, part funded by TfL.

An Electric Vehicle Action Plan has been prepared by the City Corporation. Up to five locations for new charging points will be put to market in 2023/24 and 2024/25.

Risks and Mitigation

There is a risk that there could be a lack of capacity for fast EV charge points.

Funding constraints to the delivery of new EV charging points will be coming from DfT and the City Corporation but costs are currently unknown.

2.2.5 Highways Maintenance

Road changes are aimed at transforming City streets to deliver a healthier, safer, and more attractive street environment. Where development would have impacts on transport networks, these must be mitigated though site/building design and management of operational activities.

There is TfL approval for a 20mph zone on Upper and Lower Thames Street in line with neighbouring boroughs.[40] There are a number of Road Danger Reduction priority schemes planned in the period up to 2030 across the City to reduce the risk of casualties. There are several area specific schemes in line with the City Corporation's aspirations for Destination City to make key walking routes safer and more comfortable. The All Change at Bank scheme aims to deliver permanent changes to Bank Junction, removing through traffic and improving safety and air and noise quality in the area. Healthy Streets plans identified in the Transport Strategy will deliver significant safety and environmental improvements.

Risks and Mitigation

Targets are in part dependent on measures introduced by the Mayor of London and TfL such as the proposed Central London Zero Emissions Zone.

[40] Transport for London. 2020. Road danger reduced with new 20mph speed limits on all TfL roads in central London - Transport for London

2.2.6 Freight/servicing

Efficient off-street servicing and delivery arrangements are vital to keep the City moving. The Transport Strategy seeks to reduce the number motorised freight vehicle volumes over a 24 hour period, from 34K currently to 27K by 2044, a 30% reduction.[41] New types of initiatives such as freight consolidation into fewer vehicles or different vehicles, use of cargo bikes for delivery, enhanced use of the river and rail for freight is necessary.

The City Corporation has a Freight Forum with businesses to encourage effective freight consolidation and discuss approaches. These include supporting low/ultra-low emissions and last mile deliveries, consolidation centres, last mile delivery hubs, pick up centres such as Amazon lockers and infrastructure to prevent deliveries in restricted hours and use of the river for movement of freight and waste.

Risks and Mitigation

Dependent on development schemes coming forward.

2.2.7 Cool streets

Through its Cool Streets and Greening Programme, the City of London Corporation is investing £6.8 million to improve the resilience of its streets, parks and open spaces to the impacts of climate change.[42] A range of urban greening, climate-resilient planting and sustainable drainage projects are being trialled, alongside sensor based environmental monitoring, to evaluate the effectiveness of schemes. The projects aim to tackle a number of risks from climate change, such as overheating, water stress, flooding, new pests and diseases while providing valuable data to inform future projects.

Phase 1 of the programme identified existing projects where additional funding could improve the climate resilience of their schemes. In 2022, avenues of street trees on Vine Street were planted to provide a shaded route to eliminate street-level overheating. In 2022, drought tolerant planting was planted in the riverside planters at the City of London school. Further phases will aim to include climate resilience measures earlier in the design process, with delivery between 2023 and 2025.

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[41] City of London Corporation. 18 July 2023. *City Streets 2023 Summary Report*.
[42] City of London Corporation. 2023. Cool streets and greening in the Square Mile - City of London

Risks and Mitigation

The programme currently only has funding up until 2025. Once the funding runs out the future of the programme is uncertain.

2.2.8 River Transport

Greater use of the river is encouraged for both passenger and freight transport to alleviate the need for some motor vehicle trips on the City streets.

Walbrook Wharf is the only active river wharf in the City and will be retained as a waste facility and potentially used for freight logistics. Swan Lane Pier is a redundant pier and the City will seek its reinstatement for use of freight or emergency services. The adopted Local Plan and draft City Plan 2040 seek its reinstatement for river-related use and potential river-borne freight.

Blackfriars Pier provides access to river passenger services operated by Thames Clippers.

Risks and Mitigation

Use of the river for transport is dependent on the commercial viability of passenger and freight operations.

2.3 Parks, Open Spaces and Recreation

2.3.1 Open space

The City of London is a busy urban environment containing many small open spaces and pocket parks. There is a growing recognition that green infrastructure helps to mitigate against some effects of climate change, provides benefits for well-being and mental health and improves air quality.

Green infrastructure in the City includes civic spaces, parks and gardens, cemeteries and churchyards, and green roofs and walls in addition to amenity spaces. The provision of urban greening should be integral to the design and layout of buildings and the public realm and major development proposals will be required to include an Urban Greening Factor (UGF). Development should incorporate measures to enhance biodiversity including the retention and enhancement of habitats within Sites of Importance for Nature Conservation (SINCs), including the River Thames

and measures recommended in the City of London Biodiversity Action Plan (BAP) in relation to particular species or habitats. From November 2023, a statutory requirement to deliver 10% Biodiversity Net Gain will come into effect. Urban greening is important as temperatures rise, rainfall increases and to combat the urban heat island effect.

In 2022, within the Square Mile the open spaces comprise of 34.55 hectares which includes parks, gardens, churchyards, and hard spaces.[43] Approximately 80% (26.8 hectares) of this open space is fully accessible. Some of the spaces have restricted access, no access or access only for residents. Draft City Plan Policy OS1 seeks additional publicly accessible open space and pedestrian routes in major developments, particularly in areas of open space deficiency and where pedestrian modelling shows significant pressure on City streets. The quantity, quality and accessibility of public open spaces will be maintained and improved.

Open Spaces and Recreation Audit 2022:

- Primacy Civic spaces – Courtyards and Piazzas – 6.94ha
- Secondary civic spaces – 10.48ha
- Parks and Gardens – 6.11ha
- Cemeteries and Churchyards – 4.13ha
- 10 SINCs – primarily North of the City
- 4 registered historical gardens – Inner Temple, Middle Temple, Finsbury Circus and The Barbican

The City of London Open Spaces Strategy is supported by the City Gardens Management Plan 2017 – 2022 which sets out projects to increase the amount and quality of open space in the City in parks and churchyards.[44] Following completion of construction works for the Elizabeth Line, Finsbury Circus gardens reopened in 2020 after being closed for 10 years to facilitate rail construction works.

The City of London has 6.21sqm of green roofs per resident population.[45] There is 43,100sqm of total green roof space in the City of London, 51% are extensive green roofs (including 3% BioSolar (extensive) green roofs and 49% intensive green roofs.[46] The City Plan 2040 encourages developers to include more green infrastructure in development proposals which will be sought through the installation of biodiverse extensive or intensive green roofs, terraces, green/living walls, and landscaping

[43] City of London Corporation. 2021. *Local Plan Monitoring Report: Open Spaces and Recreation.*
[44] City of London Corporation. 2017. *City Gardens Management Plan 2017-2022.*
[45] City of London Corporation. 2021. *Local Plan Monitoring Report – Roof Terraces and Green Roofs*.
[46] City of London Corporation. 2021. *Local Plan Monitoring Report – Roof Terraces and Green Roofs*.

around the building. Major development proposals will be required to demonstrate an Urban Greening Factor (UGF) target score of 0.3 (as a minimum) for both commercial and residential developments. UGF is a tool to assess the amount, type, and value of greenery within development proposals**.** From November 2023 there will also be a requirement for 10% uplift in biodiversity on development sites.

The City has 10 adopted Sites of Importance for Nature Conservation (SINCs), and 3 proposed new SINCs (Postman's Park, Portsoken Street Garden, St Dunstan in the East Church Garden), which will be formally designated on adoption of the City Plan 2040. The City of London Biodiversity Action Plan (2016-2020) (BAP) covers open spaces, habitats and species in City of London and will be reviewed shortly.

Risks and Mitigation

Intensification of development in the City and growing numbers of workers, residents and visitors will place increased pressure on the City's open spaces.

Limited public funding available to deliver new open spaces and to maintain and improve existing open spaces.

Changing climate conditions may result in increased stress on planting in existing open spaces, increasing future maintenance and improvement costs.

Developer funding through S106 planning obligations and CIL to deliver new open spaces and amenity spaces.

Implementation of the City of London Biodiversity Action Plan (BAP) and promotion of green corridors.

Implementation of Environment Act and NPPF requirements for biodiversity net gain, delivered through new development.

Implementation and updating of the (SPD). Safeguarding of trees and any existing trees which are required to be removed during development works will only be permitted in exceptional circumstances.

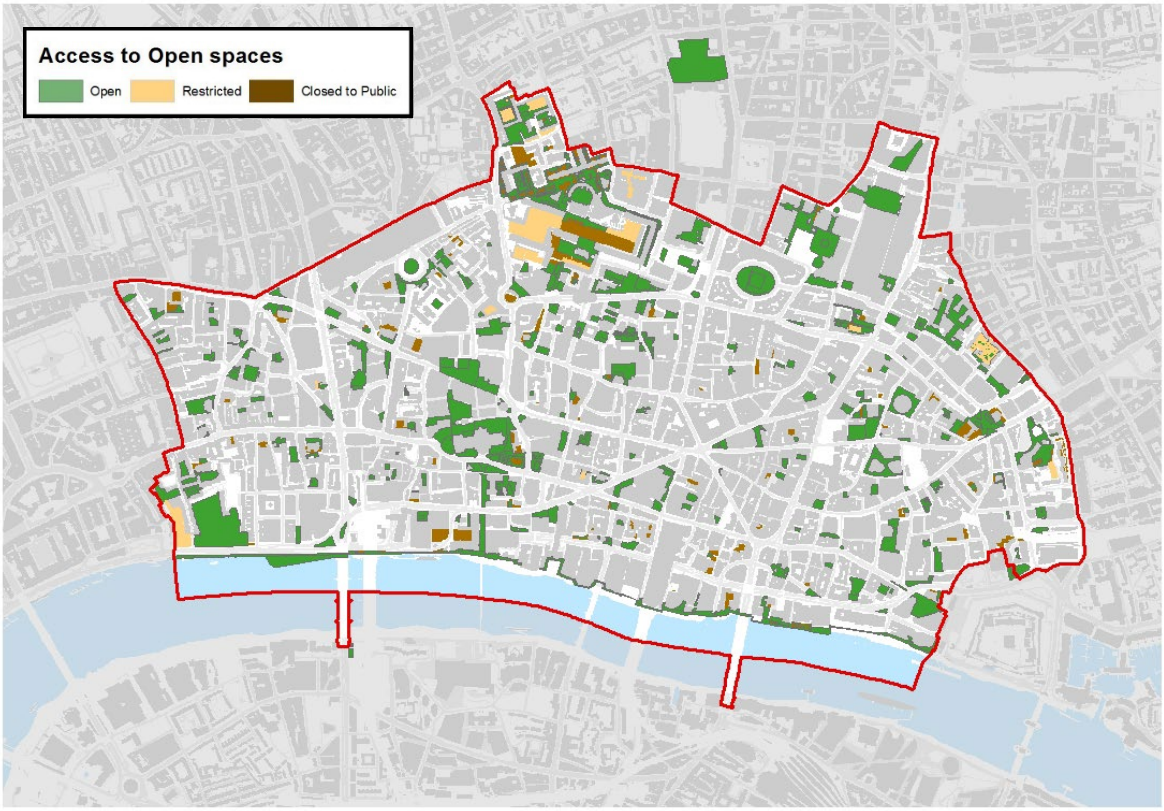

Figure 1 Accessibility of open spaces in the Square Mile

Growth of the City's working, and residential population and recognition of health and wellbeing means continued demand for sport and recreational facilities. City workers have an expectation that sports, and recreation facilities will be available in proximity to workplaces. Play spaces are essential for the healthy development of children and to benefit the increasing number of children living in and visiting the City.

Most of provision within the City is from private gyms within office developments which are often closed during the weekends. There is only one public leisure centre within Golden Lane residential estate in the City which is limited in capacity. Parts of the City such as Portsoken are not serviced at all. The Golden Lane Community Centre and education centre underwent a £1 million refurbishment programme in 2012 and is accessible to all. Opened in 2021, the Portsoken Community Centre is a multi-functional community centre providing a range of activities.[47] The Barbican

[47] City of London Corporation. 2021. Portsoken Community Centre - City of London

Library has facilities for further community events and functions alongside the multi-games' facilities for Barbican residents.

The Aldgate School contains a private sports hall and playground. The City of London Schools have swimming pools available for external hire, St Botolph's churchyard comprises privately owned netball and tennis courts. The Guildhall Yard is available to host events and have included events such as yard yoga and archery. There is children's play equipment within City Gardens at Tower Hill in the West Smithfield Rotunda garden, Portsoken Street Garden and St Peters Hill and there is an outdoor gym at Lower Thames Street Riverside.

The City Plan seeks additional, and replacement play areas and facilities where there is identified need. It also seeks appropriate sensory play areas for children and young persons with special education needs. Through informal engagement in spring 2023, as part of the City Plan process, residents in the east of the City identified a need for more children's play equipment.

The 2023 Sport Strategy seeks to create the Square Mile to be a leading global city of sport, through valued and exceptional sport facilities, events and engagement.[48] The Sport Strategy is assessing options for the development of a new sport and leisure hub in the heart of the Square Mile.

The 2023 Sport Strategy aims to activate our streets and public spaces to encourage sport and exercise. This includes expanding free-to-use outdoor sport and fitness facilities on our streets and public spaces.

Following completion of Elizabeth Line construction works, the open space at Finsbury Circus has been reinstated. Low-cost measures such as identifying walking/cycling or running routes around the City streetscape could help to encourage healthier lifestyles and meet increasing demand for these types of activity and mass participation sporting events such as the London Landmarks Half Marathon.

Risks and Mitigation

In some parts of the City of London there are no publicly accessible facilities for sport and recreation. The planned provision of sport, recreation and play spaces facilities will not be sufficient to service the scale of the growing working population over the City Plan period. City populations do not distinguish administrative

[48] City of London Corporation. 8 June 2023. *Global City of Sport – A New Sport Strategy for the Square Mile (2023-2030)*

boundaries as people travel into neighbouring boroughs for leisure and recreation. Poplar Baths Leisure Centre for example on East India Dock Road was refurbished in 2016 following long term closure and it is likely that residents in the eastern portion of the City would attend such facilities.

Continued joint working with neighbouring boroughs will be considered to deliver shared facilities using S106 developer contributions through the planning application process or CIL for the benefit of the Square Mile.

Facilities provision will be coupled with a range of other implementation measures such as campaigns and activities to encourage sport and activity and ensuring premises are open for City workers, visitors and residents.

2.3.4 Roof terraces

One of the City's key attractions are the free-to-visit public roof terraces which provide elevated views to all. The Sky Garden at 20 Fenchurch Street has welcomed over 10 million visitors since opening. Roof terraces with full and partial public access increased from 14 in 2011/12 to 21 in 2019/20, and are projected to increase to 35 in 2025/26.[49] There are two new elevated viewing galleries opening at 22 Bishopsgate and 8 Bishopsgate in August and September 2023.

Risks and Mitigation

Roofs have many competing priorities, to be publicly accessible, to support sustainability goals (including green roofs and air source heat pumps), and utility needs to support improved cell phone reception. With these competing interests in mind, the City will continue to secure free publicly accessible roof terraces when possible.

[49] City of London Corporation. 2021. *Monitoring Report – Roof Terraces and Green Roofs 2023*

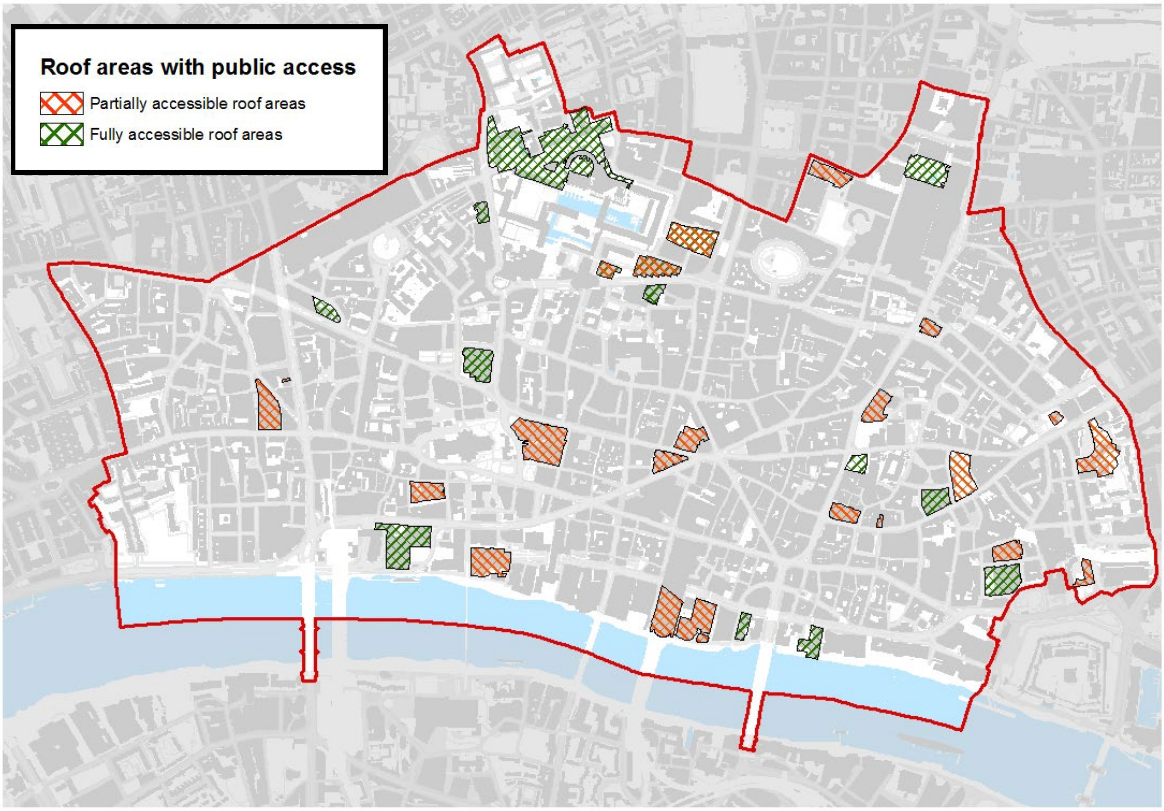

Figure 2 Roof spaces in the City of London

2.4 Infrastructure and Utilities

2.4.1 Lighting

Lighting of global cities is often addressed in an ad hoc way with new developments adding lighting in a piecemeal way and street lighting applied in a uniform way. Lighting contributes to improving the night-time offer, enhancing visitor experience, an attractive townscape, and a safe and secure experience.

Where are we now?

On 18 July 2023, City Corporation adopted the Lighting Supplementary Planning Document providing guidance for developers on lighting buildings and the spaces between them.[50] It will help developers to meet the requirements of the

[50] City of London Corporation. 18 July 2023. *City of London Lighting Supplementary Planning Document (SPD)*

Development Plan policies that relate to lighting and supports the aims of the City Corporation's Climate Action Strategy. The document also contains the 'Considerate Lighting Charter' which the City Corporation encourages all those involved in the lighting in the City to commit to.[51]

The City Corporation completed a project for the replacement of its street lighting using intelligent and sustainable LED lighting for better energy use and sustainability. The lighting also has smart capability meaning it can be controlled intelligently, changing the temperature of lighting (between warm colouring or white light) and the brightness in response to ambient lighting, mood creation and safety.

The Illuminated River Project is the longest public art commission in the world, lighting 15 of central London's bridges along the River Thames over 10 years. Lighting on London Bridge, Cannon Street Rail Bridge, Southwark Bridge and Millennium Bridge was completed in 2019, with Blackfriars Bridge (along with 4 bridges in Westminster) completed in spring 2021.[52]

Risks and Mitigation

The Considerate Lighting Charter was launched this year and urges building owners and occupiers to sign up and demonstrate their commitment to improving lighting. The Charter is voluntary and aims to help ease concerns of residents and improve sustainability.

2.4.2 Flood risk

To ensure that the City remains resilient in the face of a changing climate as risk of flooding and extreme heat events increases. Predictions that the City of London will experience a rise in average temperature between 2 – 6°C by 2061 (UKCP18) and the City could experience maximum temperatures up to 10°C higher due to the Urban Heat Island Effect.[53] Climate change could also affect patterns of wind flow in high density urban environments like the City.

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[51] City of London Corporation. 10 February 2023. Light up responsibly, City developers are urged (cityoflondon.gov.uk)
[52] Illuminated River Foundation. 2023. Illuminated River: A public art commission
[53] Met Office. 2018. *UK Climate Projections*.

Climate change will make patterns of rainfall more intense which could increase flooding, especially in an impermeable environment like the City. The City lies within the tidal section of the Thames and is vulnerable to sea level rise.

Designing climate change resilience into developments and infrastructure will keep the City safe as weather patterns change.

Where are we now?

- City Plan 2040 includes policies on greening, SUDS, flood protection and defences, flood risk, overheating & urban island effect.
- Tackling flood resilience is a priority within the City's Climate Action Strategy 2020-2027.[54] The strategy covers actions for the City Corporation and businesses in the Square Mile and addresses climate change mitigation and climate resilience, identifying adaptation measures that must be undertaken. The Climate Action Strategy aims for the City of London to achieve net zero carbon emissions by 2040.
- The City Corporation prepares a Strategic Flood Risk Assessment which models flood risk in the Square Mile and is updated every 5 years.
- The City's Local Flood Risk Management Strategy 2021-2027 (LFRMS) includes a Flood Risk Action Plan which identifies the practical steps that the City.[55] Corporation and other partners need to take to reduce their risks from flooding.
- The City's Environmental Resilience Team produced guidance for businesses and property owners on steps they could take to help reduce the impact of flooding.
- The Environment Agency has indicated in its Thames Estuary 2100 Plan that it anticipates needing to raise the statutory defence level of the City's riverside up 0.5m by 2050 and up to an additional 1m by 2090. This is to provide a higher level of protection and to account for sea level rise due to climate change. The City Corporation is working actively with the Environment Agency to determine how to implement this plan. The City is producing an update to the Riverside Strategy to align with the TE2100 Plan update.

Risk and Mitigation

If the Corporation and City businesses do nothing to tackle the impacts of climate change locally and the City becomes an unattractive place to work, live and visit.

[54] City of London Corporation. 2020. *Climate Action Strategy 2020-2027.*
[55] City of London Corporation. 2017. *Strategic Floodrisk Assessment.*

Flooding could cause the loss of life, damage to property and business continuity. Funding reduced or stopped from central government to deal with LLFA duties.

Flood resilience and resistance designed into development proposals, including public realm can help to alleviate future concerns.

2.4.3 Water/drainage

Water is a vital resource for the City. The challenges of sustainably managing water security, quality, drainage, and wastewater are considerable. Thames Water is the primary water and sewerage company operating in the City of London. Thames Water has adopted a 5-year business plan for 2020-2025.

Surface water flooding is a major concern in the City of London as the drainage network has pinch points at which there is insufficient capacity to accommodate the amount of surface water running off from buildings and hard spaces. This can result in sewers surcharging. Local drainage network blockages have the capacity to cause further damage.

Greater stress from increased populations on the supply of water and its wastewater system with increased rainfall from climate change will require new approaches and new infrastructure.

Where are we now?

The City Plan requires new major developments to incorporate the principles of sustainable drainage system (SuDS) to reduce the amount and rate at which water enters the drainage network. The draft City Plan 2040 seeks to extend this requirement to all development. New developments are encouraged to reuse water on site to reduce the demand for potable water and requirement to treat additional wastewater. The City of London Lead Local Flood Authority (LLFA) is a statutory consultee to the planning process and reviews all major applications, recommending conditions when necessary, to secure reductions and ongoing maintenance of systems.

The GLA have produced the London Sustainable Drainage Action Plan. It is a series of actions to help promote the use of SuDS in London, specifically retrofitting and awareness raising.

The Thames Tideway project will be completed in 2025 and will substantially reduce the amount of untreated sewage being released into the Thames by instead discharging to a newly constructed 25km tunnel under the River Thames.

The City of London's Multi Agency Flood Plan (MAFP) determines the emergency actions that will be taken if a catastrophic flood occurs in the City.

Risks

- Increase in surface water flooding due to climate change and decreases in permeable area.
- Increase in demand for potable water.
- Increase in volume of wastewater requiring treatment.
- More frequent 'reactive' works.

Mitigation

- Requirement for minimum level of SuDS for major developments. The draft City Plan proposes extending SuDS requirements to all new development.
- Partnership working with Thames Water to determine areas of higher risk of water mains burst.
- Thames Water's business plan suggests they want to replace 700km of water pipes across their network and reduce leakage by 15%. They also want to fund SuDS installation, giving £150k to each local authority in their area.
- Working with other LLFAs in the same sewer catchment to increase capacity within the network through the widespread use of SuDS.
- New developments are encouraged to incorporate water saving devices through BREEAM assessment requirements and where applicable the Building Regulations.

2.4.4 Circular economy/waste

The City Corporation is a waste planning authority and has a duty to prepare a waste local plan to identify sufficient opportunities to meet the identified needs for the management of waste and ensure suitable sites and areas for the provision of waste management facilities are identified. Waste arisings for the City by 2041 are estimated at 238,000 tonnes.[56]

Where are we now?

There is one designated waste site in the City, a transfer station at Walbrook Wharf, and no waste management sites. Walbrook Wharf has a design capacity of 110,000 tonnes of waste although it is limited to 85,000 for safety reasons. From the Wharf,

[56] Greater London Authority. *London Plan*. (2021).

waste is transported along the river to the Riverside Energy from waste facility at Cory Environmental Riverside Resource Recovery facility at Belvedere, Bexley.

Recycling is transported via road to Veolia's Integrated Waste Management Facility in Southwark. Food waste and green waste is also sent to the Southwark facility to be bulked and forwarded to a Biogen facility in Bedfordshire. Other waste, such as street sweepings, are transported to Wandsworth for bulking and forwarding to a composting facility in Sussex. Clinical waste is forwarded to the Edmonton clinical waste incinerator. Smithfield Meat Market generates waste that falls under the Animal By-Products Regulations which impose requirements on the disposal of waste. The City Corporation's markets co-location programme proposes moving the market to a new consolidated site at Dagenham Dock. St. Bartholomew's Hospital produce some low-level radioactive waste and hazardous waste streams that would both count towards industrial and commercial waste streams. The City relies on co-operation between waste planning authorities, other authorities, and public bodies to ensure a suitable and sustainable network of waste management facilities. The City Corporation is a member of the South East London Joint Waste Group (SELJWG) which comprises the boroughs of Bexley, Southwark, Bromley, Greenwich, Lewisham, and the City. The group meets regularly and works together to identify and meet sub-regional requirements for waste management facilities.

The City Corporation has produced a Recycling and Reduction Plan (RRP) to demonstrate how the City can contribute to the Mayor of London's recycling targets for Greater London, this involves several measures around recycling communications campaigns. The London Plan 2021 set a waste apportionment figure requiring the City to identify sites with capacity to manage 84,000 tonnes per annum in 2021 and 90,000 tonnes per annum in 2041. The City Corporation meets this requirement through joint working with the SELJWG. The City Corporation monitors waste per type generated and reports through the Waste Data Flow system to DEFRA.

Risks and Mitigation

The maximum waste arisings for 2040 is estimated to be potentially 500,000 tonnes to include collected, commercial and industrial, construction, demolition and excavation, hazardous, residual waste, recycling, and organics. With no viable waste management capacity, the City Corporation relies upon disposal at facilities outside of the City of London. Some sites outside London have been identified as potentially not being available to receive waste throughout the whole lifespan of the draft City Plan. However, given that the waste hierarchy projects a decrease in construction, demolition, and excavation wastes this is not anticipated to be problematic.

Walbrook Wharf is a safeguarded waste site sited alongside the Thames Riverside within the City Flood Risk Area, constrained physically and within operations to reduce nuisance to residents. Processing more waste at this location is likely to impact upon vehicle access and cause queueing. New technologies such as sorting, composting or energy recovery would require 2ha of land, however this is very unlikely to be financially viable due land prices in the City. C&I arisings for the City are difficult to forecast and the last data was collected in 2018. Whilst there has been progress in technologies to treat C&I waste, it is unlikely to be financially viable to treat waste at Walbrook Wharf.

The commercial nature of waste generated in the City, alongside limited opportunity to expand the waste management facility and lack of available land for waste use are obstacles to overcome in order to move towards a zero waste city.

The City Corporation has a Duty to Cooperate commitment to working jointly and an agreement with Bexley as a waste partner. The City Corporation participates in the South East London Joint Working Group (SELJWG) to identify sufficient waste management capacity to meet the combined London Plan apportionment of each member and also works with GLA and Environment Agency to improve waste planning.

Further use of the river to remove waste and construction waste will be supported through Walbrook Wharf as a safeguarded waste site and river wharf in line with the London Plan and Safeguarded Wharves Direction. Construction, demolition, and excavation waste is not covered by targets for net self-sufficiency and will continue to be transported to sites outside London by river or rail, where feasible.

New waste management technologies have increased the viability of small-scale waste management in large development sites within the City. However, these should not create an unacceptable land use conflict, lead to unacceptable access arrangements and should have minimal carbon impact in compliance with the Mayor's Carbon Intensity Floor (CIF).

On site or multi-site consolidation of waste storage and separation purposefully located at ground floor level with direct access to highways can reduce number of refuse vehicle collections. This on-site management can also incorporate food waste to assist management of the City's waste generated from eateries. The Plastic Free City initiative encourages large office buildings or multi-tenanted complexes to reduce their use of plastics to minimise loads on current waste treatment facilities. This can be achieved through the planning application process including a waste minimisation plan and construction logistics plan, as well as incorporating waste facilities into the design of buildings.

2.4.5 Energy

The energy system is a key element in the effective functioning of the City for both businesses and residents and includes the consideration of heat, cooling, electricity, transport, buildings, energy system flexibility, storage and generation.

The UK mission to reach net zero carbon emissions by 2050 is also prompting fundamental changes to the energy system, with a shift underway from a centralised, fossil-fuel-based approach to a decarbonised, decentralised, digitised and democratisation.

The City Corporation's Climate Action Strategy has set out the ambition of a net-zero Square Mile by 2040 with a set of 5-year milestones for decarbonising key areas such as commercial buildings and transport.

The City of London Local Area Energy Plan (LAEP) was endorsed by the City Corporation's Policy & Resources committee in September 2023 and sets out a routemap and a package of priority intervention areas which will support the transition to a net-zero energy system in the Square Mile by 2040.

The recommended routemap for getting to net-zero is a blend of interventions to:

- Individual building solutions – deep retrofit and electrification of existing buildings; highest possible sustainability standards for new build.
- Network solutions – low-carbon heating and cooling networks; electricity grid reinforcement and flexibility; decarbonisation of transport infrastructure.

Hydrogen is discounted due to the lack of credible plans to supply hydrogen into the City within the timeframes required.

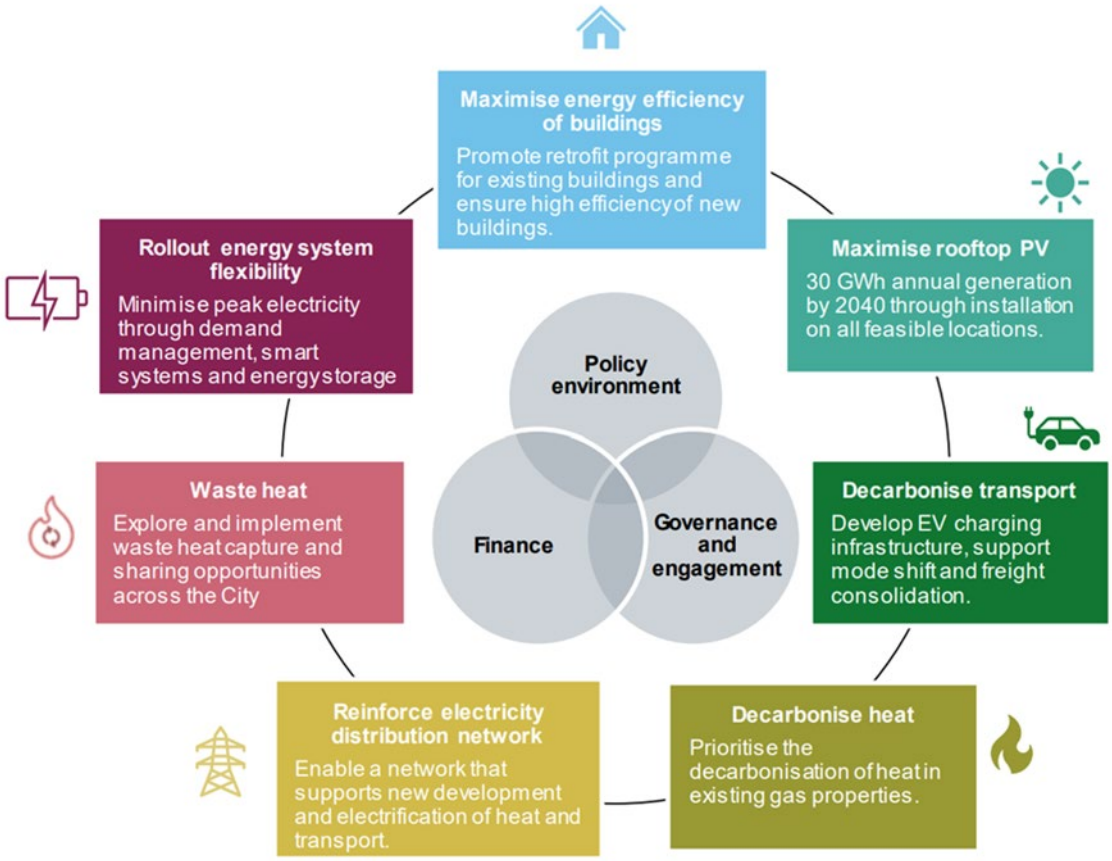
It is expected that the level of heat network deployment will be driven by up-coming Heat Network Zoning policy, currently under development by UK Government. The City is already participating in the Advanced Zoning Pilot run by the Department for Energy Security and Net Zero.

Where buildings are not mandated to connect, it is recommended that individual heat pumps are used to decarbonise heat. Office buildings should also participate in wider City heat networks where possible as heat suppliers, sharing rejected thermal energy from their cooling systems.

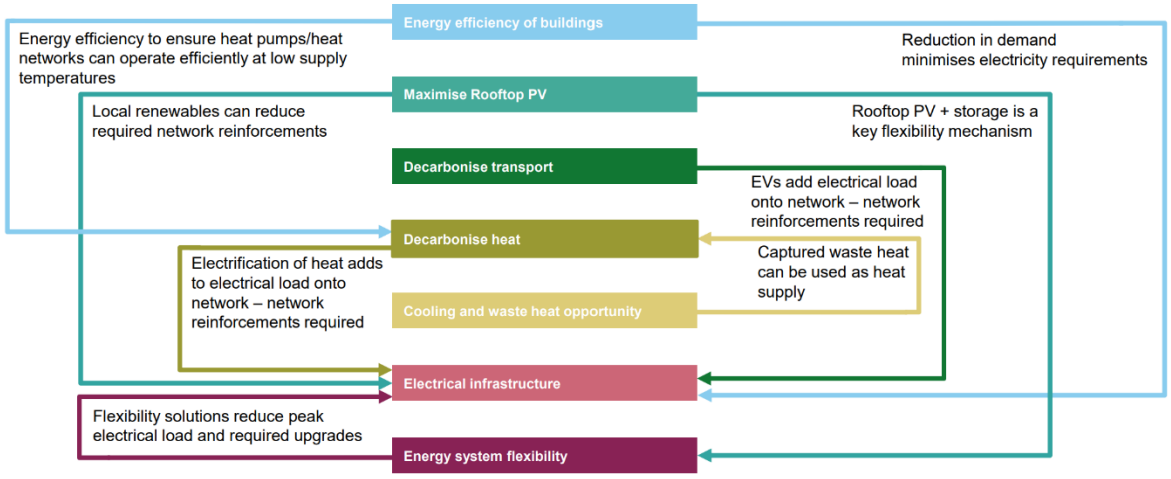
The LAEP sets out 7 priority intervention areas:

- Maximising the energy-efficiency of buildings

- Maximising rooftop PV
- Decarbonising transport
- Heat decarbonisation
- Waste heat capture
- Reinforcement of electricity distribution network
- Rollout energy system flexibility



There are numerous interdependencies and interactions between the priority intervention areas. The figure below highlights the importance of a whole system approach with a coordinated programme of delivery to meet the net zero carbon target by 2040.



The following considers each of these areas in more detail.

Maximising the energy-efficiency of buildings

The City Plan 2040 encourages the retrofit and refurbishment of existing buildings to achieve high energy-efficiency as well as high sustainability standards for new buildings. While changes in technology, policy and culture are increasing the number of energy-efficient new buildings, it is critical that the large existing urban building stock is retrofitted in order to meet the UK's net zero carbon targets.

Demolition and new build can be very impactful on the environment, due to the embodied carbon associated with the extraction, transportation, and production of new materials, energy required for the construction work itself and from unrecycled building waste materials. There are also noise, and air quality impacts of construction sites to be considered.

Retrofitting existing buildings is a principal way of reducing the carbon emissions of the construction industry and in the City. Different levels of retrofit can help strike the right balance between a low-carbon project and one that works for final users.

The opportunity to retain and retrofit existing buildings, which follows circular economy principles, must be fully explored and prioritised before a project team considers demolition of any kind. This decision must be explored at the earliest possible stage, ideally brief development stage, to achieve the maximum impact.

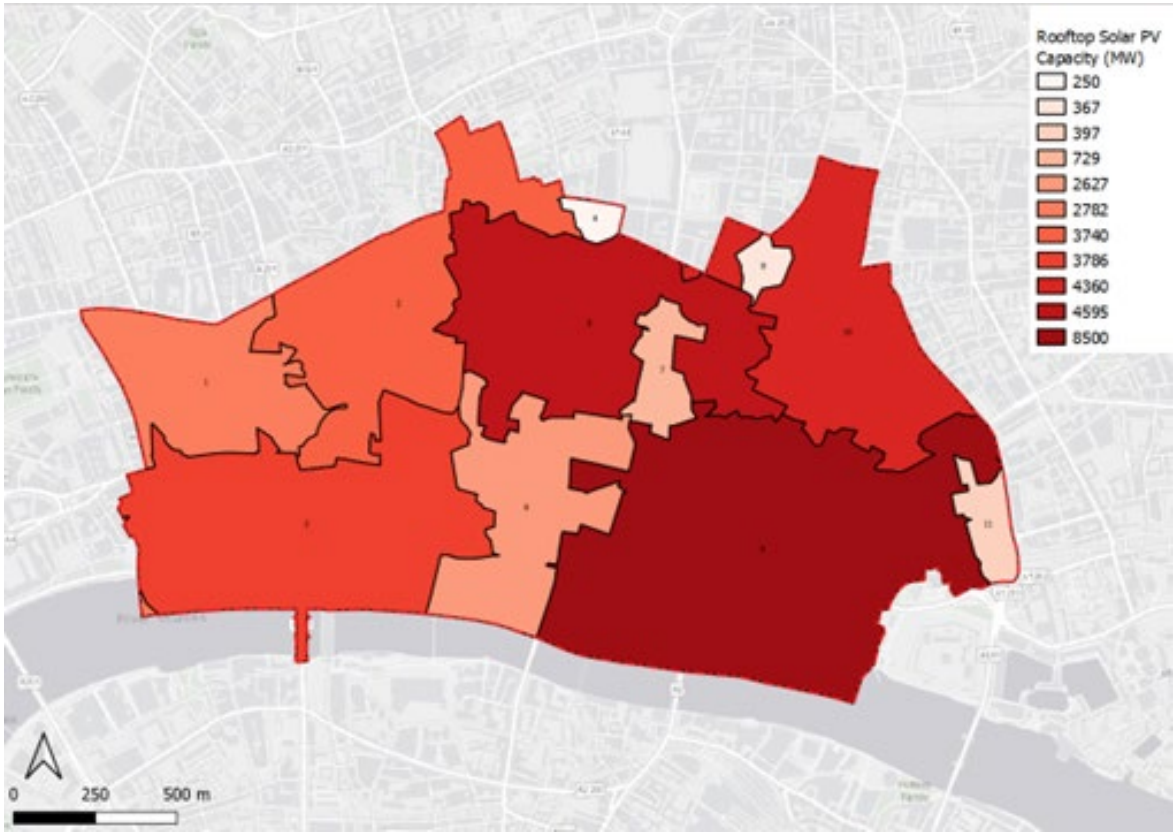
The City Corporation requires considering retrofit as a means of improving the sustainability of existing buildings, reducing carbon emissions from development and maintaining or introducing a vibrant mix of building types and uses within them, to contribute to futureproofing the City and transitioning to a net zero carbon

City by 2040. Retrofit is likely to result in a more sustainable form of development than new-build when considering the whole-life impact on the environment.

Maximising Rooftop PV

Due to the location and nature of the City, renewable energy generation technology options are quite limited. The primary feasible opportunity for local energy generation comes from rooftop Solar Photovoltaic (PV) panels.

Zonal distribution of maximum PV rooftop capacity.



Maximum PV deployment is x40 times installed capacity.

Throughout the year the generation achieved via full deployment of rooftop PV accounts for ~3% of the total electricity demand.

The City's dense, urban context means that opportunities for local low-carbon energy generation are limited. However, the technical analysis and optimisation modelling undertaken for this plan communicates that there are still benefits of maximising the deployment of rooftop PV in the area, which will support in delivering low-cost, zero-carbon energy to residents and businesses. Other

opportunities for Building Integrated PV (BiPV) including external wall PV, Solar tiles, Solar Glass and Solar Shading should also be assessed in detail and implemented if proved to be viable. This plan recommends that the City Corporation should aim to deploy rooftop PV on all feasible City Corporation assets, to be delivered alongside energy efficiency retrofits, and encourage uptake among building owners and developers through education and engagement. The maximum utilisation of rooftop PV in all modelled scenarios points toward the requirement for widespread deployment to all feasible locations. By 2040, at least 30MW of rooftop PV should be deployed across the City's buildings, resulting in ~34GWh of local electricity generated annually.

Transport Decarbonisation

As road transport becomes increasingly electrified, a significant rollout of electric vehicle charging infrastructure will be needed to ensure the needs of residents and vehicles are met. This will include installation of public chargers located at workplaces and destinations and encouraging others with off street parking and loading bays to install rapid charge points. The City Corporation have a detailed transport strategy which covers all forms of transport, as well as an EV infrastructure forecast which extends to 2025. These focus on the voices of residents and workers within the City to make it safer, prioritise pedestrians and active transport whilst also providing cleaner and lower carbon streets.

The modelling carried out for this plan supports the electrification of transport, and thus the scaling up of public and private EV charging infrastructure within the City. By 2040, there should be a total of 3MW of standard EV charging infrastructure installed and 14MW of rapid EV chargers installed within the Square Mile. This includes the installation of chargepoints across City Corporation assets, as well as advocating and supporting local businesses with installation, to enable private sector rollout. Alongside electrification, this plan supports the City Corporation's ambitions to reduce motor vehicle traffic by 25% by 2030. This will minimise charging demand within the City, as well as reduce congestion, making the area more accessible to active travelling such as cycling and walking. This includes expanding and developing the identified plans to reduce freight and last-mile delivery logistics within the City through consolidation services and last-mile hubs.

Heat Decarbonisation

The majority of the current building stock within the City of London is heated by natural gas boilers, which will need to transition to a low carbon heat source by 2040 in order to meet the City's net zero ambitions. The City's dense building stock and concentrated demands makes it an area that is well suited to heat network

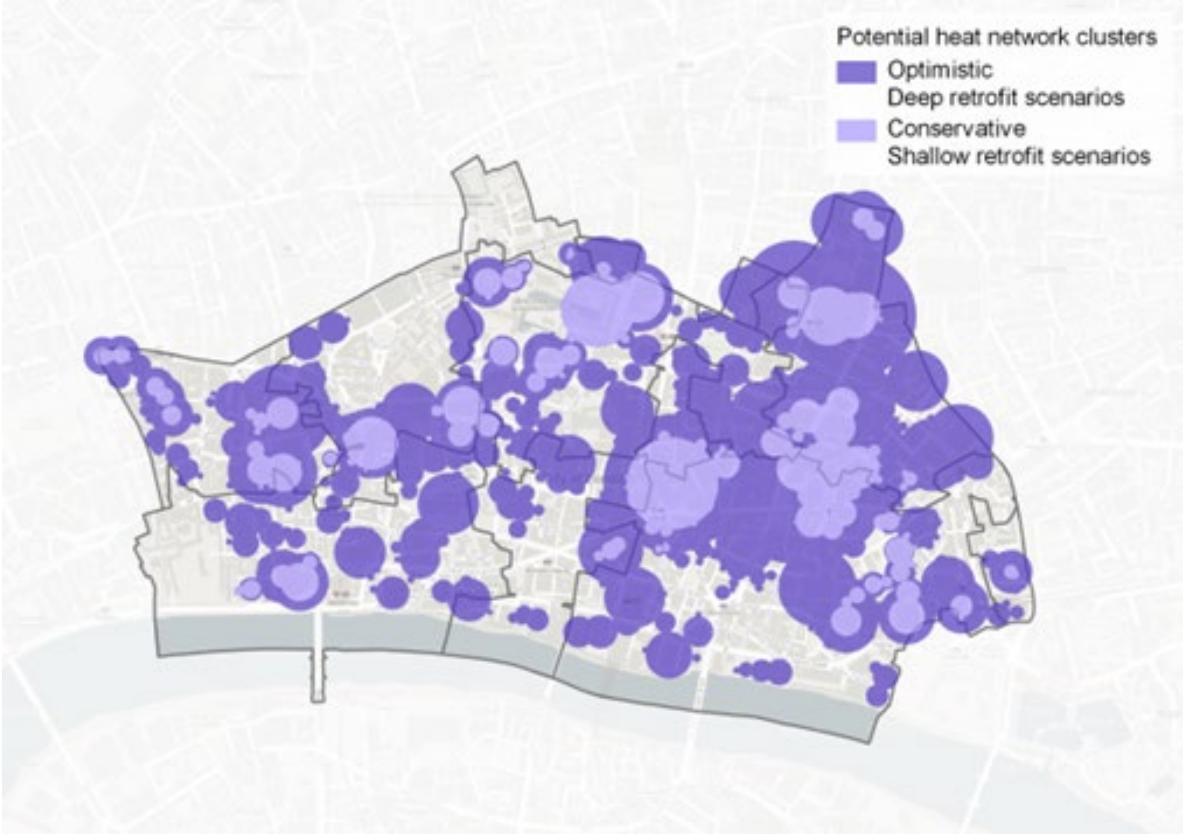
development, which has been explored through the technical analysis and modelling carried out as part of this plan.

The current heating & cooling network is located in the northwest of the City, with the Citigen plant located just north of the City boundary on Charterhouse Street in Islington. Decentralised energy is currently supplied via the Citigen tri-generation CCHP owned by Eon. CHP generation produces heat and chilled water which are distributed locally to premises to meet their heating and air conditioning requirements via separate heating and cooling networks. The CHP plant runs on gas, with electricity produced going into the National Grid. In 2021, Citigen installed a 4MW heat pump utilising waste heat from the London Aquifer to reduce carbon emissions by 30%. The Citigen network serves numerous City Corporation buildings including the Guildhall, the Barbican Arts Centre, the Guildhall School of Music and Drama, the Museum of London and London Central Markets (Smithfield) as well as other commercial customers. There have been considerable additional loads joining the network in the last 3-4 years.

The draft City Plan 2040 encourages decentralised energy networks where feasible and supports developments that incorporate connections to existing decentralised networks. However there has been limited extension of the network since its conception in 1998. Extension to the south would turn the present radial system into a loop system offering good prospects for such buildings as the Criminal Court, St Paul's Cathedral, and areas such as Paternoster Square and Gresham Street. New developments in the north of the City and public realm works also offer opportunities for network expansion.

The Local Area Energy Plan recommends that the City Corporation should explore the potential for heat network development opportunities within the City. This includes the expansion and decarbonisation of existing heat networks in the area, waste heat offtake opportunities, and enabling existing and new developments to connect to future networks. For buildings where a future connection to a heat network is deemed to be infeasible or unlikely, alternative low carbon heat sources will need to be explored, such as heat pumps or hydrogen boilers. Heat pumps will have a role to play in the future energy system irrespective of the other systems/ vectors i.e. heat networks and hydrogen. Therefore implementation of heat pumps within buildings which are likely to not be connected to a heat network or served by a hydrogen grid provides a no regrets route to decarbonisation. There is potential for heat decarbonisation through the use of renewable heat sources available in the City, such as the air ground and water. This included the use of air source heat pumps and the Thames.

Optimistic and conservative heat network clusters:



Risks and Mitigation

The network runs on gas and heat pumps. Citigen plans will deliver lower carbon heating and cooling, but further decarbonisation will be required to reduce the carbon intensity to ensure the City's trajectory towards zero carbon.

Further expansion of the network is expensive and would require the laying of additional pipes, which are likely to result in highways and other disruption.

The cost of expansion is estimated at between £15,000 - £20,000 per metre. Extending the network by 1km would cost approximately £20 million.

The fixed metal nature of the pipework requires additional space for welding and fitting and the hydraulic capacity of the present system are a constraint to functionality.

Disruption to highways can be minimised through use of existing pipe subways and basements for pipe and cable routes.

New development can be subject to conditions to ensure development is constructed with capacity to connect to the network.

Capital funding of approx. £75,000 from the Heat Networks Delivery Unit (HNDU) of the Department Business, Energy, and Industrial Strategy (BEIS) is available and the City Corporation are progressing an economic and technical feasibility study with Citigen to consider the potential for expansion of the network.

The UK Government recognises that accelerating the deployment of heat networks is key to meeting the nation's net zero goals. It is seeking to increase the proportion of the UK's heat supply that comes from heat networks from the current level of 3% to 18% by 2050.

Its forthcoming heat zoning regulation has the potential to be a game-changer for heat network operators, investors, and the broader market. It is expected to require all new buildings within the zone to connect to a heat network, along with all existing large non-domestic buildings and all existing large public sector buildings. The government proposed that all buildings with an annual heat demand of 100MWh or more be defined as "large" for the purpose of the regulations.

Waste heat

Capturing and utilising heat which is produced as a by-product from other processes is an effective and efficient method of providing low carbon heating to buildings directly or via heat networks. This can be via building scale energy centres or larger network scale energy centres as a source for heat pumps. The latter has the additional advantage of allowing the buildings that otherwise would not have access to a waste heat opportunity due to location to benefit from it whilst also providing efficiency improvements of large scale waste heat capture. Even compared to air source heat pumps, which are commonly proposed to replace gas boilers, waste heat sources can offer a reduction on electricity demand as the heat they produce is normally at a higher initial temperature and therefore requires less energy to be 'boosted'.

In dense, urban areas such as the City, waste heat is often readily available from a range of sources such as building cooling plant and London Underground ventilation shafts. The location, temperature and quantity of potential heat from these sources should be mapped in parallel to any heat network studies. Waste heat from cooling in particular is of interest to the City which has a large proportion of non-domestic buildings such as offices and businesses with servers which require constant cooling. Opportunities to share this heat across the area boundary with neighbouring boroughs should also be explored.

It is recommended that the Local Plan is updated to mandate new developments with a waste heat source to be enabled for heat offtake. This could also be

encouraged through development of a waste heat pilot study to present the financial and carbon benefits to the asset owner.

Electrical infrastructure

London's electricity network must be fit for purpose in order to be competitive and comparable to other world cities in terms of resilience, quality of supply, and the ability to deliver new connections. Electricity forms the greatest proportion of energy use in the City due its use in IT, cooling, heating, and lighting and other appliances. The requirement in the City Corporation's Climate Action Strategy and in individual developer, owner, and occupier corporate social responsibility plans, to move to net zero carbon will result in an increase in all electric buildings. As more of London's transport becomes electrically powered it is likely that a larger share will also be consumed by transport sectors. Electric network failure is among the top risks to the City Corporation.

Where are we now?

The forward planning and funding mechanism for electricity infrastructure is controlled by Ofgem through the Distribution Price Control Review mechanism (known as RIIO ED-1). This runs from 1st April 2015 – 31st March 2023. In March 2014 UKPN revised its Business Plan which has opened up the electricity market to smaller suppliers and there are independent connection partners in the City.

UK Power Networks (UKPN) has installed a 33KV network that supplies all new City buildings requiring more than 5MW of electricity to accommodate development in the Square Mile and provided increased capacity and greater resilience to buildings.

A new subterranean electricity superhighway was completed in 2016 from South-East London to East London to deliver essential electricity supplies across London, connect substations north and south of the River Thames and meet growing demand. This was the third and final phase of the project to install cables between SE London and the City.

The potential inability of investors to finance electricity infrastructure ahead of demand can have an impact on the cost and delivery times of development in the city. However, an additional £150 million investment was secured by UKPN through large scale projects. In 2018, 348-Megawatt capacity was provided at Limeburner Lane (in the City) substation and Osborn Street and Brick Lane substation (outside the City) which can generate sufficient supply for 34 major new developments and is the largest amount new electric capacity installed since 1960's. It is estimated that this is enough power for 15-20 years and sufficient for growth of the City Cluster.

Existing cables along Bishopsgate have resulted in 33KV of power supply to the City Cluster where much of the new office development is coming forward.

The London Energy Plan maps supply and demand indicating projections of heat and electricity infrastructure. The plan considers how demand could be shifted from peak times through retrofitting of the built environment, increased use of electrically powered transport and smart energy solutions. The energy supply in the future will need to be met through cleaner sources, delivering *'decarbonised electricity'* to meet EU obligations and ensure environmental sustainability. Development that incorporates infrastructure that allow for local generation such as heating and cooling networks, smart grids, and collective battery storage to enable demand supply side flexibility and peer to peer local energy trading would be supported. Smart and intelligent energy systems which seek to provide a more efficient sustainable and resilient supply, using control energy systems to predict demand and avoid peaks, to cut costs and bills, reduce demand and minimise emissions would also be supported.

Risks and Mitigation

Account should be taken of the need to conserve resources and deliver energy efficient buildings to minimise future demands. Temporary building supply for the construction phase should be identified in conjunction with electricity providers including estimated load capacity, substations, and route for supply.

There is risk of transient faults from London high voltage activity.

Upgraded substations are not in close proximity to new developments and licences are required to facilitate road works under the Highways Act.

The adopted City of London Local Plan 2015 and the draft City Plan 2040 require early engagement between developers and utility providers to assess utility supply needs and ensure that these are put in place, or planned for, early in the development.

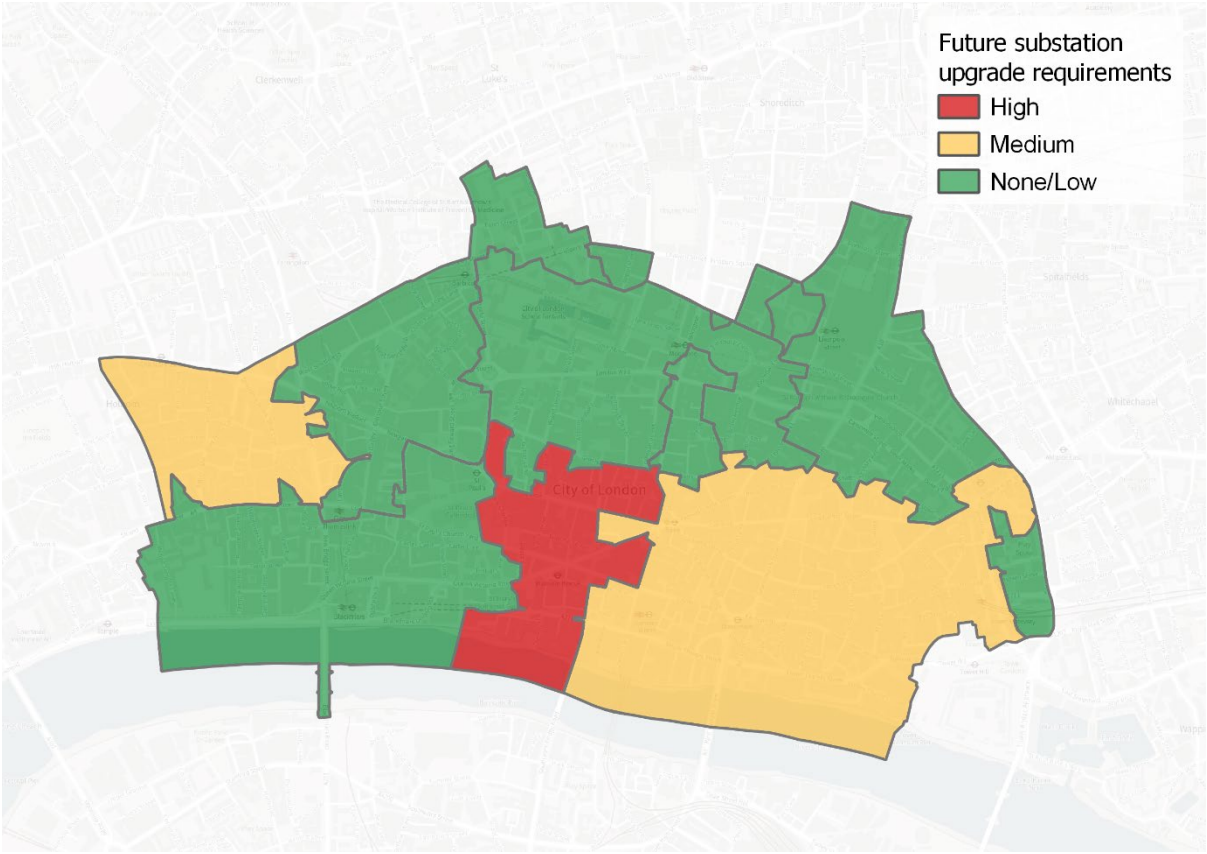
The City Corporation liaises closely with utility providers on an ongoing basis and works closely with Citigen in the delivery of lower carbon heat and energy.

The adopted Local Plan 2015 and the draft City Plan 2040 require developers to adopt the highest feasible and viable sustainability standards, seeking to reduce potential future energy loads and deliver net zero carbon by 2040.

Electrical infrastructure network upgrades are a priority intervention to allow new local renewable assets to connect to the electricity grid, as well as meeting the increased electricity demand due to growth and a shift to electrified transport and

heat. This plan recommends that the City Corporation continues to engage and coordinate with UKPN to understand the implication of growth and electrification on the electricity infrastructure in the area, and to work collaboratively to deliver additional capacity where required.

Map of modelled future primary substation upgrade rating from the optimisation analysis undertaken within this study.



Energy system flexibility

To minimise the need for further grid infrastructure, and to deliver a resilient energy system to businesses and residents, this plan recommends that the City Corporation will need to support the uptake of flexibility technologies. These include demand side response and smart appliances, thermal/battery storage and vehicle-to-grid, alongside more. The City Corporation should look to embed flexibility technologies in their own assets, condition developers to design flexibility solutions into new buildings, and encourage energy stakeholders and local businesses to participate in flexibility pilots such as testing smart appliances and time of use tariffs (TOUTs) which can become replicable use cases for delivering flexibility.

Heat networks - Gas network

The City's gas network is operated by Cadent and currently serves ~ 90% of properties across the area.

In a net zero future, the heat demand met by natural gas today will need to be met in the future through either electrification or the use of low carbon hydrogen.

Where are we now?

The Cadent London network extends from the National Grid owned National Transmission System (NTS) to supply the City with gas from the Bacton gas terminal in Norfolk. Most gas pipes in the City are Victorian over 120 years old, susceptible to leaks and are deep beneath the City's streets. The London Supply Strategy/30/30 mains replacement programme aims to replace all cast iron gas mains within 30 metres of buildings by 2029/2030 with safer, durable polyethylene pipes. This may take the form of a 10-year rolling programme as a series of smaller programmes. These pipes are capable of carrying a wider range of gases to improve safety and reduce methane emissions.

The IDP from 2013 indicated likely sufficient capacity to meet the City's demand for gas until 2026. The Cadent business plan peak gas demand forecast in 2018 indicates minimal change over the next 10 years. The majority of investment relates to the replacement programme and small network capital investment in order to meet peak capacity requirements.

The UK Government's decision on hydrogen for heating is expected in 2026. Currently there is considerable uncertainty regarding the future direction of energy policy and the exact role hydrogen will have to play. Cadent is focussed on enabling the transition from natural gas to other fuel sources as national emissions ambitions and targets develop. Cadent's primary focus is therefore on the role of hydrogen as a possible energy vector within the future energy system. Cadent has a detailed understanding of the existing infrastructure within the City and the associated transition requirements that are required to support the transition.

The Irons Mains Replacement Programme developed by Ofgem and the Health and Safety Executive has been running since 2002 and is focused on switching old aging iron gas mains with hydrogen ready piping. Within the City, Cadent has currently replaced 92% of the low-pressure network to piping that is fit to distribute natural gas, and hydrogen in the future, if it were available (there is still significant uncertainty regarding its the future availability and affordability). This helps to mitigate a significant barrier to hydrogen deployment as infrastructure works on network replacement and routing has already been completed. Beyond gas grid

conversion, the Maritime Hydrogen Highway project is a development programme looking at the feasibility of establishing a national hydrogen network with the River Thames used as a transportation route, facilitating the landing and distribution of hydrogen to inland port terminals.

Risks and Mitigation

Risks

- The aging gas network in the City has resulted in numerous leaks and average costs of replacement are £1,000 per metre.
- The gas pipes are located at a greater depth than other utilities and when replaced the 'old' apparatus is removed which can create disruption and result in repairs to highways. In highly sensitive traffic areas, there can be difficulties accessing.
- Extensive stakeholder engagement can be necessary to co-ordinate works with other utility providers, working with TfL and buses to agree road closures, diversion routes and traffic management plans.

Mitigation

There is Cadent gas programme funding for the 30/30 programme.

Technological advances have enabled a robotic camera 'Cisbot' to remotely seal joins in gas pipes from the inside along linear pipes. So far this has only been carried out in one area of the City, however, it may be used elsewhere in the City as technology advances. This increases the longevity of the pipes and reduces the risk of leaks in the system therefore improving safety. New technology significantly reduces the footprint of mains excavation and improves efficiency of the pipe replacement work.

Cadent have an extensive customer and stakeholder engagement programme which is supported and enhanced by the City Corporation to improve the services provided. The City Corporation will work with Cadent ensuring delivery with minimal disturbance to City streets, businesses and residents and seek to co-ordinate street and public realm enhancement works.

2.4.6 Digital

Telecommunications provide City businesses with connectivity, speed, and resilience to support business operations throughout the Square Mile and its failure and cyber security are among the top risks to the Corporation. The Mayor of London has highlighted internet connectivity as a key public utility. Smart Grid technology

from smart travel to cyber security is changing how we work and live. Future proofing businesses with the latest technology, can enable business to be carried out easier and ensure that the City is highly attractive to businesses, residents, and social visitors.

Fibre to the Premise (FTTP) or full fibre is recognised as next generation access technology. There is expectation that new development will include ducting and fibre optic cabling unless there are technical issues that prevent this or abnormal costs.

Where are we now?

The City of London has invested in a world leading gigabit Wi-Fi network which offers speeds up to 180 megabits per second. Approximately 150 access points are live across the City. The City of London is served by over 10 independent tier 1 telecommunications operators, (each with its own fibre optic network deployed in the ground). There are 9 fibre networks in the City. Openreach Ltd has completed Fibre to the Premises (ultrafast broadband) to over 12,000 premises. Openreach and other broadband operators are working to provide Fibre to the cabinet to deliver superfast broadband services.

The City Corporation actively engage and collaborate with developers and infrastructure providers on an ongoing basis. The City Corporation promotes the standardised wayleave toolkit to improve connectivity for business and speed up the installation of broadband. Development is required to provide a communal entry chamber to enable multiple providers to service a building without the need for significant disruption in the installation of new supply.

In 2015, the Mayor launched the digital connectivity rating scheme to be delivered by WiredScore. WiredScore certification provides a score of five key aspects of a building's digital capability, covering resilience, future readiness, mobile connectivity, choice of providers and user experience. Developers will be expected to undertake an assessment of the connectivity of major new office buildings or refurbishments using such a certification. Ensuring that buildings are optimised for connectivity needs and expectations can provide resilience, safeguarding buildings from obsolescence by building to certain standards and avoiding future retrofitting costs for next generation technology. Many tenants identify reliable internet connection as a main consideration when selecting office space searches, in particular start-ups and SME's requiring adaptable workspaces.

The City Corporation supports delivery of 5G across the City. EE undertook trials of 5G in 2018, with roll out of 5G capability in the City underway through a range of

mobile networks. The City Corporation's wireless delivery partner CTIL is encouraging telecoms providers to roll out small cells using street furniture. 5G requires significantly more small cells than 4G, approximately one every 100 metres and there is not enough street furniture in the City to accommodate.

It is important that the City Corporation and developers collaborate at an early stage to how infrastructure can be accommodated as part of development, how signal is propagated through properties and avoid reducing mobile connectivity.

Risks and Mitigation

WiredScore certification is not a legal requirement.

5G speeds require fibre optic cables which require a physical trench and proximity to breakout point on the fibre network. In some cases, operators have concluded that servicing the site is not viable nor practical.

5G requires a very high density of tiny antennae. Shorter wavelengths and super high frequencies only work if devices are in close proximity to antennae. Trees and buildings are obstructions.

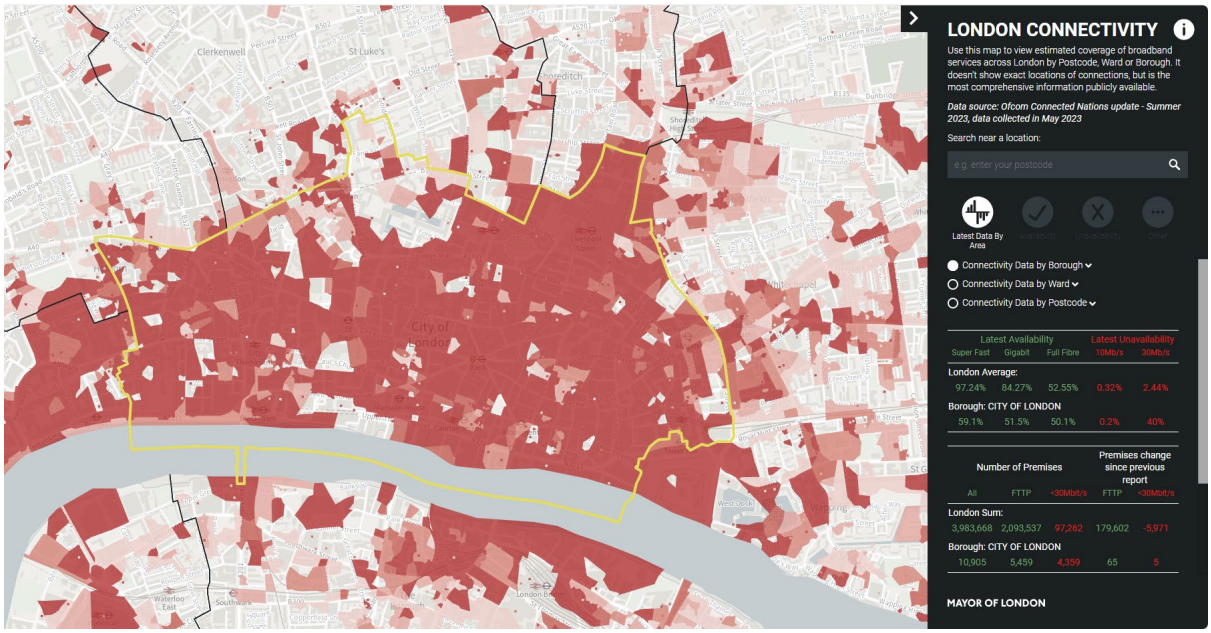


Figure 3 Quality of broadband services

The City Corporation will continue to work with developers and building occupiers through the planning system and its digital team to promote and deliver improved connectivity.

2.4.7 Noise

As London's principal business location, the City has a complex, densely developed, and intensively used built environment where multiple activities occur in very close proximity. Noise arises from construction and demolition works, building services plant and machinery, leisure and licensed premises and servicing activities. Noise sensitive developments in the City include residential developments, including hotels, health facilities, schools and childcare provision and open spaces. The City Corporation has a statutory duty to manage and minimise exposure to excessive and unnecessary noise, whilst ensuring that the City can function as a business centre.

Where are we now?

The City of London Noise Strategy 2016 – 2026 addresses noise associated with new developments, transport and street works, complaints and the protection and enhancement of acoustic environment and soundscape. The City's Code of Practise for Deconstruction and Construction Sites provides guidance on procedures to minimise noise impacts to which environmental plans must comply.

Risks and Mitigation

Site specific mitigation measures will be delivered by developers. The 'Agent of Change' principle applies meaning that the responsibility for mitigating the impact of noise lies in any new development. Planning for new development seeks to avoid, mitigate, and minimise noise and noise impacts and to protect and where possible enhance the acoustic environment in suitable parts of the City.

Development proposals must demonstrate no increase in pre-existing background noise levels resulting from new plant, equipment, or machinery. Likewise, service plans to manage waste collection, deliveries and collections and actively encouraging the use of acoustically considered loading bays can reduce noise. Planning conditions or s106 planning obligations will be used, where necessary, to limit hours of opening and address the need for monitoring and mitigation.

A complementary approach to planning and licensing regimes can also mitigate against noise disturbances particularly to minimise impact of new licensed premises.

2.4.8 Air quality

To meet health-based limit values and World Health Organisation (WHO) Guidelines for nitrogen dioxide in over 90% of the Square Mile by 2025. To support

the Mayor of London to meet WHO Guidelines for PM10 and PM2.5 by 2030. The City of London can experience high levels of air pollution due to its location at the heart of London and density of development. Poor air quality can harm human health. National health-based objectives for nitrogen dioxide and small particles (PM10) limits are not being met in the City. The City of London Air Quality Strategy fulfils the Corporation's statutory obligation to assist the Government and Mayor of London to meet European Limit Values for nitrogen dioxide and fine particles (PM10) and obligations under the Health and Social Care Act 2012.

Where are we now?

City of London Corporation published its latest Air Quality Strategy 2019 – 2024 which sets out its plans and programmes for improving air quality and reduce the impact of air pollution on public health. Its main outcomes are to ensure that the Square Mile has clean air, people enjoy good health through reduced exposure to poor air quality and that the Corporation is a leader for air quality policy and action and to inspire collaboration.

The City of London lies within the ultra-low emission zone (ULEZ) as of April 2019 requiring vehicles to meet emission standards or pay a daily charge to enter the zone.

Risks and Mitigation

The City's pedestrians and more sensitive locations such as schools, nurseries, medical facilities, and residential development are at risk from exposure to pollution from traffic in the Square Mile and emissions from building heating and energy generation systems. Alongside the Air Quality Strategy 2019-2024, the Transport Strategy seeks to implement Healthy Street plans in Bunhill, Barbican & Golden Lane, Liverpool Street, Fleet Street Area, Bank & Guildhall, Aldgate, Tower & Portsoken and the City Cluster and Fenchurch Street to reduce exposure of pedestrians to pollution through pedestrianised or pedestrian priority streets, widening pavements, enhancements to public realm creation of new public space and changes to kerbside uses. The Transport Strategy also includes a plan to complete the riverside walkway and enhance the public realm along the riverside.

To reduce air pollutants associated with road traffic 2019-2024 the City will support moving its fleet to ultra-low emission vehicles and electric where possible. The Mayor's Air Quality Fund for projects is a continuation of the London idling project jointly managed by London Borough of Camden which will support the City Cluster Zero Emission Zone through £150,000 of funding.

There are a number of electric vehicle charging points in the City. In order to support an electric vehicle fleet, the Air Quality Strategy seeks to install additional EV rapid charge points by 2025 across City Corporation sites including residential estates. The draft City Plan 2040 requires new charging points are installed in the service areas of new buildings for freight.

These projects will be augmented by the City Corporation's aim that there should be no additional on street parking and its further promotion of cycling.

2.4.9 Shifting from Gas

Gas network upgrades and reinforcements provide a safe and reliable network to generate power, meet increase in heat demands and safeguard economic growth of the City. The gas network can support district heating network extensions, to decarbonise and enable a low emission future as new sources of distributed gas facilitate greener and sustainable energy supplies into the future. The Climate Action Strategy and Local Area Energy Planning both assume a substantial, if not complete, shift away from gas by 2040, for buildings as well as heat networks.

Where are we now?

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The IDP from 2013 indicated likely sufficient capacity to meet the City's demand for gas until 2026. The Cadent business plan peak gas demand forecast in 2018 indicates minimal change over the next 10 years.

It is likely over the course of the City Plan that there will be new and emerging technologies to reduce carbon intensity, provide renewable gas and decarbonisation may change the demand for gas.

Risks and Mitigation

- The aging gas network in the City has resulted in numerous leaks and average costs of replacement are £1,000 per metre.
- The gas pipes are located at a greater depth than other utilities and when replaced the 'old' apparatus is removed which can create disruption and result in repairs to highways. In highly sensitive traffic areas, there can be difficulties accessing.
- Extensive stakeholder engagement can be necessary to co-ordinate works with other utility providers, working with TfL and buses to agree road closures, diversion routes and traffic management plans.

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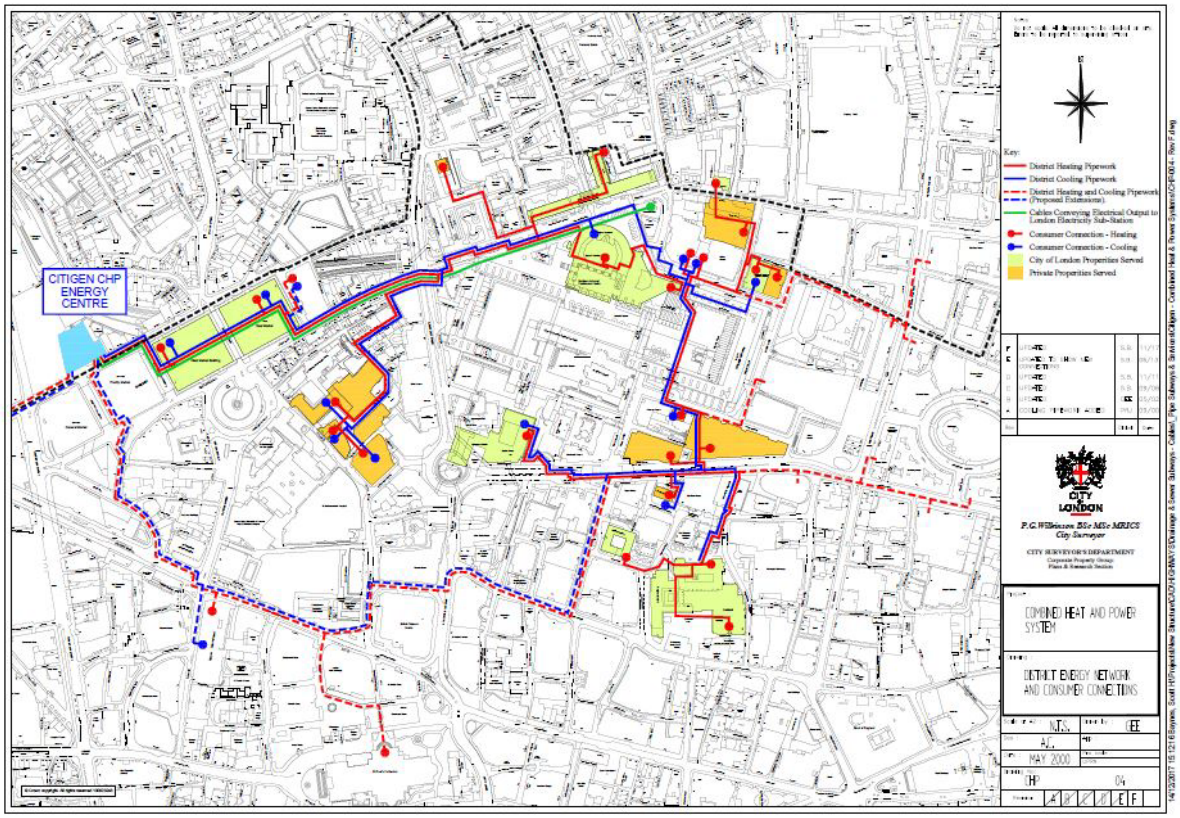

Figure 4 Schedule of projects: CHP System in the City of London

2.4.10 Pipe Subways

Expansion and integration of the pipe subway network would provide greater capacity for pipes and cables and easier access for maintenance to avoid disruption associated with street works. This would provide a means of delivering future supply particularly in areas of severe underground utility congestion.

Where are we now?

The City benefits from a network of Victorian brick sewer tunnels extending for 6km which can be used for utilities infrastructure and can be accessed without disturbance to highways and pedestrian footways. The Local Plan requires developers to provide entry and connection points within proposed development which relate to the City's established networks, utilising pipe subway routes where available and encourages sharing routes. However, the network is fragmented, and many parts of the City are not connected or served by the pipe subways. Crossrail implementation enabled the City Corporation to add capacity around Liverpool Street due to the depth of the excavation. Construction of new ticket hall left

insufficient space for utilities to remain buried under the road surface affecting existing equipment. Refurbishment of the Houndsditch/Snow Hill pipe subway is required.

Risks and Mitigation

The pipe subways are constructed in brittle red brick for which the City Corporation is responsible for the maintenance and repair under statutory powers conferred by the Secretary of State.

Due to the extensive excavation required and the engineering and logistics required it is unlikely that the pipe subways will be extended elsewhere in the City in the foreseeable future. Costs are estimated to be approx. £10,000 per linear metre and involve complex negotiations between number of different parties.

However, the City Corporation can insist that utility companies use the pipe subways rather than install apparatus directly beneath the highway to make use of the capacity available.

Mitigation

Some works to pipe subways will continue due to the deteriorating condition of the structures.

2.5 Key Areas of Change

Blackfriars

Most development in this area is post-war, with large building footprints, little or no active frontages and a lack of open space. Major transport routes are a barrier to pedestrian movement and access to the riverside walk is limited. There have been improvements along the Riverside Walk at Paul's Walk and the City Corporation's Riverside Walk Enhancement Strategy sets out plans for public realm enhancement along the riverside.

Where are we now?

A Key Area of Change has been identified to facilitate beneficial commercial redevelopment such as Puddle Dock, a key renewal opportunity site which would provide for public realm upgrades and improvements to the setting of St Benet Welsh Church Paul's Wharf. There have been advancements through City Corporation's Riverside Walk Enhancement Strategy. Development of the Thames

Tideway Tunnel will create a large new area of public realm built out into the river west of Blackfriars Bridge, which is due for completion in 2025/26.

Risks and Mitigation

Risk

Blackfriars lies within the City Flood Risk Area which may constrain development capacity to ensure safe occupation and flood resilience.

Mitigation

An update to the Riverside Strategy is currently being undertaken following the release of TE2100. The Riverside Walk will need to be widened to support better pedestrian flow and raised to meet the new floodrisk requirements from the Environment Agency.

Pool of London

The public realm in the Pool of London is in need of refurbishment. Lower Thames Street acts as a significant barrier to pedestrian movement to and from the rest of the City and air quality is very poor. There is potential for significant improvement to buildings and public realm, including through new active frontages to enhance heritage assets.

Where are we now?

This area has a number of large office developments, in proximity to a range of transport connections. The area also has a residential population at Sugar Quay, with hotel and residential accommodation at Three Quays. The riverside walk provides an accessible public space for walking and recreation. The Pool of London has been identified as a Key Area of Change to promote significant public realm improvement, enhance existing buildings, improve vibrancy whilst enhancing and protecting tranquil areas and the riverside walk for enjoyment.

Risks and Mitigation

Risk

Funding and space for public realm improvements will depend upon redevelopment/refurbishment of the existing building stock. The bulk and height of development is constrained by London Views Management Framework and Monument Views and the presence of significant Grade I and II listed buildings.

Development capacity may be constrained by the flood risk area and restrictions to ensure safe occupation and flood resilience.

Mitigation

Public realm improvements will be the main short term focus for the Pool of London. Enhanced active frontages and vibrancy at ground and rooftop levels will be encouraged through the use of retail, leisure and cultural uses. Any opportunities from new developments will be maximized for additional public space and place facilities.

Aldgate, Tower and Portsoken

The area lies on the eastern fringe of the City where there have been significant public realm improvements at Aldgate Square and a number of redevelopment schemes are proposed. There is a significant residential population, principally within the Middlesex Street and Mansell Street estates, and a need to regenerate the Mansell Street estate and improve links between the residential estates and the rest of the City. New Purpose Built Student Accommodation has opened in the area and a further scheme is proposed. There is potential for regeneration of the Mansell Street housing estate in the latter part of this Plan period.

Where are we now?

Aldgate, Tower and Portsoken is designated a Key Area of Change to support a mixed-use area which balances needs of residents, visitors, students and workers.

The area comprises the residential communities of Mansell Street and Middlesex Street and is in proximity to communities within Tower Hamlets. Enhancements will be undertaken to Petticoat Lane Market and Middlesex Street in conjunction with LB Tower Hamlets.

The policy supports a greater mix of development including commercial, residential, hotels and cultural facilities to build on the area's proximity to visitor attractions, including the Tower of London World Heritage Site, with supporting services and improvements to connectivity in conjunction with the Public Realm Aldgate and Tower Area Strategy.

Risks and Mitigation

Risk

There is a lack of funding to deliver public realm and transportation improvements. There is uncertainty over future large scale estate regeneration schemes.

Mitigation

Development opportunities in the area have the ability to secure public realm improvements, such as increase play space, provision of retail and potential for affordable workspace.

City Cluster

The City Cluster is a world-renowned centre for financial and insurance services. It is a rapidly expanding area of increasing office space and additional workers and tall buildings. There is scope for further tall building development to complement the existing cluster. The tall building cluster and concentration of businesses and workers mean that security measures, particularly area-wide security measures are needed. The Cluster is not only a significant employment and tall buildings location, it contains a number of heritage assets, including the Grade I Listed Bevis Marks Synagogue, the oldest Synagogue in continued use in Great Britain and Leadenhall Market which provides a key retail use in the heart of the Cluster and a valuable contrast to the modern development that surrounds it.

Where are we now?

The City Cluster has been identified as a Key Area of Change to support and co-ordinate with the City Corporation's City Cluster public realm vision and the Transport Strategy to deliver changes to the streets and public realm. Key issues are the delivery of an improved walking environment, rebalancing streets to reflect user needs, implementing greening and street activation programmes such as timed closures and parklets ahead of permanent implementation. The City Cluster Vision is to be undertaken in three stages to ensure delivery is coordinated with development such as 22 Bishopsgate and improvements to key streets associated with the Elizabeth Line. The City of London Noise Strategy also seeks to deliver a suitable acoustic environment for people working and commuting to the City Cluster. New developments are required to contribute through s106 to the development of area-wide security.

Risks and Mitigation

Risk

An increase in the density of development could adversely impact the environment and amenity for businesses and workers in this area, adding to congestion and air pollution. A higher density of development also increases potential security risks.

Mitigation

- s106 contributions towards the development and implementation of area-wide security measures
- Pedestrian priority traffic reduction and programme is targeted for Leadenhall Market and St Mary Axe
- The Wellbeing and Climate Change Resilience Programme will include an improvement to public spaces including St Helens Churchyard, St Andrews Undershaft Churchyard, Jubilee Gardens and a pilot SUDS projects on Bevis Marks and Houndsditch
- Safety and security measures part of a city wide HVM security programme
- A series of activations and engagement events will be held together by the EC Bid and Destination City that are welcoming and encourage public participation and social engagement

Fleet Street and Ludgate

Fleet Street and Ludgate Hill form a key part of the Processional Route linking Westminster to St Paul's. The area is a centre for the legal profession in the City, housing the Old Bailey and the Rolls Building and the Inns of Court at the Temples. There is a need for public realm and transportation improvements to enhance the environment of the area and deliver improvements in air quality. The Fleet Street Principal Shopping Centre is in need to improvement to attract a wider range of retailers. However, development must not impact on views of St Paul's Cathedral from the Processional Route. The City Corporation is delivering a new court complex, police headquarters and enlarged square at Salisbury Square on Fleet Street.

Where are we now?

Fleet Street and Ludgate Hill have been identified as a Key Area of Change to support aspirations of the City Corporation for the area as a centre of judicial and related business and support delivery of the Fleet Street Courts and Lanes Enhancement Strategy. Fleet Street Quarter BID supports business development in the area.

The area includes a major road junction at Ludgate Circus, the cycleway and Thameslink rail station and includes St Paul's Cathedral, a major visitor attraction. There is support for enhancing the public realm and open spaces through pavement capacity improvements and additional greening. The City Corporation in partnership with the Ministry of Justice is developing a new flagship court facility for London to tackle cybercrime, fraud and economic crime. In addition, new development will include tall buildings on appropriate sites.

Risks and Mitigation

Risk

The proposed law courts and associated projects represent a substantial funding requirement.

Mitigation

Through the City's Transport Strategy and Public Realm enhancement programme there is funding for Healthy Streets Plans and public realm improvements. New development will bring about enhanced office floorspace, increased pedestrian footfall and public realm opportunities.

Smithfield and Barbican

Smithfield and Barbican comprises a vibrant cultural quarter focused on the Barbican and Museum of London, St Bartholomew's Hospital, Smithfield Market, heritage assets and residential units. The opening of the Elizabeth Line has brought an increase in numbers to this part of the City and it will continue to increase with the proposed relocation of the London Museum to Smithfield. The City Corporation's Markets Co-Location Programme will result in the move of the Smithfield Meat Market to a new location at Dagenham Dock.

The area contains the largest concentration of residential units in the City, on the Barbican and Golden Lane Estates and within the Smithfield area.

Where are we now?

Smithfield and Barbican has been identified as a Key Area of Change to support the significant change occurring in the area, including the Museum of London and relocation of the Meat Market. The area is a centre for cultural and creative uses, with the Barbican and Guildhall School of Music and Drama, the museums, galleries, and libraries which can strengthen resilience of the City by building a mixed economy. The fastest growth in creative industries within music, performing and visual arts. Cultural Mile is home to many creative and digital industries and creative clusters. There are many opportunities within the Smithfield and Barbican area to provide an improved cultural offer and differentiated workspace offer.

Smithfield Meat Market is proposed to be moved to London Borough of Barking and Dagenham as part of the wider consolidation of the City Corporation's wholesale markets onto a single site. The potential for re-use of the Central Market Buildings (East and West) is being considered.

There are a series a works required to the Barbican podium, waterproofing, drainage, and landscape works to Ben Johnson, Breton, and Cromwell High walks.

Risks and Mitigation

The relocation of Smithfield Market is currently undergoing a Private Parliamentary Bill until mid 2025. After design and planning applications, construction is anticipated to be from 2029-2035.

The City Corporation is working to create the narrative to develop business support and ensuring that there is a portfolio of affordable and flexible workspace that will provide employment opportunities in a mix of land uses and promote the area as a place of innovation in creative enterprise. A range of incentives such as shorter-term rents, temporary meanwhile uses, cooperating with other creative districts and applying agent of change principles can protect existing venues and also attract new businesses.

There is support for public realm projects to improve pedestrian permeability and connectivity and manage traffic levels to improve air quality.

Liverpool Street

Liverpool Street has seen a change in the number of people arriving at or leaving the area, following the opening of the Elizabeth Line. Further significant development is both underway and planned for the area, resulting in increase in office floorspace, increased retail activity and vibrancy during the evening and at weekends.

Where are we now?

A number of Transportation and Public Realm works are required to safely integrate the additional pedestrians, improve wayfinding and urban greening along main thoroughfares in conjunction with the Liverpool Street Area Strategy. The area is designated as a Principal Shopping Centre, where further retail development will be supported, alongside additional leisure and the night-time economy. The first phase of the Liverpool Street Integration was completed in 2021/22. Further improvements to the public realm, and in particular the walking environment are planned.

Risks and Mitigation

Risks

Increased pedestrian footfall from the Elizabeth line, new retail destinations and an increase in office space will result in congested streets.

Mitigation

There is funding support via S106, CIL and highways S278 contributions for improvements to local infrastructure and public realm. A Healthy Streets Plan is being developed setting out an integrated approach to improving the public realm and managing traffic to support delivery.

Thames Riverside

The River Thames is an important feature for London, tourism, recreation and a corridor for freight and pedestrian movement.

Where are we now?

The Thames Policy Area includes two key areas of change, Blackfriars, and the Pool of London. The adopted Local Plan and draft City Plan seek to deliver public realm improvements, address flood risk issues, and improve accessibility to this area from the rest of the City.

Walbrook Wharf is the only active river wharf in the City and will be retained as a waste facility and potentially used for freight logistics. Swan Lane Pier is a redundant pier, and the City Corporation seeks its reinstatement. River passenger services are provided via Blackfriars Pier.

Risks and Mitigation

Risk

Development capacity maybe constrained by the flood risk area to ensure safe occupation and flood resilience.

Mitigation

Although at inception stage there is funding from TfL for the Riverside Walk. The Thames Policy area crosses neighbouring local authorities and any improvements or projects are likely to be in partnership.

2.10 Rest of the City

There are other places outside the Key Areas of Change that are likely to experience change over the Plan period until 2040 and will require infrastructure investment in this period.

Where are we now?

There are a number of public realm enhancement strategies that cover parts of the City outside Key Areas of Change, including Bank, Chancery Lane, Cheapside and Guildhall and Fenchurch and Monument.

Bank Area Enhancement Strategy sets out measures for road danger reduction, transportation, and ways to improve the pedestrian environment. Implementation of the Bank on Safety scheme from 2018 around Bank Junction has helped make streets safer, more attractive to walk and cycle and delivered air quality and noise improvements. The All Change at Bank scheme is looking to make these changes permanent and deliver significant further public realm enhancements.

Chancery Lane is the City's legal quarter and public highways and open spaces have been better connected through a series of street enhancements. A new experimental scheme on Chancery Lane has removed through traffic during the day, except for taxis. Experimental schemes on Cheapside (bus and cycle only between Bread Street and Milk Street) and Old Broad Street and Threadneedle Street remain in place after being made permanent in May 2023.

Cheapside and Guildhall area enhancement seeks to better connect attractions such as St Paul's Cathedral, and the Barbican and support the delivery of Destination City. This area has undergone significant change since 2010 with the opening of One New Change and other retail developments, and significant public realm investment.

Risks and Mitigation

Some projects are subject to internal Corporation review and funding is not confirmed.

3. Next steps

The growth and change over the period of the draft City Plan necessitates a broad range of infrastructure to support its goals. The infrastructure delivery plan list of projects has been prepared with projects at a variety of stages, that are essential to the function of the City, that have been approved at a committee and have budget attached, projects which would be a 'nice to have' so they are anticipated for later phases of the plan period.