OPDC
OLD OAK AND
PARK ROYAL
DEVELOPMENT
CORPORATION

Industrial

Supplementary Planning Document

23 November 2023

MAYOR OF LONDON


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Contents

1 Introduction

What is an SPD?

1.1. A Supplementary Planning Document (SPD) can provide additional information and guidance to explain how planning policies in OPDC's Local Plan can be successfully implemented. SPDs cannot create new planning policies.

1.2. OPDC is preparing a series of SPDs, including this Industrial SPD.

Why is an Industrial SPD needed?

1.3. OPDC's adopted Local Plan sets out a Vision and Strategic Policies to guide how the OPDC area will be transformed over the next 20 years. It also includes detailed development management policies that are used to assess different aspects of development, such as housing; transport; open space; employment; and environment and utilities, when planning applications are submitted.

1.4. The OPDC area has London's largest Strategic Industrial Location (SIL), with over 1,700 businesses, employing around 43,000 people. OPDC's SIL plays a significant role in the local, London and national economy and this is recognised in OPDC's Local Plan. There are a number of industrial related strategic and development management policies, with the fundamental priorities being the need to protect, strengthen and intensify the industrial area, and to support the delivery of high quality and a diverse range of industrial floorspace and jobs.

1.5. The Local Plan also indicates the spatial locations where industrial uses would be acceptable across the OPDC area, and opportunities to deliver a net uplift of over 250,000 sqm of industrial floorspace by 2038.Varying business needs and demand from a range of broad industrial type activities is anticipated and has already been planned for, including a range of industrial employment growth sectors and a mix of spaces.

1.6. Regeneration, on the scale envisaged in the Local Plan will shape the local and subregional economy and strengthen London's role as a global city. It will also provide new and existing communities with access to a range of different jobs and training, as well as support local businesses to access new supply chain opportunities.

1.7. Through the Industrial SPD, there is the opportunity to guide and inspire planning applicants towards exemplar forms of industrial development that can create the best environment in which to work and operate a business, and in doing so, create more opportunities for local people and communities. The Industrial SPD provides additional information and detail on how OPDC will implement industrial related policies in the Local Plan. The SPD will apply generally to the whole OPDC area, with a core focus on:

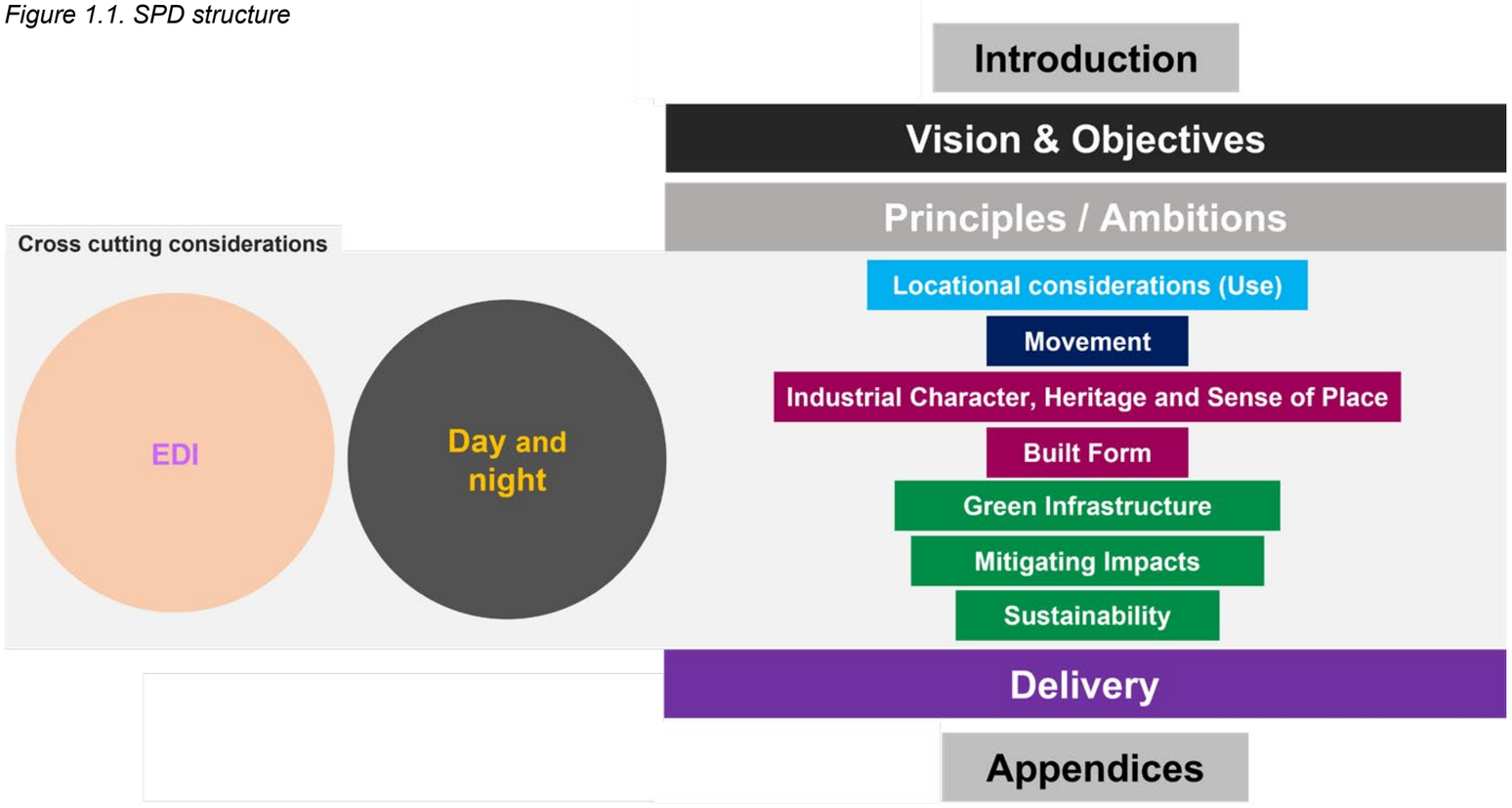
- how industrial developments, within and outside of SIL, can be intensified and integrated within the urban fabric and demonstrate best practice from a design, placemaking and sustainability perspective;
- how industrial developments can respond to local character, by setting out spatially specific design guidance where appropriate; and
- development that happens on/within sites.

What is the structure of the SPD?

1.8. The SPD follows the same structure and uses the same chapter colours as OPDC's Local Plan, with sections setting out guidance and information in the form of:

- **Principles** – Proposals will be required to comply with Principles.
- **Ambitions** – Ambitions set out more ambitious standards. They are not required in planning policy and will not be a material consideration when determining a planning application but have been provided as guidance.
- **Signposts** – Signposts direct readers to other relevant national, London or local guidance.
- **Supporting text and illustrations** – Supporting text and illustrations are used to expand on and support Principles and Guidance. The illustrations are diagrammatic and not intended to represent specific planning proposals or sites. They are aiming to convey as much guidance as possible to optimise their usefulness. OPDC notes that individual sites will be unique, and the appropriate application of Principles and Ambitions will always need to be considered on a case by case basis. To avoid lengthy portions of supporting text, the Industrial SPD generally doesn't include supporting text for guidance that coordinates Local Plan policies. Instead, it directs readers to the relevant supporting text in the Local Plan. Where guidance is based on further analysis and community consultation, supporting text is provided.

Figure 1.1. SPD structure



1 Introduction

1.9. Cross cutting issues such as opportunities to support equity, diversity and inclusion (EDI) outcomes and how to support a 24-hour industrial economy have been considered and embedded throughout the SPD. More information on how OPDC has considered EDI issues can be found in the EDI statement which will be published alongside this SPD.

How does the Industrial SPD relate to other OPDC Supplementary planning documents?

1.10. The Industrial SPD does not cover anything that is off site/ plot.

1.11. OPDC is preparing a separate Public Realm and Green Infrastructure SPD which sets out dedicated guidance related to streets and public spaces, including those that have an industrial context. An Old Oak West SPD is also being developed to provide spatially specific guidance for the Old Oak West area.

1.12. The Planning Obligations SPD also provides detailed information on how OPDC will negotiate and secure delivery of and/or contributions towards affordable workspace and employment and skills. The full suite of adopted and emerging SPDs is depicted in figure 1.2.

What studies support the Industrial SPD?

1.13. The SPD is supported by the existing Local Plan supporting studies that are already published online here and the following new evidence base documents

- OPDC Biodiversity and Urban Greening Strategy
- OPDC Canal Placemaking Study (Parts 1 and 2)

1.14. The GLA is working on a Designing Industrial Intensification and Co-location report and wider Industrial London Plan Guidance. This is likely to relate to sections in the SPD covering use, movement, and built form. Applicants should refer to the latest GLA guidance when developing their proposals.

What is the status of the SPD?

Legal status

1.15. This document is a Supplementary Planning Document (SPD). Part 5 of the Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended) sets out the procedure for the production of SPDs.

1.16. A Strategic Environmental Assessment (SEA) screening of the SPD has been carried out. This identifies that an SEA is not required and is published alongside the SPD.

Guidance status

1.17. The guidance in this SPD will be a material consideration for the determination of planning applications alongside relevant policies in the OPDC Local Plan, the National Planning Policy Framework (NPPF), London Plan, West London Waste Plan, any 'made' neighbourhood plans and any other supplementary guidance.

1.18. OPDC recognises that it might be more challenging to meet elements of the SPD guidance in certain circumstances, such as when proposals are responding to specific site issues and context (i.e. site size, configuration etc) and balancing different objectives outlined within Principles. Each site is different and proposals will be judged on a case by case basis. In order to assess this, it will be important for applicants to clearly set out the site opportunities and constraints; provide information to demonstrate compliance with relevant planning policies, having regard guidance in this SPD; communicate how this has informed the development proposal; and early engagement with OPDC is encouraged.

1.19. The SPD does not repeat policies or guidance within the NPPF, London Plan, Local Plan, West London Waste Plan or other SPDs. Therefore, this SPD should be read in conjunction with these other documents.

1.20. The guidance in the SPD is consistent with the NPPF and does not conflict with the policies in the London Plan or OPDC's Local Plan.

What period does the SPD cover?

1.21. The guidance period for the SPD aligns with the OPDC Local Plan which is from 2018-2038.

Figure 1.2. Adopted and emerging OPDC SPDs

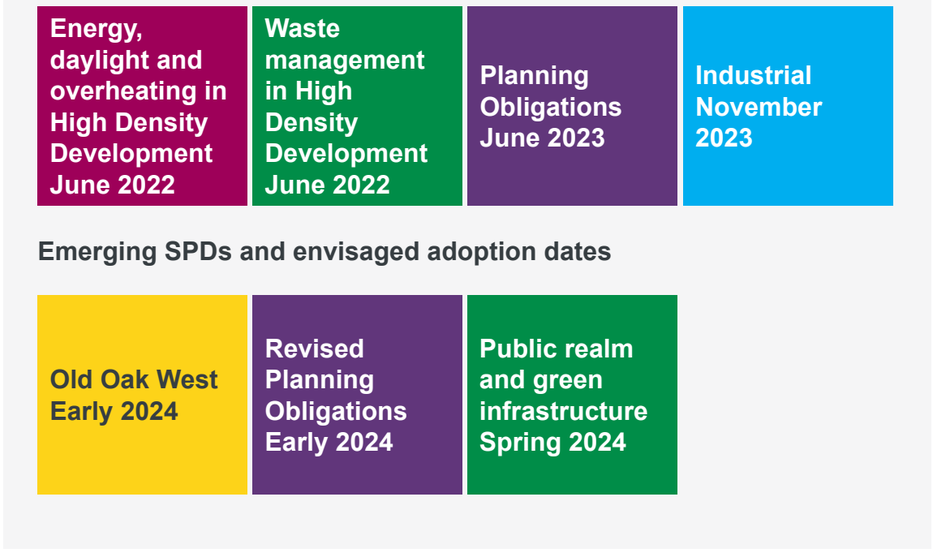
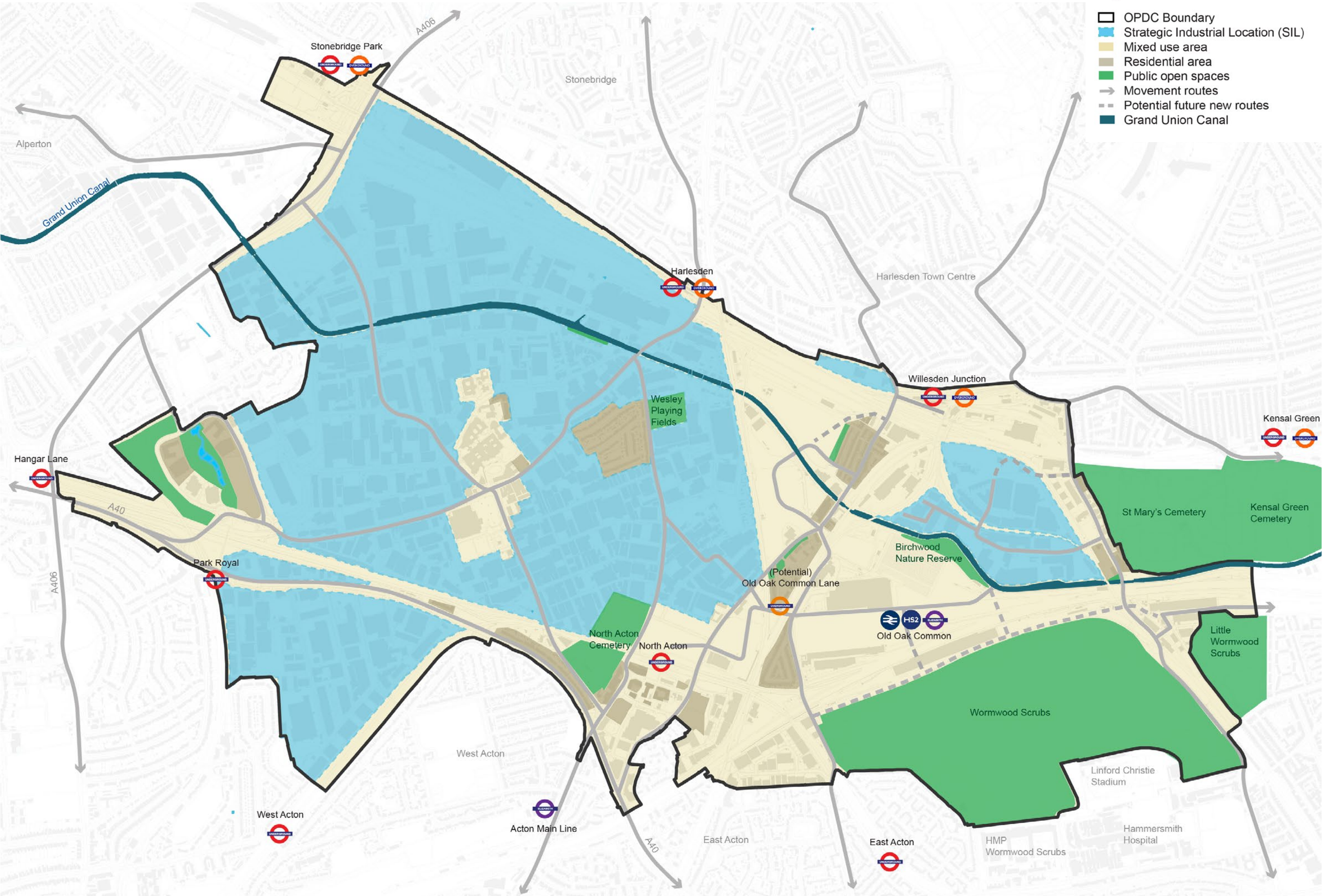


Figure 1.3. Strategic Industrial Location, mixed use and residential areas



2 Context overview

Strategic context

2.1. The Old Oak and Park Royal Development Corporation (OPDC) was established by the Mayor of London on 1 April 2015. OPDC's aim is to ensure that the maximum benefits for London are achieved through the once in a generation opportunity presented by the development of a major new transport hub which will connect the Elizabeth Line with High Speed 2 and national rail services. The OPDC area covers the Old Oak and Park Royal Opportunity Area in the Mayor's London Plan (2021), which identifies the area as having the capacity to deliver a minimum 25,500 homes and 55,000 jobs, making it one of the largest regeneration projects in the UK.

2.2. Upon its establishment as a Mayoral Development Corporation, the OPDC also became the Local Planning Authority for its area, giving it responsibility for planning decisions, planning enforcement, the preparation of a Local Plan, Supplementary Planning Documents (SPDs), heritage guidance and the introduction of a Community Infrastructure Levy (CIL).

Local context

Socio-economic

- Most of the area is designated as Strategic Industrial Location (SIL) and the majority of this is occupied by core industrial uses. There are existing residential and business communities in close proximity to each other within the OPDC area.
- Key employment sectors include transport, wholesale and logistics, food manufacturing and creative industries, these are expected to grow alongside other sectors, such as advanced manufacturing, low carbon (clean tech) and med tech/life sciences. There has been a significant uptick in demand for data centres in Park Royal, with a number of existing data centres already in the industrial estate and more in the pipeline.
- There are around 43,100 jobs, including employees who work at night. Whilst business data is more limited, it is understood that a significant proportion of employees in Park Royal either live within or adjacent to the OPDC area - within a 5km radius, approximately 60% of employees come from Brent and 30% from Ealing1.
- There are 1,700 businesses, the majority of which are small and micro businesses, both accounting for 97.6% of the total share[1].
- Sites across the industrial area are largely in private ownership, with some key landowners having an established presence.
- There is a reduced supply of industrial land across London. The London industrial land vacancy rate has been declining and now stands at between 4-6%, whilst the London floorspace vacancy rate for industrial and light industrial buildings was 3.2% (in 2021). This is below the frictional vacancy rates that are needed to allow for the effective functioning of the market. In the OPDC area, the reduced supply is contributing to higher rents, with prime industrial rents reaching as high as £28/sqft, and vacancy levels as low as 2% to 3% (as of May 2023).
- There are a range of different workspaces in OPDC area, including smaller business units and this diversity of unit sizes is important to supporting different business needs. Data shows that the majority of the buildings within host boroughs are between 2,500sqft – 25,000sqft. Across London in 2020, the highest levels of vacancy were seen within the 25,000-50,000sqft unit size ranges (around 4.1%), whilst units sized 2,500 – 5,000sqft and 100,000+ sqft had the lowest levels (around 1.7%). London has experienced growing take-up of larger units in recent years against the 2016-2021 average. Unmet demands could place upward pressure on rental values. Similar to the national level, key sectoral growth in E commerce, Q commerce, data centres, and Film and TV production has underpinned this strength in take-up. The trend seen in OPDC applications is for large industrial units, in some cases this has lead to the loss of smaller units.
- 57% of the Lower Layer Super Output Areas (LSOAs) fall within the top 10% to 30% of most deprived LSOAs.
- The equivalised household income in the OPDC area (before housing costs) averages £33,940. This local area figure falls below the London average.
- Residents in the OPDC area are more likely to be unemployed, with 6.4% of residents identifying as unemployed compared to the London average of 4.8%. The proportion of economically inactive residents who suffer from long term sickness or disability is 13.5%.
- Residents in the local area are less likely to have a degree level qualification compared to the average across London. This is expressed by 40.7% of OPDC residents holding a Level 4 qualification or above compared to London's average of 46.6%.
- The health of the community in the OPDC region is broadly in line with London average levels, with childhood obesity levels either falling just below or in line and nominal lower than average life expectancy.
- Access to amenities for local businesses and employees varies across the industrial estate; and the lack of provision could affect the competitive position of the area.
- The OPDC area is an ethnically diverse part of London, with a large Black and Asian community (21.7% and 21.5% respectively), with those identifying as White higher at 37.6%. Other ethnic groups, including mixed, account for around 19.3% combined.
- The 2021 census revealed that 60.3% of all adults in a household within the OPDC boundary has English as a main language. 21.2% of households, however, have no adults speaking English as a main language; significantly higher than the London average which sits at just over 5%.

Environmental

- There is limited amount of green space in the industrial area.
- The Grand Union Canal runs through both Old Oak and Park Royal and is an environmental site of metropolitan importance, conservation area and a significant amenity asset.
- The area's main risk of flooding is from surface water.
- There are heavily trafficked and congested highways due to the high volume of through-traffic, on street parking and insufficient off site servicing.
- Existing infrastructure – roads and railways - creates barriers for people walking and cycling to the area.
- The OPDC area is covered by safeguarding zones associated with RAF Northolt, specifically aerodrome height and birdstrike safeguarding zones.
- Character varies across the area. Key opportunities to improve the urban character include the provision of positive frontages, improving relationship with the canal and reducing the impact of parking/servicing.
- The area has a rich heritage including the identification of 64 Locally Listed assets and 1 Statutory Listed asset.
- Local Air Quality Focus Areas have been identified around A40 and A406.
- There are some sensitive receptors with respect to groundwater in the local/surrounding area, including to the northwest of the SIL area by Stonebridge there are superficial deposits of Alluvium and Taplow Gravels, whilst Secondary A Claygate Member bedrock is present by Hanger Lane station.
- Most of the industrial building stock predates 2000, which might have implications in terms of sustainability and renewal.

Local Plan policies summary related to industrial development

2.3. The OPDC Local Plan sets out a number of clear spatial vision statements, which communicate the ambitions for the industrial area and developments, that Local Plan policies and in turn this SPD seek to realise.

Local Plan Spatial Vision

Old Oak and Park Royal will be a highly connected part of London, playing an important role in shaping west London's future and driving national economic growth. It will comprise a network of places including an innovative industrial area and a high-density new vibrant part of London. It will be home to a diverse and

2 Context overview

intense mix of uses, places and people. Development will pioneer international excellence in sustainability, health and wellbeing and design quality to deliver tangible benefits for both local communities and London.

Old Oak North
A high quality, intensively used and vibrant industrial area, which is better connected to surrounding neighbourhoods. Redevelopment with new multi storey intensified industrial typologies will respond sensitively to the area's heritage, including the Canal and the Rolls Royce Building. High density industrial activities will be supported by better connections and ancillary facilities as well as canal side open spaces that can support businesses, employees and visitors, making Old Oak North a vibrant industrial location that people will want to work in, visit and pass through.

Park Royal West
Park Royal West will continue to be London's leading location for large, medium and small industrial businesses. The protection and intensification of industrial space, along with a co-ordinated approach to infrastructure investment and delivery will improve its functionality and environment; strengthening Park Royal's competitive position, and helping businesses to grow sustainably.

Old Park Royal
Old Park Royal's established industrial land use and historic character will be protected. Today, this place is a prominent hub for smaller businesses. Opportunities to intensify industrial uses will support the continued growth of start-up businesses and innovative activities across a range of employment sectors. The enhancement of buildings along with improvements to the public realm and movement network will support a functional and exciting place that helps to mediate the transition between industrial and mixed use areas.

2.4. The Harlesden Neighbourhood Plan (2019) provides policies for the Willesden Junction area supporting the delivery of residential, employment and town centre uses alongside station and active travel route improvements.

2.5. The key Local Plan policies related to industrial development cover the following areas:

Theme	Description
Places and communities	• The Places where industrial uses would be acceptable. • The need to meet business needs and deliver benefits to local communities by providing a range of employment spaces and opportunities, whilst also positively contributing towards wider placemaking.
Land uses and jobs	• Broad support for industrial uses within the Strategic Industrial Location (SIL). • Supporting industrial uses as part of mixed use neighbourhoods in appropriate locations outside of SIL. • Planning for a net increase in industrial floorspace and new industrial jobs across a range of sectors in a range of sizes, forms and affordabilities.

Design and heritage	• Maximising the extent of positive and/or active frontages.
	• Taking a balanced approach to security.
	• Designing buildings that:
	  • are accessible and inclusive
	  • positively respond and avoid harm to the historic environment, local character and townscape
	  • are high quality and suitable for intended use
	  • are BREEAM Excellent
	• Ensuing the choice of materials enhance local character.
	• Achieving appropriate levels of amenity.
	• Implementing the Agent of Change principle so that industrial uses are not compromised.

Movement	• Supporting the ambition for more journeys to be made by walking, cycling and public transport. Measures related to this include designing healthy streets, limiting vehicle parking and the delivery of transport infrastructure. • The use of more sustainable and efficient ways to transport freight. • Providing appropriate levels of servicing.
Green infrastructure	• Ensuring Biodiversity Net Gain (BNG). • Optimising urban greening, although no Urban Greening Factor is set for B2/B8 uses.
Environmental sustainability	• Zero carbon development and/or offsetting payments if this cannot be achieved on-site. • Aiming for air quality positive developments. • Designing buildings to be resilient and adaptive to a changing climate. • Achieving greenfield surface water run-off rates to reduce flooding and measures to minimise water consumption.
Building heights	• Supporting increased building heights in SIL where this will deliver industrial intensification and SIL compliant broad industrial type activities.

Use

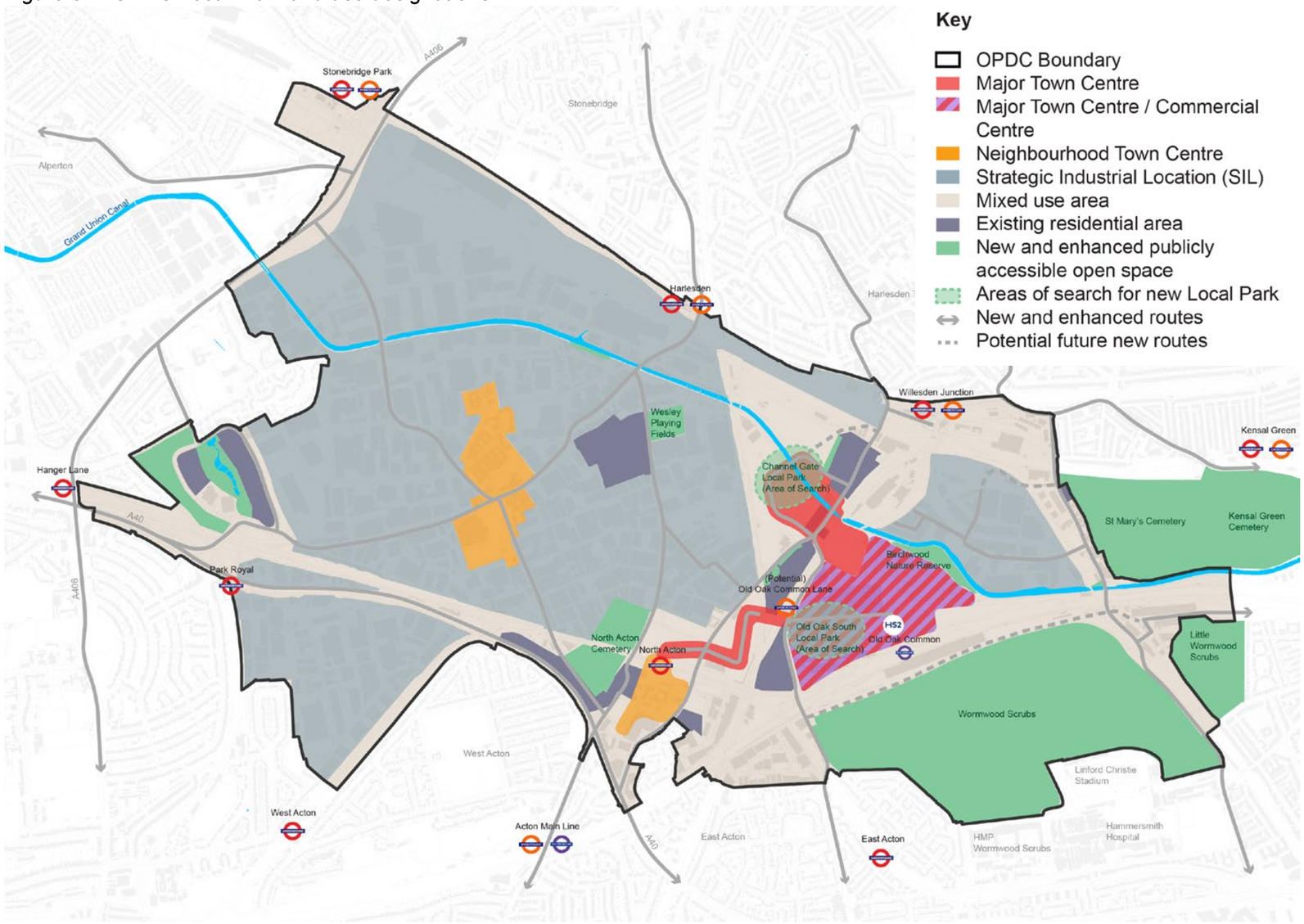
3 Use

Introduction

3.1. The OPDC Strategic Industrial Location (SIL) is protected for a range of industrial uses. The mix of uses present today makes for a rich business ecosystem and contributes towards the economic resilience of the area. Access to the strategic road network, business clustering, proximity to customers and suppliers are all important features that attract different industrial uses to the area, but on the other hand, road congestion is a key issue affecting day to day business operations.

3.2. The SPD does not and cannot change land use designations in the Mayor's London Plan and OPDC'S Local Plan (see figure 3.1 and Policies Map), but it is hoped that providing more detailed guiding principles for uses can enhance existing locational benefits and, at the same time, mitigate impacts.

Figure 3.1. OPDC Local Plan land use designations



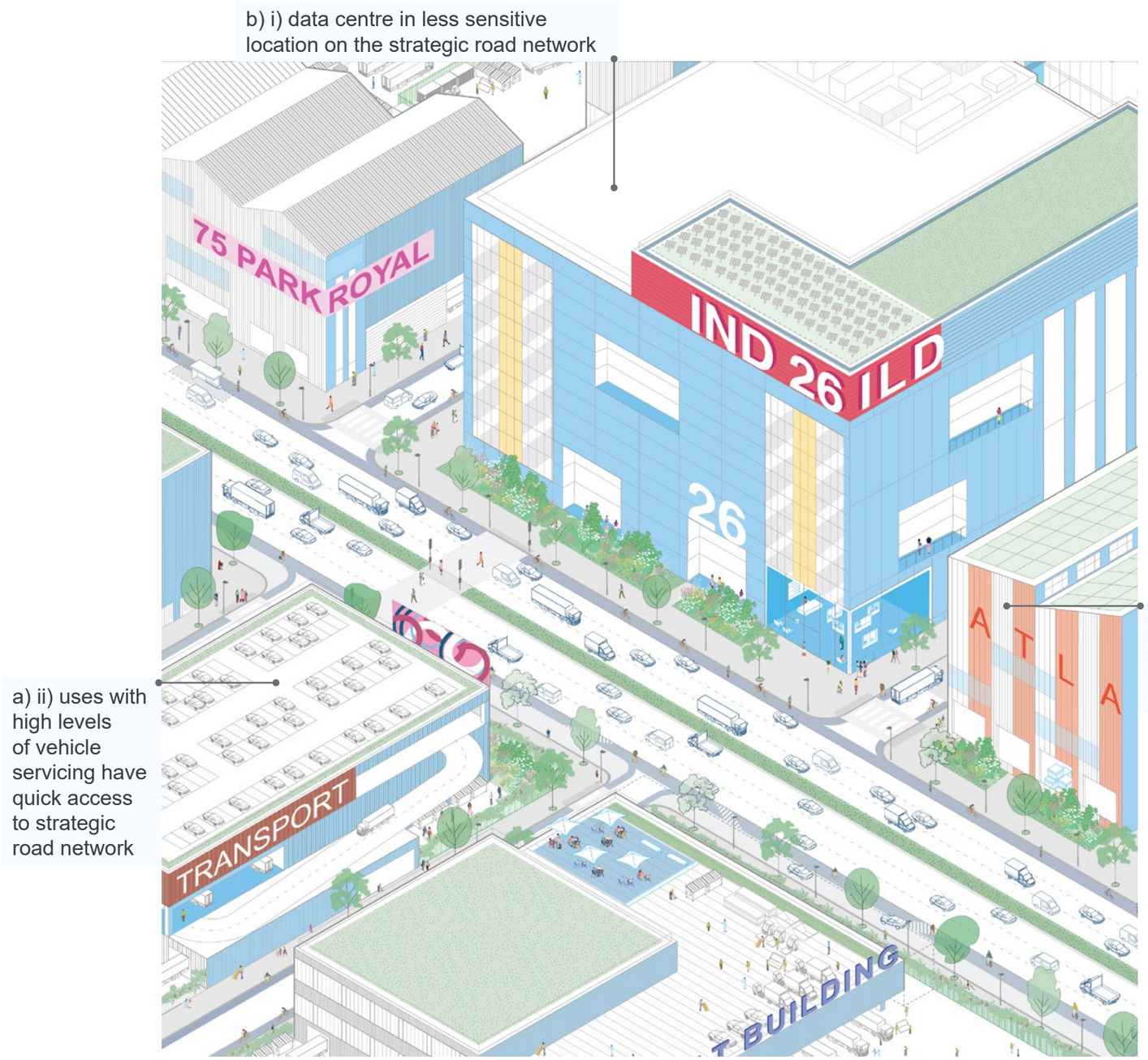
3 Use

Principle LCP1 Locational considerations

a) All industrial proposals within and outside of SIL should:
   i) show in their Design and Access Statements how their impacts can be managed having regard to the particular location and the needs arising from the uses proposed, including:
      - servicing (frequency and types/size of vehicle);
      - compatibility with other adjacent and proposed land uses;
      - how the design successfully addresses the Agent of Change and other Principles in section 5 (Industrial Character, Heritage and Sense of Place) and section 6 (Built Form);
   ii) consider the following opportunities:
      - locating and co-locating with industrial uses that have highest onsite industrial employment densities in areas with the highest public transport accessibility;
      - supporting clustering and agglomeration, where this could positively contribute to the area including:
        - placemaking and support of future growth sectors;
        - where any adverse impacts can be mitigated;
      - prioritising locating uses that require high levels of vehicle servicing and heavy goods vehicles (HGV) access along Park Royal Road, Acton Lane, Abbey Road, Coronation Road, or in proximity to and with quick access to the strategic road network; and
      - locating industrial land uses that would benefit from access to water or rail along these corridors.

b) Proposals for data centre uses are encouraged towards sites that:
   i) adjoin less sensitive activities such as railway lines or the strategic road network (A406, A40) to minimise the impact of heights and massing on surrounding areas;
   ii) are away from key public transport hubs and walking and cycling routes, if it is demonstrated that they are not able to support typical employment levels or have very low access and servicing requirements; and
   iii) will avoid detrimental impacts on the industrial heritage and character in line with Principle ICP1.

Figure 3.2. Illustration of how locational consideration principles could apply to development on the strategic road network



3 Use

Signposts

London Plan
- Policy D13
- Policy E4
- Policy E5
- Policy E8
- Policy T1

Local Plan
- Policy SP5
- Policy SP7
- All Place and Cluster policies
- Policy T1
- Policy T7
- Policy T9
- Policy E1
- Policy E2
- Policy E3

Supporting text

3.3. Appropriate locations for new industrial and industrial related uses are:

- within Strategic Industrial Locations (SIL), where industrial intensification is expected to take place; and
- outside of SIL where this would accord with Place and other relevant policies and are delivered as part of industrial co-location.

3.4. Each Place and site will have a different context and characteristics, and therefore different opportunities and constraints. For example, Old Park Royal Place is based on a historic street network and the highway was not designed to accommodate significant levels of large vehicle servicing. This will need careful management if Old Park Royal is to continue to be a successful and attractive business and industrial location. Also, when integrating industrial uses into or adjacent to mixed use schemes outside of SIL, the nature of the industrial operations and their compatibility with other uses needs to be carefully assessed on a case by case basis. As such, it is important for applicants to engage with OPDC early in the scheme formulation process. At the pre-application stage, applicants should clearly outline their intended types of uses and occupier so that appropriate consideration can be given to the site context and mitigating impacts particularly if industrial uses are being co-located with other more sensitive uses.

3.5. Old Oak and Park Royal has some of the highest employment densities (number of workers per hectare) when compared to other London industrial estates. At the moment, there is no clear spatial link between industrial employment densities and public transport accessibility levels. If industries with higher numbers of workers could locate in more accessible parts of the estate, this could help increase the number of people choosing to travel via more sustainable public transport modes and reduce commuting by car.

3.6. The priority objective for the SIL is to provide land and premises that can accommodate a range of industrial uses, including activities that cannot be located elsewhere because of the conflicts with other sensitive uses. Increasing industrial employment densities does not outweigh the need to meet this objective but OPDC recognise that there might be opportunities to do both - optimising employment generation by designing typologies that integrate different industrial uses that include higher industrial employment densities alongside lower employment generators. This approach would also help accord with OPDC Local Plan Policy E3, if this mix included affordable or shared workspace for start up or small businesses. Mixing of industrial uses has been achieved elsewhere and will be supported by OPDC.

3.7. Opportunities to support future employment growth sector related or other business clusters should be explored to help meet objectives in Local Plan policies SP5, E1 and E2; examples of existing/potential clusters include:

- Acton and Park Royal Creative Enterprise Zone (CEZ) – seeks to position local Creative Industries at the heart of development and regeneration within this area of West London. It provides an opportunity to connect across sectors and sites, to enable emerging creative clusters to become an ecosystem for growth, innovation and change. OPDC and Ealing are providing proactive support to retain and attract creative activities to this location.

Figure 3.3. Proposal for Uplands Business Park – Blackhorse Lane, Waltham Forest

3 Use

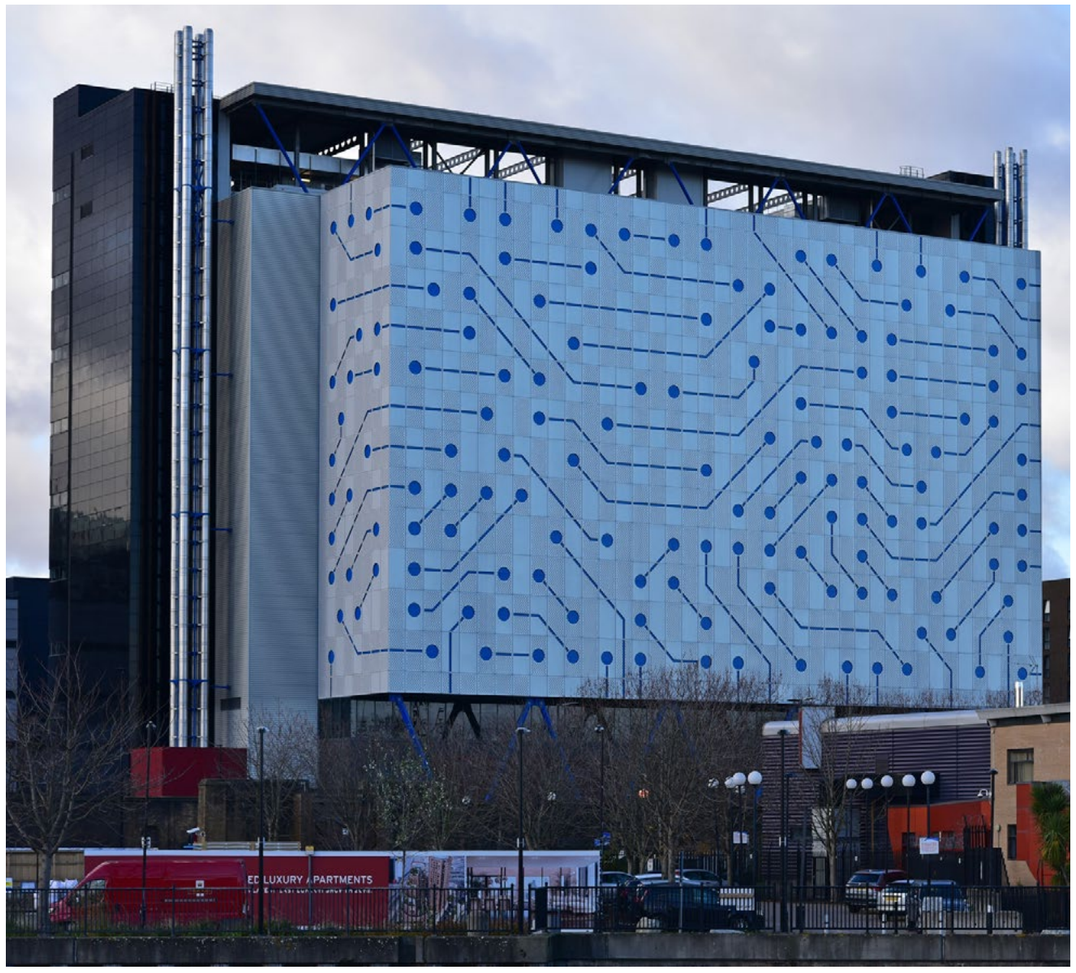
- Cleantech Cluster - The London Sustainable Development Commission produced a report recommending that the OPDC area and the neighbouring Imperial White City development act as a focus for a world-leading cleantech cluster. Cleantech or low carbon industries is a cross cutting sector; as such, the type of space and where this is best located will be dependent on the specific nature of activity.

3.8. Transport and Logistics is a key sector within the OPDC area. The potential to locate uses that require heavy servicing and access for heavy good vehicles (HGVs) on or with easy access to the strategic road network could help reduce unnecessary mileage and improve the efficiency of road freight movements. It is hoped that this would coincide with the transition to electrification of vehicle fleets to reduce emissions from this form of transport. Prioritising sites to be used or reused by rail/water-served industries along canal/rail corridors would mean that businesses/ land uses that could benefit from access to water and rail are able to. Industries that deal with bulky, lower value/urgency goods could be suited to canalside sites. The use of water and rail to transport goods is considered in more detail in the Movement chapter.

3.9. The Local Plan does not include specific location policies for data centres; however, London Plan policy E4 identifies that they are appropriate within industrial locations. Within the OPDC context this is within SIL. There are likely to be several factors which influence the suitability of sites and locations for data centres from a commercial perspective. However, their massing, materials, heights and articulation can often have a negative impact on the public realm and surrounding area. This is particularly the case where they are in close proximity to residential-led development sites and in parts of the industrial estate that are more sensitive in terms of heritage and character (see Principle ICP1: Respecting and Enhancing Local Character). High security requirements can also compromise placemaking, the delivery of active/positive frontages and the Healthy Streets that OPDC is seeking to deliver in the area (see Principle BFP5: Building lines, boundary treatments and frontages). Opportunities could be taken to site these uses in less sensitive locations, where it will be easier to mitigate these impacts. Further information is also provided on how to mitigate negative impacts in the Built Form section (see section 6).

Figure 3.4. HereEast data centre, Queen Elizabeth Olympic Park

Figure 3.5. Telehouse North 2 Data centre, Tower Hamlets



Movement

4 Movement

Introduction

4.1. Active travel and limiting unnecessary car parking are key priorities in the Local Plan and London Plan. As a consequence of this, it is expected that more journeys will be made by walking, cycling or public transport. In OPDC's industrial area, large goods and heavy goods vehicles (LGV and HGV respectively) are key contributors to daily traffic flows – on Park Royal Road alone there were 4,100 daily two-way freight movements.

4.2. OPDC's vision plans for a net increase in industrial floorspace but also expects that this will coincides with a shift towards greater sustainability, including the transition towards reduced/consolidated trips and more sustainable, zero emission vehicle fleets.

4.3. In line with these objectives, this SPD guidance focusses on how to support inclusive access for users who may have different needs, successfully accommodate the range of modes expected (walking/cycling/LGV/HGV), minimise conflicts and increase overall sustainability of transport movements.

Figure 4.1. Illustration showing an industrial street scene

4 Movement

Principle MP1 Access

All industrial proposals within and outside of SIL should:

a) be supported by an Active Travel Zone (ATZ) assessment which assesses the key routes to/from the development and identifies deficiencies that need addressing;

b) provide an active or positive frontage with dedicated, prominent, adequately lit building entrance with natural surveillance, that addresses personal safety, has legible signage and well located to serve pedestrians accessing the site directly from the street;

c) ensure that access into the building is inclusive and accessible, considering:
   i) ramps that comply with the latest guidance;
   i) removing unnecessary steps and barriers;
   ii) door width;
   iii) automatic or push to open button operated doors;
   iv) touch/tacile and auditory measures;

d) ensure internal footpaths and/or access points for pedestrians and cyclists:
   i) are well lit and secure, including the use of CCTV;
   ii) are separate from vehicular traffic and servicing routes;
   iii) support inclusive access, including step free access routes, and take into account ramp gradients, the width of footpaths, the need to avoid obstructions and the appropriate selection of materials;
   iv) deliver a direct and legible route;
   v) include clear wayfinding and signage;

e) ensure that vehicular highway access points are:
   i) designed with a small kerb turning radius;
   ii) able to achieve minimum visibility requirements set out in Manual for Streets;
   iii) designed with entrance gates that are as narrow as possible using a minimal amount of frontage;
   iv) subject to a Road Safety Audit to demonstrate that adequate highway safety will be achieved;
   v) marked with clear wayfinding and signage taking into account whether this is clear to HGV drivers if they are likely to access the site;
   vi) where appropriate, take advantage of sites that have multiple sides/road by providing separate access points for walking/cycling and vehicles;

f) if internal vehicular roads are provided, these should:
   i) usually meet the requirements for emergency vehicle access, including a minimum unobstructed carriageway width of 3.7m for one-way and 5.5m for two-way operations unless agreed by London Fire Brigade;
   ii) where, necessary, include traffic calming to reduce vehicle speeds through the site; and
   iii) include clear wayfinding and signage.

g) All mixed use proposals delivering industrial floorspace outside of SIL should provide separate vehicle access points for industrial uses and residential uses.

Signposts

National Planning Policy Framework
- Paragraphs 92, 104 to 106, 110 and 112

London Plan / GLA
- Policy D3
- Policy D5
- Policy SI1
- Policy T1
- Policy T2
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- Air quality positive LPG
- Air quality neutral LPG
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy SP7
- Policy D2
- Policy T2
- Policy T3

Other
- TfL Active Travel Zone (ATZ) assessment instructions
- TfL Road Safety Audit Procedure

Principle MP2 Onsite cycle parking

All industrial proposals within and outside of SIL should:

a) design onsite cycle parking in line with the London Cycle Design Standards (or any successor document) to ensure it is:
   i) fit for purpose:
      - meets current and future demand with appropriate balance of short and long stay provision;
      - take into account different needs as well as different types and sizes of cycles, by providing:
        - step free access from outside and inside the building;
        - signage to any accessible cycling facilities;
        - suitable and convenient access routes and parking space for larger cycles, including cargo bikes;
        - aiming for a target to provide at least 5% of all cycle parking spaces as accessible bays so that they are capable of accommodating larger or non standard cycles;
        - charging facilities for e-bikes;
   ii) secure – cycling parking located in adequately lit, overlooked secure spaces;
   iii) well located – convenient, accessible, preferably sheltered and located to minimise conflicts with other users, including pedestrians and disabled people;

b) ensure long stay cycle parking facilities for staff:
   i) have controlled access/entry arrangements;
   ii) are supported by complementary facilities such as showering and changing facilities with accessible features, lockers and equipment for basic maintenance; and

c) ensure separate provision is made for short stay cycling parking which prioritises locations that are accessible to the street, close to the entrance, easy to locate and secure/ overlooked.

Ambition MA2 Onsite cycle parking

All industrial proposals within and outside of SIL are encouraged to provide a minimum of 20% of cycle parking as easily accessible tubular type stands.

Signposts

National Planning Policy Framework
- Paragraphs 106 d), 110 a) and 112

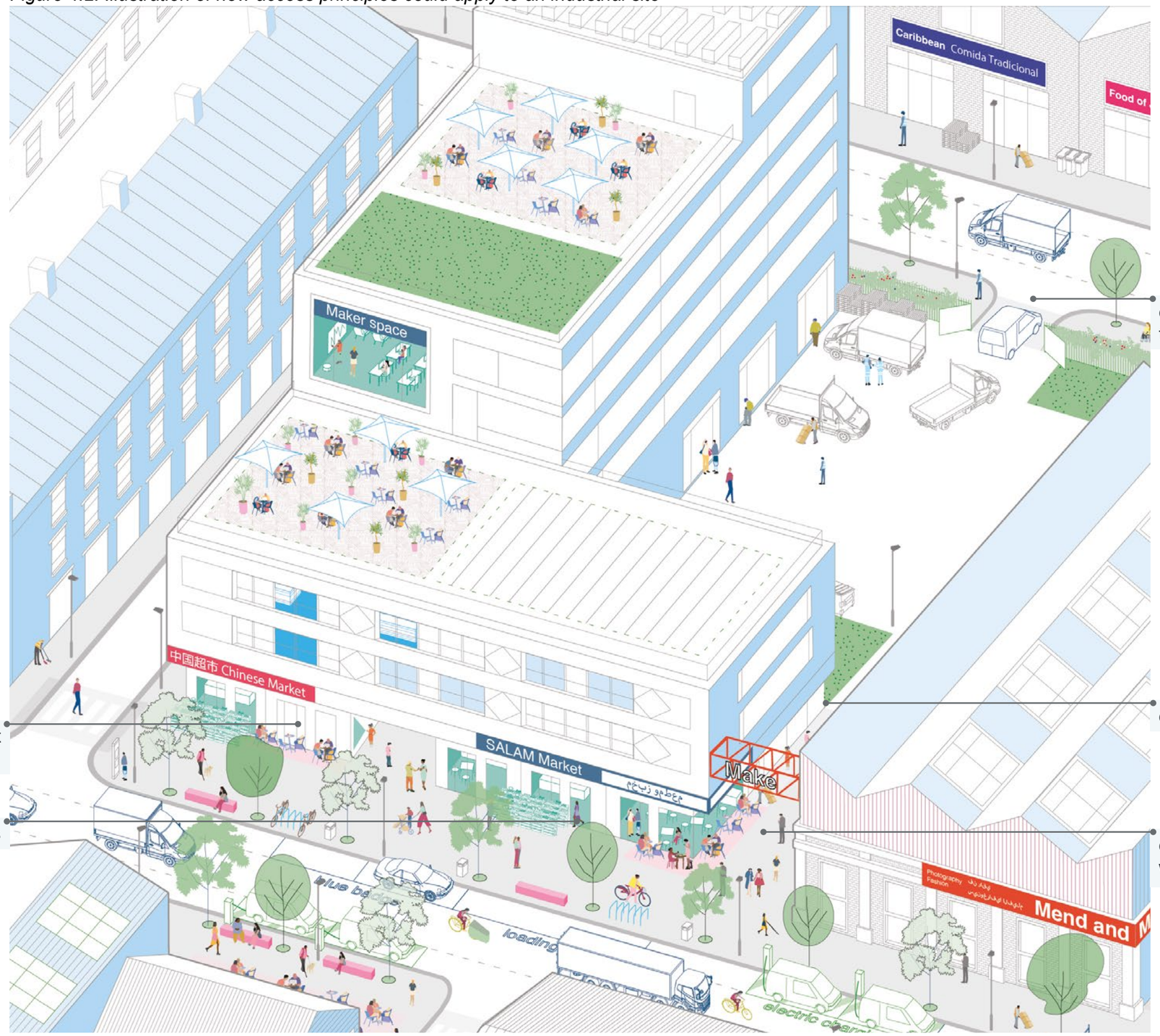
London Plan / GLA
- Policy SI1
- Policy T5
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- Air quality positive LPG
- Air quality neutral LPG
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy T3

Other
- TfL London Cycling Design Standards
- DfT Inclusive Mobility (2021)

4 Movement

Figure 4.2. Illustration of how access principles could apply to an industrial site



e) narrow gates and small kerb turning radius

b) active frontage with prominent entrance directly on to street

c) inclusive, step free access

d) i) well lit internal footpath

d) ii) separate access points for walking, cycling and vehicles

4 Movement

Supporting text

4.4. The Principles and Ambitions are based on the different journeys that might typically be made within sites: pedestrians and cyclists arriving from the street and heading towards the entrance, where cyclists need to go to park their bikes once they arrive, and the vehicles leaving/entering the highway that are using the servicing and parking area. All of these journeys should be inclusive, convenient and safe.

Journey from the street

4.5. To aid wayfinding and accessibility, building entrances should be designed to serve pedestrians and cyclists accessing the site from the street and not tucked away to the rear or in a location which makes the journey from street to front door more difficult. They should also include measures that enhance personal safety. Internal footpaths should also allow for safe, clearly marked, obstruction free and inclusive passage for pedestrians and cyclists arriving/leaving the site. Where ramped access is provided, gradients should be compliant with current guidance which is less than 1:21.

4.6. Currently, approximately 40% of the total trips made by car (into Park Royal) are within an 8km radius and 35% of the total car trips are within a smaller 5km radius. This is significant as 5km represents the average cycle trip length in the UK, while 46% of cycle trips in Central London were found to be of 5-8km in distance (Analysis of Cycling Potential, TfL 2010). Therefore, there is huge potential to change travel behaviour and increase the uptake of more sustainable modes rather than private car use if suitable and well designed cycling infrastructure is provided on sites. Investment in workplace cycle parking also helps promote a mode of transport that has health and productivity benefits as well as reducing the strain on the local transport infrastructure.

4.7. The London Cycling Design Standards (LCDS) Guidance provides detailed guidance that is signposted in this document. Key design features include the need for adequate lighting and overlooking, particularly at night-time or where the parking is under cover to help ensure it is safe for night time or vulnerable workers. Also ensuring that any cycle parking or furniture is not be placed in obstructive locations – zoned and with a ‘clear’ width for pedestrian movement – incorporating a tapping rail and a strong visual contrast with the surrounding environment. Inclusive cycling design needs to be built into all schemes catering for all, from novices to long-distance cyclists.

4.8. Consideration should be given to providing a minimum of 20 per cent of cycle parking provision as easily accessible tubular type stands. This allows for some flexibility in terms of the design of cycle parking stands, but they should always fulfil the main function of allowing for two-point frame and wheel locking. Parking for cargo bikes is also needed to support active freight travel which may be particularly relevant for some industrial uses such as logistics and distribution.

4.9. Cycle parking should be configured to bear in mind the length of cargo bikes and tandems, and the width of tricycles and side-by-side cycles. The LCDS includes specifications for bays intended to accommodate tandems, cycles with trailers and other larger cycles designed specifically for use by disabled people. It recommends that at least 5% of cycle parking is provided for non-standard cycles to accommodate disabled people.

Journey from highway to servicing area and vehicle parking

4.10. Vehicle accesses and internal roads must be designed so that they are safe but also so that they do not negatively impact on the public realm (see also Principle MP3: Yards, Vehicle Servicing and Parking). The 3.7m minimum carriageway width is based on the minimum access requirements for emergency vehicles. 5.5m allows for two-way access for passing HGVs – narrower access may be considered on a case-by-case basis.

Figure 4.3. Characterful bike racks, Brooklyn NYC

Figure 4.4. Clear cycle lanes using robust materials, Camden

Figure 4.5. Example of cycle maintenance facility, London Bridge

4 Movement

Principle MP3 Yards, vehicle servicing and parking

a) Yards, servicing and parking provided in industrial proposals within and outside of SIL should:
   i) provide and/or maintain adequate capacity for off-street servicing, including loading, deliveries and pick up/drop off, taking into account GLA technical specifications and guidance. On-street loading bays should only be used where this is not possible;
   ii) consider shared yards/servicing areas within sites and between adjoining sites/properties for industrial users in order to optimise the use of land;
   iii) provide a suitable height clearance for the largest vehicles which will access the site, and a minimum headroom that takes into account GLA guidance;
   iv) ensure emergency vehicle access complies with the latest fire safety guidance;
   v) designing yard-space as separate from employee/visitor parking provision within sites;
   vi) where car parking has been justified in line with London Plan and Local Plan Policies, this should be designed to minimise the amount of land used for this to ensure the most efficient use of land and higher plot ratios;
   vii) if they include on site yard space and/or where parking has been justified, where feasible, prioritise:
      • locating it away from the public highway and the canal;
      • integrate this within the built form;
   viii) ensure the design, lighting and layout of car parking areas and walking/cycling routes reflect security considerations;
   ix) segregate servicing and pedestrian/cyclist routes;
   x) where routes are provided for pedestrians and cyclists, deter on-footway parking through the use of physical measures such as bollards, trees and other street furniture whilst avoiding steps and unnecessary clutter;
   xi) address sustainability design and construction principles;

b) where car parking has been justified in line with London Plan and Local Plan Policies, on-site staff and visitor parking provided in industrial proposals within and outside of SIL should:
   i) ensure the distance between blue badge parking to the principal entrance serving disabled persons is no more than 50m;
   ii) include engagement with the local highway authority to consider the introduction or amendment of parking restrictions and Traffic Management Orders to help prevent additional staff from travelling to work by car;

c) HGV and LGV site access, servicing and operational parking provided in industrial proposals within and outside of SIL should:
   i) robustly justify the level of operational parking in line with London Plan and Local Plan Policies;
   ii) ensure all facilities for servicing, including loading, deliveries and pick up/drop off are provided off-street, with on-street loading bays only used where this is not possible;
   iii) incorporate sufficient space for HGV/LGV turning circles within the site to prevent HGV/LGV manoeuvring on highways and an access and egress where HGV/LGV parking is being provided on-site. This should not conflict with pedestrian or cycle routes and should be supported by swept path analysis for the largest vehicles that will access the site;
   iv) maximise the use of zero emission operational vehicles having regard to Principle/Ambition MIP1/MIA1;
   v) consider provision of shared HGV/LGV parking for units that only require occasional HGV/LGV access;
   vi) locate servicing areas away from the public realm where feasible;
   vii) electric charging infrastructure should be designed to allow for rapid charging, which may require consideration of the available electrical infrastructure; and

d) Space and processes should be in place to support the proper management of waste so that it does not compromise the servicing arrangements and amenity.

Signposts

National Planning Policy Framework
- Paragraphs 104a), e), 110b), c) and 112d)

London Plan / GLA
- Policy T1 A1)
- Policy T2
- Policy T6
- GLA Industrial Intensification and Co-Location Study
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- Fire Safety LPG

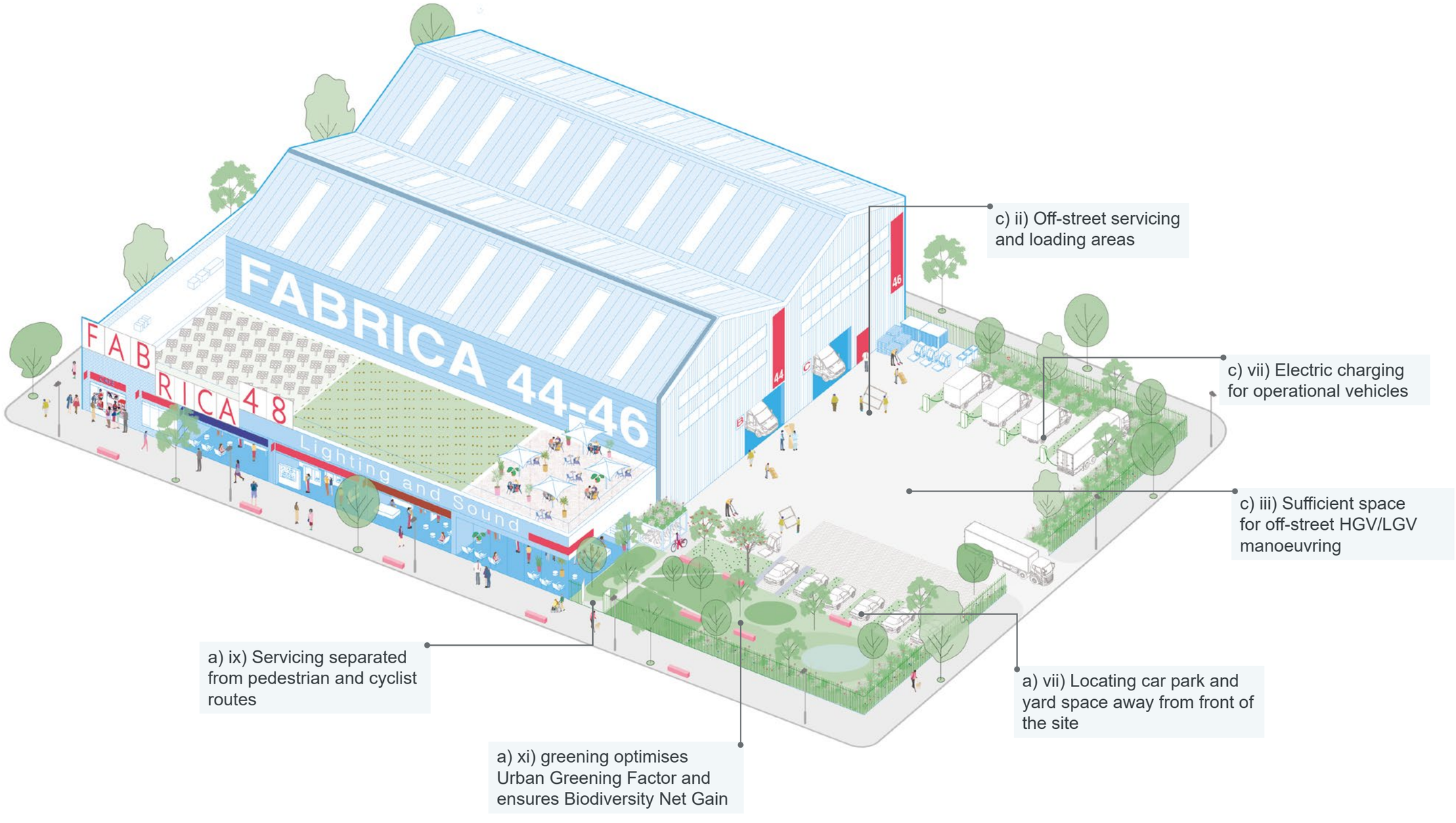
Local Plan
- Policy T4
- Policy T7

Other
- HM Government Building Regulations 2010 - Approved Document Part B Fire Safety
- DfT Manual for Streets

Figure 4.6. Example of a shared working yard space, Sheffield

4 Movement

Figure 4.7. Illustration of how yards and servicing spaces could be designed



4 Movement

Supporting text

4.10. Providing or maintaining adequate off street servicing will mean that vehicles are not obstructing the highway when loading or unloading. All facilities for servicing, including loading, deliveries and pick up/drop off, should be provided within the site. Servicing on street or in the public realm would only be considered in exceptional circumstances. GLA technical and design guidance for yards spaces for different types of industrial typologies should be used. The space should be planned as efficiently as possible so that there is an opportunity to fulfil other objectives. The latest guidance on fire safety is 45m from the principal entrance to a pumping appliance for buildings not fitted with fire mains and 18m from the principal entrance to a pumping appliance for buildings fitted with fire mains. Building Regulations 2010 - Approved Document Part B Fire Safety.

4.11. In line with the London Plan and OPDC's Local Plan, the starting position is for car free development and any levels of parking proposed must be robustly justified. If any operational parking is deemed acceptable then this must be positioned so that it does not negatively impact on the public highway, canal and public realm. To facilitate this and to enable buildings to have active and/or positive frontages with the public realm, car parking and servicing areas should be prioritised to the rear of sites.

4.12. Well-designed parking and servicing should be safe, functional and sensitively integrated into the built form so that it does not dominate the development or the street scene. Its arrangement and positioning relative to buildings can limit its impacts, whilst ensuring it is secure and overlooked. The transition to electrified vehicle fleets is a trend seen across the estate that is expected to continue and therefore the design should reflect this.

4.13. A range of case studies show the potential for industrial units to share servicing space and/or designing less land intensive car parking– see Boden House, Victoria Rd. Applicants will need to demonstrate that they have explored different ways to integrate servicing and any parking into the built form such as through the use of roof space, decks, undercrofts, internal yards, basements and semi basements. Some of these approaches will also help to reduce noise from yard spaces and vehicle movements; should help reduce the need for reversing; with arranging residential space to minimise overlooking into vehicle-dominated spaces; and/or create covered yard space or canopies. Podium residential amenity space may also benefit from an element of acoustic screening in the event that it is located overlooking industrial streets or yard space.

4.14. The design of yards needs to balance functional requirements with meeting other objectives such as making efficient use of land, urban greening and managing flood risk. The SPD provides guidance on these issues in the Built Form, Green Infrastructure, Mitigating Impacts and Environmental Sustainability sections.

4.15. Policy T4 of the London Plan requires all non-residential developments to install charge points. It is recommended that these are designed to be of sufficient capacity to enable charging at a rate suitable to the needs of future site users.

Figure 4.8. Boden House with access ramp to rooftop parking and loading spaces

4 Movement

Principle MP4 Freight operations

All industrial proposals within or outside of SIL should consider the use of rail or water to transport freight for construction and operational purposes.

Where, a site is located within 100m of the Grand Union Canal foreshore or a rail siding, a freight by rail/water feasibility study should be completed and submitted as part of Transport Assessments. An Outline or Framework Construction Logistics Plan and Delivery and Servicing Plan should also be provided so that OPDC can assess the potential to maximise use of these alternative modes.

Ambition MA4 Freight operations

All industrial proposals within or outside of SIL are encouraged to attain the Gold Fleet Operator Recognition (FORS) accreditation.

Signposts

London Plan
- Policy SI15

Local Plan
- Policy T7
- Policy T8
- Policy T9

Other
- TfL Freight Infrastructure in London Tool
- TfL Delivering Goods by Water

Supporting text

4.16. It has been reported that there is scope to increase the use of the traditional narrow and broad canals for freight movement. Domestic fuel, waste, canal maintenance and waterside site construction material and aggregates provide some existing traffic and potential for growth. The use of water transport for construction traffic, inwards for materials such as cement and aggregates, outwards for demolition and construction waste, should always be considered.

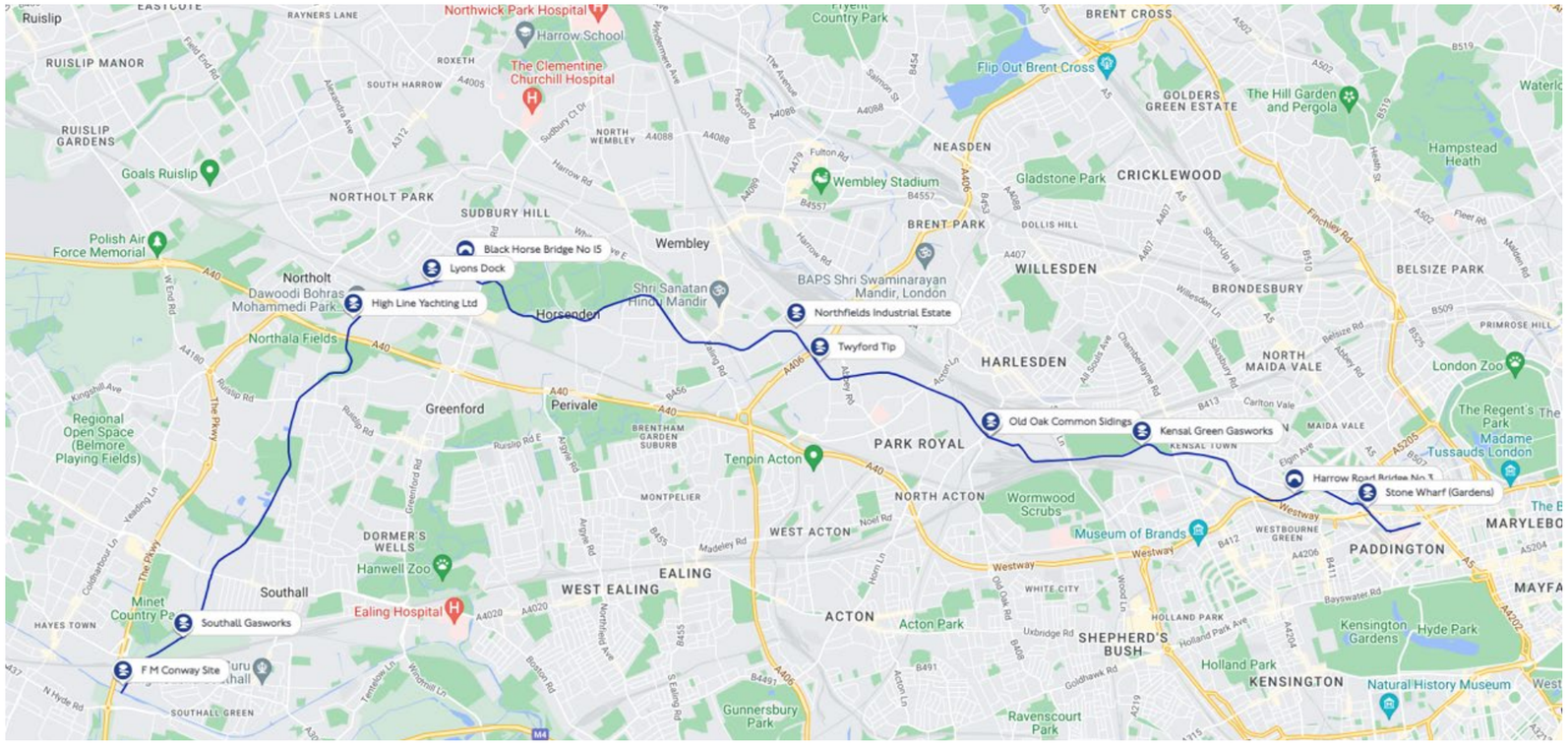
4.17. There is also potential to establish transhipment points close to where a ring road crosses the waterway. Goods could be carried through urban areas by water/rail and transhipped for onward distribution by road or vice versa.

4.16. Freight by rail and/or water should be considered and a feasibility study be completed if the site has access to a rail siding or the canal. See figure 4.9 for the Delivering Goods by Water map to see potential and existing opportunities to use waterborne transport along the Grand Union Canal. TfL's Construction Logistics Planning Guidance suggests that sites within 100m of foreshore of navigable waterway or rail freight siding should be assessed for purposes of freight by water or rail.

4.17. The feasibility of using these modes should be considered from the outset, so developers should engage early with OPDC at the pre-application stage to understand the scope of this assessment. Applicants should submit Construction Management Plans (CMP) and Delivery Servicing Plans in an outline or framework format as part of the planning application and a key consideration of the CMP should be justifying the use of river or rail. Guidance on Outline CMPs are provided in Construction and Logistics Community Safety – Construction Logistics Planning Guidance document.

4.18. At some canalside sites, this may require investment in the infrastructure (dredging or wharfage for example). A navigational risk assessment should be completed by the developer/ contractor as part of their proposal, and included within freight feasibility studies. Consideration should be given to loading and unloading points, likely barge movements and any impact on water resources, and possible network closures for other works. Applicants are encourage to undertake early engagement with the Canal and River Trust.

Figure 4.9. TfL's Delivering Goods by Water map for the Grand Union Canal



Industrial character, heritage and sense of place

5 Industrial character, heritage and sense of place

Introduction

5.1. The vision is for Park Royal and Old Oak North to be London's largest and most successful industrial area, reflecting its designation as a Strategic Industrial Location (SIL); including new forms of industrial intensification and innovative growth.

5.2. Notwithstanding this, new development needs to be grounded in 'place' and what sets the area apart from everywhere else – its history, the diversity of uses, buildings and cultures.

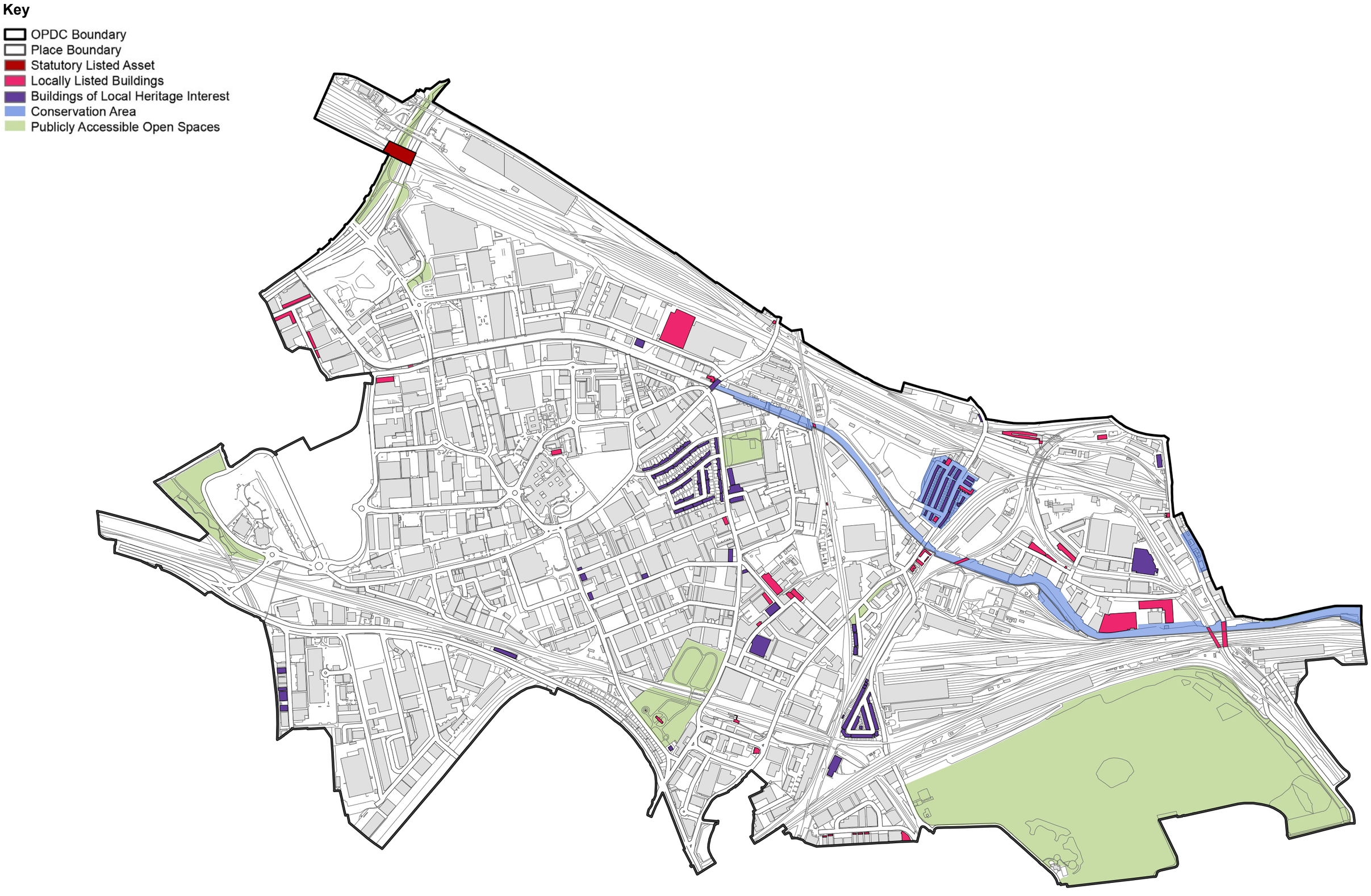
5.3. Industrial areas are often given a bad reputation. This is usually because it is not really clear what goes on in them and, in turn, how significant they are to supporting London as a productive city and our everyday lives. Industrial processes should not be hidden away and OPDC wants to encourage new development and businesses to be proud at what they do and be better at communicating this, including increasing the 'visibility of making'.

5.4. A successful place isn't just based on its physical fabric – good growth is also about the placemaking as well as equity, diversity and inclusion. Therefore, addressing existing issues related to poor access to amenities for industrial workers is also a key priority taken forward in this guidance.

Figure 5.2. Local Art Deco industrial frontage

Figure 5.1. Illustration of how local character and heritage could inform the design of new buildings including the Park Royal typology

Figure 5.3 Heritage assets



5 Industrial character, heritage and sense of place

Principle ICP1 Respecting and enhancing local character

All industrial proposals within and outside of SIL should demonstrate how they are positively responding to local cultural, social and economic heritage and character of the area to create a strong sense of place that is functional, safe and attractive to all by:

a) having regard to spatially specific information and using this to influence the design, including the potential for impact and sensitivity levels, set out in:
   i) Character Study;
   ii) Heritage Strategy;;
   iii) relevant conservation area appraisals and/or management plans;
   iv) Canal Place Making Study;
   v) Area profiles (Appendix 1);

b) seeking to reuse or retain materials, building, typologies and other features that contribute positively towards local industrial character as identified in part a) and any other relevant evidence base; and

c) reflecting the Park Royal typology (see Case Study).

Signposts

National Planning Policy Framework
- Achieving Well Designed Places
- Conserving and enhancing the historic environment

London Plan / GLA
- Policy D3
- Policy D4
- Policy HC1
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- Fire Safety LPG

Local Plan
- Policy SP9
- All Place and Cluster policies
- Design Principle
- Policy D3
- Policy D7

Supporting studies
- OPDC Character Study
- OPDC Heritage Strategy
- OPDC Local Heritage Listings
- OPDC Canal Placemaking Study

Figure 5.4. Illustration of how buildings could be retained and how the Park Royal typology could support activity and character of an industrial street

a) facade design reflecting local Art Deco heritage

c) Park Royal typology helping to create a strong sense of place

b) activation of frontages that provide a glimpse of the behind-the-scenes action and communicates the local economic character

5 Industrial character, heritage and sense of place

Supporting text

5.5. The OPDC area has a rich industrial heritage and character, as evidenced in the signposted supporting studies. Industrial developments are expected to protect and enhance this character and proposals should include details of how this character and heritage has informed their scheme design within their Design and Access Statements.More detailed information on the key heritage assets and themes in the OPDC area can be found in OPDC's Heritage Strategy.

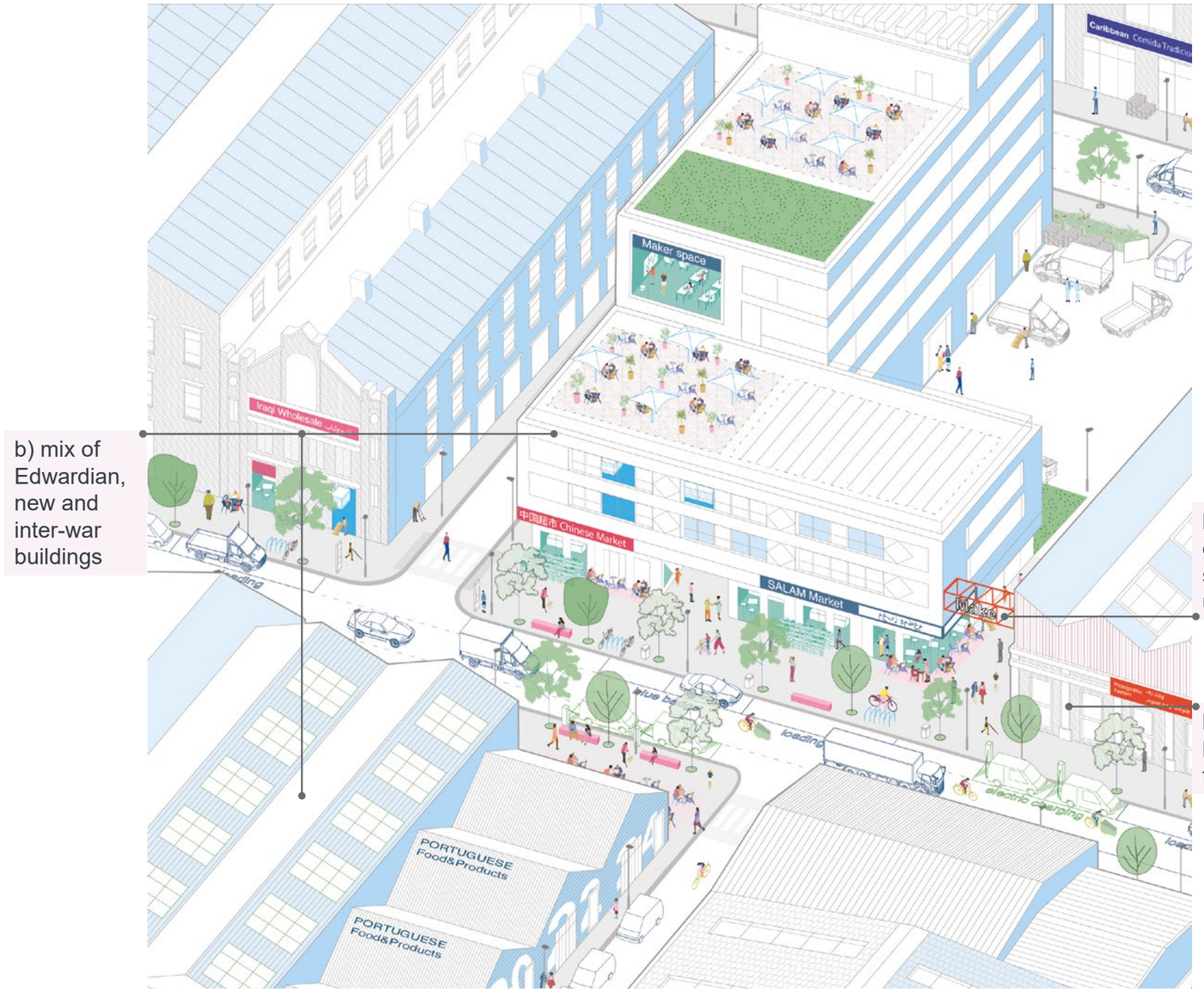
5.6. Industrial heritage is highlighted as one of the overarching themes that is fundamental to the area's history. There is physical evidence of this heritage in terms of the stock of historic buildings, but there are also less visible, important social and economic dimensions to this.

5.7. Many of the older industrial buildings are still in use today and continue to be repurposed for a mix of occupants. Due to their age, they can also sometimes provide more affordable space relative to newly built premises. This is particularly the case in Old Park Royal where the nature of these buildings/grain not only support a mix of vibrant smaller businesses but also a diverse business community. Whilst redevelopment will involve new and different forms of development, in line with OPDC Local Plan Policy E1, existing small business units should be reprovided.

5.8. Another defining heritage feature of the area is the Grand Union Canal, and its designation, in part, as a conservation area.

Figure 5.6. Edwardian industrial facade

Figure 5.5. Illustration of what new and older building typologies within the OPDC industrial context could look like



5 Industrial character, heritage and sense of place

Canalside industrial developments should conserve and enhance the canal's unique character in line with OPDC's Local Plan Policy P3; and consider opportunities to improve the industrial canalside referenced in OPDC's Canal Placemaking Study. Developers bringing forward industrial proposals should engage with relevant local businesses, users, the Canal & River Trust (who own and manage the Grand Union Canal) and local communities to put the unique qualities and functionalities of the Grand Union Canal at the heart of their design proposals.

5.9. The cultural, social and economic dimensions of industrial heritage also reflect the change from a rural landscape to an industrial powerhouse and transport hub. This includes stories of the significant businesses and industries that once operated in our area and their associated social clubs and broad range of community activities that took place. This brought a mix of workers and residents together from diverse communities, supporting multiculturalism. New proposals that are located along the key routes and well connected to the public transport hubs by walking or cycling, could play a key role in celebrating the rich cultural, social, and economic heritage and the industrial identity of the area, particularly by incorporating activation of frontages to provide a glimpse of the behind-the-scenes action.

5.10. OPDC's Character Study identifies the varying nature of different parts of the OPDC area. Development should be responsive to this, considering:

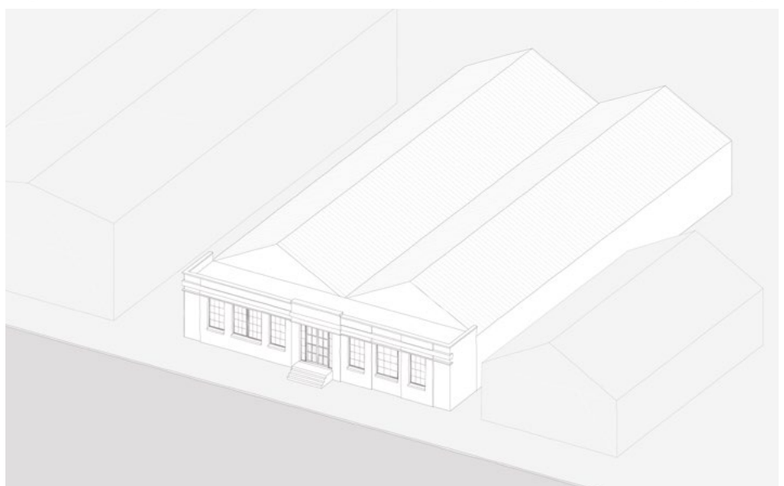
- positive elements of character and how to use these to inform future development
- potential level/sensitivity of impact from future development, taking into account the value of existing character; and
- issues that may provide opportunities for improvement in urban character.

5.11. A contextual appraisal should inform the design process of any new industrial development proposal, both within and outside of SIL area, and should be used to influence design choices, such as architectural-style, building typology, material selection and boundary treatment (see also Principles in section 6: Built Form). Where appropriate, new proposals will be expected to reuse, retain or incorporate materials and building/typology features. Reusing and retaining features can help maintain industrial character and heritage and also support the reduction of waste and the circular economy (see section 9). Opportunities should also be taken to incorporate elements of the distinctive Park Royal typology (see Case Study) that contribute positively towards local industrial character. OPDC acknowledges that the Park Royal typology might not work on all sites, however there will be sites that already have this typology and heritage assets related to this so there are potential opportunities respond positively to this in the design. The most appropriate approach will be considered on a case by case basis. Applicants should test options for delivering/ retaining the Park Royal typology on site as a starting point, and show evidence of this within Design and Access Statements. This should include a clear and robust justification/rationale if an alternative approach is proposed as a result of testing. Applicants should outline the benefits of an alternative approach and how many of the issues that the Park Royal typology provides a positive response to (i.e. the potential for active/positive street frontages, the removal of fences, locating yards away from the public realm) will be resolved.

5.12. All design solutions should apply the information in the supporting studies and be based upon a robust understanding and evaluation of the defining characteristics and assets relevant to the development site and demonstrate how proposals will positively respond to local heritage and character of the area. This must be considered from the earliest design stage and demonstrated through the Design and Access Statement.

5.13. Within the SIL, the challenge remains that industrial intensification will increase the density of an industrial area that is already relatively dense. This intensification will require new and innovative approaches to design, both at the individual site level and at the street and neighbourhood scale. Therefore, it is essential these proposals are carefully designed, so that all design elements such as building typology, massing, layout, height, density, façade treatment and the relationship of the building to the street are sensitive and respond to local context, history, and the character of the area. More detail about these considerations are also included in Section 6 of the SPD (Built Form).

Figure 5.7. Illustration of the Park Royal industrial building typology



Case Study - The Park Royal industrial building typology

The Park Royal industrial estate has a distinct character. This is in part due to its rich mix of building typologies and activities along some of the area's busiest roads. An important typology consists of a purpose-designed street facing 'block' sitting as a buffer between the road and a much larger warehouse or industrial shed. Their human-scale design creates a strong positive frontage and provides the flexibility for uses to evolve over time. Many of these buildings now accommodate a variety of uses, from ancillary uses to small manufacturing activities.

<u>Defining features</u>

The look and feel of Park Royal buffer buildings is fundamentally different from the industrial sheds located behind them:

- They are purpose-designed buildings.
- Their average dimensions are 26 x 9 meters, and no more than 3 floors high.
- They are built from robust self-supporting materials.

Figure 5.8. Industrial sawtooth roof typology

Figure 5.9. Art Deco frontage

5 Industrial character, heritage and sense of place

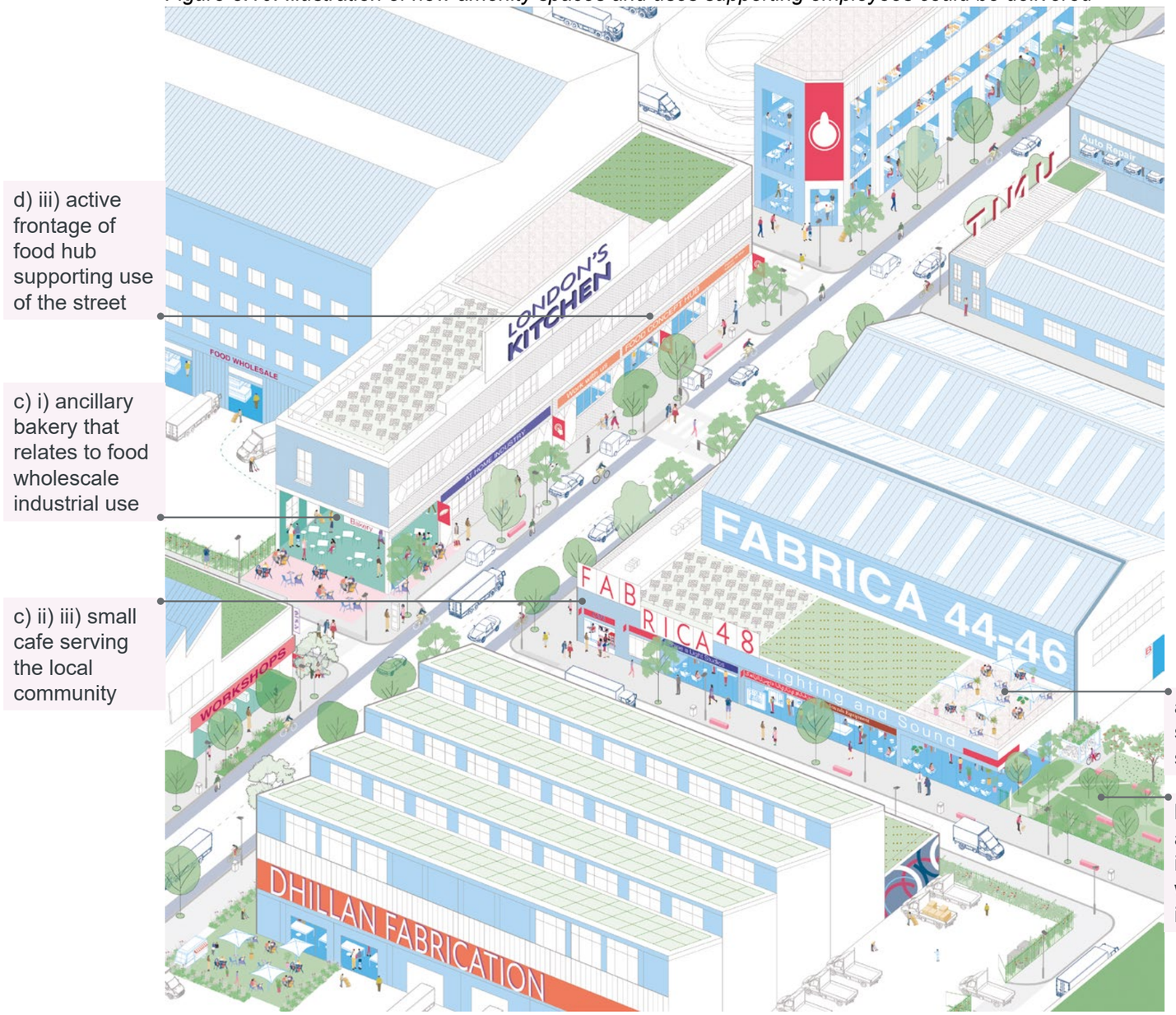
Principle ICP2 Amenities and supporting facilities for businesses and their employees

a) All industrial proposals within SIL should provide a mix of indoor and outdoor onsite staff amenity space if feasible. This should be designed to be inclusive and accessible, taking into account relevant design guidance;
b) Outdoor staff amenity space should:
   i) be incorporated as part of green infrastructure provision, prioritising locations adjoining public open spaces including the Grand Union Canal, and/or provide new access to the canalside where it would be safe to do so and subject to formal agreement with the Canal and River Trust;
   ii) explore the use of rooftops where feasible, having regard to Principle BFP2;
c) Additional amenities and supporting facilities that could be considered within and outside of SIL include:
   i) ancillary uses that have a direct relationship with the industrial uses on site;
   ii) ancillary uses that are indirectly related to the industrial uses on site but can clearly demonstrate that they serve the local business and employee community;
   iii) other town centre / social infrastructure where these accord with Local Plan Policies TCC1 and TCC3;
d) In any case, additional provision should:
   i) deliver amenities and facilities that support industrial businesses and their employees;
   ii) not compromise the function/integrity of SIL if the proposal is located there; and
   iii) usually be focussed onto key routes and deliver an active or positive ground floor frontage that is accessible and inclusive in line with Principles MP1 and BFP5.

Principle ICA2 Amenities and supporting facilities for businesses and their employees

All industrial proposals are encouraged to:
a) sign up to the Womens' Night Safety Charter; and
b) adopt the Mayor's Good Work Standard, including adopting guidance on night workers' wellbeing and amenity.

Figure 5.10. Illustration of how amenity spaces and uses supporting employees could be delivered



5 Industrial character, heritage and sense of place

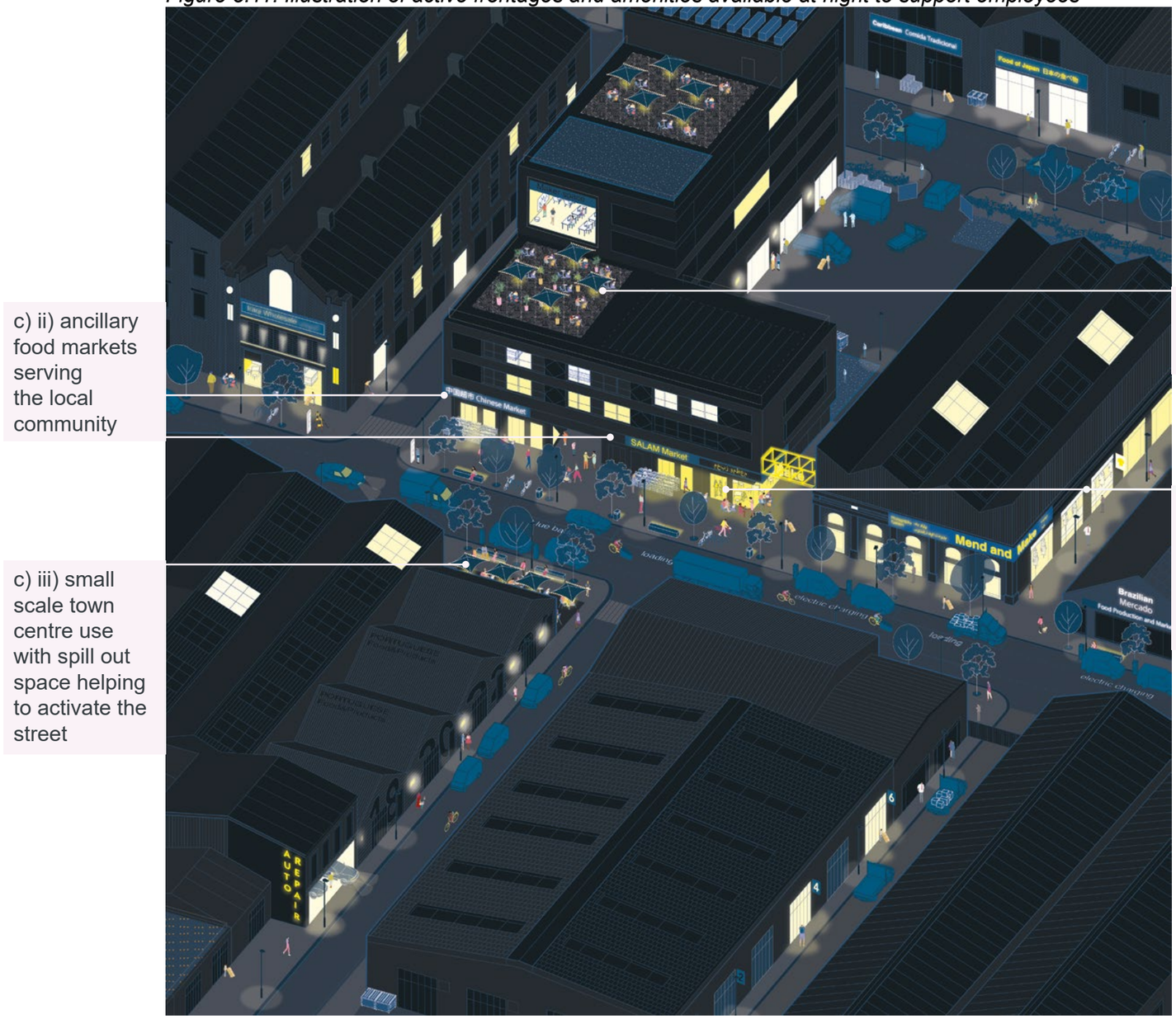
Signposts

London Plan / GLA
- Policy E4
- Policy E5
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- Fire Safety LPG
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy E1
- Policy E2
- Policy TCC1
- Policy TCC3

Supporting studies
- OPDC Industrial Estates Study
- GLA Women's Night Safety Charter
- GLA Safety in Public Spaces, Women, Girls and Gender Diverse People - Good Growth by Design
- GLA Good Work Standard

Figure 5.11. Illustration of active frontages and amenities available at night to support employees



Supporting text

5.14. The OPDC Industrial Estates Study found that there is more limited access to amenities across the OPDC industrial estate, compared to other similar locations.

5.15. Providing amenities and supporting facilities has several benefits:

- it helps ensure that the industrial area is competitive and an attractive place to do business and to work;
- it supports the wellbeing and retention of staff; ensuring workers in an industrial context are not treated differently compared to other non industrial sectors in this respect; and
- it contributes towards industrial character and positive placemaking through active and positive frontages; and sociability - maintaining the historic legacy of work/play as well as the relationships forged between businesses and the community that has been an important part of Park Royal's history.

5.16. Onsite amenity space should be provided for staff, particularly on larger sites, as part of higher employment generating industrial uses or on multi-unit sites. Amenity space can provide a safe, accessible and inclusive environment for people to take breaks from work, socialise and eat meals. This is even more important in situations where people have very set break times based on shift patterns and offsite amenity options are not in short walking distance. Applicants should think about how they

are helping people to socialise and interact and how the design and arrangement of amenity space(s) supports this and contributes towards general wellbeing.

5.17. The design of amenity spaces should consider diverse staff needs – i.e. social areas to, for example, to make a coffee or have a meal break; and/or flexible spaces that can be used for different activities at different times of the day, such as for sport/ cultural/social activities or private solo or group prayer. Kitchens and toilets should be basic amenities available to staff. Alongside male and female toilets, gender neutral toilets where dedicated, self-contained toilets that maintain privacy for the single user can support inclusion and provide an efficient use of space, should be considered.

5.18. Applicants will be expected to optimise urban greening and biodiversity (see Principle/Ambition GIP1/GIA1: Optimising Urban Greening and Biodiversity and GIP2/GIA2: Green roofs and boundaries). Incorporating outdoor amenity space provision as part of this green infrastructure can address both objectives and provide additional wellbeing benefits, such as access to nature and the comfort of cool, naturally shaded areas during hot weather. The Grand Union Canal is a site of metropolitan importance for nature as well as a significant amenity asset in the area. Development within SIL that adjoins the canal can use this locational advantage and locate complementary onsite outdoor amenity space and/ or support access and improvement alongside the canalside for staff and visitors. This equally applies to other publicly accessible open spaces such as the Wesley Playing fields. Applicants should undertake early engagement with the Canal & River Trust when considering proposals in relation to the Grand Union Canal.

5.19. Opportunities to provide amenity space on roofs should be explored - terrace and roof space should be considered, as well as the spaces above industrial podiums. These spaces can add to the quantity and variety of places on offer in the area. Principle BFP2 considers rooflines in more detail.

5.20. Ancillary uses, in the industrial context, are usually those uses that are incidental, but directly related, to the primary industrial use on the site. They are physically linked to but subordinate to the main industrial use in scale and function and support the viability/operation of an industrial business within the site. However, in some cases they might be indirectly related but also not independent from the main operation (see examples in Table 5.1). Local Plan Policy TCC1 makes provision for independent (non-ancillary) small walk to town centre uses, subject to a number of criteria being met. These ancillary uses can play a role in providing a broader range of local amenities and services subject to meeting any relevant criteria in OPDC Local Plan Policies TCC1 and E1.

5.21. Ancillary and social spaces that are created should be arranged to support positive and active frontages. If provided on the ground floor, these can help activate streets, celebrate and increase the visibility of the industrial and creative activities. Ancillary uses could be open access or shared on large sites where this would reduce the amount of space required, make more efficient use of land and could support micro or small businesses in the area. Ancillary uses can also be important social spaces that facilitate the business ecosystem and support the expression/ experience of different cultures and identities.

5.22. The priority is to optimise the use of land. OPDC understands land is at a premium in this location and industrial occupiers have operational needs. OPDC will consider the case for ancillary uses on a case by case basis, taking into account the need to protect SIL, the nature/function of the street that the building fronts onto, the size of the site, employee numbers and walking distance to existing town centre uses, site size and floorspace capacity (with the last point having regard to the specifications in Mayoral technical studies and guidance).

5.23. There will be limitations on the extent of ancillary floorspace with a judgement being made on a case by case basis and to protect the overall function/integrity of SIL.

5.24. Employers play an important role in the lives of the people working for them. Not only can they ensure the health and safety of their workers and employees but also that they are fairly treated and rewarded. The Mayor's Good Work Standard brings together best employment practice and links to resources and support from across London to help employers improve their organisations. Organisations able to meet the Good Work Standard can apply for accreditation and recognition as a leading employer from the Mayor. Employers can also enhance the wellbeing and retention of staff by supporting the provision of active travel routes (see OPDC's Local Plan) and improved safety along these routes, particularly at night. The Women's Night Safety Charter aims to make London a city where all women feel confident and welcome at night. It encourages all organisations that operate after 6pm to sign up to some simple pledges. The Mayor's Safety in Public Spaces, Women, Girls and Gender Diverse People - Good Growth by Design Report builds on this to provide a framework for thinking about women, girls and gender diverse people's safety in public spaces to help guide projects.

Table 5.1 Examples of ancillary uses

Description	Potential examples
Ancillary uses that have a direct relationship with the industrial uses on site	An **office** where administration activities related to the industrial use takes place.
Ancillary uses that have a direct relationship with the industrial uses on site	A **retail counter** where goods manufactured on site are sold directly from the counter, with opportunities to celebrate both the process of making and displaying goods along public-facing frontages.
Ancillary uses that are indirectly related to the industrial uses on site but can serve the wider local business and employee community	An **open access canteen** related to the operation and provided to serve employees of an industrial business but also allows other people working within the estate to buy their lunch. With the proceeds going back in to supporting the viability/operation of the industrial business.
Ancillary uses that are indirectly related to industrial uses on site	A **nursery** serving the employees of an industrial business.
Ancillary social infrastructure (where this is not a town centre use) where these accord with Local Plan Policy TCC3	An **ancillary exhibition or performance space**, a public space for people to see the creative outputs produced onsite related to the industrial use.
Small scale walk to town centre uses where these accord with Local Plan Policy TCC1	A small independent **retail food and drink shop**.

Figure 5.12. Towpath Cafe in Hackney providing an example of a small scale ancillary use

Built form

6 Built form

Introduction

6.1. The nature of industry means that it will inevitably evolve over time. OPDC expects to see new building typologies emerge to cope with ongoing demand.

6.2. However, what should remain as a constant is the quality of the built form and the need to successfully mitigate any potential harm/conflicts. Communities should be able to celebrate and enjoy industrial structures for what they are, a reflection of form meeting function. In turn, industry should not turn its 'back', and instead take opportunities to make industrial activities more visible and engender a sense of place.

6.3. By doing these things well, the nature of industrial streets, their visual appearance, sense of vibrancy and safety, will also be improved. The Principles provide more guidance on how to do this.

6.4. The Industrial Intensification and Co-location study was published in 2018 by the GLA. The GLA is preparing new emerging guidance – Designing Industrial Intensification and Co-location report and wider Industrial London Plan Guidance- that is anticipated to include indicative building standards for different model building typologies. This, together with other GLA design guidance it will be a key resource to consider when thinking about the built form.

Figure 6.1. Illustration of how different industrial building typologies could come forward to frame an improved street environment

6 Built form

Principle BFP1 Adjacencies and agent of change principle

a) Industrial proposals within and outside of SIL should be designed with the appropriate orientation of buildings - locating fronts with fronts and backs with backs of buildings where possible.

Residential uses

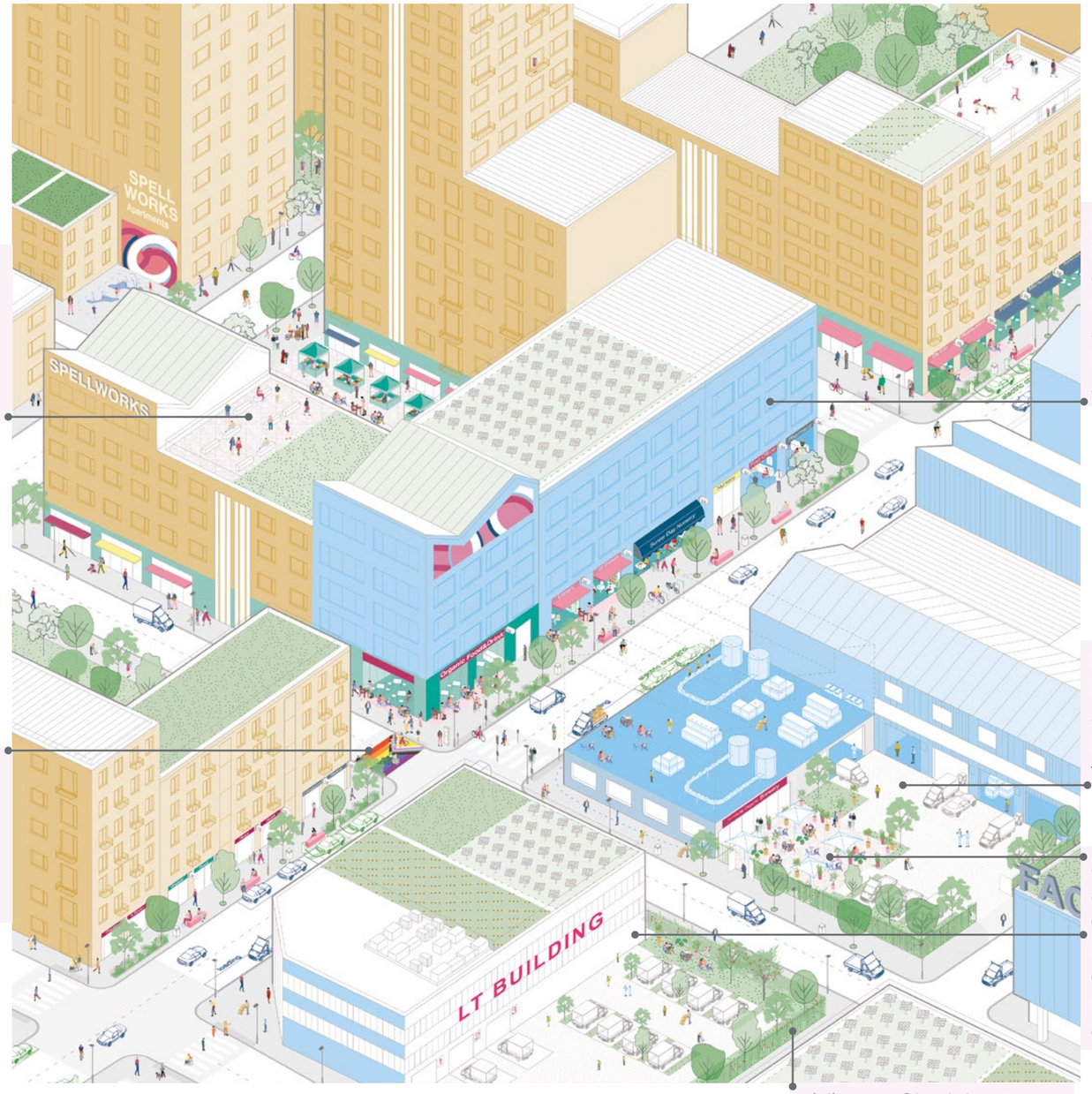
b) Industrial proposals within SIL and adjacent to residential areas should be designed to mitigate the impacts of the conflicting uses considering the following:
   i) the provision of buffers on the SIL side or non SIL side or both to separate the uses;
   ii) locating industrial servicing facilities and routes away from sensitive uses;

c) Where industrial is contiguous (i.e. where there is no separation such as a road) with residential areas, proposals should respond to adjacent uses, in terms of their palette of materials and details, and this mixed use character. The application of hard-wearing, tactile materials is encouraged in line with Principle BFP6;

Primary Streets and railway corridors

d) Industrial proposals within SIL or outside of SIL located along primary streets or railway corridors should deliver:
   i) highly visible positive frontages and place branding that does not affect safety or amenity and is coordinated with other elements of the proposals, with particular emphasis on the creative integration of:
      - colour;
      - signage;
      - lighting;
      - public art; and
   ii) green infrastructure and landscaping that help mitigate conditions arising from proximity to an infrastructure edge in line with Principles/Ambitions GIP1, GIP4, MIP1, MIA1, MIP2, MIA2.

Figure 6.2. Illustration of how principles could be applied along the interface between SIL and mixed use areas



6 Built form

Canal and Public Open Spaces

e) Industrial proposals within and outside of SIL along the canal or public open spaces should provide positive frontages and actively complement them by:
   i) introducing green boundaries such as hedging and appropriate planting that soften the edge whilst providing important habitats in line with Principles/Ambitions GIP1, GIA1, GIP2, GIA2, GIP3, GIP4 and GIA4;
   ii) locating outdoor public open space/staff amenity space along the canal or adjacent to existing public open spaces, and exploring more direct employee access to the canal or public open space in line Principles ICP2 and GIP3:
   iii) facades and public art/signage that presents a higher quality frontage onto the canal and/or open space and communicates the use of buildings;
   iv) improving access to the Grand Union Canal and/or public open spaces by delivering new and/or improving publicly accessible routes and wayfinding infrastructure;

Town centres

f) All proposals within and outside of SIL and adjacent to town centres should enable permeability along active travel routes between the SIL and non SIL sides for the freeflow of people, including creating breaks in the built form to allow for new routes where appropriate;

Agent of change

g) All mixed used or non-industrial proposals that adjoin SIL or existing industrial uses should not compromise the continued operation of industrial and related activities in line with London Plan policies E5 and D13. Design and Access Statements should include details of how matters concerning the Agent of Change and relevant mitigation measures have been considered and addressed;
h) All mixed use proposals delivering industrial floorspace outside of SIL should be designed to ensure that each use is successfully integrated but incorporate mitigation for noise, dust, odour, vibration and other nuisances and be in line with London Plan policy D13 and any mayoral guidance. Consideration should also include but not be limited to the following:
   i) ensuring industrial activities are enclosed where feasible and buildings are designed to transfer noise and vibration through the structure of the building, addressed

Figure 6.3. Illustration of how industrial developments could complement the Grand Union Canal

by structural separation and increased wall and floor acoustic performance specification;
ii) locating/orientating residential habitable rooms, openable windows and external private amenity space away from industrial operations, or if this is not feasible, make use of balcony parapets, winter gardens and triple glazing;
iii) incorporating acoustic screening, fencing and light mitigation measures;
iv) ensuring extraction, ventilation and energy plant is appropriately provided and located for industrial uses to reduce potential nuisance;
v) designing yard spaces to reduce vehicle movements, including eliminating or reducing reversing manoeuvres;
vi) creating a visible presence for the industrial business to support commercial sustainability and/or for day to day operation;
vii) including a separate access for loading, deliveries and parking for industrial units to maintain the quality of any residential led neighbourhoods; and
viii) considering any other GLA guidance related to this.

Figure 6.4. 12 Thames Road, a housing and industrial mix building proposed by Be First

Signposts

National Planning Policy Framework
- Achieving well-designed places

London Plan / GLA
- Policy E7
- Policy D13
- GLA Industrial Intensification and Co-location Study
- Fire Safety LPG
- Urban Greening Factor LPG
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy SP6
- Policy SP7
- Policy SP8
- Policy SP9
- All Place and Cluster policies
- Policy D3
- Policy D5
- Policy EU1
- Policy EU2
- Policy EU4
- Policy EU5
- Policy EU10
- Policy T7

Supporting studies
- OPDC Canal Placemaking Study
- OPDC Park Royal Development Framework Principles

Supporting text

6.5. Whatever the use or adjacency, industrial and non-industrial uses have a shared responsibility to address the other in terms of orienting buildings - locating fronts to fronts and backs to backs, unless doing so would be infeasible.

6.6. Parts of the OPDC Strategic Industrial Location (SIL) boundary interface with non-industrial uses, in particular town centre, residential, open space, major road/railway corridor and canalside locations. Each of these different 'adjacencies' are associated with different opportunities and challenges (see adjacencies map and Table 6.1) and Principle BFP1 identifies some key ideas that should be considered as part of development proposals to address these conditions. Appropriate mitigation should always be considered and delivered through the design and construction of a building and proposals should comply with London Plan and Local Plan Agent of Change and design related policies.

6.7. The Agent of Change is based on the principle that whoever causes a change in the environment (agent of change) is responsible for managing the impacts of this change. Therefore, following this definition, incoming/new development should mitigate against potential issues arising from existing uses/development. This applies to intensification and co-location; in both cases, proposals should not compromise industrial operations. New sensitive uses will need to demonstrate that they will not be disturbed by sources of noise, dust, vibration etc through building layout and location, insulation and glazing, and other interactions, such as issues with ventilation and overheating. The Mayor's London Plan and OPDC's Local Plan set out detailed policies related to this and what should be considered as part of wider design mitigation. Technical design specifications and design guidance has or is being developed by the GLA. Principle BFP1 identifies some specific ideas related to the built form that could help assess whether impacts are appropriately managed. Specific mitigation could include covering industrial yard space and utilising this as podium amenity space where possible to help with acoustic and light pollution. Again, appropriate mitigation should always be part of the design/construction of the building. In addition to this, applicants might also want to consider developing lease agreements that control noise, dust, light, odours and vibrations. However, making provisions in lease arrangements alone would not be a sufficient means to mitigate for the potential impacts arising from development.

6.8. It is important for applicants to submit an assessment related to agent of change as part of Design and Access Statements so that up to date knowledge and considerations can be fed into this.

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Table 6.1 Examples of adjacencies

Area type	Conditions	Opportunities/ Challenges
Residential	Where SIL immediately abuts existing/ proposed residential.	Opportunity: To manage sensitivities including through considering the use of buffers. Examples of this could include by locating compatible ancillary or publicly accessible uses or staff amenity (see Principle ICP2) or urban greening (see section 7) along these edges. Compatible ancillary uses could present opportunities to benefit local business, employees and residents alike. These examples demonstrate that buffers can be based on what is might typically be provided on site but thoughtful positioning could help mitigate impacts between different uses. Challenge: Mitigating impacts between SIL and sensitive uses and the need for appropriate separation and nuisance abatement measures embedded in the design development
Primary street and railway corridors	Along roads and railways - where SIL is being experienced by people moving through at pace.	Opportunity: Less sensitive edges therefore larger buildings might already exist or be proposed here. These movement routes tend to carry a high volume of vehicles/carriages (and therefore people) and there is an opportunity to exploit this visibility and improve the qualitative perception of the area (i.e. in terms of façade design, use of supergraphics, lighting and public art along these corridors).
Canal and open space	Where SIL adjoins the canal and open space.	Challenge: Buildings typically don't engage with the canal positively. Opportunity: Rethinking the 'backs' of businesses located along the canal can help to make the canal 'friendlier', enhance the natural environment/greening and improve its biodiversity value – helping provide wellbeing benefits to workers, local community and visitors.
Town centre	Where SIL meets town centre.	Opportunity: To celebrate and integrate SIL and connect it to supporting services and amenities.

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Principle BFP2 Scale, massing and rooflines of new industrial buildings

Industrial proposals within and outside of SIL should:

a) ensure the form and massing:
   i) positively responds to local character and heritage (see Principle ICP1), including the Park Royal typology, while enabling industrial intensification;
   ii) avoids long spans/frontages that are overbearing, blank and monotonous and that lack variety, visual interest, or physical breaks (see Principle BFP3ii);
b) deliver active and/or positive frontages along streets (see Principle BFP5);
c) ensure the design and articulation of rooflines is functional and:
   i) demonstrate an understanding of, and positively contribute to, local industrial character, heritage and sense of place in line Principle ICP1;
   ii) carefully consider the relationship between the roof and the façade;
   iii) appropriately consider orientation, order, rhythm, repetition and the expression of internal structural forms;
   iv) where they provide green infrastructure and/or amenity (see Principles/Ambitions GIP2, GIA2 and ICP2), explore opportunities to make these spaces visible from the street by using appropriate guarding treatment;
   v) ensure the provision of, and visibility of, plant and building services equipment is minimised in line with Local Plan Policy D3;
   vi) ensure that access to the roof and associated vertical structures have been considered as part of the overall massing composition; and
   vii) considers access to natural light, the delivery of photovoltaics, green roofs, rooftop amenity or parking (see Principles/Ambitions GIP2, GIA2, ICP2, MP3);

Principle BFP3 Designing large footprint and taller buildings

Industrial proposals within SIL proposing large footprint buildings with large span/long frontages should:

a) be of a high quality design in their own right and not adversely affect the quality of the industrial area;
b) break up massing through vertical breaks in the building line or by incorporating distinctive, high quality elements into the design, such as greening, circulation cores, fenestration and vents and careful use of materials, colour and public art;
c) incorporate other compatible SIL compliant uses with higher employment densities including provision that complies with Local Plan Policy E3 as active and/or positive frontages;
d) provide a positive relationship with the street; and
e) where possible, reduce the size of blocks or consider breaks in between blocks to increase permeability and create new accesses if opportunities to connect up walking and cycling routes exist.

Signposts

National Planning Policy Framework
- Achieving well-designed places

London Plan / GLA
- Policy D4
- Fire Safety LPG
- Urban Greening Factor LPG
- Sustainable Transport, Walking and Cycling LPG

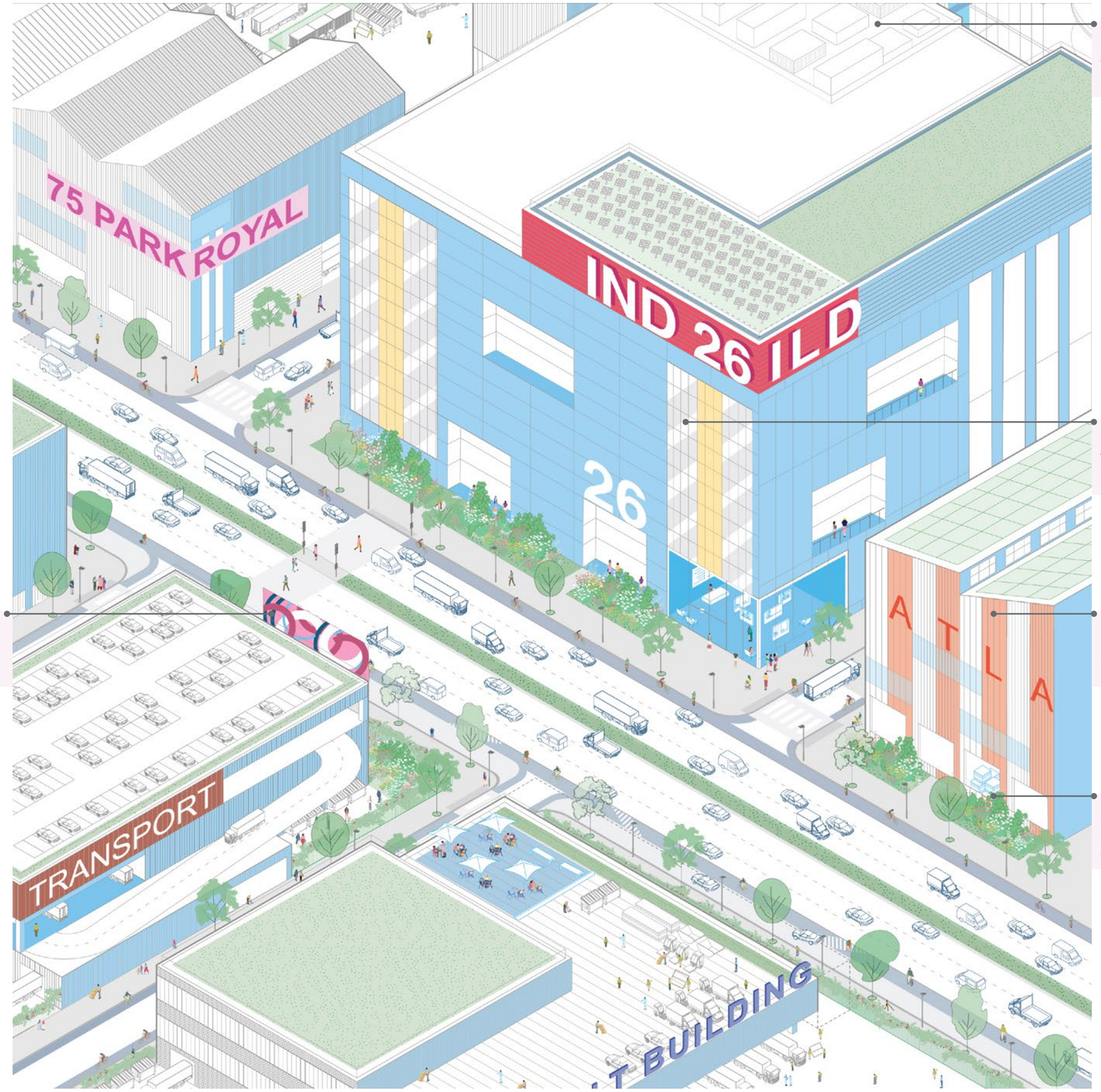
Local Plan
- Policy SP9
- All Place and Cluster policies
- Policy D3
- Policy D5
- Policy D7
- Policy E1
- Policy E2
- Policy E3

Supporting studies
- OPDC Character Study
- OPDC Heritage Strategy

Figure 6.5. Workspaces providing active well-lit frontages to the street, Manchester

6 Built form

Figure 6.6. Illustration showing a range of large scale buildings with design responses to manage their scale



BFP2 c) v) roof plant equipment located to the rear of building

BFP2 a) ii) & BFP3 b) varied frontage design to break up massing

BFP3 b) public art used to add interest and break up facade

BFP2 c) i) sawtooth roof industrial typology utilised in new roof design

BFP2 b) positive frontages used to activate walking and cycling routes

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Supporting text

6.9. OPDC is seeking to meet demands for a range of industrial uses and different business sizes. A proportion of this demand is likely to be uses that typically operate from large format buildings.

6.10. Industrial locations are characterised by enormous change – their ability to flex and evolve, and for buildings to change to suit changing business has to be maintained. However, buildings are not always built with the long term in mind. Also, while the specific nature of the operational activity, function and technical requirements might dictate parts of their design, industrial buildings are not exempt from the requirements to deliver high-quality design that contributes to the betterment of the built environment and the creation of sustainable and successful places. Through thoughtful design, everyone can and should be able to celebrate and enjoy industrial architecture – not just praise its economic outputs (floorspace, jobs, GVA etc). Key to this is focussing on those elements that can make a positive impact without compromising the utilitarian function. Whilst the form and structure of these buildings might be simple, influential moves could focus on other elements – for example the articulation of the building, how the building interacts with the street (based on the pedestrian experience), the roof form, choice of materials, use of colour, legibility and permeability etc – can be used effectively to create a positive architectural presence.

6.11. Reflecting the constraints of land availability within the Strategic Industrial Location (SIL), industrial growth is expected to be largely driven by the delivery of industrial intensification, which can include multi storey industrial developments. Principle BFP4 (Intensification - Efficient site layout and plot ratios) sets out a variety of considerations that will drive the most appropriate intensification typologies, depending on a range of site and contextual factors and constraints. The approach should be driven by applying innovative and high-quality design solutions that intensify and diversify the types of spaces, moving away from past trends of single-use, low-density sheds where feasible. The proposals should use the most suitable built form to intensify the site responding to the distinct industrial character and urban grain of the area as set out in Principle ICP1: Respecting and Enhancing Local Character. Opportunities to present a smaller scale along the street frontage, taking cues from the Park Royal typology (see Case Study) should be explored.

Figure 6.7. Here East demonstrating approaches to delivery a high quality large frontage

6.12. By virtue of their function and size, large footprint buildings including data centres have specific design challenges which, if not addressed at the outset of the design process, could have a detrimental impact on delivering high-quality places. Therefore, this guidance should be taken on board as the scheme is developed and demonstrated through Design and Access Statements. Further details on how to approach different aspects of schemes is set out in the paragraphs that follow.

<u>Responding to local context</u>

6.13. London Plan and Local Plan policies both require development to have regard to the form, function and structure of an area and the scale, mass and orientation of surrounding buildings.

6.14. The design of buildings need to be informed by a detailed analysis of the existing context, to reflect the local character and heritage of the area and respond to the grain of the surrounding context. This should also include an analysis of how the urban form has changed historically to the present day.

6.15. The scale and character of existing buildings, public open spaces and the Grand Union Canal in the immediate and wider surrounding area should be analysed to identify sensitive locations such as residential areas, buildings of heritage value, public open spaces or the canal itself.

6.16. Where possible as a first principle, due to their scale, data centres should consider the locational considerations set out in Principle LCP1 (Locational considerations) of this SPD to minimise potential impacts. Where this is not possible, the scale and massing of these and other industrial buildings should be designed to ensure that they do not negatively impact on sensitive locations within the surrounding area by having an overbearing and domineering presence.

6.17. The spatial requirements of large footprint or taller buildings can pose significant challenges in terms of achieving an appropriate proportion and scale, and due to the comparatively large dimensions of the facilities. Proposals should be measured against the prevailing scale of the local context through detailed three-dimensional modelling, to evaluate the impact of the proposed form against the existing pattern of development.

6.18. Sensitive townscape views should be identified early, to test the impact of potential massing arrangements on the prevailing character of the area, to design out, at the outset, any harmful aspects of the proposal. This may include the arrangement of scale and massing, provision of setbacks and ensuring the design of

detailed elements and elevations complement sensitive uses.

6.19. Any potential residual negative impacts that arise from the scale of the built form should be mitigated by considering the implementation of a range of approaches, as set out below.

Siting of bulk and massing

6.20. Design and Access Statements should explore alternative massing/bulk options early in the design process to test how the distribution of massing impacts on sensitive locations through undertaking detailed townscape views. These options should be evaluated and developed through an iterative design process so that a view can be taken on the overall volume.

Articulation of bulk and massing

6.21. Massing can be articulated to reduce the impact of the bulk through fragmenting the appearance to a series of smaller volumes. The rationale for articulating the massing should be grounded in reconciling a number of design considerations, as covered in this document, including but not limited to the presence and distribution of positive/active frontages (i.e. how smaller scale ancillary functions within these frontages can be articulated as such); removing bulk that is based on concealment of elements that could be exposed and celebrated industrial features; the expression of spatial hierarchy; and expression of a finer grain/ smaller scale street frontage (see Park Royal Typology Case Study, page 28).

Maximising opportunities for enhancing setting

6.22. The setting of buildings and along the street can be enhanced by incorporating high quality green spaces and trees that can be enjoyed by staff and from the public realm (see Principles/ Ambitions ICP2: Amenities and supporting facilities for businesses and their employees; GIP1 and GIA1: Optimising Urban Greening and Biodiversity; GIP4/GIA4: Trees). These areas should be identified from the outset and the siting of the built form then be proposed in a way that relates to this, including ensuring that the landscaped and amenity areas are not unduly impacted by the built form and that the arrangement can create optimum conditions for the landscape to thrive and be enjoyed by staff and local people (see Principles/Ambitions GIP1/GIA1: Optimising Urban Greening and Biodiversity; and MIP3/MIA3: Amenity for outside spaces). For example, a setback of the front façade to allow for greening and amenity, if appropriate in line with Principle BFP5 (Principle BFP5: Building lines, boundary treatments and frontages), can create the opportunity for a welcoming pavement and positively contribute

Figure 6.8. London 1 Data Centre with well designed facades, Dagenham

Figure 6.9.Chapelle International - Logistic Hotel, Paris

towards a high-quality public realm. Proposals should also explore how the overall landscape design relates to a wider analysis of green infrastructure provision in the area.

6.23. Where large footprint buildings require servicing by heavy goods vehicles (HGVs), these yard spaces should not be detrimental to the setting and character of the area (See Principle MP3: Yards, Vehicle Servicing and Parking). It is recommended that the efficient tracking of vehicular movements is considered early on in the design development process in order to minimise the extent of hard surfacing required for the industrial operation, and to maximise opportunities for urban greening, biodiversity and trees; thereby also enhancing the setting of the building and the local area.

Optimising relationship to streets

6.24. Large footprint buildings with long spans can relate poorly to streets as the overall bulk and massing can be overbearing. If left unchecked, they have the potential to result in large expanses of inactive facades, which is a key character issue identified in supporting studies. Furthermore, the security requirements of some large footprint buildings can exacerbate issues, through the introduction of fences.

6.25. Long spans/frontages that are overbearing and monotonous, without any variety, visual interest, or physical breaks, should be avoided. Design proposals should minimise large expanses of blank walls or homogeneous material and should include active or positive frontages on the ground and lower floors to better address the street, carefully considering how these uses relate to vehicular and walking/cycling entrances and greening in line with Principles MP1: Access; MP3: Principle MP3: Yards, Vehicle Servicing and Parking; BFP5: Building lines, boundary treatments and frontages and those in section 7 (Green Infrastructure).

6.26. Positively enhancing the character of the street is a key consideration that should be embedded at the start of the design process. The layout of the functions within a large footprint building should be arranged to distribute active and positive frontages against the street.

6.27. Where possible, large footprint buildings should also consider co-locating other smaller industrial units within the development (see Principle LCP1: Locational Considerations and Principle BFP8: Integrating small and affordable industrial workspaces). For example, affordable workspace units that are effectively decoupled from the main large footprint facility, could be

Figure 6.10. Industrial facade providing a positive frontage to the street

implemented along the street edge as a smaller, finer grain volume to 'foreground' a larger footprint building beyond. The provision of these co-located industrial uses will contribute towards achieving other policy objectives set out in Local Plan Policy E3, and will be seen as a strong planning benefit. Bringing the building forward would allow for an efficient site layout with the potential for positive/ active frontages lining the street and also remove the need for fences – all of which will create a better environment along the street.

6.28. Any security measures that are needed must be balanced with the amenities and quality of the wider environment. Security measures should be integrated into the building, street and/ or landscaping design rather than standalone fencing in line with Principle BFP5: Building lines, boundary treatments and frontages.

Celebrating spatial hierarchy

6.29. The different spaces within large footprint buildings often have a spatial hierarchy relating directly to their operational requirements - where some spaces might be large and voluminous whilst others are small and cellular. Proposals should celebrate the opportunity to express the different hierarchy of spaces in the appearance of the building – this can be an important tool for articulating the massing and minimising the impact of a large volume.

6.30. For example, the facades of the building can express the change in volume (from large to small volume spaces), simply through the scale, proportion, and placement of openings. The arrangement of large and small volumes can also often help add a human scale to the appearance of the buildings and, when combined with sensitively locating appropriate uses, can help enhance the character of the street.

Celebrating industrial features

6.31. Some industrial features that are unique to the operational requirements can be celebrated. Carefully curating and organising these industrial features can help achieve a high quality, bespoke appearance to the buildings. For example, where ventilation is required thinking about whether it is appropriate for this to become key to the architectural expression of the whole façade design; and exploring the use of materials that could allow for this to happen i.e. hit and miss brick work or perforated, patterned metal cladding are two examples of this, but the design response will need to look at different options depending on the specific nature of the site and any industrial features.

Architectural expression

6.32. The external appearance or 'outer skin' of large footprint buildings should reinforce the overall urban design principles of the scheme discussed in the preceding paragraphs. Proposals should clearly demonstrate how the choice of materials and their application achieves this. For example, in cases where a finer grain 'foreground' building is being proposed, an appropriate palette of materials should be considered that helps express the building's role in creating a street edge. If a large footprint building is envisaged as a 'background' to the finer grain 'foreground' building, then a muted approach to the appearance of the large volume might be explored, to reinforce its more subdued/ subordinate role in forming the street edge. This approach would help to reinforce and showcase the 'foreground' building.

6.33. Active and positive frontages can be expressed through the use of public art and detailing, and the articulation of the massing, for example where a larger volume structure is setback but a smaller volume structure fronts onto the street, the smaller volume can be expressed as a plinth to reinforce the human scale of the street.

6.34. Reconciling the spatial and technical requirements of these buildings with a carefully selected palette of materials can help achieve a high-quality appearance through careful consideration of several issues.

6.35. The material choices themselves can offer a deep connection to the industrial heritage of the place through direct or indirect references to materials that have been used in the area. Consideration should be given to the scale, texture, grain and

6 Built form

Figure 6.11. Industrial Modernist building with simple features

colour of the materials and their appropriateness to express the conceptual approach to organising the massing.

6.36. Consideration should be given to how certain (i.e. mechanical, electrical etc) requirements can be integral to the design approach. For example, there are many different ways that ventilation design can be integrated such as consistent colour coding and choice of material between it and the façade or using a material that can be designed or applied in ways that allow for perforation such as patterned brickwork, slatted application of cladding materials or laser cut panels. This is one example and an non exhaustive list of potential ideas but it serves to illustrate the need for careful consideration to select materials that can reconcile architectural drivers with utilitarian requirements.

6.37. Large footprint buildings can pose a risk of appearing flat and lacking in character. The architectural expression and choice of materials should therefore explore opportunities to add varying degrees of depth in the facade. For example, the use of deep reveals in parts of the building might be appropriate to help mark features and reinforce the sense of place. Whereas, a flush approach to openings elsewhere might be important to the simplicity and legibility of a singular volume. In addition to this, incorporating transparency into the façade can help add depth by expressing the layering of the construction and celebrate the way in which large volume buildings are detailed. This approach can be combined with lighting strategies to change the way in which the building appears and deliver a positive contribution to the street at night. Also, a carefully curated projecting window could indicate a particular active use. Once more, these examples are not exhaustive, but serve to illustrate an approach to ensuring an expressive facade design and celebrating the industrial use of the building.

6.38. Opportunities to create variety in materials at street level are also encouraged. For example, the possibilities for a change in texture at ground level and diversifying materials in a way that offers a different relationship at street level.

Rooflines

6.39. Roof forms can help create variety and delight, interesting skylines and contribute positively to the industrial character as well as a sense of place. One example is the older pitched and sawtooth roofs evident in the area; the rise and falls in the eaves profile provides visual interest to elevations and to the street scene.

6.40. The design of and access to roofs (including vertical structures such as stairs and lift overruns) should also be considered early in the design process. This should form part of the testing of massing options to explore how the distribution of the massing can minimise impact on sensitive settings and how the articulation of the roof form can positively contribute to enhancing the character of the area alongside relevant functional requirements. Rooftop amenity should take into account potential risks to human health having regard to the placement of stacks, vents and chimneys, and should not result in mitigation that has negative impacts on the skyline and visual amenity of the wider area.

6.41. The overall architectural composition of the massing should be a key driver for defining how the roof meets the facade. For example, where a singular rectilinear form is justified as essential to the massing composition, a parapet – to conceal the edge of the roof entirely – could help define the form of the building. There may be other instances where the roof profile is being expressed and an overhang forms part of the design.

6.42. Roofs can also express internal structural forms – for example, the orientation of pitched or slanted roofs can align with repeating internal structural bays, following a clear structural logic and creating order, rhythm and repetition. All of these factors should be considered as part of the design development process.

6.43. The Design and Access Statement should set out:

- a detailed evaluation of the context, including establishing an understanding of the prevailing roofscape and industrial character and heritage; and

Figure 6.12. Edwardian Torpedo Factory with varied roofline

- an assessment of where the roof might be visible from to help inform how the design can focus on improving the character of the area to maximise its impact. For example, identifying early in the design process if the roof is visible from above can help inform the approach to defining the appearance of the roof. Similarly, identifying if the silhouette of the roofline is visible from long street views should be part of the criteria for informing the overall form and composition of the massing.

6.44. If roofs are utilised for accommodating plant and equipment, including photovoltaics (PVs) and flues, consideration needs to be given to how to minimise the impact of these in accordance with OPDC Local Plan Policy D3. These elements, as well as any safety or maintenance balustrades and railings, should be concealed or integrated into the overall composition and expression of the massing to define the character of roofscape. Where screening is needed, this should help achieve improved legibility of the overall massing composition.

Principle BFP4: Intensification - Efficient site layout and plot ratios

a) Industrial proposals within SIL should:
   i) ensure that all options for industrial intensification have been explored through the design process whilst having regard to Principle ICP1; this should be illustrated in the Design and Access Statement;
   ii) develop sites as efficiently as possible, utilising space to the edge of the site, in line with Principle BFP5;

b) Industrial proposals within and outside of SIL should:
   i) ensure plot ratios are reflective of the demands on spaces such as:
      A. operational yards (see Principle MP3);
      B. where it is justified, car parking (see Principle MP3);
      C. cycle parking (see Principle/Ambition MP2/MA2);
      D. urban greening and biodiversity (see section 7 – Green Infrastructure);
      E. drainage (see Principle/Ambition MIP4/MIA4);
      F. where appropriate, provision of staff amenity (see Principle/Ambition ICP2 and MIP3/MIA3);
   ii) where feasible and to support an efficient use of land, explore the potential to share facilities within and across sites; and
   iii) locate on-site car parking or yard space away from the public realm in line with Principle MP3.

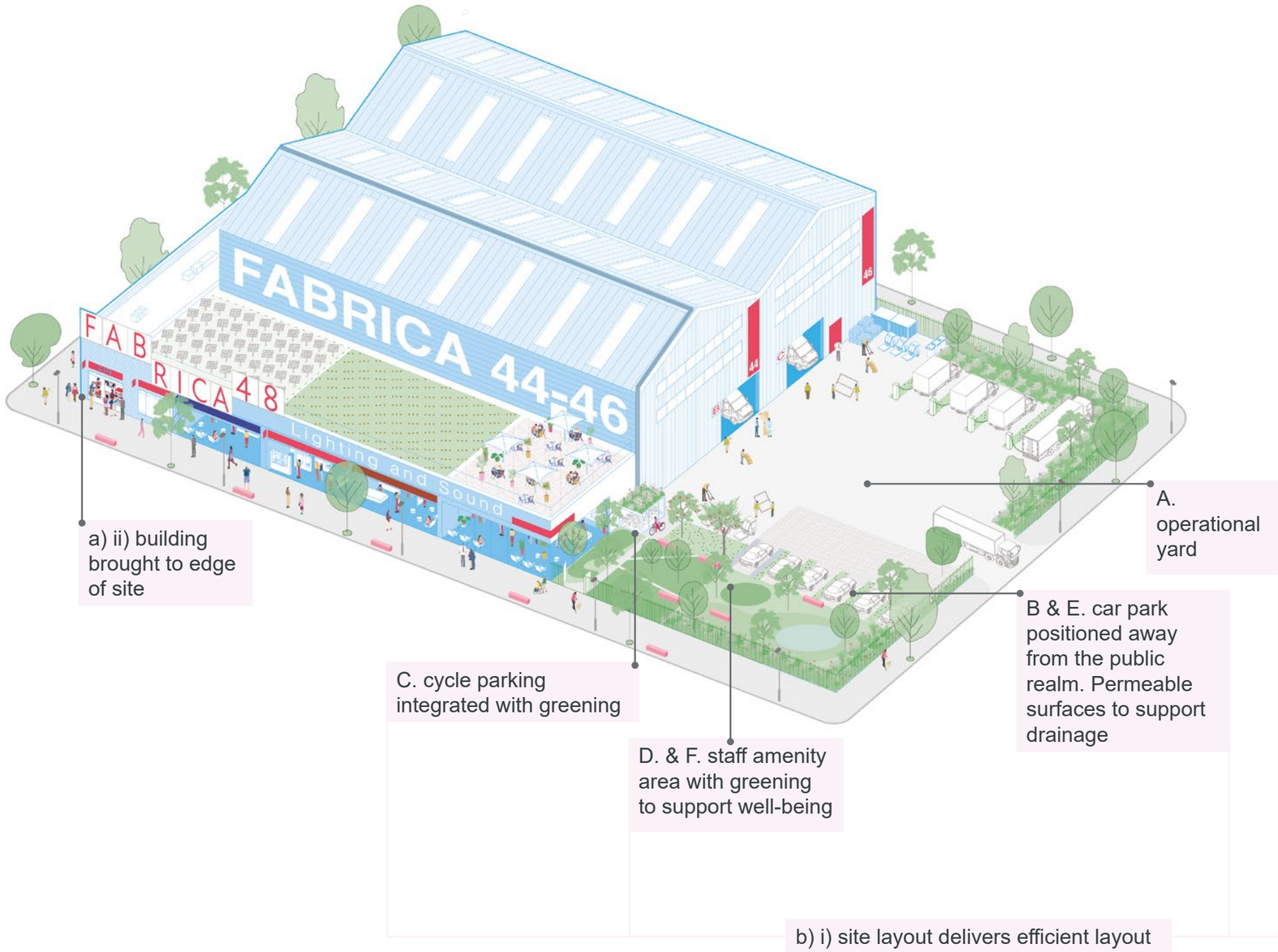
Signposts

National Planning Policy Framework
- Achieving well-designed places

London Plan / GLA
- Policy D3
- Policy E4
- Policy E5
- Policy E7
- GLA Industrial Intensification and Co-location Study
- Fire Safety LPG
- Urban Greening Factor LPG

Local Plan
- Policy SP9
- All Place and Cluster policies
- Policy D1
- Policy D3
- Policy E1
- Policy E2
- Policy E3

Figure 6.13. Illustration showing a how an efficient site layout could be delivered



Supporting studies
- OPDC Park Royal Intensification Study

6 Built form

Supporting text

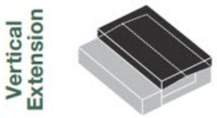
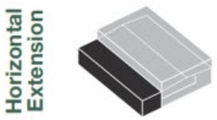
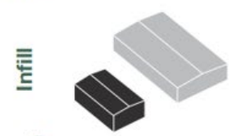
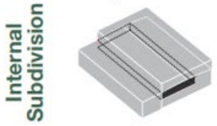
6.45. As industrial land has been lost at a rapid rate across London, what is remaining is increasingly in demand. Park Royal and Old Oak North are of strategic importance as part of London's largest reservoir of industrial land – Strategic Industrial Location (SIL). Industrial land must meet current and future demands for industrial and related functions and make provision for the varied operational requirements of a range of industrial uses and the form of development will be shaped by this. Sustainable intensification, wherever feasible, is a key imperative as part of this. The requirements to protect SIL and, where feasible, intensify industrial uses across the OPDC area are clearly set out in Local Plan Policies SP5 and E1. Intensification will be assessed by measuring the uplift in permanent industrial floorspace (excluding mezzanines) and the plot ratio.

6.46. The OPDC Park Royal Intensification Study shows that large plots of land for new intensive development within the area are few, as well as a lack of vacant and under-utilised land. Therefore, strategies for delivering industrial intensification will typically be seeking to increase the density in an area, which is already relatively dense. These proposals should optimise the use of sites but also need to factor in the need to protect industrial character, support staff amenity, urban greening and to deliver biodiversity net gain amongst other things.

6.47. Intensification can come forward in a number of ways (see table 6.2). The feasibility of each intensification approach would depend on specific spatial conditions and context for each individual development site and the type of industrial use being proposed. These intensification types are not intended to be exhaustive but instead are illustrative of how intensification is envisioned to be floorspace-led. All development proposals should demonstrate how options for intensification have been explored. Options should be assessed and demonstrated early in the design process, with proposals showing how different approaches have been considered to arrive at a design solution which balances the needs of intensification with other requirements. Consideration should be given to operational requirements, flexibility and adaptability to accommodate a range of uses, transport impacts, agent of change, delivery of a high quality public realm and all other relevant planning policy considerations.

6.48. Lower-density sites have a higher potential for transformation, the design proposals should assess the current FAR and area per volume efficiencies. Sites with low parameters will generally be expected to demonstrate how the quantum of development on the site can be increased.

Table 6.2 Examples of different forms of intensification

Intensification Type	Suitable Site Type	Incentive for Development	Risks
 Vertical Extension	Spatially constrained sites	Increase in floor area	Impacts on current occupiers staying operational. Dependant on structural capacity of existing building.
 Horizontal Extension	Sites with underutilised space	Increase in floor area, with the capacity to extend existing site operation	May be fewer opportunities across Park Royal due to high density
 Infill	Sites with large amounts of un-utilised/underutilised space	Increase in floor area with minimal impact on existing occupants	May be fewer opportunities across Park Royal due to high density
 Internal Subdivision	Buildings with sufficient eave heights to accommodate mezzanine floors	Increase in floor area with or without significant structural modifications to existing building	Significantly changes the nature of accommodation possible within building, but could be useful for buildings which have been experiencing long void periods.
 New Provision on Vacant Land	Vacant sites	Provision of high density, high quality accommodation suiting market demand	May be fewer opportunities across Park Royal due to low vacancy rates, but may become more important as buildings reach end of their life.
 Comprehen-sive Redevelop-ment	Large sites under single ownership	Significant upgrade in quality of accommodation and floor area	Requires strong actor to carry risk of large redevelopment, but may become more important as buildings reach end of their life.

6.49. Buildings should line the street and prioritise the location of the active frontages where they can provide activation of and engagement with the public realm in line with Principle BFP5. The creation of any redundant areas such as unnecessary hardstanding, non-accessible open space, areas behind fencing and dimensionally inaccessible spaces should be avoided. Much of this can be achieved from an appropriate and well thought through approach to the layout of the building, in relation to the plot but also its relationship with the surrounding buildings, facilities, road network and infrastructure. A layout where the building is set in the middle of its plot in isolation of other buildings will usually not be supported.

6.50. To optimise intensification opportunities, rooftop parking should also be considered (see Principle MP3) as well as the use of green roofs to provide amenity space for workers and contribute to urban greening (see Principle/Ambition ICP2 and GIP2/GIA2). Sharing of common facilities such as loading areas, storage, meeting and office space, and circulation space between neighbouring businesses can create more efficient, intensive use of space and optimise limited capacity on smaller sites. It can also allow these facilities to be of a much higher quality.

6.51. To mitigate the impact of the increased densities, all design proposals should consider place making, responding to current issues and opportunities as well as delivering industrial intensification in order to create a high-quality place for businesses, employees and visitors (see Principles ICP1 and ICP2).

6.52. Although, the accepted measure of intensification is industrial floorspace, OPDC will also be interested in how this can support a diversity of industrial uses and occupiers, additional jobs, an increase in productivity and in efficiencies of industrial processes. Information on any of these positive changes linked to increased floorspace capacity on sites should be set out in the Planning Statements.

Principle BFP5 Building lines, boundary treatments and frontages

Building line and boundary treatments

a) Industrial proposals within SIL should:
   i) set the building line to the edge of the site, facing onto the street unless:
      - this has a negative impact on the street; and/or
      - a positive forecourt is being maintained or provided linked to a postive frontage or an active frontage in an acceptable location;
   ii) use the building line, hedges and/or landscaping as security measures instead of stand-alone fencing along the boundary edges. If it is demonstrated that fencing is still required, proposals should:
      - ensure the height is reduced as far as possible;
      - maintain important sightlines;
      - deliver appropriate visual permeability;
      - integrate greening, public art and lighting; and
      - represent high quality design.

Frontages and signage

b) Ground floor industrial frontages within and outside of SIL should:
   i) maximise the extent (length) of positive or active industrial frontages, locating and articulating these based on OPDC's Street Family, and improve the industrial canalside in line with Principle BFP1;
   ii) include windows and doors that allow for good levels of visual permeability onto streets. Where possible this should include associated shutters;
   iii) accommodate appropriate ancillary uses, in line with Principle ICP2, on the ground or lower floors where possible;
   iv) ensure lighting can also help deliver benefits by increasing sense of place and feelings of safety at night for people travelling on adjoining streets;
   v) locate yard, loading space and parking in line with Principle MP3;
   vi) incorporate legible signage, comprising number and business name, on individual buildings and/or as signage boards where they are part of a self contained business park;

c) Upper floors should still make a positive contribution to the public realm by acting as positive frontages.

Figure 6.14. Illustration of how principles could deliver building lined streets and active/positive frontages

6 Built form

Signposts

National Planning Policy Framework
- Achieving well-designed places

London Plan / GLA
- Policy D3
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- Urban Greening Factor LPG
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy SP9
- All Place and Cluster policies
- Policy D1
- Policy D3

Supporting text

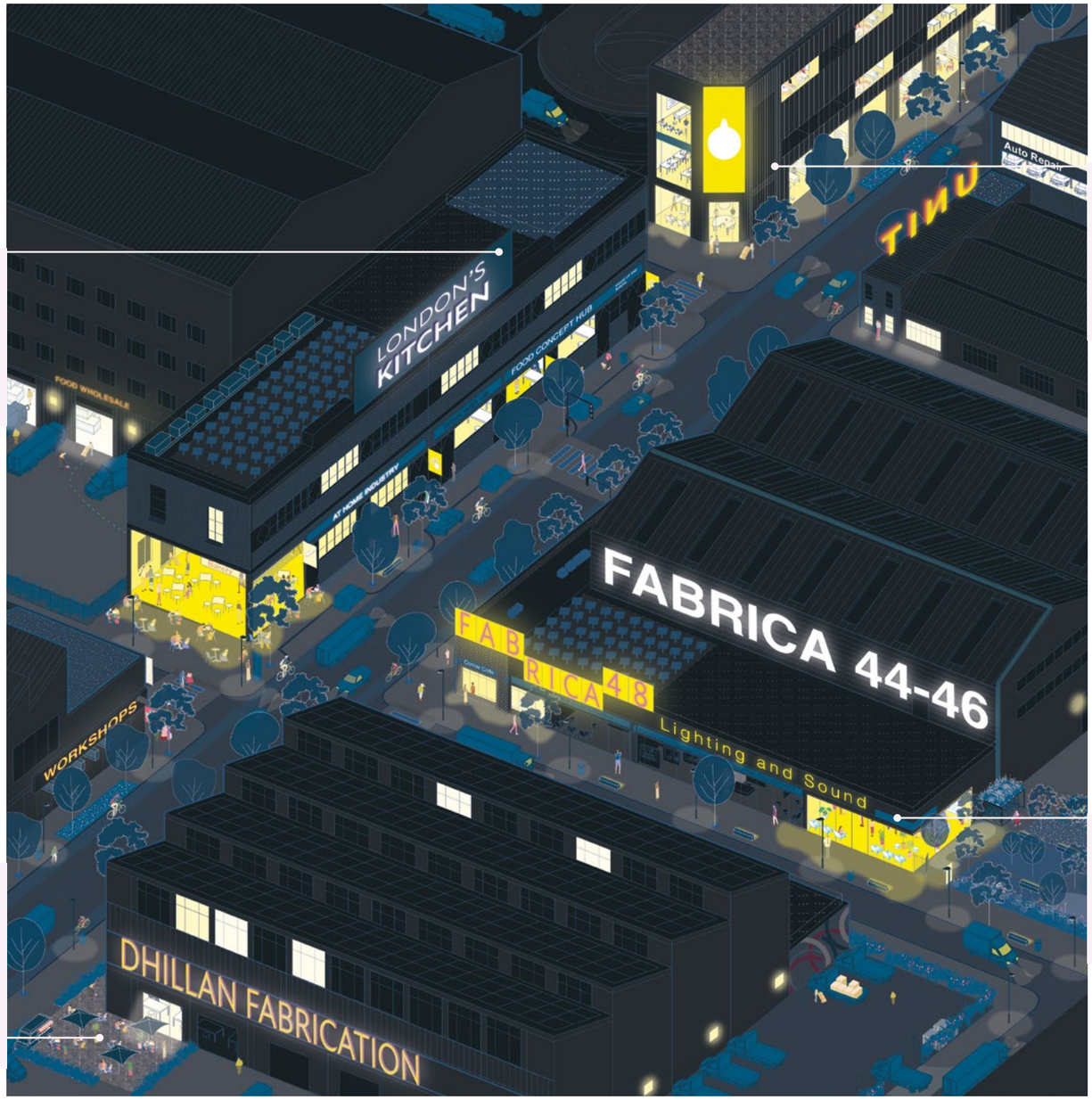
6.53. The way in which industrial buildings, plots, and their activities relate to and interact with the street has a direct impact on how people use and experience the public realm and public spaces surrounding these developments.

6.54. As described in supporting text to Principles BFP2 (Scale, massing and rooflines of new industrial buildings) and BFP3 (Designing large footprint and taller buildings), a key part of the approach to managing the impact of scale and massing of industrial buildings is focussed on what happens along the edges of the building and at the ground and lower floors – referred to as frontages. Further information on what constitutes a good positive and active industrial frontage are shown in Figures 6.14 and 6.15.

6.55. The building frontages should be designed in relation to the role and function of the streets that they are facing (according to the street hierarchy). Better frontages can be created through ensuring building entrances are located directly on streets and allowing buildings to form the boundary of sites. Building to the edge of the plot on the street frontage can create a cohesive street character and remove the need for fences.

6.56. Locating the building at the front of the site can be an effective way of enclosing 'private' external spaces, such as operational yards and car parks, providing a clear distinction between public and private space (see Principle MP3: Yards, Vehicle Servicing and Parking). This will enable industrial activities to happen within the private realm without it adversely affecting users of the public realm and the general environment.

Figure 6.15. Illustration of how principles could support legibility and increased sense of safety at night



6 Built form

Figure 6.16. Well-articulated entrances, San Francisco

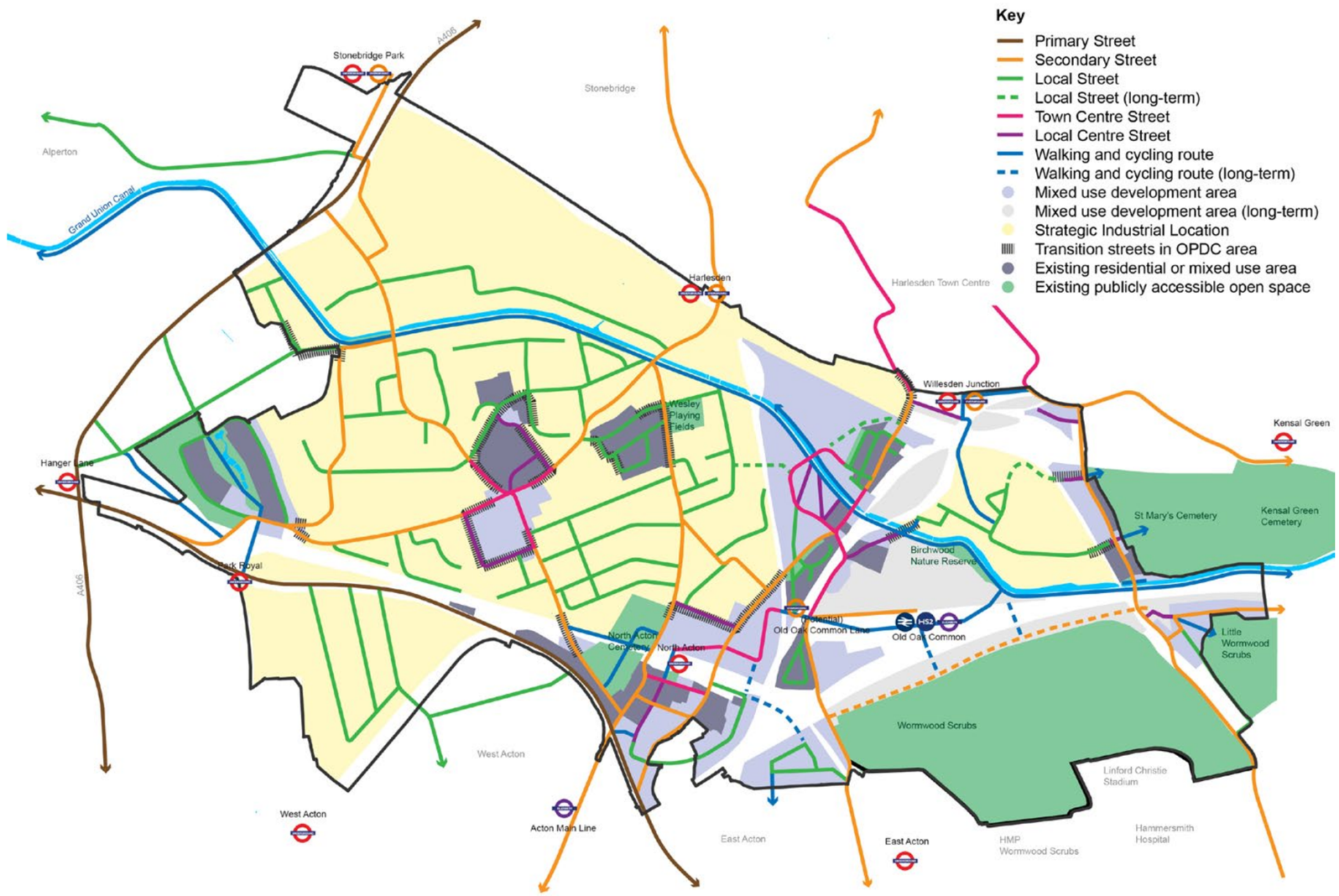
6.57. The building line should be to the edge of the site, unless there would be negative impacts or positive, purposely designed, forecourts are proposed within the boundary of the site. Positive forecourts are open spaces at the front of sites that provide high quality onsite amenity for the benefit of the industrial business and its staff and visitors. It can also allow space for appropriate ancillary uses to 'overspill' onto the street linked to active frontages and should incorporate elements that positively contribute towards the public realm (greening, seating etc). They would not typically include car parking or loading in line with Principle MP3: Yards, Vehicle Servicing and Parking.

6.58. These forecourts will not be appropriate everywhere. Active frontages are more likely to be prioritised along the highest order key walking and cycling routes in OPDC's Street Family, and potentially to act as 'corner' points. Therefore, given the link between the two the same is likely to apply to forecourt provision, however this will be considered on a case by case basis. More information on the street hierarchy and the nature, form and function of different street types will be detailed in the forthcoming OPDC Public Realm and Green Infrastructure (PRGI) SPD. The PRGI SPD will set out the street hierarchy as OPDC's Street Family.

6.59. Industrial proposals with a frontage onto the Grand Union Canal corridor should respond positively to the canal by providing an appropriate setback from the canal of at least 8 metres and by following the other good design principles set out in the Canal Placemaking Strategy and guidance set out in Principles/Ambitions BPF1 (Adjacencies and agent of change principle), GIP1/GIA 1 (Optimising Urban Greening and Biodiversity) and GIP3 (Canalside Edges).

6.60. Fenestration design should maximise the amount daylight for the proposed internal use where possible, such as access to

Figure 6.17. OPDC's draft Street Family (to be finalised in the forthcoming Public Realm and Green Infrastructure SPD)



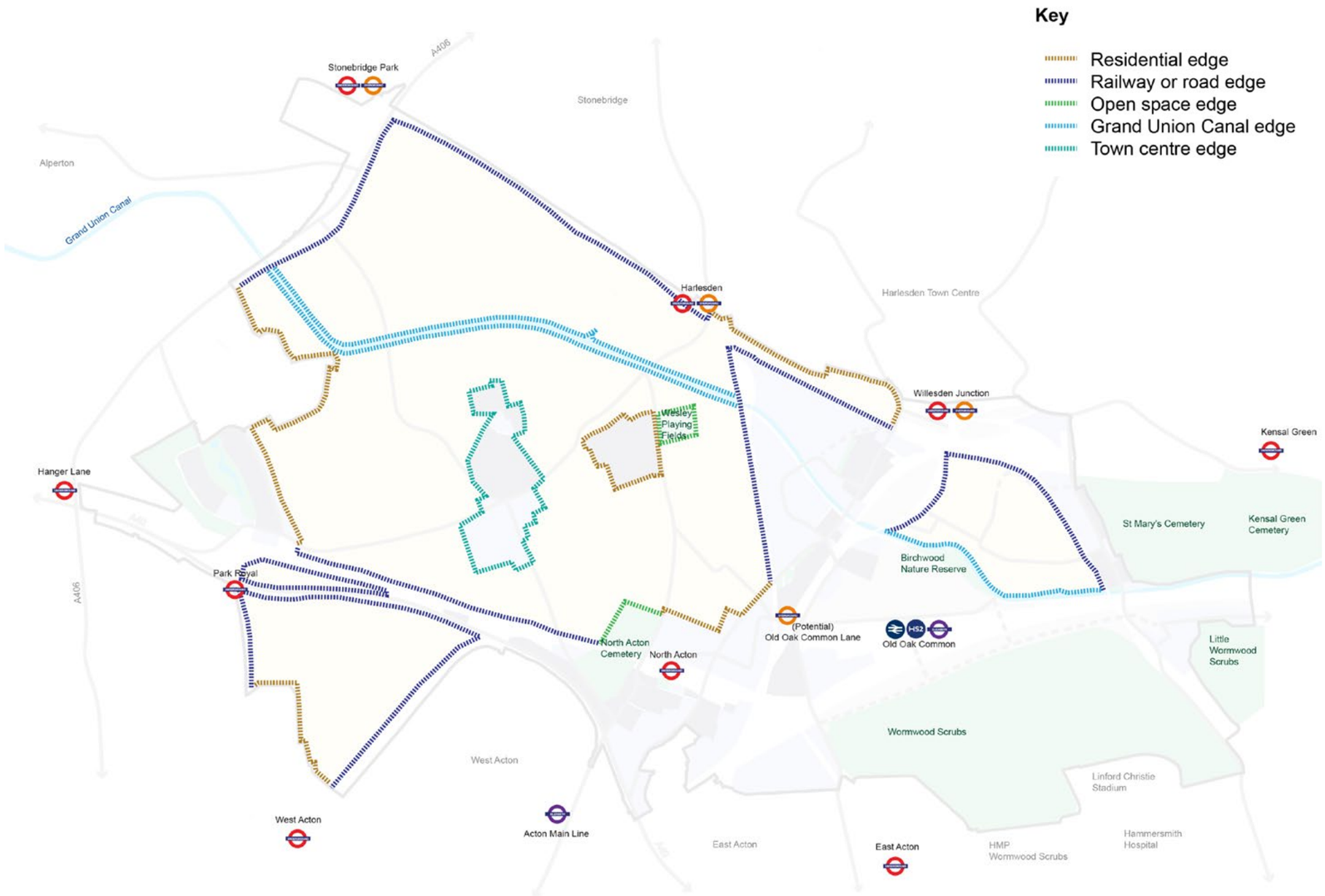
borrowed light for the purposes of workspace use; however south facing elevations should employ deeper reveals or provide solar shading to mitigate overheating.

6.61. Ground floor design will need to balance active frontages as well as practical internal arrangements. Where practically possible, windows into the working area to promote activation and visibility on the street is encouraged. Large window openings at ground floor are promoted but should not be covered for example by plant, back-of-house uses or tall furniture items, vinyl coverings or a continuous series of solid shutters. Ground floor sill upstands could be considered if needed to conceal clutter, deliver an appropriate degree of privacy and allow for flexible planning of industry-compliant uses, but they should still allow views through and into the building where possible.

6.62. Poor-quality boundary treatments can result in a 'streetscape' of yards, car parks and fences, of varying styles and conditions – all of which can degrade the environmental quality of the public realm. This negative impact on character can be seen across the industrial estate today. It is recognised that security is an important consideration when designing industrial buildings. However, the need for estate and plot security measures must be balanced with the amenities and quality of the wider environment. Buildings themselves are likely to be the most satisfactory means of achieving security and effective boundary treatments for industrial sites adjacent to the public realm, so security measures should be integrated into the building and/or landscaping design rather than standalone fencing. In some instances where it is not practicable to locate a building close to the public realm or the front boundary of the site, a robust justification must be provided as to why this cannot be achieved, and mitigating solutions proposed. Where the site boundary, along which the fencing is proposed, is facing a narrow public pathway, the fencing should be setback to allow for greater level of visual permeability to increase the perception of safety and legibility. OPDC will typically not support palisade fencing as it does not represent high quality design. Applicants should consider and select alternatives that make a more positive contribution towards the public realm.

6.63. Given the density of buildings and the nature of development, navigating around an industrial area can be notoriously difficult. Legibility is critically important, and signage is one of the measures that supports this. Signage should take cues from the industrial context; for example it could engage with the scale of buildings in really interesting ways such as roof top level signage or integrated as public art and provide another way to visually communicate the types of industrial activities that are actually taking place in the area. Signage and lighting should be considered from the outset, taking into account how to integrate this into the overall primary façade composition and as well as establishing signage or 'building appendages' zones, and managing legibility, contrast and accessibility considerations.

Figure 6.18. Industrial adjacencies



Principle BFP6 Appearance and materiality

Industrial proposals within and outside of SIL should:

a) use hardwearing, robust and resilient materials and apply high quality detailing;
b) select building materials and architectural forms:
   i) that draw influence from the area's distinctive character and heritage, support legibility and a sense of place (see Principle ICP1);
   ii) that express a positive approach to managing the scale, massing and rooflines (see Principles BFP2 and BFP3);
   iii) are driven by circular economy principles; with major building fabric elements such as structure, façade, glazing, surfaces being sourced sustainably and designed with a long-life, loose fit approach, taking into account Principle/Ambition ESP2 and ESA2);
c) where it involves new development, consider a naturalistic palette of metals, timber, polycarbonates, profiled glass, and hardwearing masonry materials, if this would meet other parts of this Principle and other sustainability principles (see Section 9); and
d) ensure rain water pipes and gutters are organised and coordinated; with consideration given to concealing pipes and gutters or formally expressing these elements on the façade.

Signposts

National Planning Policy Framework
- Achieving well-designed places

London Plan / GLA
- Policy D3
- Fire Safety LPG

Local Plan
- Policy SP9
- All Place and Cluster policies
- Policy D3
- Policy D7

Supporting studies
- OPDC Character Study
- OPDC Heritage Strategy

Figure 6.19. Illustration of how different materials and architectural forms could create a characterful built environment

6 Built form

Supporting text

6.64. It is acknowledged that industrial buildings need to be functional and that there are practical considerations that might drive elements of the façade design. However, all buildings will still be expected to contribute positively to the richly diverse and characterful landscape of the OPDC area. To this end, the choice of material palette, façade design, organisation of utilities, and their relationship to artwork and fenestration layout, should all be considered at early design development stage and with the end user in mind (see also Principle BFP5: Building lines, boundary treatments and frontages).

6.65. Material choices must appropriately respond to the richly layered social, cultural and built history. Expectations are for new projects to demonstrate an understanding of the local area, particularly in relation to more heritage sensitive locations (see OPDC Local Plan Policy D7 and Principle ICP1: Respecting and Enhancing Local Character), nurturing what is special about this place, whilst also creating new layers that respond sensitively and enhance the built fabric. For example, the super-dense and fine grain industrial neighbourhood of Old Park Royal is a diverse mix of smaller unit types on heavily used streets, and will require robust, durable materials at ground level to withstand daily wear at vulnerable junctions. The mix of materials could also emphasise the rhythm and the tightness of the grain.

6.66. Carefully selected and robust materials can improve the quality of the buildings and enhance their use by business owners, as well as visual perception/amenity within the industrial area. Good design is about much more than the building appearance; it is about creating wider benefits. The choice and mix of materials as well as appropriate detailing can create moments of delight, promote an identity, better legibility, and engender more civic pride; including through the use of colour, public artwork, local craft and careful detailing. Design interventions also need to explore ways to incorporate wayfinding elements and for distinctive ironmongery as part of the building or boundary treatments (where this is appropriate in line with Principle BFP5: Building lines, boundary treatments and frontages).

6.67. Opportunities to celebrate the industrial character and sense of place should be taken into account, whilst also ensuring that materials are ultimately fit for purpose and adaptable over time; reducing the need for redevelopment and unnecessary waste. Ease of management and longevity should be reflected in the choice of materials to ensure buildings age gracefully, can be readily adapted and allow potential for reuse.

6.68. Managing the scale of buildings along the street should be considered both in terms of the form/layout (see Principles BFP2: Scale, massing and rooflines of new industrial buildings and BFP3: Designing large footprint and taller buildings), as well as materiality. High quality, tactile material choices should be prioritised where possible, as well as the use of transparent materials, windows and portholes at ground level (see Principle BFP5: Building lines, boundary treatments and frontages) to express an openness, improve perception of safety, and to allow passers-by the opportunity to see into industrial buildings and de-mystify activities associated with industry. The mix of material choices and the expression of openings could also help define attractive active and positive frontages.

6.69. Material palettes should not be overly complex; attention should be given to robust and attractive detailing and the creation of hardwearing buildings. Justifications for material choices should have considered potential for layering, to emphasise texture, creation of depth, light and shadow.

6.70. Engaging in the detail from the outset, selecting robust material palettes and specifying construction details can help reduce long term costs. For example, the application of lightweight brick slip panels, that may be prone to peeling and are more likely to have longevity issues, should be avoided. Ultimately, material choices, building orientation, circular economy and other sustainability objectives must be considered in the round (see Principle/Ambition ESP2/ESA2): Sustainable Construction and Materials).

6.71. In terms of signage and wayfinding integrated as part of the building fabric, distinctive colour and form presents opportunity to enhance legibility and sense of joy. We expect the same rigour to be applied to the design of and selection of materials for the signage (see Principle BFP5: Building lines, boundary treatments and frontages) as to the façade.

Figure 6.20. Example of a local 1950s industrial frontage

Figure 6.21. Use of robust materials reflecting industrial character

Principle BFP7 Designing for flexibility and resilience

Flexibility and resilience

a) Industrial development proposals should be designed to allow for flexibility in building design which can easily and quickly shift its capabilities;
b) Typologies should support a mix of industrial uses and the needs of diverse business communities in the OPDC area;

Technical Design Standards

c) Industrial proposals within and outside of SIL should meet technical specifications in relevant GLA studies and guidance or, as a minimum, or where the proposal is for a flexible range of industrial uses, demonstrate how they are accommodating this range; and
d) Development proposing vertical extension and/or multi storey and stacking should demonstrate how structural considerations have been addressed, utilising considerations set out in relevant GLA design studies / guidance.

Principle BFP8 Integrating small and affordable industrial workspaces

a) All industrial proposals within and outside of SIL should support small businesses and start ups in line with OPDC Local Plan Policies SP5, E1, E2 and E3. Applicants should also refer to the detailed guidance in OPDC's Planning Obligations SPD;
b) Where affordable workspace is being provided onsite as part of industrial development proposals within and outside of SIL, the design and integration of the affordable workspace should consider the following:
   i) the provision of utilities and the fit out of kitchens and toilets;
   ii) the need for adequate provision of natural light. Providing small or affordable workspace within basements will usually not be accepted unless this would specifically suit the requirements of an identified long term occupier or reprovision to support an existing industrial use under OPDC Local Plan Policy E2;
   iii) the provision of individual lockable units;
   iv) opportunities to reduce operator/end user costs including business rates and service charges including;
   v) using durable materials within units and common commercial parts, and materials and components that are easily replaceable and typically not bespoke;
   vi) considering goods lift requirements and whether the costs can be spread over enough units to mitigate costs per business and any other potential cost effective solutions;
   vii) providing suitable floor plate depths and widths for businesses;
   viii) whether mechanical and electrical (M&E) systems such as air conditioning are required for all activities; and
   ix) opportunities to design communal spaces where businesses can interact, get mutual support, collaborate and use shared equipment.

Signposts

National Planning Policy Framework
- Paragraphs 81-83

London Plan / GLA
- Policy E2
- Policy E3
- GLA Industrial Intensification and Co-location Study
- Fire Safety LPG
- Circular Economy Statements LPG
- Whole Life Carbon LPG

Local Plan
- Policy SP5
- Policy E1
- Policy E2
- Policy E3

SPDs
- OPDC Planning Obligations SPD

Supporting studies
- OPDC Character Study
- OPDC Heritage Strategy
- West London Affordable Workspace Study

Supporting text

6.1. The GLA published the Industrial Intensification and Co-location Study in 2018 looking at the technical specifications of different industrial typologies. The GLA are working on updated design guidance – an emerging Designing Industrial Intensification and Co-location report and wider Industrial London Plan Guidance - and it is anticipated that this will include indicative building standards for different model building typologies; as this emerges this, together will other GLA design guidance, will be a key resource to consider when thinking about the built form. Applicants will be expected to demonstrate that the proposed design are fit for purpose taking into account this evidence base.

6.2. Affordable workspace is space which overcomes a market failure for a specific social, cultural or economic development purpose. Any specific proposal should consider all the elements needed to provide a workspace that meets the requirements of the target end user. This will include the discount to market rent but also wider factors including total costs paid by the end user (business rates, service charge, operator costs), the fit out and size of the space, and support/facilities offered. OPDC's Planning Obligations SPD sets out detailed guidance on how OPDC will negotiate and secure affordable workspace – either on site or as a financial contribution in lieu of onsite provision.

6.3. The definition recognises that all proposals are unique so does not prescribe a specific definition of Affordable Workspace – the approach can be flexible, but it must be shown that the workspace achieves its intended purpose. The Principle identifies key physical features that can help ensure that space is affordable. Further information on how OPDC will negotiate affordable workspace is set out in the OPDC Planning Obligations SPD.

6.4. Certain typologies, particularly smaller scale premises, not only support a mix of vibrant smaller businesses but also a diverse business community.

Figure 6.22. The Hithe, Affordable Workspace, Southwark

Green infrastructure

7 Green infrastructure

Introduction

7.1. Due to logistical and operational requirements in industrial settings, the ability to increase urban greening and achieve biodiversity net gains are challenging but not impossible. Whilst B2/B8 developments within the SIL are not required to deliver an Urban Greening Factor (UGF) of 0.3, careful design and planning from the outset can ensure the enhancement, functional connectivity and resilience of green habitats in and around the industrial area.

7.2. The focus of the guidance is on optimising urban greening and biodiversity gains in an area that is otherwise lacking in greenspace. The delivery of green roofs, green boundaries and high-quality landscape planting, provide opportunities for industrial developments to maximise wider social and sustainability benefits for people, nature and the environment, alongside economic outputs. The advantages to developers, building owners/users and the environment include opportunities to increase biodiversity; help improve air and water quality; adapt/respond to impacts of climate change and the urban heat island effect; reduce energy consumption; increase building user comfort; promote better mental/physical health and wellbeing, more recreation and a greater connection with nature.

Figure 7.1. Illustration of how industrial buildings fronting the Grand Union Canal could improve the canal's setting

7 Green infrastructure

Principle GIP1 Optimising urban greening and biodiversity

All industrial developments within and outside of SIL should apply the objectives and principles in OPDC's Biodiversity and Urban Greening Strategy to the site design, and:

a) conserve, restore and enhance wildlife rich habitats, protected species and trees of ecological value;
b) deliver DEFRA's Biodiversity Net Gain target by securing a level of change ≥10% between baseline and post development scenarios;
c) protect, enhance and create new resilient and diverse habitats, supporting flora and fauna, taking into account recommendations for the relevant Landscape Ecology Areas (LEAs) in OPDC's Biodiversity and Urban Greening Strategy;
d) incorporate features that support the needs of local wildlife and nature recovery with input from an ecologist, including bird/bat boxes and spaces for wildlife to pass through fences;
e) ensure adverse impacts on biodiversity has been minimised and on-site and habitat creation has been explored by applying the spatial mitigation hierarchy (onsite, local offsite, off-site outside local area);
f) maximise opportunities for 'naturalistic' or semi natural urban greening. This greening should:
    i) provide a variety of characteristics and priority habitats such as scrub, woodland, trees, biodiverse green roofs, green boundaries and wildflower grassland and optimise the value of the site for wildlife in line with LEAs and DEFRA's Biodiversity Net Gain target;
    ii) aiming for a minimum of 50-70% of trees and plant species to be native species, of known value to wildlife and locally relevant, taking into account the need for future resilience to climate change;
    iii) include trees selected based on a 'right tree for the right place' approach and provide these, where feasible, in connected tree pits in line with Principle GIP4;
    iv) deliver structural complexity and climate change resilience by:
        • selecting plants with a variety of shapes and sizes, including plants with a range of flower forms;
        • introducing a diverse selection of species with a mix of evergreen, deciduous and other species capable of producing flowers, fruits and seeds, as well as providing shelter and food sources throughout the year;
        • designing in layers, mimicking natural habitats to create a dynamic plant community;
    v) minimise the extent of fragmentation by ensuring green infrastructure is designed to be as continuous/contiguous as possible;
    vi) incorporate a mosaic of habitat types providing a variety of ecological niches;
    vii) form a self-sustaining, regenerative, and adaptive ecosystem, rather than an assortment of plants chosen only for their aesthetic appeal. Species or varieties that can self-seed and shift with the conditions and seasons should be selected. This can include both natives and appropriate non-natives and done in a way that retains aesthetic value;
    viii) contribute towards multi-functional ecosystem services that:
        • support resilience to future climate change as far as is practically possible;
        • address site deficiencies and opportunities, such as providing visual and functional amenity, and also mitigating effects of noise and air quality in line with Principle/Ambitions MIP/MIA1 and MIP2/MIA2;
g) consider the wider landscape context including any opportunities to link up off-site green spaces, such as parks or Sites of Importance for Nature Conservation through creation of green corridors or 'stepping stones' through the site;
h) consider how the green infrastructure can form a connected system, including as part of Sustainable Urban Drainage Systems (SuDS) and collaborations and partnerships with surrounding sites;
i) where SuDS are provided in line with OPDC Local Plan Policy EU3, these should be designed as a mechanism to enhance the value of the site for biodiversity, in line with this Principle and Principle/Ambition MIP4;
j) ensure proposals are developed through collaborative working at an early stage with ecologists, landscape architects, architects, engineers, sustainability practitioners and other professionals to maximise opportunities for urban greening and biodiversity, in terms of scale, connectivity, biodiversity value and usability;
k) use sustainable horticultural practices to minimise off-site ecological impacts;
l) design any landscaped areas to withstand periods of water stress and waterlogging; and
m) ensure Green Infrastructure and Open Space Strategy and Management Plans (GIOSSMP) consider how water stress and water logging will be identified and specific remediation measures to address this.

Ambition GIA1 Optimising urban greening and biodiversity

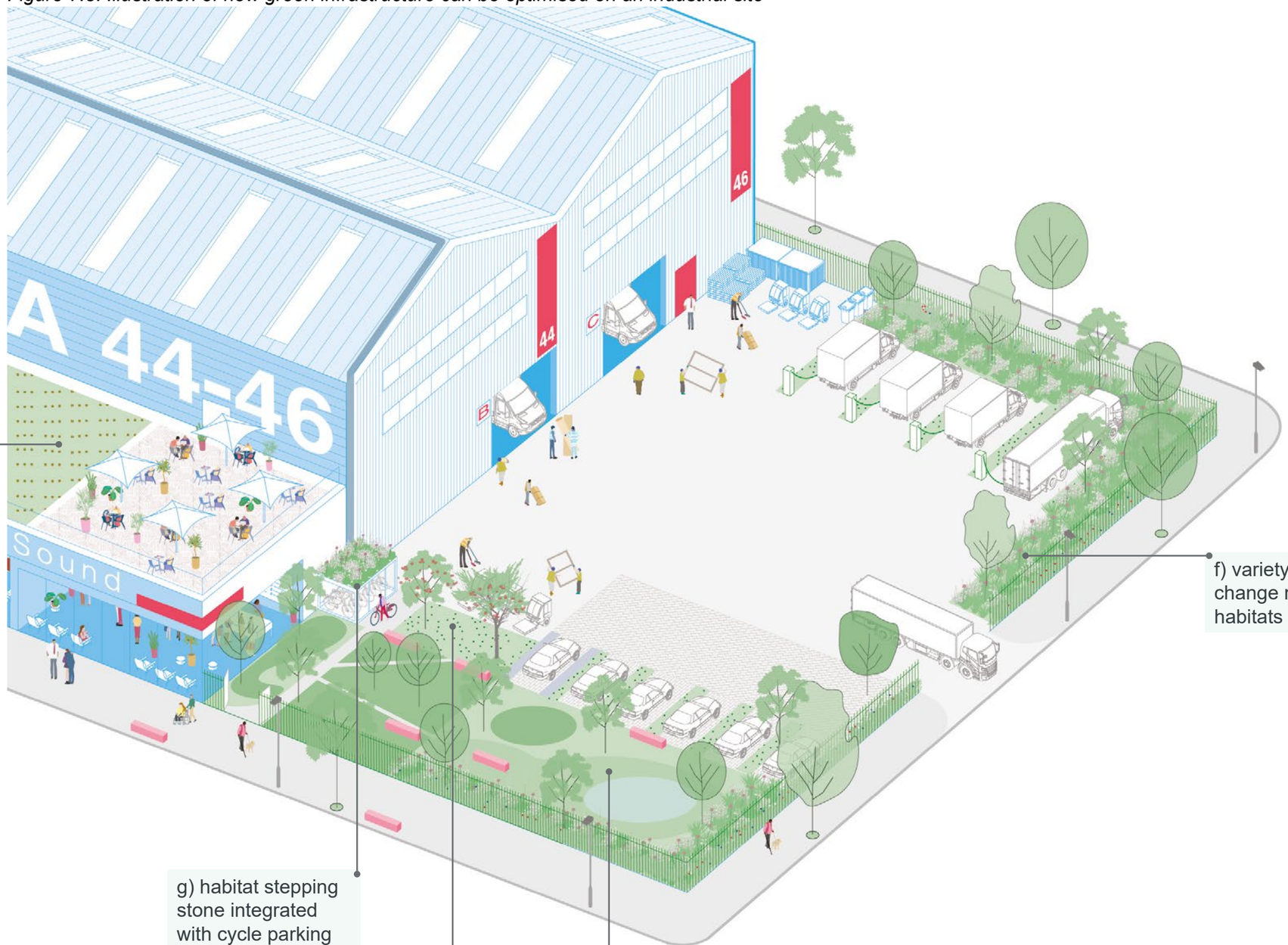
All industrial developments within and outside of SIL are encouraged to:

a) achieve an urban greening factor of 0.3 or more, where a benchmark is not already set for this in the London Plan , and where possible given site coverage of buildings; and
b) explore opportunities for space-efficient food production such as vertical farming and the use of hydroponic technology.

Figure 7.2. Car parking integrated with green infrastructure, USA

7 Green infrastructure

Figure 7.3. Illustration of how green infrastructure can be optimised on an industrial site



f) iv) Green roof providing habitats for birds, bats and insects

f) variety of native and climate change resilient planting and habitats

g) habitat stepping stone integrated with cycle parking

f) iv) flowering and fruiting trees to support pollinators and the wider ecosystem

d) range of features supporting nature recovery including wild flower planting, pond and hedging

7 Green infrastructure

Signposts

National legislation
- Environment Act 2021

National Planning Policy Framework
- Paragraphs 20, 92, 130, 154, 161, 174, 186

National Design Guide
- N1 to N3

London Plan / GLA
- Policy GG2
- Policy G1
- Policy G5
- Policy G6
- Policy G7
- Policy G8
- Urban Greening Factor guidance and calculator
- Using Green Infrastructure to Protect People from Air Pollution
- All London Green Grid SPG
- Urban Greening Factor LPG
- Air Quality Positive LPG
- Air Quality Neutral LPG

Local Plan
- Policy SP8
- All Place and Cluster policies
- Policy D3
- Policy EU2

Supporting studies
- OPDC Biodiversity and Urban Greening Strategy

Other
- Natural England Green Infrastructure Planning and Design Guide
- Natural England Biodiversity Metric
- British Standard 42020:2013 - Biodiversity
- British Standard BS 3936-1: 1992 - Nursery Stock Specification for Trees and Shrubs
- CIRIA - SuDS Manual Item Detail
- Forest Research – Tools and Resources
- London Wildlife Trust and GLA - Urban Greening for Biodiversity Net Gain: A Design Guide
- Royal Horticultural Society (RHS)- Plants for Pollinators
- RHS – Prairie planting: creation and maintenance
- RHS – Plants for Bats
- Trees and Design Action Group - First Steps in Trees and New Developments; Trees in Hard Landscapes: A Guide for Delivery; Tree Species Selection for Green Infrastructure; First Steps in Urban Air Quality and Heat
- University of Birmingham Green Infrastructure for Roadside Air Quality (GI4RAQ) guidance & decision tree

Supporting text

7.3. Whilst industrial areas are often characterised by enormous change, green infrastructure provides an opportunity to transform environmental quality and create a sense of permanence - landscapes and green spaces within which industry can change and evolve while nature continues to thrive.

7.4. New developments will be expected to increase and embed green infrastructure and biodiversity in developments (see OPDC Local Plan Policies SP8 and EU2) while ensuring the continued successful operation of industrial businesses.

7.5. The OPDC Biodiversity and Urban Greening Strategy (BUGS) sets out Objectives, Principles and identifies Landscape Ecology Areas (LEAs). The key elements of each LEA in terms of habitat, flora and fauna are described. The LEAs picks out species of importance (e.g. rare or a priority species) that are key to the LEA's character. A useful example showing how the BUGS principles can be applied to industrial sites is also provided. Applicants should clearly show how they have used the BUGS to inform their site design and approach to landscaping and planting.

7.6. As a first principle, the spatial mitigation hierarchy should be explored. The first approach should be that existing habitats and biodiversity should be retained on site. Retaining existing habitats and trees will reduce any offsetting, the cost of clearance and creation of new habitats. For reference, protected species generally refers to those listed under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017. Whilst wildlife rich habitats includes those identified on section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and those that support protected and notable species. See evaluation methods for trees discussed under Principle GIP4:Trees.

7.7. The Environment Act 2021, will establish the requirement for proposals to achieve at least 10% biodiversity net gain (BNG) compared to the pre-development biodiversity value. Net gains in biodiversity, measured through Natural England's biodiversity metric, and habitats will need to be secured for at least 30 years.

7.8. The London Plan recommends a target score of 0.4 for developments that are predominately residential and a target score of 0.3 for predominately commercial development. Whilst B2 and B8 use class developments within the Strategic Industrial Location (SIL) are excluded from the requirement to meet the Mayor's Urban Greening Factor (UGF) target score of 0.3, OPDC will work

Figure 7.4. Public space in an industrial setting, Landschaftspark, Germany

with developers to seek to optimise proposals' UGF score within SIL and meet targets where these still apply. Careful design and planning from the outset can ensure the enhancement, functional connectivity and resilience of green infrastructure and habitats in and around SIL. Providing surface covers with higher urban greening factor (UGF) weightings will also help to enhance the BNG score of the site. Increased vegetation cover and structural complexity of vegetated areas can also help reduce air pollution levels and increase the availability and resilience of wildlife habitats, opening up industrial areas to wildlife and connecting these with the wider environment, including the canalside. Applicants should use the signposts and other available data sources (such as these) to determine the context of the site and any priorities for green infrastructure, rather than simply designing by numbers.

7.9. Planting design should be site specific, appropriate to the site conditions, and prioritise species that can better support wildlife and ensure resilience to changes to the climate (higher average and peak temperatures, fewer winter frosts, drought and waterlogging), particularly in exposed areas such as in car parks. In the case of plant failure due to future changes in climate, it may be appropriate to replace plants at a later date with more resilient species. The design should be undertaken in line with British Standards, including BS 42020:2013 and BS 3936-1: 1992 or any future updates to these.

7.10. In general, this SPD guidance recommends using a 'naturalistic' style of planting design and natural or semi natural habitat designs, encouraging structural complexity, and the ability to self-regulate. This is based on a number of reasons:

- better resilience to changing conditions, including future climate change and drought/flooding.
- more complex vegetation 'ecosystems' retain more CO2, have a greater weighting in terms of UGF and BNG and are better

for wildlife compared to more traditional ornamental and exotic focused planting designs; and
- they require minimal management intervention, therefore reducing maintenance costs whilst simultaneously increasing the likelihood of long-term success and establishment.

7.11. Allowing vegetation to naturally succeed often leads to the establishment of a self-sustaining, well-functioning ecosystem. These may be different ecosystems from those that occur in natural and semi-natural habitats but develop because they are well adapted to the present conditions. This can be achieved through relaxed or minimal management, which also reduces maintenance costs, with management needed only to address weather extremes like drought, and prevent further succession to less valued habitat types – for example the succession from open mosaic habitat to scrub. Wild species and self-regulated ecological communities can be more drought-resistant and sequester more CO2, particularly where there's an increase in shrubs and trees.

7.12. Soil makes a significant contribution to CO2 sequestering and has an important role to play in the area's environmental quality - anything that breaks up areas of soil disrupts/undermines this process. Also, green infrastructure should be connected across the site as much as possible rather than be too fragmented so that it can function as usable amenity space and provide opportunities for different forms/scales of Sustainable Urban Drainage Systems or SuDS (see Principle/Ambition MIP4/MIA4).

7.13. An ecological niche is the set of conditions that a particular species needs. Different species require different conditions and can often require different features at different times during their life cycle. For example, different food plants or features such as deadwood, or sandy areas for feeding and burrowing. Therefore, providing a range of habitats appropriate to the locality, and with a range of habitat features will help to support higher biodiversity and in turn support BNG and UGF goals.

7.14. Best practice is to select the right species or habitats in the right places. This approach will enhance the chances of successful establishment and reduce maintenance, so that landscape planting flourishes in industrial settings. Taking a more informed approach can ensure that green infrastructure optimises benefits to biodiversity, as well as people.

7.15. Landscaping should aim to be connected and multi-functional in terms of ecosystem services, and resilient to future climate change as far as possible. For example, a well-designed hedge and/or line of trees could help to buffer air and noise pollution, while also creating a wildlife corridor, and a linear green space for movement of people. A well-designed SuDS system, including features such as swales and raingardens, could help to mitigate effects of flooding and reduce pollutants in water running off the site, while also providing habitat for wildlife and amenity space for people.

7.16. Opportunities to reduce noise and improve air quality through urban greening include:

- planting noise buffers close to the source (i.e. along roads), rather than areas to be protected;
- planting trees/shrubs as close together as they will allow;
- using plants with dense foliage and as tall as possible, with a diversity of tree and shrub species;
- choosing foliage that persists from the ground up and plants in layers to limit gaps; and
- the use of Evergreen species that give better year-round protection. Example of native evergreen species include English Yew, Juniper and Scots Pine. Beech trees will retain the first three meters of foliage through the winter and make an effective winter screen.

Figure 7.5. Trolley park with insect and nesting habitats

7.17. Opportunities for climate amelioration and resilience through urban greening include:

- selecting plant species for their resilience to environmental conditions such as contamination, as well as future climate change to ensure they are suitable and sustainable for the long term. In general, deep-rooting varieties that can resist both flooding in winter and drought periods in summer should be selected, while considering potential effects of tree roots on buildings and utilities. For example, Scots Pine and English Oak are both deep rooting native species which are seasonally tolerant of drought. Juniper, Cherry Plum, Hawthorn and Crab Apples are smaller species that will reduce risks of damaging infrastructure. Where larger species are preferred, root barriers can be used to guide roots away from underground services and structures.
- green infrastructure with drainage potential to help mitigate the risk of future flooding. For example, surface run-off from green roofs and permeable/porous paving can be captured into a series of retention ponds comprising swales and rain gardens.

7.18. Opportunities to support a connected system through urban greening include green roofs designed to irrigate ground level habitats and flow into SuDS, such as rain gardens at ground level. Collaborations and partnerships to achieve this same objective across adjoining sites should also be explored.

7.19. Tree professionals should be involved in tree selection and this should be based on guidance relevant to urban environments (see signposted documents). Schemes should, wherever possible, seek to provide connected tree pits which benefit the trees and by consequence achieve a higher weighting under UGF.

7.20. Some forms of SuDS can create new wetland habitats that have high biodiversity value by supporting invertebrates and foraging opportunities for birds and bats. They provide the greatest biodiversity benefit when they are linked to other habitats, where they provide varied ecological niches, and where water quality is controlled before water moves into retention and detention features through infiltration or silt/pollutant interceptors, as part of a SuDS management train. Further guidance is available in Principle MIP4.

7.21. A number of technical disciplines have a role in maximising greening and biodiversity. It is possible to meet BNG and UGF targets if these issues are considered at an early stage, and it's vital for developers' to engage suitably qualified professionals in the design process. This approach will mean that proposals can

respond to existing habitats and the surrounding site context, and mitigation can focus on avoiding, rather than reducing, impacts in line with the mitigation hierarchy.

7.22. Sustainable horticultural practices should be used to minimise off-site ecological impacts, considered through the Green Infrastructure and Open Space Strategy and Management Plan (GIOSSMP) and secured via Planning Conditions. These include:

- all native plant material should be sourced from suppliers who have adopted Flora Locale's (2012) Code of Practice for collectors, growers and suppliers of native flora;
- the use of peat-free composts and soil conditioners to reduce the loss of important peat bogs;
- feeding of plants using organic based fertilisers and improving the soil structure by incorporating organic material, preferably composts produced on site or composted municipal waste;
- the use of drought tolerant plants and mulches to reduce evaporation and the amount of mains water needed for horticulture; and
- minimising the use of pesticides (herbicides, insecticides, and fungicides) to prevent cumulative fatal effects to animals via the food chain. Where use is unavoidable, non-residual chemicals should be applied.

7.23. Vertical farming and hydroponic solutions can provide food, particularly salad crops, with minimal land use requirements and high nutrient and water efficiency. Such systems should be designed to be energy efficient to reduce carbon emissions and energy input costs, for example, by limiting artificial lighting only to the very early stages of plant growth and by combining this with renewable electricity generation. More traditional 'space efficient' food growing includes espalier and 'step over' fruit trees.

7.24. There is no 'one size fits all' approach to urban greening and biodiversity. Some sources for species selection are referred to in the signposted documents, but these aren't all encompassing, and therefore expert knowledge will still be needed to inform the approach taken to a specific site. The GIOSSMP should establish the existing site conditions and characteristics, and inform appropriate species selection and site design, including opportunities to link the landscaping into surrounding green spaces and sites of importance to nature conservation (SINCs). Failure to take a joined up approach to the protection of existing green spaces, habitat creation, water management, investment in ecological networks and the long term management of green infrastructure, will result in fragmented ecological networks and a poor quality public realm that does not achieve good growth, climate resilience, human and ecosystem health or biodiversity integration.

7.25. The GIOSSMP should also explain how habitats and biodiversity will be managed, maintained and funded. Management arrangements will be appropriately secured through conditions by OPDC. If habitats are not appropriately managed then they may not achieve the net gains assumed within a BNG calculation.

7 Green infrastructure

Principle GIP2 Green roofs and boundaries

All industrial developments within and outside of SIL should:

a) where feasible, optimise the provision of green roofs that:
   i) are biodiverse, extensive, semi-intensive or intensive, and where possible incorporate solar, blue roof technology and glazing;
   ii) have a varying substrate depths, starting with a minimum of 80mm. Where loading or other constraints don't allow this, thinner substrate depths may be considered, but they should provide biodiversity value and habitat enhancements;
   iii) incorporate at least 25 native wildflower species that are resilient to climate change and additional habitat features where possible;
   iv) avoid fully sedum roofs. These will generally be considered unacceptable, unless they can be justified in exceptional cases and includes some other biodiversity enhancements;
   v) optimise the use of roof space for food growing, including exploring opportunities for vegetable growing, greenhouses, orchards, food forests and movable planters;
   vi) are planned, implemented and maintained in line the UK Green Roof Organisation (GRO) Code of Practice;
   vii) have appropriate arrangements for accessing and maintaining the green roof once installed;
b) where feasible, not locate other mechanical plant facilities on roof space;
c) ensure that the structural implications of green roofs are considered at an early stage in the design process;
d) build specifications should include extra loading capacity across their roof spans to enable solar and blue roof solutions where possible;
e) consider opportunities to provide boundary hedging and ensure that boundary fencing, where this aligns with Principle BFP5, provides:
   i) a structure for suitable ground planted climbers to grow on; and
   ii) facilitates the safe movement of and access for wildlife.

Ambition GIA2 Green roofs and boundaries

All industrial developments within and outside of SIL are encouraged to:

a) retrofit any existing poor quality sedum green roofs where appropriate by adding enhancement features, including creating mounds of deeper substrate seeded with wildflowers, and the addition of log piles; and
b) retrofit suitable existing buildings without a green roof where factors like load bearing and fire safety allow.

Signposts

London Plan / GLA

- GG2 Making the best use of land
- Policy G1 Green Infrastructure
- Policy G5 Urban greening
- Policy G6 Biodiversity and access to nature
- Policy G8 Food growing
- Fire Safety LPG
- All London Green Grid SPG
- Urban Greening Factor LPG
- Air Quality Positive LPG
- Air Quality Neutral LPG

Local Plan

- Policy SP8
- All Place and Cluster policies
- Policy D3
- Policy EU2

Supporting documents

- OPDC Biodiversity and Urban Greening Strategy

Other

- Buglife - Creating Green Roofs for Invertebrates: A Best Practice Guidance
- CIRIA - Building Greener. Guidance on the use of green roofs, green walls and complementary features on buildings
- Green Roof Organisation (GRO) - Code of Practice
- Living Roofs
- London Wildlife Trust – A buzz up top – encouraging the conservation of invertebrates on living roofs and walls

Figure 7.6. Bio-Solar roof providing habitats

Supporting text

7.26. Living roofs, including intensive, semi-intensive, extensive, blue-green and bio-solar green roofs (see Glossary), provide a series of benefits besides providing wildlife habitat. These benefits range from, reducing the urban heat island effect; reducing water run-off and aiding storm water management; improving building insulation and energy efficiency; to improving air quality and sound insulation.

7.27. There are many examples of industrial green roofs, but it's also understood that they might not be practical to deliver in all cases, for example where buildings are being retained and they cannot support the additional weight. However, where it is possible to, the provision of green roofs on buildings should be optimised, alongside greening along boundaries – the Principle provides guidance for this scenario. Incorporating green roofs will help proposals to achieve Biodiversity Net Gain (BNG) targets and increase Urban Greening Factor (UGF) scores in an environment where space is otherwise limited and can provide stepping stones between habitats in a wider area, such as the to/from sites of importance for nature conservation, including the Grand Union Canal.

7 Green infrastructure

7.28. Combining green roofs with solar photovoltaic (PV) panels (known as Bio-solar green roofs) can be beneficial for planting and wildlife as this creates varying micro-climates and shady spots for different plants to thrive, and wildlife to shelter. Bio-solar designs could also provide further benefits, such as the cooling effect the vegetation has on the PV cells, increasing their productivity in hot weather, and resulting in a more efficient use of roof space.

7.29. Blue green roofs can deliver additional advantages and can contribute towards a connected system by reducing discharge rates, improving discharge quality of rainwater falling onto the roof, and by being designed to provide irrigation to landscaping at ground level. A balanced approach will be taken to considering these.

7.30. Deeper substrate depth generally leads to improved drought and frost tolerance, and species diversity. Substrate depths should vary across rooftops, for example extensive green roofs should vary between 80-200mm+, to create varying conditions for species, aid retention of water and embed resilience for future climate risks, including longer and more frequent periods of drought. Research also shows that variation in substrate depth leads to a mosaic of habitats through varying sun, wind and rain conditions, leading to a higher diversity of species. Deeper substrate can provide important areas for some invertebrates to refuge during winter or drought. Whereas, shallower areas will be less vegetated and present warm spots for invertebrates.

7.31. Green roofs should support local and native wildlife by including at least 25 native wildflower species, and additional habitat features including deadwood, varying substrates and depths, and temporary pools. Additional features to enhance the value of the green roofs for biodiversity include:

- open bare ground – provide bare areas through shallower substrate patches or areas of stone, brick or gravel. These areas warm quickly, benefiting a wide range of invertebrates.
- deadwood – provide piles of untreated hardwood logs. These should comprise a mix of log sizes, and should be buried into the substrate to help keep them damp. This will provide important shelter for invertebrates.
- sandy mounds – sand banks set in sunny areas will provide important habitat for solitary burrowing bees and wasps. These can vary in size depending on the roof, but a general guide is approximately 50cm high, covering around 1-2m2.
- waterbodies and/or damp areas – simple shallow rain water bodies can be provided by partially burying a plastic or waterproof liner on the roof. This will provide water for birds to drink, and damper areas to benefit some invertebrates.

7.32. These features will promote a mosaic of micro habitats and conditions to optimise biodiversity including invertebrates, birds and bats. There is no one size fits all to green roof specification or species selection, and a company with a proven track record in constructing high quality green roofs should be employed.

7.33. Fully sedum roofs are not generally acceptable as they provide very limited value for wildlife, and a low BNG and UGF score. Some sedums can be included in the species mix, however a sedum only roof will not be supported in most circumstances - they may be appropriate for high rise buildings with more extreme conditions, or for low weight bearing buildings so early engagement with OPDC is recommended. In specific cases where this is deemed appropriate, they should be improved with the addition of patches of deeper substrate and wildflowers where possible.

7.34. Over 30% of London's food is processed in the OPDC area, and while it is not expected that rooftop produce is likely to make a substantial contribution to the wider supply chain, it can help support a circular economy. Food growing need not be directly related to the commercial interests of the site tenants – workplace productive gardens can deliver a wellbeing benefit by providing a source of nutritious food and engagement in green spaces during workplace breaks has been shown to boost productivity.

7.35. The Green Roof Organisation (GRO) 2021 Code of Practice for green roofs in the UK has been developed to ensure that the green roof market delivers quality green roofs for the built environment and covers aspects such as planning, implementation and maintenance.

7.36. Well designed and installed extensive biodiverse roofs require little maintenance following initial irrigation and plant establishment. An inspection should be undertaken at least once yearly to clear out drainage outlets, and remove undesirable colonisers and weeds. Semi-intensive or intensive green roofs will likely require more intensive maintenance according to site specific requirements. Maintenance arrangements should be set out in applicant's Green Infrastructure and Open Space Strategy and Management Plans (GIOSSMPs) and secured through condition.

7.37. In line with OPDC Local Plan Policy D3, roofs should be designed to minimise the provision of plant and building services. The placement of mechanical plant on the roof of buildings is, along with capacity of the roof to support greater weight, often a main constraint on achieving substantial green roof extent across a development. To optimise the use of this space, where possible and where this does not conflict with other objectives, mechanical plants should located elsewhere. Exceptions to this include photovoltaic panels or blue roof technology, as this can often be more easily integrated into a green roof.

Figure 7.7. Planting integrated with fencing

7.38. Given the benefits of green roofs, the Ambition encourages applicants to consider retrofitting or enhancing provision on existing/retained buildings.

7.39. In all cases, a chartered structural engineer should be consulted at the initial stage of the design process to ensure the roof will be able to take the weight of green roof proposals. The slope of the roof and the loading requirements of green and blue roofs mean that there may be implications for structural design, which should be considered at an early stage in the design process. Costs often increase when green roofs are considered at later stages.

7.40. Boundary fencing is prominent across the industrial area and can negatively impact on the character of the area. Where fencing is considered appropriate – see Principle BFP5: Building lines, boundary treatments and frontages – it should contribute towards urban greening and support biodiversity. For example, fencing can be improved through the use as climbers such as hop, wild honeysuckle, jasmine and common ivy. These species provide nectar for bumblebees and potential nest sites for house sparrows and other birds. Honeysuckle is a known plant favoured by the garden tiger moth, a London Priority Species.

7 Green infrastructure

Principle GIP3 Canalside edges

Industrial developments located along the canal, within and outside of SIL, should:

a) prioritise areas adjacent to the canal for staff/visitor amenity spaces as well as urban greening and biodiversity, to help extend and broaden the canal green corridor. In appropriate cases, such as on larger sites, this should include publicly accessible open space adjacent to the canal;

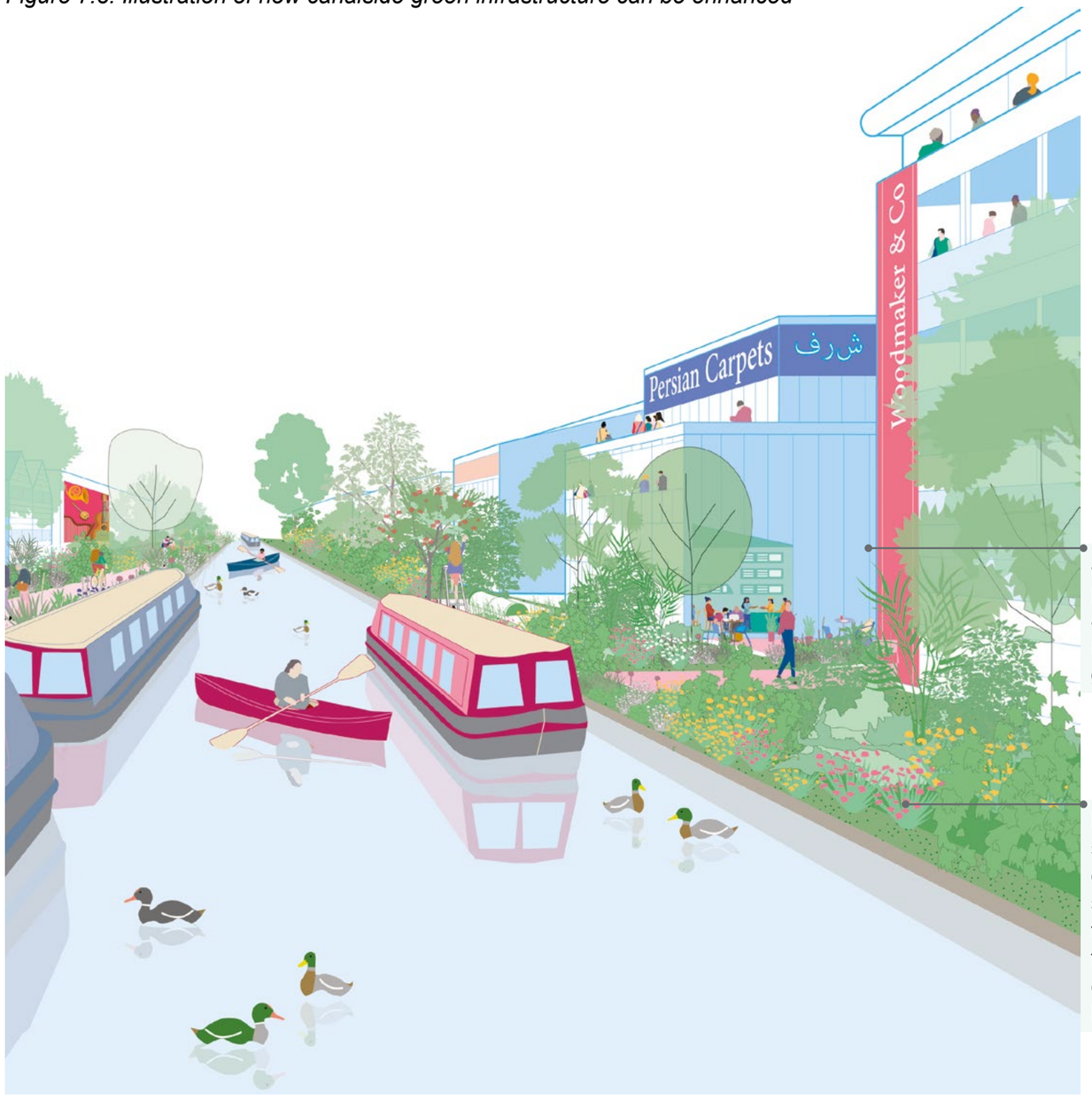
b) provide new access to the canal where it is safe to do so, including exploring more direct access for employees, subject to formal agreement with the Canal and River Trust;

c) prioritise nature-based sustainable drainage solutions such as rain gardens and swales to intercept and clean up run-off from sites;

d) ensure GLOSSMPs include maintenance plans that seek to control colonising invasive species such as Japanese knotweed, Himalayan balsam and floating pennywort; and

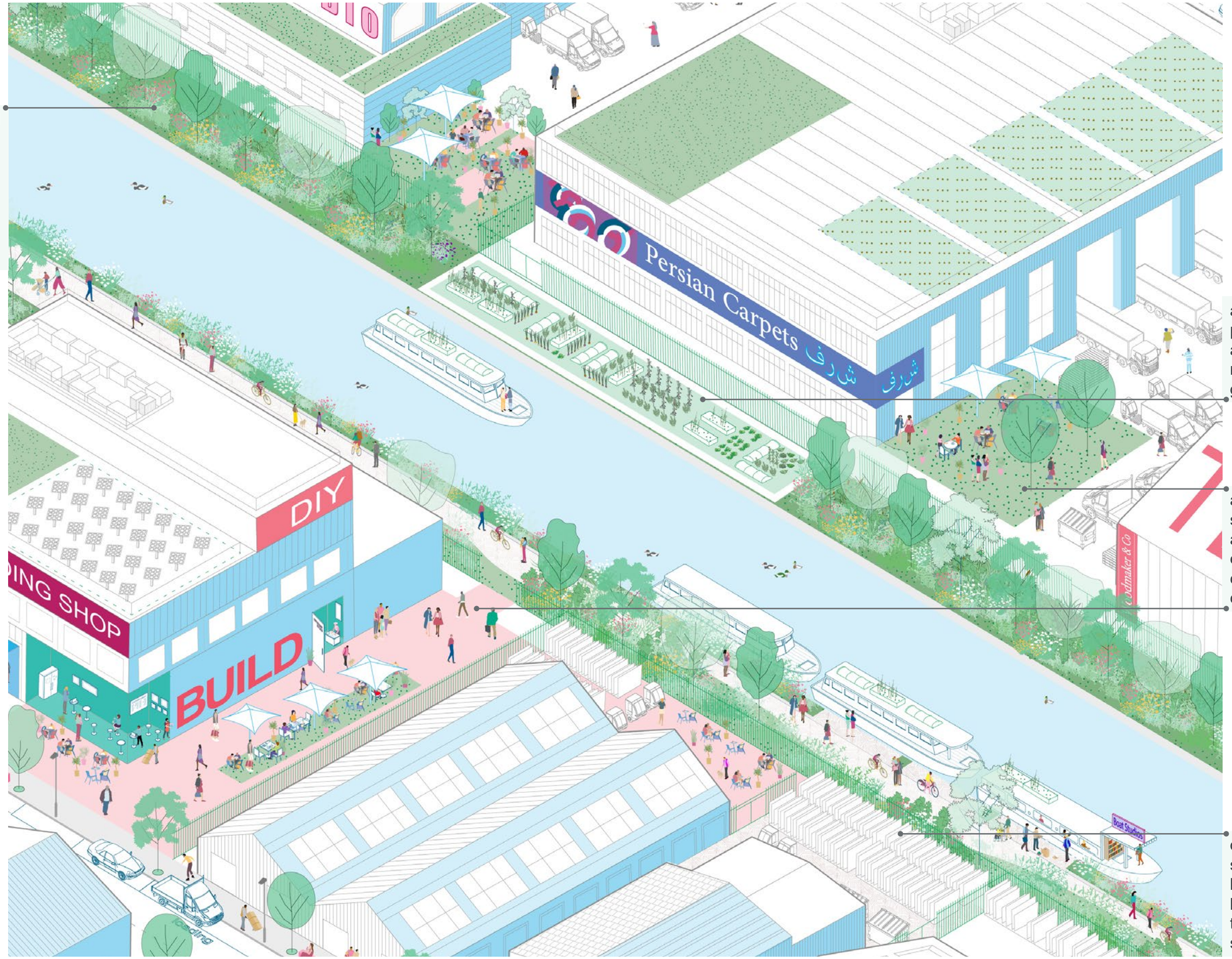
e) ensure proposals have been developed with lighting consultants and ecologists to ensure that light spill from proposals does not damage the Site of Importance for Nature Conservation.

Figure 7.8. Illustration of how canalside green infrastructure can be enhanced



7 Green infrastructure

Figure 7.9. Illustration of how the Grand Union Canal could be enhanced



7 Green infrastructure

Signposts

National Planning Policy Framework
- Paragraphs 20, 92, 130, 154, 161, 174, 186

National Design Guide
- N1-N3

London Plan / GLA
- Policy GG2
- Policy G1
- Policy G5
- Policy G6
- Policy G7
- Accessible London SPG
- Planning for Equality and Diversity in London SPG
- All London Green Grid SPG
- Urban Greening Factor LPG
- Air Quality Positive LPG
- Air Quality Neutral LPG

Local Plan
- Policy SP8
- All Place and Cluster policies
- Policy D3
- Policy EU2

Supporting documents
- OPDC Biodiversity and Urban Greening Strategy
- OPDC Canal Placemaking Study

Other
- Bat Conservation Trust - Bats and artificial lighting in the UK
- Environment Agency - Best Practice Guidelines: Artificial Bank Creation for Sand Martins and Kingfishers

Supporting text

7.41. The Grand Union Canal is a Site of Metropolitan Importance for Nature Conservation (SINC) that runs through the OPDC industrial area - providing an important blue and green corridor for wildlife. The canal has many sections where colonising vegetation creates a relatively undisturbed linear habitat corridor. The canal is an underutilised asset, which could be optimised to provide ecosystem services for people and improved for nature.

7.42. Canals can provide benefits such as flood mitigation; linear corridors for species movements, a reduction in the urban heat island effect; improving health and wellbeing by providing space to exercise and access to nature; as well as helping nature recovery. However, they can also increase the dispersal of invasive species.

7.43. Existing habitats of value that occur along the canal, including woodland and mature trees, should be retained and protected in line with planning policies and other Principles in this section. Where landscape planting is proposed adjacent to the canal, this should follow the general guidance set out under Principle GIP1: Optimising Urban Greening and Biodiversity, allowing areas to self colonise to retain a wild nature, improving connectivity along the canal for wildlife and linking it to other areas of green space. The OPDC Biodiversity and Urban Greening Strategy identifies the canal as a Landscape Ecological Area (LEA) and applicants should consider this as outlined in Principle GIP1. Where trees are proposed, the strategy should follow the guidance set out under Principle/Ambition GIP4/MIA4.

7.44. The Grand Union Canal Placemaking Study outlines a number of ways to provide a more positive and livelier frontage to the canal for the benefit of all. Specific examples relevant to the industrial context include:

- opening up public routes to enable greater porosity between the towpath and the wider public realm, for the benefit of general public and workers
- formally opening employee access onto the canal to enable and encourage employee usage of the canal for leisure time and breaks.
- creating canal side gardens and/or terraces to provide employee or customer space on the canal.
- appropriate planting and ecological improvements, and measures to eliminate run-off

7.45. The Canal Placemaking Study suggests prioritising biodiversity in the off-side canal edges, relative to on-side canal edges where pedestrian amenity is of greater relative importance, However, providing amenity for staff/visitors adjacent to an off-side canal edge provides an opportunity to widen the green corridor provided by the canal; but any potential negative impacts would have to be carefully considered and mitigated. In line with OPDC's Local Plan, biodiversity should be protected, and disturbance such as from lighting proposals, should be avoided.

7.46. Nature based sustainable drainage (SuDS) solutions can provide habitat for wildlife and amenity for people, complementing the function of the canalside. Principle/Ambition MIP4/MIA4: Water and Drainage, provides more information on how to incorporate SuDS effectively on sites.

Figure 7.10. Example of boundary treatments that support biodiversity

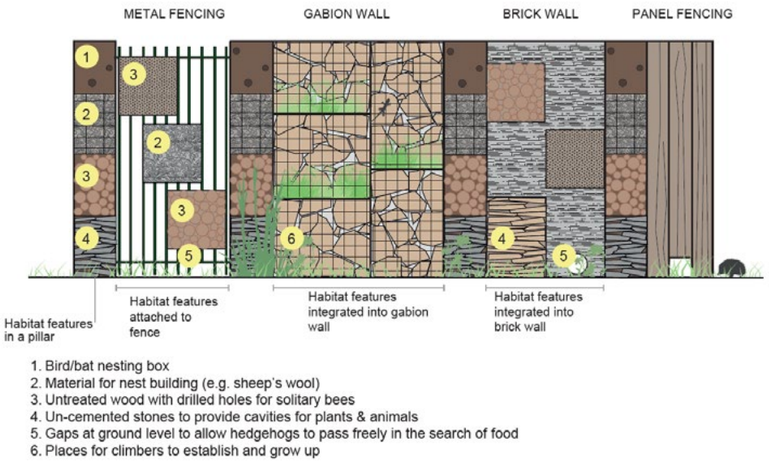
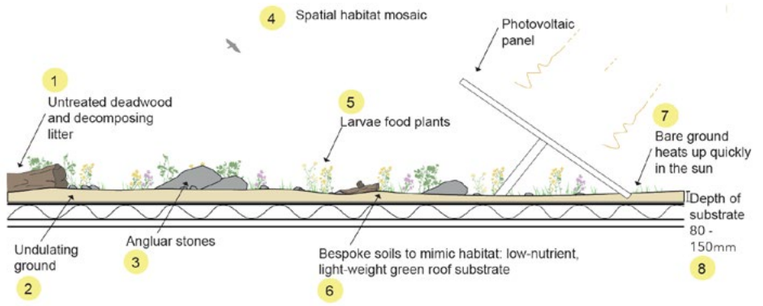


Figure 7.11. Example of how to integrate solar panels with habitats



7 Green infrastructure

Principle GIP4 Trees

Industrial developments within or outside of SIL should:

a) where possible, retain existing trees;
b) as part of soft landscaping proposals, ensure that an adequate amount of space is set aside for new tree planting to contribute towards a London-wide 10% increase in tree canopy cover;
c) within car parking areas and where it is not possible to plant trees in soft landscaping areas, trees should be engineered into hard landscaping areas within connected tree pits;
d) integrate larger instant impact trees available in Heavy Standards where possible;
e) ensure diversity of trees across the site, with no one tree species making up more than 30% of the total tree population;
f) within outdoor staff/visitor non roadside amenity spaces, include:
    i) dense closed canopy trees;
    ii) edible fruiting trees, while limiting the potential for nuisance by fruit litter;
f) provide a mix of tree species that offer year round visual amenity, including during winter months, and that flower consistently through the year;
g) avoid forming closed tree canopies above transport corridors;
h) incorporate trees within drainage schemes and to support water attenuation where appropriate;
i) locate and select trees to provide shading in appropriate areas and to act as wind breaks, with consideration given to planting:
    i) solar friendly deciduous trees with airy canopies on the eastern and western sides of buildings;
    ii) evergreen species with dense crowns perpendicular to prevailing winds on the northern sides;
    iii) not blocking/shading winter sun on the northern sides of buildings;
    iv) not blocking/shading winter sun but providing shading in summer months to address any potential overheating issues on the south facing sides of buildings;
j) limit mortality rates for newly planted trees through a carefully considered post planting and maintenance plan; and
k) include appropriate tree protection for trees on site.

Ambition GIA4 Trees

a) Industrial developments within or outside of SIL are encouraged to:
    i) restore relationships with their local context, character and heritage through species choice including providing riverine species around waterways to characterise the natural landscape and provide a sense of place;
    ii) landscaping proposals should aim to achieve a future tree canopy cover of between 20% and 30% based on the extent of mature tree canopy goals; and
b) In large development sites, where landscaping is proposed within the site along the street frontage, proposals should aim to contribute towards delivering an avenue of trees and a sense of place and time. Proposals should characterise streets with autumn colour or spring flowering, signifying the onset of a season.

Figure 7.12. Birch trees

Figure 7.13. Beech trees

Figure 7.14. Oak tree

7 Green infrastructure

Signposts

National Planning Policy Framework
- Paragraphs 20, 92, 130, 154, 161, 174, 186

National Design Guide
- N1-N3

London Plan / GLA
- Policy GG2
- Policy G1
- Policy G5
- Policy G6
- Policy G7
- Using Green Infrastructure to Protect People from Air Pollution guidance
- All London Green Grid SPG
- Urban Greening Factor LPG
- Air Quality Positive LPG
- Air Quality Neutral LPG

Local Plan
- Policy SP8
- All Place and Cluster policies
- Policy D3
- Policy EU2

Supporting documents
- OPDC Biodiversity and Urban Greening Strategy

Other
- London Tree and Woodland Framework guidance - 'Right place, right tree' principle
- Trees and Design Action Group
- Tree valuation method such as CAVAT or i-Tree. Example here
- University of Birmingham Green Infrastructure for Roadside Air Quality (GI4RAQ) guidance & decision tree

Supporting text

7.47. As set out in Principle GIP1: Optimising Urban Greening and Biodiversity, proposals should retain existing high value habitats and trees of value as far as possible. If any loss of trees is proposed, the applicant should quantify existing tree values using a combination of amenity assessment and a recognised tree valuation method such as CAVAT or i-Tree and to make sure suitable compensation is made for any loss required by the development.

7.48. Planting proposals for new trees should adopt the 'Right place, right tree' principle using information in the London Tree and Woodland Framework guidance.

7.49. A good volume of tree greenery/ clustering and a diverse mix of species is required to ensure a climate adaptable and ecologically resistant urban tree cover. Planting new trees also contributes towards the urban greening factor and biodiversity net gain targets. Through this mix there are also opportunities to increase visual amenity during the winter months such as by choosing species with interesting barks and winter flowers and introducing edible fruiting trees to help enhance people's connection with nature.

7.50. Where frequently used pedestrian walkways are located next to transport corridors, a green barrier can help with separating pollutant sources from people. Evergreen and coniferous species such as Holly, Leyland Cypress and Mediterranean Cypress will provide pollution buffering year-round. Alternatively, to decrease the maintenance necessary to shape the hedges, smaller trees can be planted in raised planters of sufficient height combining a grey barrier with a green. Small pollution tolerant species appropriate to raised roadside planters include but are not limited to Tamarix, Staghorn Sumac and broad-leaved Cockspur Thorn.

7.51. In open space areas used for amenity that are not roadside, it is beneficial to use tree planting with dense closed canopies. This will provide shading and shelter making the space more comfortable and provide a pollution buffer with less ambient pollution under the canopy.

7.52. Where roads are likely to see slow moving traffic with congestion and vehicles waiting with engines running, tree canopies should not form closed canopies above the transport corridors as this can trap air pollutants below increasing the ambient concentrations at ground level.

7.53. Tree species that flower consistently through the year would prolong the pollinator season. As an example, winter flowering Cherry and Witch Hazel can increase pollen availability through the winter months. More information on different species is available in the Trees & Design Action Group guidance - this provides peak flowering times, landscape uses, and environmental tolerances.

7.54. Trees should be incorporated into drainage schemes where appropriate. Drainage from gutters can be redirected to tree pits and away from sewers to reduce run off; while planters can be located at the base of guttering to capture water runoff from roofs.

7.55. In industrial yard and parking areas, engineering tree pits into the site using crate systems can increase both tree cover and water attenuation. Installing root barriers and service routes together can also provide a sustainable and harmonious relationship. This will help to reduce pollution run off and direct it towards tree pits. Biochar can be used in with the tree pit soil to remediate pollutants.

7.56. Proposals should seek to locate trees for the shading of grey infrastructure to reduce ambient temperatures and energy usage. Where appropriate, trees can provide building shade reducing the energy consumption required to cool buildings. Conversely, trees will provide lower heating bills by providing wind breaks. On eastern and western sides of buildings solar friendly deciduous trees should be planted with airy canopies such as but not limited to Birch, Honey Locust, False Acacia and Alder. On northern sides evergreen species with dense crowns should be planted perpendicular to prevailing winds. Appropriate wind break species could include but should not be limited to Scots pine, Norway spruce and western red cedar. Trees planted on northern sides of buildings should be carefully considered so as not to shade out winter sun from buildings and increase energy usage. Shade trees should also not block winter sun from the south facing walls of buildings, but also need to consider appropriate shading to address any potential overheating and amenity issues.

7.57. Trees can be lost through accidental damage or vandalism, including at the construction and operational stages of development. To limit this, opportunities for tree protection should be incorporated into the design.

Mitigating impacts

8 Mitigating impacts

Introduction

8.1. Strategic Industrial Locations (SIL) are one of the few areas that can accommodate industrial activities, including those operating 24 hours a day and creating noise, which would normally lead to land use conflicts elsewhere. The integrity or effectiveness of these locations should not be compromised. However, any potential negative impacts do still need to be mitigated.

8.2. There is an extensive body of planning policies, as well as detailed regulations that exist outside of the planning system, that explain how a range of impacts should be assessed. For example, the Environment Agency expect all regulated facilities to comply with the relevant best available technique reference documents or BREF notes.

8.3. This SPD guidance does not repeat this, and just focusses on very specific ideas related to 3 issues – opportunities to help reduce air emissions and noise/vibration, and more detailed consideration on how to integrate sustainable drainage into industrial designs.

Figure 8.1. Illustration of a street with industrial and mixed uses

8 Mitigating impacts

Principle MIP1 Air quality

Industrial developments within or outside of SIL should:

a) where possible, consider enclosing activities within buildings;
b) implement measures to reduce emissions from construction and operational fleet road vehicles as well as plant equipment;
c) maximise the use of zero emission operational fleet vehicles by applying the vehicle hierarchy in the following order of priority:
   i) zero-emission;
   ii) hybrids;
   iii) up-to-date Euro Standards for vehicle emissions or superseding alternatives applicable at the time of initial occupancy;
d) prioritise the use of sources of energy, heating and/or cooling that do not result in emissions of air pollutants;
e) where fuel directly combusted on site is justified, priority should be given to fuels which have a clear benefit to reducing emissions of greenhouse gases and/or air pollutants affecting human health, over the use of fossil fuels;
f) prioritise lower or zero-emission alternative gensets over generators powered by on-site sources of combustion, where generators (including those used during emergencies) are proposed. Generators powered using fossil fuels will not typically be permitted; and
g) designing onsite green infrastructure to help limit exposure to air pollutants in line with Principles/Ambitions GIP1/GIA1 and GIP4/GIA4.

Ambition MIA1 Air quality

Industrial developments within or outside of SIL are encouraged to:

a) implement measures to reduce emissions from construction and operational fleet road vehicles as well as plant equipment including using:
   i) 100% zero emission operational fleet vehicles;
   ii) non-road mobile machinery used operationally on sites that meets equivalent emissions standards to those used at the construction stage; and
b) 100% zero emission sources of energy, heating or cooling.

Signposts

National Planning Policy Framework
- Paragraph 186

London Plan / GLA
- Policy SI1
- Policy SI2
- Using Green Infrastructure to Protect People from Air Pollution guidance
- Air Quality Positive LPG
- Air Quality Neutral LPG
- Be Seen Energy Monitoring LPG
- Circular Economy Statements LPG
- Energy Planning Guidance
- The Control of Dust and Emissions in Construction SPG
- Whole Life-Cycle Carbon Assessments LPG
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy SP2
- Policy SP3
- Policy SP9
- Policy D5
- Policy EU4
- Policy EU5

Supporting documents
- OPDC Old Oak and Park Royal Air Quality Study
- OPDC Environmental Standards Study

Other
- Environmental Protection UK & Institute of Air Quality Management - Land Use Planning & Development Control: Planning for Air Quality
- University of Birmingham - Green Infrastructure for Roadside Air Quality (GI4RAQ) guidance & decision tree: an evidence-based approach to reducing roadside exposure to road transport pollution

Supporting text

8.4. Enclosing activities within buildings can help to control air emissions. It can also reduce the quantity of yard/ service area and associated runoff; increase roofspace, providing additional drainage which can be used in industrial processes and/or support objectives for green infrastructure and biodiversity net gain. Enclosing activities may also have visual and aesthetic benefits.

8.5. Road transport (including vehicle trips attributable to construction activities) is the largest source of the key air pollutants - nitrogen dioxide (NO2) and fine particulate matter (PM10 & PM2.5) - in London. Heating systems (on-site sources of combustion) also contribute to NO2.

8.6. Vehicle emissions have generally improved over time, which is in part due to the progressive introduction of newer vehicles as part of commercial fleets. The amount of construction activity planned for the area provides an opportunity for sustainable construction traffic and transport solutions to be adopted. The Principle seeks to support the transition to cleaner vehicles in order to help ensure improvements to air quality.

8.7. Some emissions in London are generated by plant, particularly those used at construction sites. Regulations related to non-road mobile machinery (NRMM) specify emissions standards for NRMM plant used at construction and industrial sites. London Plan Policy SI1 requires that “development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone” to mitigate effects on air quality whilst demolition and construction activities are undertaken. Whilst there is no requirement to register NRMM within the low emission zone, plant used in any industrial, storage or warehousing activities are encouraged to comply with the equivalent emissions standards to those adopted during the construction stage. The emissions standards applicable are available at www.nrmm.london.

8.8. Policy SI2 of the London Plan (2021) outlines that major developments should be net zero carbon and should follow the Energy Hierarchy. Prioritising the deployment of electric sources of heat and hot water over on-site sources of combustion is required. Justification will be required where on-site sources of combustion resulting in emissions to air are proposed, including generators. Therefore, lower or zero-emission alternative gensets (such as those using lithium-ion batteries) should be prioritised over generators (including emergency generators) powered by on-site sources of combustion. Where fuel is directly combusted on site, priority shall be given to fuels which have a clear benefit

to reducing emissions of greenhouse gases and/or air pollutants affecting human health, over the use of fossil fuels. The benefit associated with using any alternative fuel should be specified. Where the air quality benefits would only be achieved under certain operating conditions, the applicant should explain this and commit to operating under those conditions insofar as is practicable. Generators emitting fossil fuels will not typically be supported.

8.9. Where on-site sources of combustion are proposed, these should be designed to accord with measures to facilitate dispersion, the distance from the closest receptor, and any emissions limit values as set out for a generator of its size to meet requirements which can reasonably be expected to be enforced for either Specified Generators or Medium Combustion plant under the Environmental Permitting Regulations. Good design principles, such as maximising stack height, minimising emissions rates and operating hours, and ensuring gases discharge vertically without a cowl or similar impeding dispersion, are encouraged for all on-site sources of combustion, regardless of additional permitting requirements.

8.10. Wherever sources of combustion are proposed, an air quality assessment considering the impacts associated with their operation, including during testing and servicing regime, should be submitted to demonstrate compliance with OPDC Local Plan Policy EU4. The assessment should consider the potential effects of testing generators sequentially, rather than simultaneously, noting the potential cumulative effect this could have (including compliance with the hourly mean air quality objective (AQO) for nitrogen dioxide (NO2)). Mitigation measures could include reducing effects from these sources on air quality. The 'Land Use Planning & Development Control: Planning for Air Quality' guidance (Environmental Protection UK & Institute of Air Quality Management, 2017) ('the EPUK-IAQM guidance') is helpful in regards to this.

8.11. Green Infrastructure can assist with facilitating the dispersion of pollutants away from sensitive receptors, when designed carefully to consider the direction which pollutants travel along a road and the relative height and location of buildings on either side of a road, relative to pollutant dispersion (see also Principles/Ambitions GIP1/MIA1: Optimising Urban Greening and Biodiversity and GIP4/GIA4: Trees). The signposted information provides guidance on how green infrastructure can be used to facilitate dispersion inside and outside of street canyons, where continuous buildings or similar structures can modify pollutant dispersion along roads. It also considers the influence of urban form and the distribution within the street, therefore providing advice on how green infrastructure should be used to disperse air pollutants upwind and downwind of air pollution at various locations adjacent to roads. When designing schemes, applicants are encouraged to consider the available evidence to ensure any green infrastructure proposals improve pollutant dispersion or at least do not worsen it at locations into which receptors sensitive to air pollution may be introduced. Definitions regarding the locations at which the Air Quality Objectives against which local authorities must assess air quality within their jurisdiction are provided in the London Local Air Quality Management Technical Guidance 2019 (LLAQM.TG (19)) (Mayor of London, 2019). It is recommended the same definitions are applied to the locations where exposure to breaches of the Air Quality Standards is "relevant" are based on the same definitions to which the Air Quality Objectives are applied.

8.12. The GI4RAQ guidance also includes case studies outlining how green infrastructure has been used to improve air quality.

8.13. Where sensitive receptors are proposed, good design principles to minimise exposure to air pollutants should be employed. This is likely to include:

- maximising the distance of receptors from known sources of air pollution (including inlets to mechanical ventilation systems);
- avoiding the creation of street canyons which would serve to inhibit the dispersion of pollutants;
- designing onsite green infrastructure at any sites introducing exposure to air pollutants or which could affect offsite exposure in accordance with the 'Using Green Infrastructure to Protect People from Air Pollution' London Plan Supplementary Planning Document and 'Green Infrastructure for Roadside Air Quality' as and where appropriate; and
- where other options have been exhausted, implementing a mechanical ventilation system (incorporating pollutant filtration where appropriate), ideally coupled with sealed facades, to prevent the ingress of air pollutants into areas containing sensitive receptors. Applicants will be expected to commit to maintaining this for as long as air quality at the site poses a risk to future site users.

8.14. Dust, air pollutants, smoke, fumes and odour associated with industrial schemes have the potential to impact on amenity. The Agent of Change principle will be applied in accordance with Policy D13 of the London Plan and Policy D5 of the OPDC Local Plan. To this end, relevant assessments submitted with planning applications should consider the impacts on proposed receptors or, if introducing a source(s) of pollution, should also consider cumulative effects from developments which would not be adequately accounted for in the baseline pollutant concentrations adopted, either due to new sources being introduced since the baseline information was published or where they may affect the outcomes of an air quality assessment regarding exposure to poor air pollution.

8 Mitigating impacts

Principle MIP2 Noise and vibration

Industrial developments within or outside of SIL should:

a) use Appropriate Measures (or Best Available techniques' (BAT) or 'Best Practicable Means' (BPM)) to prevent or minimise noise pollution from the development. Appropriate measures that should be used to control noise include but are not limited to:
   i) where noise and vibration impacts are likely to largely arise from transport, demonstrate mechanisms to reduce the number of vehicle trips;
   ii) considering quieter alternatives when installing or replacing equipment, or the use of silencers;
   iii) review all potentially noise producing activities and consider how these could be undertaken in a quieter way;
   iv) if outside of SIL, consider whether particularly noisy activities, including deliveries, could be undertaken at less acoustically sensitive times. Where this is not possible, extra care should be taken to incorporate other measures to minimise the noise at source;
   v) switch off noisy equipment when not in use;
   vi) maintain equipment so noise levels are reduced;
   vii) locate noise generating equipment or operations inside buildings or within acoustic enclosures to reduce noise emission;
   viii) consider the location of external equipment and operations that have the potential to produce noise and/or vibration, siting them as far as possible away from sensitive receptors, having regard to staff amenity areas and the canal;
   ix) consider screening noisy external equipment and operations from sensitive receptors by buildings, infrastructure or noise barriers (perimeter screens);
   x) locating access/egress points and yards away from sensitive receptors and the public realm in line with Principle MP3;
b) develop proposals based on engaging with the people who may be impacted by noise from the development; and
c) where perimeter screens are proposed for acoustic purposes, these should be designed to contribute towards the greening of the area in line with Principle/Ambition GIP2/GIA2 where possible.

Ambition MIA2 Noise and vibration

Industrial developments within or outside of SIL are encouraged to:

a) prepare a Noise Management Plan for operation of the development to be adhered to; and
b) adopt relevant Quiet Mark certified or Noise Abatement Society measures where possible.

Signposts

National Planning Policy Framework
- Paragraphs 174 e) and 185 a)

London Plan / GLA
- Policy D13
- Policy D14
- London Environment Strategy – Chapter 9: Ambient Noise
- Sustainable Transport, Walking and Cycling LPG

Local Plan
- Policy SP2
- Policy SP3
- Policy SP7
- Policy D5
- Policy EU5

Supporting documents
- OPDC Old Oak and Park Royal Air Quality Study
- OPDC Environmental Standards Study

Other
- TfL Reducing noise and vibration

Supporting text

8.14. The concept of 'Best Available Techniques' was introduced through the Environmental Protection Act 1990. In simple terms, 'Best Available Techniques' means available techniques which are the best for preventing or minimising emissions and impacts on the environment.

8.15. Noise is considered to be 'unwanted sound' and alongside vibration can have impacts on health and wellbeing. High levels of noise and vibration can impact on physical and mental health, and in the workplace, disturbance from noise and vibration can impact on productivity and potentially be damaging to hearing.Avoiding the generation of noise in the first place, is always preferred where possible. Noise from the development should be considered holistically and early in the design development process. By appropriate placement, screening, and operation, additional noise attenuation can be minimised.

8.16. Noise and vibration caused by the operation and servicing of industrial areas has the potential to cause nuisance. This is particularly the case where industrial and sensitive receptors are located close to one another. In contrast, the introduction of noise sensitive developments such as residential, education and open spaces in existing industrial areas can potentially impact the ability of commercial businesses to operate without risk of complaints. The 'Agent of Change' principle will be applied when new development are proposed to assess impacts in line with London Plan and OPDC Local Plan policies (see also Principle BFP1: Adjacencies and Agent of Change principle).

8.17. When considering new developments, thought should be given to how noise and vibration, either proposed or existing, will be managed effectively and minimised as far as reasonably practicable. Where noise and vibration impacts are likely to largely arise from transport, particularly heavy goods vehicles (HGVs), mechanisms to reduce the number of vehicle trips or reduce the noise outputs of individual vehicles have the potential to substantially reduce the total noise associated with a development. Other considerations include choosing quieter alternatives when installing or replacing equipment, or use of silencers (e.g. lower noise plant, use of electric vehicles vs internal combustion engine vehicles, etc); locating noise activities/plant further away from noise sensitive areas and/or attenuated by screening or enclosures; or restricting noisy activities to less noise sensitive time periods. The performance of screens or enclosures for the purposes of reducing noise can be improved with the use of absorptive materials on the side facing noisy activity; other reflective surfaces (e.g. from buildings on the site) may also undermine screening, so the use of absorptive materials on these faces or changes to the layout can help maximise screening performance. Where perimeter screens are proposed for visual and acoustic purposes, options are now available that can simulate fast growing plants such as ivy which will help in 'greening' the area . Any noise mitigation measures implemented should be appropriately maintained so that their performance does not reduce over time

8.18. It is important for industrial developments to engage with the people who may be affected by noise from the development, to understand the potential impacts. This can include making sure people know how to contact the site and the local authorities if there is a problem, informing them about upcoming noisy activities and engaging with them and taking action when there are problems or complaints.

8.19. Quiet Mark certifies solutions for material handling, including electric forklift trucks which are quieter than diesel-powered truck mounted forklifts, directional reversing alarms and low noise roll cages. Its silbling organisation, the Noise Abatement Society, holds its annual John Connell Awards and past winners have included quiet delivery solutions (e.g. Recycling Lives) . These provide useful examples of how best practice could be integrated into the selection of equipment through to business operation.

8 Mitigating impacts

Principle MIP3 Amenity for outside spaces

Industrial developments within or outside of SIL should:

a) ensure external onsite amenity areas achieve acceptable wind microclimate conditions;
b) not cause unacceptable wind microclimate conditions in amenity spaces located in adjoining sites; and
c) avoid locating heat or noise generating plant/equipment near to amenity spaces if possible.

Ambition MIA3 Amenity for outside spaces

Industrial developments within or outside of SIL are encouraged to:

a) ensure amenity spaces within or surrounding the development meet BRE Guidelines; and
b) avoid worsening of wind microclimate conditions of surrounding amenity spaces.

Signposts

London Plan
- Policy D3
- Policy SI4

Local Plan
- Policy SP2
- Policy SP3
- Policy SP9
- All Place and Cluster Policies
- Policy D5

Supporting documents
- OPDC Environmental Standards Study

Other
- BRE 209 Site layout planning for daylight and sunlight: a guide to good practice (latest edition)

Supporting text

8.20. Amenity spaces should not be compromised in their ability to support the health and wellbeing of employees.

8.21. Parts of any proposed amenity area should have wind microclimate conditions suitable for sitting as defined by the Lawson Wind Comfort Criteria. If seating areas are identified in plans for amenity spaces, then these locations should have conditions suitable for sitting. A Wind Microclimate Assessment should be undertaken using wind tunnel testing where there is reasonable expectation of the potential for strong winds – for example if an initial computational fluid dynamics (CFD) study demonstrates conditions suitable for 'walking' in line with the Lawson Wind Comfort Criteria. If wind tunnel testing is not required, developers should use computational fluid dynamics (CFD), dependent on the level of risk of strong winds, and methodology should be agreed with OPDC. See OPDC Local Plan table 5.1 for further information.

8.22. Development should not cause a worsening of wind microclimate conditions in surrounding amenity areas to the extent that conditions previously suitable for sitting in these areas are no longer considered suitable for sitting, or that conditions suitable only for strolling are introduced into an amenity area where conditions were previously suitable for sitting and/or standing.

8.23. The BRE guidance recognises that different types of amenity space may have different sunlight requirements and therefore, it is hard to provide a definitive rule. However, the guidelines suggest that if at least 50% of an outside area receives at least 2hrs of sun on 21 March then it is likely to be adequately lit throughout the year.

8.24. Surrounding amenity spaces located to the north-west, north and north-east of any proposed buildings should be considered in terms of the potential for new buildings to overshadow them. Where these amenity spaces currently meet BRE Guidelines (i.e. receive at least 2 hours of sunlight to at least half its area on 21 March), development should avoid causing these spaces to no longer meet these standards.

8.25. Where proposals are submitted in outline, further testing at the reserved matters stage should be undertaken for overshadowing and for wind microclimate to ensure that the confirmed details of the proposed development would still secure acceptable microclimate conditions in internal and surrounding amenity spaces.

8 Mitigating impacts

Principle MIP4 Water and drainage

Industrial developments within or outside of SIL should:

a) deliver a range of solutions including green roofs, rainwater capture and reuse, infiltration systems, permeable paving, bioretention areas, tree pits and micro-wetlands;
b) aim to separate runoff from 'safe' areas (e.g. roofs or car parks) which may be drained through SuDS. Where possible, SuDS measures should be designed to work harmoniously with landscaping and biodiversity goals in line with Principles/Ambitions in section 7 (Green Infrastructure);
c) separate runoff from potential areas at high risk of contamination from hazardous substances. Where feasible, these should be treated on-site (e.g. hydrocarbon interceptors) prior to being discharged to SuDS;
d) SuDS features such as swales, permeable paving and bioretention areas may be lined if there is a risk of contamination;
e) ensure non-trafficked paved areas, including footpaths and parking, are permeable;
f) incorporate rills, channels and depressions into any hardscape with planting, to provide water features and attenuation;
g) on larger sites, consider use of swales, filter strips, ponds/ basins and larger wetlands;
h) consider access to existing underground infrastructure, such as utilities, in the design;
i) ensure any implemented SuDS scheme remain serviceable, including for maintenance and, if required, replacement, for the life of the development;
j) water recycling measures should also be considered when designing any landscaping scheme. Such measures could include working with existing natural vegetation, including drought-resistant plants or low water use landscaping / gardens and using automatic drip irrigation systems where this aligns with Principle/Ambition GIP1/GIA1 and GIP4/ GIA4; and
k) demonstrate feasibility of reusing and recycling water from industrial premises, including effluents, and should seek the highest viable and practical means of adding value from this. This may include potential collection for use as cooling. Alternative reuse of "grey" water can also include reuse in toilets.

Ambition MIA4 Water and drainage

Industrial developments within or outside of SIL are encouraged to:

a) utilise opportunities for smart metering and leak detection where possible; and
b) aim to improve water efficiency above the London Plan standards by greater than 25% through the use of greywater recycling, rainwater harvesting and other water efficiency measures.

Signposts

National Planning Policy Framework
- Paragraphs 167, 169, 174 a) e) and 175

National Planning Policy Guidance
- Flood Risk and Coastal Change

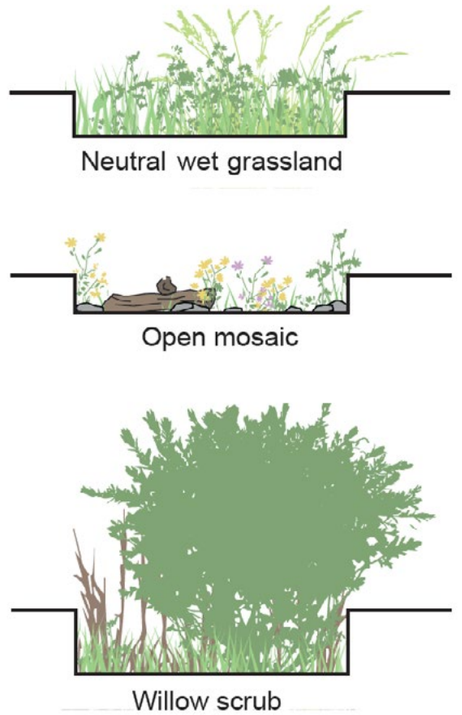
London Plan / GLA
- Policy G1
- Policy SI5
- Policy SI13
- London Sustainable Drainage Action Plan
- Urban Greening Factor LPG

Local Plan
- Policy SP2
- Policy SP8
- Policy EU2
- Policy EU3
- Policy EU13

Supporting documents
- OPDC Integrated Water Management Strategy

Other
- TfL SuDS in London: A Guide
- CIRIA C736 – Design of containment systems for the prevention of water pollution from industrial incidents
- CIRIA C753 – The SuDS Manual
- CIRIA C768 - Guidance on the Construction of SuDS
- Canal & River Trust – Heating and Cooling systems
- Environment Agency's Approach to Groundwater Protection

Figure 8.2. Examples of different SuDs habitats



8 Mitigating impacts

Supporting text

8.26. Industrial developments should minimise the demand for and promote the recycling of water, reduce the risk of flooding to on and off site receptors, and the pressure on both the local and wider drainage networks.

8.27. Some operational processes require significant water use, whilst many industrial settings are also characterised by large areas of hardstanding that can potentially increase flooding, contamination, and surface water risks. Alongside measures to reduce water use such as rainwater harvesting, smart metering and greywater recycling, developers should also identify opportunities to replace/avoid conventional piped drainage including underground attenuation (in accordance with OPDC Local Plan Policy EU3b)i)). Where possible, they should use above ground Sustainable Drainage System (SuDS) incorporating green infrastructure such as rain gardens and tree pits and, often for larger sites, basins and swales.

8.28. Industrial development may be restricted in terms of space for existing infrastructure. However, there are a range of space-efficient SuDS techniques available which should be considered including green roofs (see Principle/Ambition GIP2/GIA2: Green roofs and boundaries), rainwater capture and reuse, infiltration systems, permeable paving, bioretention areas, tree pits (see Principle/Ambition GIP4/GIA4: Trees) and micro-wetlands.

8.29. Source control is a key concept, and opportunities can be maximised where SuDS design is part of the overall design process, and considered at an early stage so that all available space is utilised (e.g. verges, small pockets of grass or paving). For example, tree pits can store and retain large quantities of surface water runoff as well as reduce and bioremediate runoff on site. However, only trees suitable for the existing site conditions should be planted with suitable root barrier systems to enable the trees to establish without damage, to protect building foundations and provide root free corridors for utilities provision. These opportunities and requirements must be worked into the architectural design of the proposals, especially if space is not specifically set aside and dedicated to water management. Furthermore, as well as being suitable for the existing site conditions, species should be selected for their pollution, environmental or climatic tolerances to further support water management on site (see Principle/Ambition GIP1/GIA1). Site specific technical studies confirming site conditions for mitigating flood risk (both on and off site), provision of surface water management and available capacity for both potable supply and foul drainage should be an integral part of the design evolution for the proposed development.

8.30. SUDs enable not just the management of water volumes but also water quality, with consideration given to avoiding discharge into made ground. Additional care must be taken when designing SuDS for commercial and industrial sites, particularly where storage, handling or use of hazardous substances occurs, such as for example, garage forecourts, coach and lorry parks/ turning areas and metal recycling/vehicle dismantling facilities. Industrial uses which hold or store materials which pose a risk to groundwater should refer to CIRIA C736 (Design of containment systems for the prevention of water pollution from industrial incidents).

8.31. Surface water from ‘safe’ areas where the risk from pollutants is low in accordance with the SuDS Manual (e.g. roofs) should be controlled at source as far as possible for example through green and blue-green roofs before discharge into a suitable SuDS network which aims to work harmoniously with the site landscaping features and biodiversity goals. Where the risk from pollutants is higher (e.g. vehicle yards) ,or where there are potential risks related to certain incidents (i.e. run off from fire incidents), additional controls should be put in place to remove contaminants including the use of silt/oil/ water interceptors. It is important to note that the use of SuDS features on site is not precluded by the presence of contamination, but if and where required, the features may be lined to provide separation between the surface water runoff and impacted material below.

8.32. Whilst it is acknowledged that commercial/ industrial sites typically include heavily trafficked areas such as servicing yards for heavy goods vehicles (HGVs), other areas of lighter trafficking such as car parks and footpaths should be permeable. Subject to suitable treatment of potential contaminants, surrounding heavily trafficked areas may also be designed to positively drain/ fall towards areas of permeable paving and/or features such as rain gardens and tree pits such that run off of these features is also dealt with in a sustainable manner.

8.33. There should be no uncontrolled run off into the Grand Union Canal. Any clean surface water drainage into the Grand Union Canal would need to be assessed by the Canal & River Trust's Utilities and Environment teams and Third Party Works engineers, and subject to a formal licence. Drainage can't be accepted if it is not clean water, and appropriate pollution interceptors may be required.

8.34. Whilst accommodating above ground SuDS features might be easier on larger sites where more space is available, a perceived lack of space for surface water attenuation will not be considered a valid reason for not incorporating SuDS. Space efficient features such as rills, depressions, rain gardens and tree pits can be small and discrete but provide a level of treatment and attenuation. It is also key to ensure that such features afford suitable protection to building foundations and that utility corridors are designed into the scheme for future resilience and maintenance.

8.35. OPDC’s Local Plan Policy EU7 (Circular and Sharing Economy) and Policy EU10 (Energy systems) identify the potential for cooling networks in the OPDC area. Where viable and practical means exist, there may be potential for waste water from industrial premises to be collected and used for cooling (via heat exchangers). Other uses can also be explored such as the reuse of water in toilets and other systems where potability is not required.

8.36. The canal also provides an opportunity to generate localised heat and cooling for development. Any proposals to use the canal in this way should be developed in accordance with Policy EU10 and in agreement with the Canal and River Trust.

8.37. A 25% reduction from the OPDC Local Plan is generally considered achievable through water efficiency measures and water metering. However, opportunities for further reductions, such as greywater recycling and rainwater use, present opportunities for reductions of up to 40%. Such reductions are in line with Policy EU3 of the OPDC Local Plan, which require a maximum score for water consumption credits in BREEAM or equivalent future standards.

Environmental sustainability

9 Environmental sustainability

Introduction

9.1. A core part of OPDC's vision is to support exemplar sustainable development. In the context of this SPD, it means the OPDC industrial area becoming a flagship low carbon, high performing, biodiversity positive, resource efficient and adaptable business location that is resilient to climate change and promotes smart and healthy behaviours, environmental health and mental as well as physical wellbeing.

9.2. Some of these strands of sustainability are covered elsewhere in this document (see Movement, Green Infrastructure and Mitigating Impacts sections in particular), and there is a wealth of planning policies that already set out strategic targets or expectations related to this. In certain cases other (non planning related) regulations and requirements for environmental permits might also apply – see paragraph 8.2.

9.3. The SPD guidance explores key mechanisms to support the delivery of these policies/targets focussed on the low carbon, adaptability and resource efficient objectives. We also have an opportunity, through Ambitions, to capture the direction of travel that development is encouraged to implement. OPDC is taking a proactive role in helping to facilitate this through the development of a strategic heat network that will be capable of using waste heat from data centres - more information on this is provided in section 10 of this SPD.

Figure 9.1. Illustration of an industrial street with enhanced green infrastructure

9 Environmental sustainability

Principle ESP1 Minimising environmental impacts and contributing to OPDC's Net Zero carbon target

Proposals for data centres should minimise their environmental impacts and contribute towards net zero carbon targets in OPDC area by:

a) meeting the expected performance targets set out in Table 9.1;

b) supporting the delivery of heat networks by designing the site to make waste heat easily and readily recoverable and demonstrating the following technical measures:

   i) 'T' off in the cooling system pipework or ducting are included in an appropriate location. It is imperative that this is installed before the cooling pipework/system reaches the external environment, where natural or 'free cooling' can reduce the heating off take potential;

   ii) routes for pipework though the building are safeguarded. This is for waste heat pipework to a plate heat exchanger and pumps/valves/control panel to export heat;

   iii) the building has allowed for additional space for a plate heat exchanger. Plans are provided to show an area that can accommodate a plate heat exchanger, sized for peak waste heat potential at the given temperature, and considerate of any operational access requirements in line with OPDC/heat network specification/requirements at the time;

   iv) route for pipework from building to boundary - Plans are provided to show an area that has been safeguarded in the public realm from the plate heat exchanger to the boundary of the applicant's land ownership in an appropriate location. Safeguarded routes should ideally be free of other utilities/services and away from any tree pits or under surface landscaping or hard finishes which would be disruptive and difficult to reinstate; and

c) supporting the delivery of heat networks by actively exploring the potential for heat export to nearby developments and where opportunities are identified.

Ambition ESA1 Minimising environmental impacts and contributing to OPDC's Net Zero carbon target

Industrial developments within or outside of SIL are encouraged to achieve BREEAM Outstanding.

Signposts

National Planning Policy Framework
- Paragraphs 152 to 158

London Plan / GLA
- Policy GG6
- Policy SI3
- Policy SI4
- Air Quality Positive LPG
- Air Quality Neutral LPG
- Be Seen Energy Monitoring LPG
- Circular Economy Statements LPG
- Energy Planning Guidance
- Whole Life-Cycle Carbon Assessments LPG

Local Plan
- Policy SP2
- Policy SP3
- Policy SP9
- All Place and Cluster Policies
- Policy D3
- Policy EU9
- Policy EU10

9 Environmental sustainability

Supporting text

9.4. National planning policy states that the purpose of the planning system is to contribute to the achievement of sustainable development, including addressing climate change and carbon emissions. The Ambition for BREAAM Outstanding is an important opportunity to go beyond policy compliance and set an exemplar benchmark for new industrial development – an important step towards making London's largest industrial estate also the most environmentally sustainable. There are precedents that prove the art of the possible in this regard.

9.5. The Mayor of London is committed to decarbonising London, and the 2021 London Plan requires all development to meet ambitious carbon emissions and contribute to carbon reduction through carbon off-setting.

9.6. Delivering zero carbon development within the OPDC area, will support the Mayor's goal to transition to a zero carbon London. Data centres have a very significant impact on carbon emissions and should therefore ensure they adopt the Mayor's hierarchy:

- focusing on carbon efficiency first; then look at
- using low carbon energy sources; followed by
- integrating renewable energy technologies into the development; and finally
- providing a carbon off-set contribution for any carbon emissions arising from regulated energy use.

9.7. In line with the London Plan, carbon emissions should be calculated using Part L of the most up to date Building Regulations. Building Regulation section 35 (1) states that 'energy performance of a building' means the calculated or measured amount of energy needed to meet the energy demand associated with a typical use of the building, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting.

9.8. Current GLA advice is that "in line with the Building Regulations methodology, the entire floor area of the building and all energy loads for heating, domestic hot water, cooling, lighting, fans and pumps should be included in the energy model and reported CO2 emissions, including for the cooling of the server rooms/data halls." This is reviewed on an ongoing basis.

9.9. Data centres generate a very significant amount of waste heat. This can be captured and used in heat networks to provide local development (residential and non-residential) with a low carbon heat source, which can significantly reduce the overall carbon impact of the development. Data centres should therefore ensure any waste heat can be captured and used in a district heating/cooling network, for example by making space available for heat exchangers and other plant in the data centre and by providing pipework to supply the waste heat from the data centre to an agreed area in the public highway.

9.10. All carbon off-set contributions collected by OPDC will be used to support carbon reductions in the OPDC area, including by investing in local heat networks that use waste heat from data centres and other sources to supply new and existing homes and non-residential development with heating, hot water and cooling as appropriate.

9.11. The provision of waste heat and the contributions to local heat networks will ensure that the data centre can contribute to a zero carbon London over the long term by ensuring a resource, which would otherwise be wasted, is captured and used to replace fossil fuel based heating in the area.

9.12. The provision of waste heat will also help reduce overall power demand by neighbouring development, by reducing the demand for electric based heating. This will help increase local resilience and reduce the demand for power from the grid.

9.13. Data centres should also address other environmental issues as part of a submission including:

i. supporting the overall goal for OPDC to deliver a significant net gain in biodiversity and greening (see section 7)
ii. managing the impacts of runoff and potential for flooding by integrating sustainable drainage and other attenuation systems on site or by contributing to off-site attenuation systems, particularly where they reduce risk and enhance the quality of public space (see Principle/Ambition MIP4/MIA4: Water and drainage);
iii. reducing and mitigating noise and vibration, both by helping to screen existing noise from sources like railways and roads and also by minimising noise and vibration during construction and operation (see Principle/Ambition MIP2/MIA2: Noise and Vibration);
iv. contributing to an overall improvement in air quality and the air quality positive objective adopted by the Mayor (also see Principle/Ambition MIP1/MIA1: Air quality);
v. supporting a reduction in resource utilisation and waste by adopting circular economy principles and developing an appropriate strategy that supports this goal (see other Principles in this section of the SPD).

9.14. A suite of measures that data centres should adopt to minimise their environmental impact is included in the Table 9.1 below.

9 Environmental sustainability

Table 9.1. Key environmental goals of data centres

No.	Goal	What is it and what is the expected performance?	Why is it important and what is the impact?	Relevant policy
1	To minimise the potential PUE of the proposed application data centre	PUE stands for Power Usage Effectiveness. PUE is a ratio of the amount of power needed to drive and cool the data centre vs the power draw from the IT equipment in the data centre. Is a ratio so doesn't have dimensions but is considered in kWh/yr. PUE can never be <1.0. Typical practice is considered 1.5 as stated in BS EN 50600-4-2:2016. Limits of technical feasibility in London are ~1.2 with many Data centre providers aiming for <1.3. PUE does not consider the impact of waste heat and only considers demand.	PUE is a measure of energy efficiency specifically for data centres. Typical measures using Part L do not capture the energy demands of energy centre though modelling and quoting of these figures will not capture the true energy use. There is no guidance or policy set up around a specific energy efficiency or carbon emission for data centres. However, the London Plan 2021 now covers a requirement for non-residential development to meet minimum carbon targets.	London Plan 2021 Policies SI2 and GG6 OPDC Local Plan Policy EU9
2	To minimise the potential WUE of the proposed application data centre	WUE stands for Water Usage Effectiveness. It is calculated by dividing the annual site water usage in litres by the IT equipment energy usage in kilowatt hours (kWh). Water usage includes water used for cooling, regulating humidity in the data centre. A WUE of 0.22 L/kWh is considered current best practice.	This metric allow data centre owners to track their internal progress on managing water usage. This metric will highlight the water consumption used to keep the datacentre cool. Using this metric can also help to incentivise rainwater or grey water recycling in buildings to cut down on potable water consumption. If dry cooling systems are used then this number can be nearly as low as zero.	London Plan Policy SI5
3	Complying with London Plan carbon requirements	London Plan sets targets and an approach to meeting those targets for carbon emissions. The Plan requires all residential and non-residential development to be zero carbon by adopting the energy hierarchy. The target requires the development to achieve a 35% reduction against Part L (for regulated emissions) and to off-set the remainder of the carbon emissions. The GLA energy assessment guidance 2022 (see paragraph 9.8) does not directly address data centre cooling but all cooling loads should be included in the Part L assessment and that this should inform design of the development, energy performance and carbon off-set requirements. The basis for this decision is that the MHCLG advise on calculating carbon emissions includes a requirement to include cooling loads and makes no exemptions for cooling of data centre server halls or other parts of the development. Applicant should include cooling for data bank/hall areas in regulated energy as it makes up the vast majority of the total energy building demand. Process electricity to power the servers can be included in process demands.	Carbon emissions from data centres are very significant and should be minimised to address the threat of climate change. Emissions from data centres is growing rapidly as demand for data grows. Whilst it is very challenging to meet the zero-carbon goal, data centres are getting increasingly efficient and can use waste heat to help off-set emissions in neighbouring developments by contributing to local heat networks. This can make a very significant contribution to net carbon reductions. Data centres are also very large buildings that can integrate PVs and other technologies into their roof and facades to provide some of their power requirements. They can also use batteries to reduce demand during peak times and provide additional resilience.	London Plan SI2 and OPDC LocalPlan Policies EU9 and 10

9 Environmental sustainability

No.	Goal	What is it and what is the expected performance?	Why is it important and what is the impact?	Relevant policy
4	Demonstrating that the data centre will be zero carbon by 2050	Major development should be net zero-carbon. However, this is defined in the London plan as regulated demands only. This is fixed building services only. Server loads are not considered in this calculation currently. However all emissions including all operational energy (including server loads) should be net zero carbon by 2050 A strategy is required to show how the development will be zero carbon by 2050 without having to undergo major retrofit. Where significant investment is required the strategy should address this including where the capital will come from and how it will be secured. This requirement is stipulated in the London Plan.	This will ensure applicants are thinking about long term operation of the data centres and how plant may be replaced. How the future energy demands are decarbonised and could be replaced with different systems by taking low carbon cooling or providing waste heat to an OPDC cooling or heat network.	London Plan 2021 Policies SI2, SI3 and GG6 OPDC Local Plan Policy EU9 GLA Energy assessment guidance page 68
5	Optimising the cooling system to minimise energy demand • Evaporative • Mixed mode • Natural ventilation	Data centres can use a variety of cooling systems, some are highly efficient whilst others are more energy hungry. Selecting a system that is resilient and provides cooling all the year round is the key objective. Exploration of free cooling for periods of the year that is possible should be undertaken. However, where a heat network can extract heat and use it to reduce heating and cooling to other development, the net impact on cost and carbon should be considered and optimised.	The different cooling systems can have impacts on the PUE and WUE. Also, different cooling systems are easier to future proof for connection to DHN to extract waste heat.	London Plan Policy SI3 OPDC Local Plan Policy EU9
6	Minimise carbon emissions by adopting Demand side Response (DSR) and Demand Side Management (DSM) systems. • Energy storage • Demand shifting • Load management	Smart buildings have been identified and acknowledged as key enablers of future energy systems for which there will be a larger share of renewables, distributed power and heat generation, and demand-side flexibility to match demand to supply and make best use of existing network connection and local generation capacity. The aim is to encourage applicants to investigate the potential for energy flexibility in new developments, include proposals to reduce the amount of capacity required for each site and to reduce peak demand. The assumption is that, if peak electrical demand is reduced across London, then less power infrastructure and less carbon intensive electricity generating plant will be needed to meet that demand. Data centre have a significant peak demand form the electricity grid. Small changes in peak load management and demand shifting could have larger positive impacts on grid constraints. The applicant should consider which measures are to be included in the development and asked to complete all relevant information as the per GLA energy guidance.	The UK grid is also becoming more complex as it incorporates more renewable power sources (e.g. solar, PV, tidal, compressed air and hydro) and large-scale energy storage. There are several energy storage and saving initiatives underway under the National Grid's Demand Side Response (DSR) program. One way global UPS manufacturers have adapted their uninterruptible power supplies to meet the challenges is to introduce bi-directional rectifiers and offer lithium-ion UPS battery options. Spare battery capacity can be used to generate income for an enterprise or colocation datacentre by supplying this to the grid or by disconnecting the building load from the grid supply for short periods of time i.e. running on battery power.	GLA Energy assessment guidance section 11 London Plan Policies SI2 and 3 OPDC Local Plan Policy EU9

9 Environmental sustainability

No.	Goal	What is it and what is the expected performance?	Why is it important and what is the impact?	Relevant policy
7	Optimising the building façade to the data centre to minimise cooling demands and maximise renewable generation.	Facades should be designed to limit solar gain into the spaces. Also roof and facades areas could include extensive solar PV for on-site electricity generation. Consideration of land verse roof top plant should be considered when asking this of applicants.	This will help reduce overall power demands from the grid and reduce PUE, as well as increasing renewable generation in line with Mayor's Environment strategy.	London Plan Policy SI2 11A OPDC Local Plan Policy EU9 and D3
8	Designing to maximise heat recovery opportunity.	Heating and cooling recovery should be considered as a minimum as this constitutes typical design practices, to minimise energy demands. Developers should consider how waste heat will be recovered and integrated in a heat network.	This is the key question to understand how waste heat could be exported into an area wide heat network as a low carbon heat source for neighbouring buildings. The applicant should provide a plan/strategy showing how the development is proactively designed to export waste heat from the cooling system. This should be undertaken at a detailed application or RMA stage. Commitments around designed in space, as well as access to this plant are the minimum that need to be considered.	London Plan Policy SI3 OPDC Local Plan Policy EU7 and EU10 GLA Energy assessment guidance page 68
9	Adopting a Circular economy strategy and designing for long term adaptability, and end of like recovery	What will happen if servers become redundant or technologies and demands change? Technology is moving quickly, satellite trains are being developed and new ways to transmit data are being developed, Data Centres are very bespoke buildings that use a lot of material and resource. Designing to minimise material use, designing in opportunities to easily adapt and repurpose these buildings and to disassemble them so that parts and components can be viably reused should all be considered as part of the design process. The Circular Economy statement should set out a clear strategy that addresses all of the above issues together with waste management, replacement cycles for example of servers and M&E systems that enables reuse and recycling as well as life time material, energy and water reuse.	Designing for a circular economy is crucial to reducing our consumption-based economy. This will help reduce global carbon emissions from redevelopment and products. Buildings need to consider reuse of construction materials and resources, as well as long term opportunities to adapt and disassemble with materials being designed with CE principles in mind is key. This is also a key area to help facilitate connection to a heating or cooling network through waste heat recycling.	London Plan 2021 Policy SI7 Circular economy Guidance OPDC Local Plan Policy EU7 and EU10
10	Design renewable, low carbon and zero emissions backup systems for power and cooling supply.	What is the current proposed power back up strategy for uninterrupted power supply (UPS). An all-electric solution is preferable over a diesel generator approach if these are not possible use of low emission fuels and other solutions should be considered.	Data centres need a UPS to avoid issues with service loss due to changes in power supply. Typically, UPS consists of Lead or Lithium-ion batteries to maintain power before diesel generator can provide back up power. Diesel has negative impact on air quality and carbon emissions so investigating how these can be reduced or avoided is strongly encouraged.	London Plan Policies GG 6 and D11 OPDC Local Plan Policies SP9, D3, EU9 and EU10
11	Source power to operate the data centre from 'new' zero carbon energy source that has been commissioned specifically to supply the data centre using PPA or other similar mechanisms. The data centre's power demand requirements and the implications of this for (existing and future) electricity capacity in the region are fully considered.	Electrical supply is to be provided by a UKPN or SSE substation. Whilst their supplies are getting 'greener' specific agreements for new zero emission power should be agreed with a supplier to off-set carbon emissions over the long term. Grid constraints and impact on the wider area, including on future development proposals, also need to be considered alongside resilience.	Securing new zero carbon energy sources for data centre development contributes to ensuring that energy supply for the development is aligned with net zero ambitions. Identifying proposed power demand for new development will help the OPDC understand the implications of this for existing and future power capacity in the locality. This could help to identify likely grid constraints before they occur and may reduce the likelihood of delay to development resulting from a need for network reinforcement.	London Plan Policies GG 6 and D11 OPDC Local Plan Policy DI3

9 Environmental sustainability

Principle ESP2 Sustainable construction and materials

Industrial developments within or outside of SIL should:

a) prioritise retaining and reusing existing buildings and other features where feasible (see Principle ICP1);
b) adopt a building design and use sustainable, resilient materials, that reduce vulnerability to overheating, flood and drought, as well as using bio-manufactured from waste where this meets objective in OPDC Local Plan Policy EU8;
c) undertake pre-redevelopment and pre-demolition audits to identify the potential for retaining any structures or a detailed inventory of materials to be managed during demolition; and
d) ensure at least 20% of materials are recycled or reused content, by value.

Signposts

National Planning Policy Framework
- Paragraphs 152 to 158

London Plan / GLA
- Policy GG6
- Policy SI4
- Policy SI7
- Circular Economy Statement Guidance

Local Plan
- Policy SP2
- Policy SP9
- Policy EU7

Other
- BRE BES 6001 Framework Standard for Responsible Sourcing and FSC and PEFC certified timber
- Cradle to Cradle
- Ethical Stone Register

Ambition ESA2 Sustainable construction and materials

Industrial developments within or outside of SIL are encouraged to:

a) not be overly engineered and passively provide for climate adaptation design measures, to allow easy or avoid additional installation at a future time;
b) report against an up to date Climate-related Physical Risks framework, such as that published by the UKGBC, and provide an outline climate change adaptation plan which demonstrates how the development will adapt in line with a);
c) seek ways to exceed the London Plan policy SI 7(A) targets;
d) share information from pre-redevelopment and pre-demolition audits into a central sharing database;
e) adopt more smart digital construction approaches, such as real-time Internet of Things (IoT) enabled dust, noise and water consumption monitoring, and real-time supply and demand of construction materials to facilitate more effective sharing;
f) increase the proportion of rapidly renewable materials such as bamboo, straw, cork, natural linoleum products, wool, wheatboard / strawboard, and/or increasing the proportion of wood and wood products (such as Cross-Laminated Timber) used as a construction material, where material requirements are met and materials are sourced responsibly in line with OPDC Local Plan Policy EU8;
g) commit to more than 20% of materials being recycled or reused content, by value; and
h) 100% of all materials and products to have Environmental Products Declaration (EPD) or similar and/or from locally sourced reused/recycled products and materials.

Supporting text

9.15. The UK Climate Predictions 2018 (UKCP18) anticipates how the general trends of climate change are expected to move towards warmer, wetter winters and hotter, drier summers. However, natural variations mean that some cold winters, some dry winters, some cool summers and some wet summers will still occur. At 2°C of global mean warming, average summer temperatures within South East England may increase another 3 to 4°C relative to a 1981-2000 baseline. Wetter winters and drier summers are also anticipated. At 4°C of global warming average summer temperatures may increase by up to 5°C, with an increase in precipitation of 20% in winter on average, and a similar decrease by 20-30% in summer.

9.16. Designs should be adaptable to potential changes over the duration of the intended lifespan, specifically that relating to a changing climate and more extreme weather events, as set out in the latest and any updated UK Climate Projections. This includes flood risk; avoidance of internal overheating; the use of building materials and infrastructure that can withstand higher temperatures and have an albedo effect; appropriate shading in external areas; and adequate foundation designs in areas of potential ground movement. With increased summer temperatures, the risk of overheating within buildings becomes greater.

9.17. Buildings should be constructed with future risks in mind. For example, to avoid overheating buildings can oriented to minimise summer solar gain while ventilation can be maximised to reduce the need for comfort cooling. Industrial processes in particular can lead to increased overheating risk and internal design should consider the need to maintain an appropriate ambient temperature including when designing the layout and approaches to ventilation.

9.18. Passive design measures can include fittings/space for solar shading, modular windows, oversized SuDS. The outline climate change adaptation plan can explain the passive measures that have been built into the design amongst other things.

9.19. Innovative materials and technology are being developed to address project vulnerability to climate change and these should be considered. This could include self-healing concrete, or bio-based materials such as mycelium. The selection of materials should align with OPDC Local Plan Policy EU8.

9.20. Some of the older industrial buildings are still in use today because they have been able to adapt to suit changing business (see Principle ICP1: Respecting and Enhancing Local Character and Case Study: Park Royal typology). Therefore,

opportunities to retain buildings should be explored as a first principle. New buildings are still likely to be part of the change seen in the industrial area, but they are not always built with the very long term in mind and usually have a higher redevelopment churn than housing. This places even more emphasis on the purposeful design of industrial buildings for reuse, disassembly and reassembly.

9.21. As set out in the GLA Circular Economy Statement Guidance (March 2022) the six circular economy principles are:

- building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary;
- designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials;
- designing for longevity;
- designing for adaptability or flexibility;
- designing for disassembly; and
- using systems, elements or materials that can be reused and recycled.

9.22. Applicants can adopt forward thinking best practice to minimise impacts during construction, as well as specifying what sort of construction materials should be selected, and how construction and operational waste can be managed and treated differently to facilitate a more circular approach (rather than the make – use – dispose linear model).

9.23. Where sites contain existing buildings, the GLA's Circular Economy Statement Guidance recognises pre-redevelopment and pre-demolition audits as important tools to establish whether building components currently on a site due to be redeveloped can be reclaimed, and to inform the management of demolition materials. A pre-redevelopment audit is carried out prior to a planning application and fully explores options for retaining existing structures, materials and the fabric of existing buildings and the potential to refurbish or repurpose existing buildings before considering substantial demolition. A pre-demolition audit is a detailed inventory of the materials in any existing buildings on site that would need to be managed upon demolition, including why the building is proposed to be demolished, a summary of the key materials including quantities, associated embodied carbon and reclamation opportunities; drawings showing the extent of demolition and retention; and opportunities for reuse and recycling. It should also be possible to identify timescales for these material arisings, although this element would need to be kept up to date throughout the construction lifespan. Sharing this information into a central database would enable collaboration between developers in the OPDC area in terms of sharing materials and waste arisings across sites and reducing construction material freight. Proposals could include committing to percentages for reused materials on-site, setting higher recycled content targets (for example, above 20 per cent for the whole building and/or for individual layers or elements), separating reused and recycled targets, and committing to higher targets than required by policy. To evidence pioneering measures, applicants could submit as evidence product Material Circularity Index values and supporting information. Maximum re-use and recycling of waste and construction materials within the area will reduce transport demands (see OPDC Local Plan Policies EU6, EU7 and EU8). This should be evidenced within the Construction Logistics Plan (CLP).

9.24. Smart Technology describes the embedding of sensors, software and other technologies within a wider range of objects so that they can exchange data with other devices and systems. Sensors can be deployed to measure particulate matter arising from construction dust, as well as noise levels and water consumption. The benefits of this approach is that it can provide real time data without the need for data to be taken at a specific point in time, and analysed, reducing delays in acting on environmental breaches.

9.25. Rapidly renewable materials refer to materials that can be grown on shorter timescales than the most traditional renewable construction material, timber. For example, cork can be used as flooring, insulation or a surface finish and a mature cork oak tree can be renewed every nine years. Some of these materials can be created from by-products of other industries, such as wheatboard, an alternative to MDF fibre boards made with straw. Opportunities for the use of these products span flooring, insulation and internal fittings. Cross-laminated timber is made from layers of structural grade timber where each layer is laid across the previous layer and glued together. This provides structural rigidity with a number of advantages including being relatively lightweight, with a low U-value, as well as its renewable nature. This might therefore be used for structural purposes.

9.26. Where wood is used within building structures with long anticipated lifecycles, this sequesters carbon in the short to medium term. Responsible sourcing of materials is required by the London Plan, OPDC's Local Plan and BREEAM, and can be demonstrated by compliance with standards, including BRE BES 6001 Framework Standard for Responsible Sourcing and Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) certified timber. An Environmental Products Declaration (EPD) is a document that communicates the environmental impacts of a product, based on the life cycle assessment for that product. This information can lead to more accurate building life cycle assessments. EPD supports the achievement of BREEAM credits with up to 1.5 credits for Mat 02 Environmental Impacts from construction products available for using at least 20 products in construction with their own product specific EPD. Other schemes that promote sustainable and/or responsible sourcing of materials include Cradle to Cradle and the Ethical Stone Register. The sources referenced here are not exhaustive and applicants are encouraged to identify appropriate schemes that can help them to meet these objectives.

9 Environmental sustainability

Principle ESP3 Infrastructure transition and delivery

a) Industrial developments within or outside of SIL should include passive provision, including ducting built under areas of hardstanding such as forecourts, car parking and servicing areas, to provide power for electric vehicles, freight and machinery; and
b) Mobile digital infrastructure should be designed taking into account other rooftop infrastructure including green roofs, solar panels or areas for maintenance and servicing.

Ambition ESA3 Infrastructure transition and delivery

Industrial developments within or outside of SIL are encouraged to include passive provision allowing for 100% electric vehicle charging for cars and operational vehicles including heavy goods vehicles (HGVs) under 26 tonnes.

Signposts

London Plan / GLA
- Policy GG2
- Policy SI6
- Air Quality Positive LPG
- Air Quality Neutral LPG

Local Plan
- Policy T4

Supporting text

9.27. A comprehensive and strategic approach to infrastructure delivery must be planned from the outset with developers integrating infrastructure for the site with local requirements, rather than looking at them in isolation. Secure, reliable infrastructure that meets current and future needs to support the transition to a low carbon economy, is essential to the successful and sustainable development.

9.28. Ultimately, to support and enable the transition and delivery of infrastructure, there is a clear benefit in future proofing developments from the design stage to actively and passively allow for known trends in technology and policy direction.

9.29. Including passive provision at the start, prevents car parks, forecourts and other areas of hard standing needing to be excavated to provide this infrastructure later. The OPDC Local Plan requires infrastructure for electric vehicles (whether active or passive) in all new operational non-residential car parking spaces.

9.30. New Heavy Goods Vehicles (HGVs) under 26 tonnes in the UK will all be zero carbon after 2035, with all new HGVs sold in the UK to be zero emission by 2040. It is expected that lighter HGVs will be battery powered, as the technology is largely mature, with models already on the market for the 3.5- 12 tonne (N2 range) and 12 to 26 tonne (N3 range) categories. For the heavier weight categories of HGVs, trials are currently underway using a range of different technologies including batteries, hydrogen fuel cells and electric roads. All developments are encouraged to have passive provision for electric vehicles suitable for all anticipated operational vehicles under 26 tonnes.

9.31. When mobile digital infrastructure is being provided on roofs, particular care must be taken to ensure that this is considered in conjunction with other rooftop features at the outset, so that the overall impact can be considered (see Principles/ Ambitions BFP2: Scale, massing and rooflines of new industrial buildings; GIP2/GIA2: Green roofs and boundaries).

9 Environmental sustainability

Ambition ESA4 Recycling and the Circular/ Sharing Economy

Industrial developments within or outside of SIL are encouraged to:

a) work on the basis of closed loop recycling;
b) incorporate 2 or more circular models from:
    - Product as a service;
    - Producer responsibility;
    - Track and trace;
    - Sharing economy;
c) provide evidence regarding efforts to seek industrial symbiosis opportunities;
d) provide shared space in accessible and communal areas for items that can be used by multiple parties, such as hardware and tools;
e) explore options to contribute materials to centres for repairing or upcycling, such as 'maker and mender' centres;
f) contribute towards or provide space or an online platform for the community to share their skills and resources; and
g) combine the means of segregating and collecting food waste, with registration with an organisation that makes the best use of this valuable resource, preferably gaining social value through distributing it to the most in need (see Ambition DA1).

Signposts

London Plan / GLA
- Policy SI7
- Circular Economy Statement LPG

Local Plan
- Policy SP2
- Policy SP9
- Policy EU7

Supporting text

9.32. Closed loop recycling is when recycling processes avoid the addition of further raw materials and do not lead to the final product being disposed of through landfill or incineration. At present, aluminium is the main material with a broadly closed loop recycling approach, although glass recycling can approach a closed loop system with sufficient collection and segregation. Closed loop recycling of other materials is at an earlier stage of development, and a circular economy approach may include choice of materials to avoid more open loops.

9.33. There are opportunities for business to think about new or adapted business models or operational practices, based on more circular economy principles. For example, some product manufacturers now offer a relationship-based service contract, rather than a single-transaction sale, where the customer pays for continuous access to a service over a defined period. Examples of industry leasing in practice include:

- Cars and industrial vehicles
- Chemicals
- Carpet tiles and suspended flooring
- Cleaning and maintenance equipment

9.34. This links to a number of the circular economy principles that could be considered as part of the building design – see Principle/Ambition ESP2/ESA2: Sustainable Construction and Materials.

9.35. Industrial symbiosis is the process by which wastes or by products of an industry or industrial process become the raw materials for another. Innovative approaches that focus on reuse of waste products from surrounding businesses are encouraged, as is collaboration between these companies and existing businesses. For example, industrial and domestic food waste could be collected and treated to create nutrient, energy, CO_2, water and other products that could be reused locally to produce energy, food and resources for the pharmaceutical and other industries thereby turning a product that is expensive to dispose of and is polluting into a high value resource. The process can be applied to the whole supply chain so that waste is reduced at the point of supply. Vertical and urban farming can use composted food waste to provide raw ingredients which are then integrated into the food processing supply chain – see Principle/Ambition: GIP1/GIA1: Optimising Urban Greening and Biodiversity.

9.36. There are many opportunities to drive efficiencies and reduce operational waste. Part of the solution is to provide sufficient space within premises to allow the segregation of material streams, which is already part of policy requirements. Other solutions can include changing to a leasing model for certain equipment, facilitating a closed loop recycling approach to materials such as glass, aluminium and some plastics and/or enable sharing and re-use of equipment.

9.37. Maker and mender centres are where communities or businesses can take, make and repair products. These centres could be designed to take all sorts of products from bulky furniture to electrical items as long as they can be reused, repaired or repurposed. The centres could be equipped with machinery and facilities to help repair from 3D printers to routers and laser cutters. They would help reduce waste and provide new jobs. These facilities are often run by, or in collaboration with, local communities and voluntary organisations.

9.38. Surplus food from the food industry can be distributed to frontline charities and community groups. This can include fresh produce, often distributed to school breakfast clubs and for other community meals, as well as surplus non-perishable food often identified for food banks and other grocery support services.

Delivery

10 Delivery

Introduction

10.1. OPDC does not own any land within the Strategic Industrial Location (SIL), but the OPDC Local Plan sets out broad support for increasing industrial capacity and identifies key site allocations to deliver this (see SP10 and Table 3.1). Policy SP10 and Chapter 11 in the OPDC Local Plan explain the powers that OPDC has, as the local planning authority, and opportunities to proactively facilitate development and the regeneration of the industrial areas within the OPDC boundary. The OPDC Local Plan policies and Infrastructure Delivery Plan (IDP) sets out further details on the key infrastructure required to unlock the comprehensive regeneration of the area. The IDP identifies funding sources, including from developers, service providers and planning contributions, to help to deliver the infrastructure needed in the OPDC area - see latest Infrastructure Delivery Plan (IDP).

10.2. OPDC has prepared an Equity, Diversity and Inclusion (EDI) Strategy and Vision: “to be an organisation which identifies, prioritises, enables and champions equitable opportunities for everyone – both staff and our communities – regardless of background, race, age, gender identity, gender expression, sexual orientation or ability and to ensure that the area’s regeneration is accessible and inclusive which helps to create a more level playing field”. The EDI Strategy explains what OPDC is planning to do and OPDC also has legal obligations related to EDI – but applicants should also consider EDI throughout all of the stages of the design and development process. Key EDI issues that OPDC have identified whilst preparing the Industrial SPD are set out in the accompanying EDI Statement.

10.3. In the immediate term, OPDC is also taking a proactive role in improving the industrial area through a number of projects. The range of projects on the ground will change over time and information on this will be kept up to date on OPDC’s website. Applicants are expected to explore opportunities to link up with these projects as this will provide an important mechanism to ‘root’ the proposal and demonstrate social value for local businesses and communities.

10.4. Applicants should engage with OPDC as early as possible so that the approach to delivery takes a holistic view of these issues and so that the OPDC team can support applicants to identify potential opportunities to deliver social value and support EDI linked to current projects and precedents.

Figure 10.1. Illustration of how canalside spaces can support social interaction

Ambition DA1 Social Value and supporting Equity, Diversity and Inclusion

Industrial proposals within and outside of SIL are encouraged to demonstrate additional Social Value and commitment to Equity, Diversity and Inclusion, beyond that which might be expected as a result of planning policy compliance, to enhance the wellbeing of local communities and the local area, taking into account Table 10.1 and OPDC projects below.

Table 10.1. Social Value and Equity, Diversity and Inclusion opportunities

Social Value and EDI opportunities	As an employer and through the procurement of good and services	As a stakeholder in the local community	As a contributor to the local/ sub-regional economy	As a steward of the environment	Relevant current OPDC projects
Number of local jobs created (see Local Plan Policy E5)	Y	Y	Y		The Forge
Number of apprenticeships (see Local Plan Policy E5)	Y	Y	Y		The Forge
Number of paid and unpaid work placements (see Local Plan Policy E5)	Y	Y	Y		The Forge
Number/hours committed to skills/career related outreach and engagement – mock in-terviews, CV support, career guidance talks (see Local Plan Policy E5)		Y	Y		The Forge
Total spend on local suppliers (see Local Plan Policy E5)	Y		Y		
Delivery of affordable Work-space (see Local Plan Policy E3)			Y		
Total spend on micro, small and medium suppliers			Y		
Evidence that diversity state-ment/policies are in place to support workplace diversity and increased representation in built environment sector	Y				
A statement of intent/action plan specific to each project on the approach to EDI		Y			
Assess social value and EDI as part of contracts					

10 Delivery

Social Value and EDI opportunities	As an employer and through the procurement of good and services	As a stakeholder in the local community	As a contributor to the local/ sub-regional economy	As a steward of the environment	Relevant current OPDC projects
Working with under-represented led practices (collaboration, incubation, sub-contracting as part of the project team, not only for the purposes of community consultation).	Y				
Adoption of the Mayor's Good Work Standard accreditation (this covers fair pay and conditions, workplace wellbeing, skills and progression and diversity and recruitment)	Y		Y		
Commitment to paying London Living Wage (see Local Plan policy SP5)	Y		Y		
Number of volunteering hours provided to local community projects and/or towards community stewardship		Y		Y	Canal side volunteering Greenspace stewardship
Support for local voluntary/ community organisations – mentoring, skill sharing, practical workshops					
Supporting stronger community support networks – i.e. number of events sponsored/ hosted that support the business ecosystem, circular/sharing economy etc		Y	Y		Creative Enterprise Zone Open Workspace/Circular Hub
Number of/hours delivering business support – business development support, accelerator programmes, mentoring		Y	Y		The Forge
Initiatives that can support communities – i.e. donating surplus food to local food banks, free meeting space		Y			
Support initiatives that increase the understanding of the local business communities		Y	Y		Creative Enterprise Zone

10 Delivery

Social Value and EDI opportunities	As an employer and through the procurement of good and services	As a stakeholder in the local community	As a contributor to the local/ sub-regional economy	As a steward of the environment	Relevant current OPDC projects
Sharing cultural capital in-cluding with underrepresented groups (mentoring, outreach, training, co-design)	Y	Y	Y		
Working with local schools and universities to promote equity, diversity and inclusion in the built environment sec-tor (lectures, talks, bursaries, apprenticeships, structured outreach).		Y	Y		The Forge
Social value leases for tenants					
Initiatives that support recov-ery from COVID-19					
Social value is embedded through the supply chain					
Support community-based businesses and enabling local ownership and management models; i.e. small owner-occu-pier business units (see Local Plan Policy SP5)					

10 Delivery

Signposts

National Planning Policy Framework
- Paragraphs 38 and 92

London Plan / GLA
- Policy GG1
- Policy D5
- Planning for Equality and Diversity in London SPG

Local Plan
- Policy SP2
- Policy SP5

Supporting Study
- OPDC Equity, Diversity and Inclusion Strategy 2022-2027

Supporting text

10.5. Social value is generated when environmental, economic and/or social benefits are delivered and, when experienced by individuals and local communities, this creates enhanced levels of wellbeing, a better quality of life and environment compared to business as usual. In the context of a business, delivering social value is the recognition that "doing good business is about far more than just making money".

10.6. The core needs of communities – for example, sufficient quality, affordable housing, accessible social infrastructure and amenities, adequate and sustainable green infrastructure, suitable and affordable workspaces – must be addressed. Social value should create additional benefits based on an approach that goes beyond policy compliance.

10.7. Social value is multi-layered and tied to the needs of local communities and the experiences of those with the least influence over development and regeneration processes. It can be generated in variety of ways and as a result of actions taken by different parties, both individually and in partnership with one another. For example, in the case of applicants, there is potential to contribute towards delivering social value during each stage of the development cycle from inception to post occupancy, and as:

- an employer and through the procurement of good and services;
- a stakeholder in the local community;
- a contributor to the local/sub-regional economy; and/or
- a steward of the environment.

10.8. The GLA Group Responsible Procurement Policy ensures that Social Value is embedded within our supply chains, including using the policies to help us:

- work to improve our communities in partnership with local people and organisations to address their specific needs through relevant contract requirements and performance measures;
- drive fair employment practice with our suppliers to ensure that their employees receive fair employment terms and pay, including the London Living Wage to the extent permitted by law; and
- break down barriers that restrict SMEs, community sector organisations and under-represented groups from tendering.

10.9. The Local Plan already sets out wide ranging policy requirements that seek to deliver social value and as many public benefits as possible, with processes in place to support this, such as the OPDC Community Review Group. However, the Covid-19 pandemic highlighted the stark inequalities across the city which have led to significantly worse outcomes for the most disadvantaged communities, including those living within and surrounding the OPDC area. Applicants are encouraged wherever possible to go beyond the level of social value that would be expected as a result of policy compliance. Many of the Ambitions set out in this SPD illustrate ways that this could be done.

10.10. An Equalities Impact Assessment (EQIA) was prepared to inform the OPDC Local Plan and a supplementary EDI Statement forms part of this SPD consultation. The EDI Statement identifies potential issues that might be relevant to people with protected characteristics and industrial developments in the OPDC area. Based on this assessment, the SPD incorporates measures that seek to mitigate the identified issues. Proposals that comply with the Local Plan policies and SPD guidance should therefore help to promote inclusive outcomes. However, there is scope for applicants to demonstrate greater commitment towards achieving EDI, particularly through the internal processes and policies that they deploy when preparing and submitting a planning application, such as the commissioning of professional planning or architectural services.

10.11. A non exhaustive list of examples/ideas of how to maximise the delivery of social value and in support of EDI are listed in Table 10.1 above. This list includes opportunities that are linked to specific policy requirements (i.e. creating local job/apprenticeship/ training opportunities, using the local supply chain, affordable workspace and outreach engagement) as well as other ideas; it is not intended to be exhaustive and innovative approaches that can demonstrate tangible benefits to local people and the area could be considered. These should be discussed with OPDC as early as possible, ideally at pre-application stage.

Figure 10.2. Community activities in the OPDC area

10 Delivery

Ambition DP2 Design Codes

Design Codes submitted in line with the OPDC validation list should consistently cover and provide information that is aligned to the sections in this SPD.

Supporting text

10.12. OPDC's local validation checklist indicates the national and local validation requirements for full, outline, reserved matters, hybrid and variation of condition applications within the OPDC area. This has a local requirement for design codes, where these are submitted, they need to provide a good coverage of information. The way the SPD is organised provides a useful structure for design codes.

10 Delivery

OPDC Projects

OPDC Heat Network

OPDC is currently developing the Old Oak and Park Royal Energy Network (OPEN), with the aim of developing low carbon energy infrastructure that will help achieve the Mayor's Zero Carbon ambitions.

OPEN is working on the opportunity to take waste heat from new and existing data centres in the area. Data Centres are significant users of power, driven in part by their cooling demand. A by-product of this cooling is heat, which can be harnessed via a network of pipes and sent directly to homes and businesses to provide useful zero carbon heat and hot water.

Creating a successful heat network will help ensure that Old Oak and Park Royal, is one of the greenest developments in the London, along with wider decarbonisation opportunities for the surrounding area.

Developers should contact OPDC for up to date information on the OPEN project.

Old Oak and Park Royal's Canalside Volunteering Programme

Run as a collaborative partnership between OPDC and the Canal & River Trust.

The objectives of the programme are to:

- Enhance the management and maintenance of the Grand Union Canal in the OPDC area;
- Deliver improvements to the canal space in partnership with local communities and businesses; and
- Build community capacity to support long-term regeneration of the canal and its surroundings.

Examples include fortnightly litter picks along the towpath and kayaking litter picks on the canal, green space maintenance activities for volunteers, as well as nature walks and summer workshops with local primary schools.

Creative Enterprise Zone

The Mayor of London announced Acton and Park Royal as one of the newest Creative Enterprise Zones (CEZ), led in joint partnership by Ealing Council and OPDC. The CEZ provides the opportunity to support and enable growth within the local creative sector, responding to specific pressures that face the creative industry including:

- Skills and employment opportunities shortages;
- Business and admin support;
- Affordable creative spaces; and
- Community outreach and engagement

The CEZ will work closely with local creative industries, placing them at the heart of the ongoing regeneration and development by:

- increasing creative upskilling and employment opportunities through working with young people as well as local businesses;
- supporting access to and use of affordable workspaces needed by smaller makers, fabricators, freelancers, sole traders and artists who contribute to the larger creative industries ecosystem; and
- ensuring the creative industries are a representation of the local community it belongs to.

The Acton and Park Royal CEZ is a three-year programme and Ealing and OPDC have set out key ambitions for the CEZ that will enable, support and protect a thriving creative sector within the area over the years that follow.

We have plans underway to establish a CEZ Hub where space for creativity is readily available for use in Park Royal. This could be used to host workshops, training, share equipment, and promote circular and sustainable systems. The CEZ will also play a role in matchmaking, funding, partnering and delivering on a range of projects and programmes, with the objective of addressing sector specific challenges and barriers.

The CEZ will include the set up and support of a Consortium Group, where interested stakeholders can make valuable contributions.

Green Space Stewardship/Volunteering Programme

OPDC, in partnership with the London Borough of Brent and the London Borough of Ealing, has launched a new stewardship and volunteering programme for public green spaces in Old Oak and Park Royal.

The programme will include activities and strategies to encourage all members of the community to get involved and improve the green spaces in the Old Oak and Park Royal area.

Working with environmental charity Groundwork UK, we will be running an exciting programme of volunteering sessions to improve the appearance and biodiversity of Old Oak and Park Royal. This will include bulb planting, clearance, bird box making etc.

The Forge@ParkRoyal

The Forge is a collaborative business support, recruitment and up-skilling service and is dedicated to supporting businesses and connecting them with a local talent pool of jobseekers in Brent, Ealing and Hammersmith & Fulham.

Glossary

Glossary

Word(s)	Definition
Biodiversity Net Gain	Biodiversity Net Gain (BNG) is the concept that new development and/or land management should leave the natural environment in a measurably better state than it was before.
Urban Greening Factor	Urban Greening Factor (UGF) is a tool to evaluate the quantity and quality of urban greening provided by a development proposal. UGF only considers the proposed landscape plans, and not what was on the site before.
Ecosystem services	Ecosystem services are the direct and indirect benefits that people and society get from the natural environment. These are generally split into four groups: • Provisioning services such that we can get from the environment such as water supply, food, materials. • Regulating services which lead to benefits such as clean air, carbon storage, flood management and water purification. • Cultural services such as provision of recreation and education areas, access to nature, and improved health and wellbeing. • Supporting services such as the nutrient cycle, healthy soils and biodiversity which support the other three services.
Green roof (see the GRO Code 2021 for full definitions)	Extensive – natural low maintenance green roofs which are generally lighter in weight, shallower in substrate (around 60mm – 150mm), and not designed for public access. These include low value sedum systems as well as high value biodiverse wildflower systems. Intensive – rooftop parks and gardens including Urban Agriculture. These generally require the most maintenance, are heavier in weight and deeper in substrate (150mm+), and can be designed for public access. Due to the deeper substrate, they can hold a broader range of vegetation and can also be designed to be biodiverse. Semi-intensive – garden green roofs. These take aspects from both traditional intensive and extensive green roofs, generally allowing for an enhanced amenity or visual quality as well as being low maintenance. Blue-green roofs – combine green roof and blue roof technologies to maximise water storage. Biosolar green roofs – where photovoltaic (PV) panels and green roofs are combined to provide renewable energy and deliver for biodiversity.
Extensive green roof	See green roof
Intensive green roof	See green roof
Semi Intensive green roof	See green roof
Blue-green roof	See green roof
Biosolar	See green roof

Appendix

Appendix - character and heritage sub areas sensitivities and impacts

Places within designated SIL	Overview	Sub area (Character Study ref/Heritage Study ref)	Summary Impact/Sensitivity
P2 Old Oak North	Old Oak North is home to a series of business operations primarily comprising of a large car processing and sales plant, but there are also light industrial uses, creative industries, waste management operations and residential moorings.	• Metal Yard (B.3)/(3.4)	• Potential Impact on Character: MEDIUM • Heritage: MEDIUM sensitivity
		• Salter Street (B.4)/(3.5)	• Potential Impact on Character: MEDIUM • Heritage: LOW sensitivity
		• Hythe Road (B.5)/(3.6)	• Potential Impact on Character: HIGH • Heritage: MEDIUM sensitivity
P4 Park Royal West	In Park Royal West, there is more of a mix of large scale industrial development, that value this particular strategic location and its connections. Access/proximity to smaller businesses in the industrial estate support their activities and likewise these larger businesses may help attract small businesses to the area.	• Disraeli Road (B.17)	• Potential Impact on Character: LOW • Heritage: MEDIUM sensitivity
		• Powergate Business Park (B.18)/(3.19)- part • Premier Park (B.24)/(3.25) • Royale Leisure Park (B.28)/(3.29)	• Potential Impact on Character: LOW • Heritage: MEDIUM sensitivity
		• Abbey Road (B.23)/(3.24) • Former Business Brewery (B.26)/(3.27) • Heron Trading Estate (B.29)/(3.30) • Western Avenue (B.30)/(3.31)	• Potential Impact on Character: LOW • Heritage: LOW sensitivity
		• Elveden Road (B.25)/(3.26) • Railway North (B.32)/(3.33) - part	• Potential Impact on Character: MEDIUM • Heritage: MEDIUM sensitivity
P5 Old Park Royal	Old Park Royal industrial estate has a distinct character. It has a fine grain of buildings, is a good example of the specificity of Park Royal's fabric. It has rich mix of building typologies and activities along some of the area's busiest roads. It is predominantly made up of single-storey buildings with very high plot coverage providing a dense mat of buildings, often hard up against the pavement edge or with minimal setbacks. The narrow streets are consequently very strongly defined spatially and are highly active working streets. There are 'moments of delight and visibility' i.e. specialist food producers with ancillary retail; opportunities to see/participate – windows that reveal production activities; local creatives involved in public art and programming of public events.	• Standard Road (B.20)/(3.21) - part	• Potential Impact on Character: MEDIUM
		• St Leonard's Road (B.11)/(3.12) - part	• Heritage: MEDIUM sensitivity
		• Powergate Business Park (B.18)/(3.19) - part	• Potential Impact on Character: HIGH • Heritage: HIGH sensitivity

Photos and images credits
Figure 3.3. Proposal for Uplands Business Park – Blackhorse Lane, Waltham Forest, New London Architecture
Figure 3.4. HereEast data centre, Queen Elizabeth Olympic Park, HereEast
Figure 3.5. Telehouse North 2 Data centre, Tower Hamlets, Images George Rex
Figure 6.4. 12 Thames Road, a housing and industrial mix building proposed by Be First, Be First
Figure 6.8. London 1 Data Centre with well designed facades, NTT
Figure 6.9. Chapelle International - Logistic Hotel, Sogaris
Figures 7.12. to 7.14 trees, Woodland Trust; Kew Gardens; Historic UK

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