ROYAL BOROUGH OF GREENWICH

CHARACTERISATION STUDY

TALL BUILDINGS ASSESSMENT

MARCH 2023

URBAN INITIATIVES STUDIO

ROYAL borough of GREENWICH

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1 INTRODUCTION

1.1 PURPOSE OF THE STUDY

The Royal Borough of Greenwich is seeing increasing pressure for tall buildings in it's strategic development locations such as Woolwich town centre and Greenwich Peninsula. The borough's Core Strategy policy DH2 guides tall building development. However, the Core Strategy dates back to 2014, with the Tall Buildings Assessment evidence base dating from 2011. The context for tall buildings in the borough is moving along quickly and the council is in need of a more up to date evidence base and approach to tall buildings to ensure the best possible outcomes.

This study provides a robust evidence base and has been prepared in close alignment with the borough Character Study. It covers:

- The existing context of building height and tall buildings in the borough;
- A definition for tall buildings bespoke to RB Greenwich;
- An analysis of the various sensitivities and opportunities for tall buildings in the Royal Borough; and
- Detailed recommendations for the appropriate locations and heights of tall buildings in the borough.

1.2 REPORT STRUCTURE

The report is structured in the following sections:

Chapter 1 Introduction
Introduces the study and provides a review of relevant local and national policies related to tall buildings.

Chapter 2 Theoretical Framework for Tall Buildings
Provides the reader with a robust understanding of the topic of tall buildings in general, which lays the foundation for the approach to tall buildings and the recommendations by the study.

Chapter 3 Definition of Tall Buildings
Provides an overview of the Borough's building heights and context heights, and a definition for tall buildings in RB Greenwich.

Chapter 4 Tall Building Objectives
Sets out nine objectives that proposals for tall buildings should meet to have a positive impact on their local and wider context and be considered acceptable.

Chapter 5 Tall Building Sensitivities
Discusses the physical aspects of the borough that are sensitive to the potential negative impacts of tall buildings.

Chapter 6 Tall Building Opportunity Areas
Sets out the general areas which in principle may hold opportunities for tall building development.

Chapter 7 Sifting for Potential Tall Building Locations
Illustrates the sifting approach to identify Areas of Search, the locations with the most potential to accommodate tall buildings.

Chapter 8 Tall Building Recommendations
Provides recommendations for the appropriate locations and height of tall buildings in the borough.

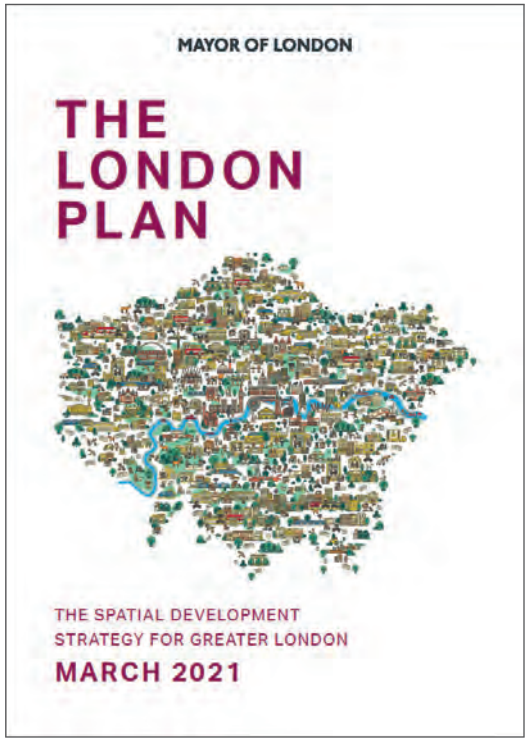
Chapter 9 Tall Building Design Principles
Provides illustrated principles for the design of tall buildings, and explains the pre-application process and applications requirements for tall building proposals.

The place based recommendations on tall buildings by this study are included in the tall building's section of the character study.

1.3 POLICY CONTEXT

LONDON PLAN

The new London Plan was adopted in March 2021. It is the statutory spatial development strategy for Greater London. All of London's Borough's Local Development Plans must be in general conformity with the policies included within this document. It provides important policies regarding Opportunity Areas, tall buildings, character and World Heritage Sites, which are relevant to this study.



Adopted London Plan (2021)

Opportunity Areas

The London Plan identifies a number of Opportunity Areas within RB Greenwich, which are expected to see substantial development growth over the plan period. The Opportunity Areas and indicative development potential are:

- Greenwich Peninsula - 17,000 homes and 15,000 jobs;
- Charlton Riverside - 8,000 homes and 1,000 jobs;
- Woolwich - 5,000 homes and 2,500 jobs;
- Thamesead/Abbey Wood - 5,500 homes and 3,000 jobs; and
- Deptford Creek and Greenwich Riverside (partly within LB Lewisham) - 17,000 homes and 15,000 jobs;

London Plan policy SD1 Opportunity Areas sets out the Mayor's commitment to support partners (such as local Boroughs and Transport for London) to realise the potential of such areas. Boroughs are expected to develop more detailed policies and proposals for Opportunity Areas and Intensification Areas within their Local Development Frameworks. Such elements should encourage a holistic approach to development that include social and other infrastructure to sustain growth, contain a mix of uses and ensure that new development is well integrated with its context.

Tall Buildings

Policy D9 'Tall Buildings', is the primary policy with regard to tall buildings. It states that tall buildings should be part of a plan-led approach and that local authorities should identify in Development Plans, locations where tall buildings are appropriate in principle and indicate general building heights that would be appropriate.

London Plan Policy D9 puts the onus on London Boroughs to define what constitutes a tall building in their Development Plans. It states that:

'Based on local context, Development Plans should define what is considered a tall building for specific localities, the height of which will vary between and within different parts of London but should not be less than 6 storeys or 18 metres measured from ground to the floor level of the uppermost storey.'

Policy D9 - C identifies impact criteria that will determine the appropriateness of a location for tall buildings. Relevant urban design criteria are:

- Contribute to skyline and not adversely affect strategic views;
- Reinforce the spatial hierarchy of the local and wider context;
- Assist legibility and wayfinding;
- Respect heritage and not cause harm to World Heritage Sites;
- Be of exemplary architectural quality;

- Be supported by transport and social infrastructure;
- Maximise economic and regeneration benefits.

Existing Character and Heritage

Policy D1 'London's form, character and capacity for growth' states that development plans and new developments should demonstrate an understanding of, and response to, local distinctiveness and character. Development plans and strategies should identify the special and valued features of a place, such as heritage assets and open spaces, which are unique to that locality. New developments that show a clear relationship with these special features through appropriate architectural style, layout, orientation and height are more likely to be successful.

Protecting local character is important, however as the London Plan states, respecting character and accommodating change should not be seen as mutually exclusive. Change is a fundamental characteristic of London. It is important to ensure an appropriate balance is established between existing fabric and any proposed change.

World Heritage Sites

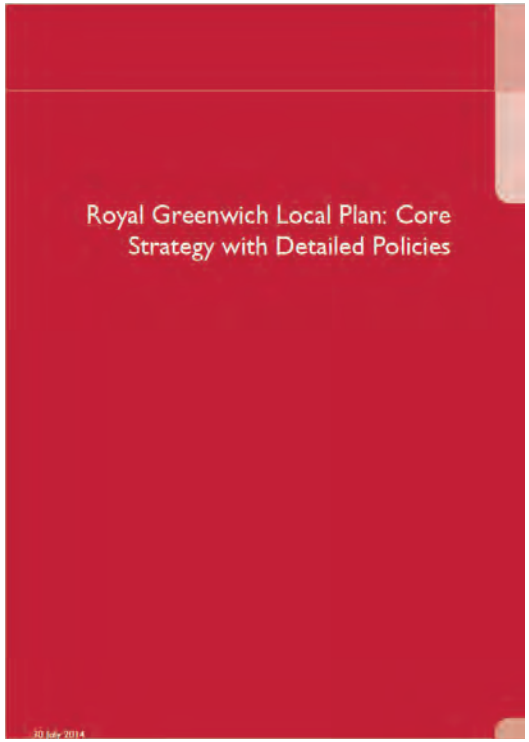
Policy HC2 'World Heritage Sites' makes clear the importance of World Heritage Sites and the responsibility that local authorities have to safeguard their Outstanding Universal Value. The London Plan states:

'The surrounding built environment must be carefully managed to ensure that the attributes of the World Heritage Sites that make them of Outstanding Universal Value are protected and enhanced, while allowing the surrounding area to change and evolve as it has for centuries.' (7.2.2)

Development proposals that may have an impact on the setting of a WHS must be supported by a Heritage Impact Assessment. This is also true for proposals that may contribute to a cumulative impact on a WHS.

ROYAL BOROUGH OF GREENWICH CORE STRATEGY

The Royal Borough's Core Strategy with Detailed Policies was adopted in 2014. The Site Allocations Local Plan is currently being prepared, which will provide specific policy for key sites.



RB Greenwich Core Strategy (2014)

Tall Buildings

Core Strategy policy DH2 Tall Buildings reads:

'Tall buildings may be appropriate in Woolwich Town Centre, Greenwich Peninsula, Greenwich Peninsula West, East Creekside, Charlton Riverside, Tamesis Point in Thamesmead, Thamesmead Town Centre, the area directly surrounding Abbey Wood train station, and 'the Hub' area surrounding Kidbrooke station. All other parts of Royal Greenwich are inappropriate for tall buildings.'

This policy is supported by the Tall Buildings Assessment (2011), which identifies areas that are appropriate for tall buildings in the borough (see Figure 1.1).

The Core Strategy defines tall buildings as any building, *'which is noticeably taller than its surroundings, has a significant impact on the skyline or is larger than the threshold size set for the referral of planning application to the Mayor. Importantly, what is considered tall in one area would not necessarily be considered tall in another.'*

This approach is largely in line with best practice guidance from Heritage England (see next page) and the approach taken in this study (see Chapter 3).

Although the Tall Buildings Assessment (2011) and Core Strategy (2014) set out locations that may be appropriate for tall buildings, these documents are now several years old and the development context in the Royal Borough and Greater London has changed.

Furthermore, policy DH2 does not provide detail on what scale of tall buildings would be appropriate in different areas or an acknowledgment of the specific sensitivities in these locations and how tall buildings could be designed to minimise negative impacts.

This study aims to provide an update of the existing tall buildings guidance while providing greater levels of detail consideration.

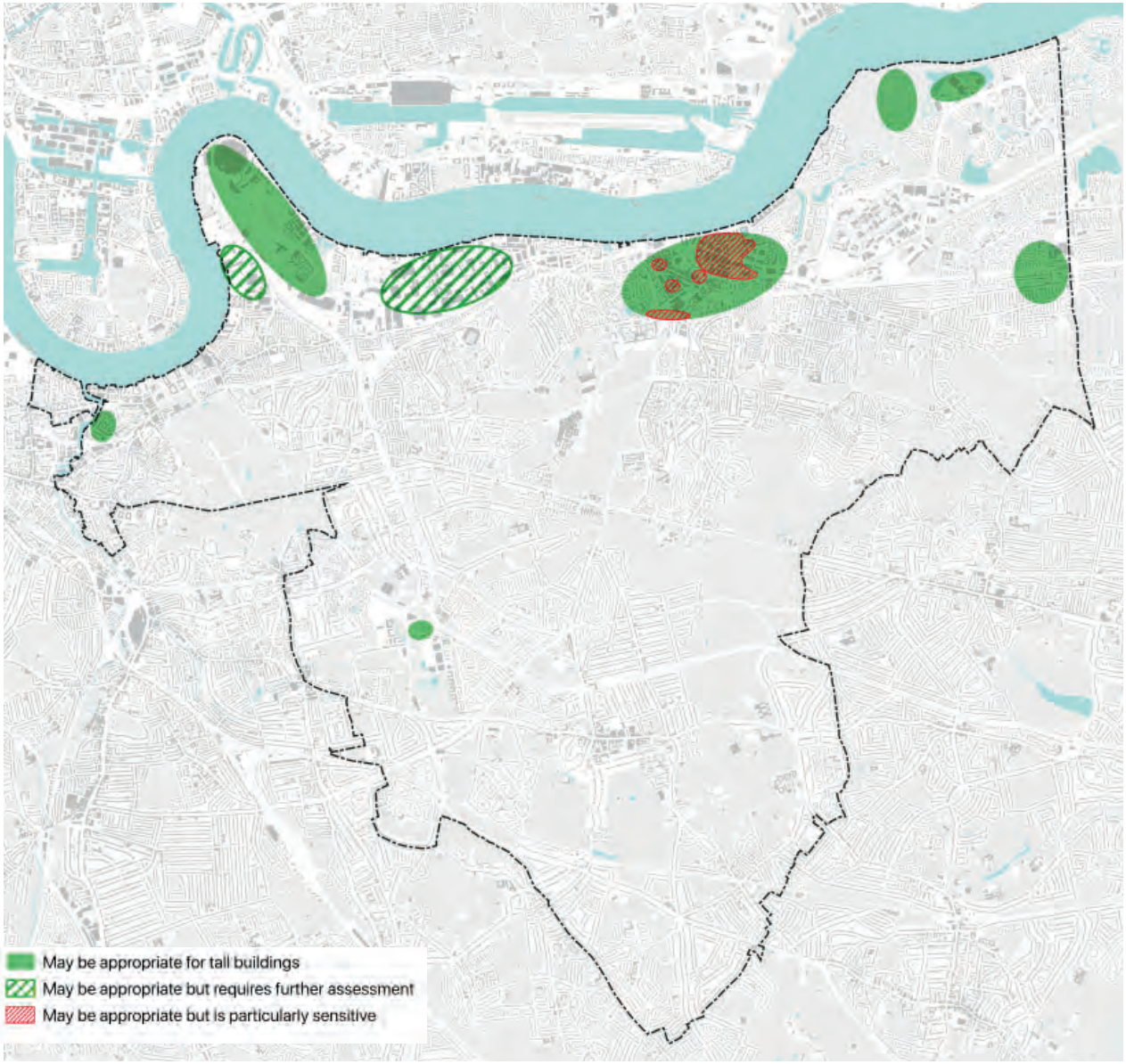


Figure 1.1: Tall Building Areas identified in Core Strategy

HISTORIC ENGLAND ADVICE NOTE 4 TALL BUILDINGS (CONSULTATION DRAFT 2020)

Historic England published a Tall Buildings Advice Note in December 2015. It is intended to support all of those involved in dealing with proposals for tall buildings from designers to local authorities. A draft revision of this Advice Note was published for consultation in March 2020. The draft revision significantly expands the existing 2015 Advice Note. It strengthens its emphasis on the harm tall buildings can have on the qualities people value about places and the impact they would have on heritage assets and the historic character of places. It significantly expands on the evidence base and studies that are required to support plan-making.

Advise Note 4 takes a balanced view of tall buildings. It states that tall buildings can be excellent works of architecture and make a positive contribution to towns and cities. For tall buildings to be successful, measures to control the location and design of such structures must be embedded in local planning documents.

Advice Note 4 contains guidance for plan making by local authorities in respect of tall buildings. It also provides recommendations on the requirements to applicants for tall buildings.

Plan Making by Local Authorities

Advice Note 4 promotes a positive, plan-led approach to the location and design of tall buildings. It states that this should be specific to areas and include a local definition for tall buildings that is appropriate to its specific context. The guidance states that the definition of a tall building is relative to context, topography and the location of the viewer. Therefore, it is not appropriate to characterise tall buildings as being above a certain predetermined height, but rather a building must be considered tall in relation to its location, surroundings and our experience of it. Tall building policies should be prepared to define tall buildings based on the local context and encourage appropriate developments.

Preparing clear and robust plans and policies for tall building allow planning authorities to:

- "Identify the role and contribution of tall buildings, where appropriate, as part of an overall place-making strategy;
- Ensure early public engagement on the principles of development in relation to place, context and design and consideration of the impact on, and contribution to, the aspirations of local communities;
- Protect designated heritage assets and their settings, where this contributes to their significance, as well as the overall historic character that makes a place distinctive and special;
- Identify areas that might be, and definitely are not, appropriate for tall buildings in advance of specific proposals, reducing unnecessary, speculative applications in the wrong places
- Demonstrate that in selecting areas for tall buildings due consideration has been given to alternative sites or forms of development to meet identified local needs, and to the impacts on land outside the local authority's area
- Express the clear expression of spatial scale and design quality requirements for new tall buildings
- Highlight opportunities for the removal of past inappropriate developments and their replacement by development of an improved quality and scale."

(Historic England, Advice Note 4 revision, March 2020).

Advice Note 4 states that the scale and form of development should be assessed as part of the formulation of the local plan. It suggests the use of characterisation and building height studies, as well as heritage and urban design assessments, to designate appropriate locations and polices for tall buildings. The consultation draft of the revised Advice Note 4 (2020) places further emphasis on the use of three-dimensional modelling to test buildings of various heights and their impact on the skyline and heritage assets. This should be done proactively to inform

policy and development management. For areas where significant regeneration is planned, a masterplanning approach should be followed to provide more detailed guidance and clarity. The impact of potential tall buildings on key views is a key consideration when assessing the suitability of sites for tall buildings as well as their scale and form.

Guidance on Planning Applications

Advice Note 4 (Consultation draft) sets out detailed guidance for planning applications for tall buildings. It states that it is good practice to consult with the local planning authority and other relevant parties, such as Historic England, before making an application. To inform this process applicants are asked to identify the zone of visual influence of proposals, which can assist in understanding the character of the areas that may be affected and determine which heritage assets are likely to be affected (this includes considering recognised views and the settings of heritage assets). Consultation will help establish an understanding of what illustrative material is required to support the application, and the requirements for the Design and Access Statement and the Statement of Heritage Significance and any Heritage Impact Assessments.

It is a general requirement for tall buildings to be of exemplary design in terms of scale, form and massing, proportion, silhouette and materiality. Advice Note 4 (Consultation draft) states that a high quality tall building will have a positive relationship with:

- Topography;
- Unique character of the place;
- Heritage assets and their settings;
- Height and scale of development (immediate, intermediate and town or city-wide);
- Urban grain and streetscape;
- The impact on the skyline and on the role of existing prominent buildings of importance or merit;

And, where relevant:

- Open spaces;
- Rivers and waterways; and
- Important views including prospects and panoramas.

Advice Note 4 (Consultation Draft) recommends that applicants test tall buildings using 3d models and Accurate Visual Representations using photography to assess the impact on the surrounding area, based on an understanding of what the development will look like when it is constructed.

The cumulative impact of a proposed tall building in relation to other existing tall buildings and concurrent proposals will need to be fully understood to assess the merits of the proposal. Where a proposal is promoted as part of a cluster, a successful design will have a positive relationship within the cluster, and the altered impact of a cluster itself also needs to be considered.

Tall buildings must also consider their social and environmental impacts, such as provision of public open space, mix of uses, microclimatic impacts, light pollution and aviation. The maintenance and potential future retrofit of tall buildings is also an important consideration.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2 THEORETICAL FRAMEWORK FOR TALL BUILDINGS

2.1 INTRODUCTION

This chapter of the report provides a conceptual framework for tall buildings. It provides a comprehensive review of the theoretical foundations, impacts and opportunities for tall buildings in reference to the NPPF and other relevant guidance and background studies. It provides a definition of a tall building, and sets out robust principles that should govern the planning and design for tall buildings.

Tall buildings are controversial typologies that divide opinions. Some people are active proponents while others are highly sceptical. Objectively, tall buildings can have beneficial and adverse impacts, which are summarised below.

POTENTIAL BENEFICIAL IMPACTS OF TALL BUILDINGS

Tall buildings can:

- Help to increase density to make best use of infrastructure, especially on constrained sites;
- Perform a landmark role and enhance legibility;
- Enhance the skyline and views to positively contribute to image and identity of a place;
- Support regeneration as a catalyst and by instilling confidence;
- Support viability of economically challenging schemes and deliver associated planning requirements, such as affordable housing; and
- Deliver additional regeneration and public benefits, such as:
  i. New public spaces and enhanced public realm;
  ii. Public viewing points;
  iii. Desirable uses or facilities; and
  iv. Cross-subsidisation of other benefits, such as the revitalisation of heritage assets

POTENTIAL ADVERSE IMPACTS OF TALL BUILDINGS

Tall buildings can:

- Impact on the character of sensitive townscapes and landscapes;
- Cause harm to heritage assets and their setting;
- Intrude and detract from views;
- Fragment the skyline and weaken the city image, if poorly managed;
- Cause adverse microclimatic and environmental impacts from wind funnelling, overshadowing, sun reflection and light pollution;
- Undermine residential amenity and privacy of existing and new residents (impacting on overlooking, day and sun lighting, quality of private and communal amenity spaces, etc.);
- Affect the definition, animation and quality of surrounding streets and spaces;
- Detract from the quality of an area through poor quality design and lack of integration; and
- Affect land values, inflate costs and make less intense forms of development unviable if there is an expectation of further tall building development.

2.2 THE NEED TO POSITIVELY PLAN FOR TALL BUILDINGS

INTRODUCTION

Tall buildings by virtue of their scale and height can bring significant change to a place's skyline, its townscape and character. A tall building, in the right location and of high quality, can be transformative and have a lasting positive impact on the character and identity of a place. However, if it is in the wrong location or of poor quality, it can become an eyesore, be resented by the community and detract from a place's character and identity.

In deciding the appropriateness of a tall building the beneficial and adverse impacts both individually and cumulatively will need to be carefully considered and balanced. On a strategic scale this needs to consider the characteristics and sensitivities of the place, together with wider development and planning objectives, as well as development interest and deliverability. On a local and building scale the visual and environmental impact will need to be examined together with an appropriate design response to the streets and spaces and the surrounding urban fabric.

The lack of coordination of tall buildings locations can result in the scattering of tall buildings on the skyline, leading to fragmentation and a poor image. Proactive management of tall buildings therefore will need to ensure that permitted tall buildings are meaningful and proportionate to their context, review the cumulative impact of tall buildings on the skyline and views, and where appropriate, group tall buildings into confined cluster locations where they can become distinct skyline features and mark important places of special character.

This tall buildings approach is anchored in the NPPF and informed by the Historic England Advice Note 4 on tall buildings. The NPPF states that '*the planning system should be genuinely plan-led', (NPPF, para 15) with an emphasis upon plans being prepared to achieve sustainable development, being aspirational but deliverable, and have clear policies on what will or will not be permitted, in order to provide clarity for the determination of development proposals'.*

Historic England notes that *'in a successful plan-led system, the location and design of tall buildings will reflect the local vision for an area, and a positive, managed approach to development, rather than a reaction to speculative development applications. …Techniques such as characterisation and building height studies provide evidence to support a local height definition for tall buildings and the identification of appropriate locations in local plans.*' (Historic England Advice Note 4, para 3.1).

2.3 CONTEXT HEIGHT VERSUS EXCEPTIONAL HEIGHT

When discussing the height of development it is necessary to make a clear distinction between the 'context building height' of an area that covers the majority of buildings, and 'tall buildings', which covers exceptional buildings that are taller and outstanding.

The context height of buildings affects many attributes of urban areas including their density, character, street enclosure and quality of the public realm, and the social environment. Increasing the general height of an area by a few storeys through upward extensions and infill development can deliver a sizable uplift in the overall density and capacity of an area, increase activity levels and vitality and result in a more compact urban form. Such an increase in density will need to be supported by sufficient transport and other infrastructures as well as the provision of quality open spaces and amenities.

Tall buildings are the exceptions to the context height. They are significantly taller than the context height in an area, break the skyline and are visually prominent.

While tall buildings have a role to play in increasing densities locally, they also are important in contributing to the character and identity of places, enhancing legibility and articulating the skyline, acting as catalysts for regeneration, offering diversity of accommodation and contributing to vitality and place making.

DEFINITION OF CONTEXT HEIGHT

The context height of an area is the height that an observer would read as the typical or defining height of a particular area. In places that are consistent in height, the context height may be the most commonly occurring building height. In more varied places, the context height may be a middle point that buildings fluctuate around.

Historic parts of the Royal Borough display a clear, consistent context height (Powis Street, Woolwich)

Image 2.1: An 8 storey building appears tall in a 3 storey context

2.4 TALL BUILDINGS DEFINITION

A ‘tall building’ is a relative term. A ten-storey building might be a (very) tall building in a predominantly two-storey suburban area, yet would be considered only as a local high point in an urban five to six storey context. Thus, tall buildings must be considered in relation to their local context (Figure 2.1).

The taller a building the greater is its presence and impact, both locally as well as on the skyline.

The height relationship of a tall building with its context can be expressed as a factor of the prevailing contextual height. We call this the context height ratio (CHR). The CHR expresses the degree of ‘tallness’ of a building in relation to its context. It also provides a measure of the extent to which a building is ‘outstanding’ on the skyline considering the prevailing height and scale of development of a place. The CHR provides a means to discuss the relative relationship of a building’s height within its immediate context, as well as to discuss this within the wider place setting. It also enables the simple categorisation of tall buildings by height in respect to their context height.

Figure 2.2 and Figure 2.3 diagrammatically depicts a large or tall building within its context. It illustrates how the relationship between the taller element and its surrounding context changes as its height increases.

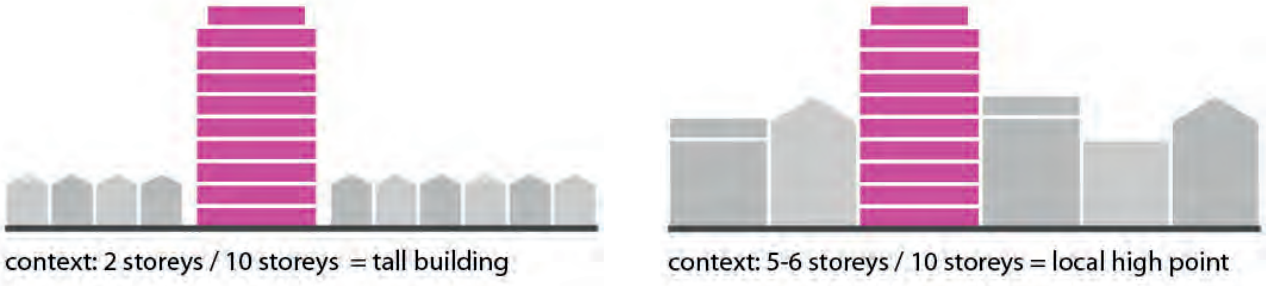

Figure 2.1: The impact of a tall building is related to its context

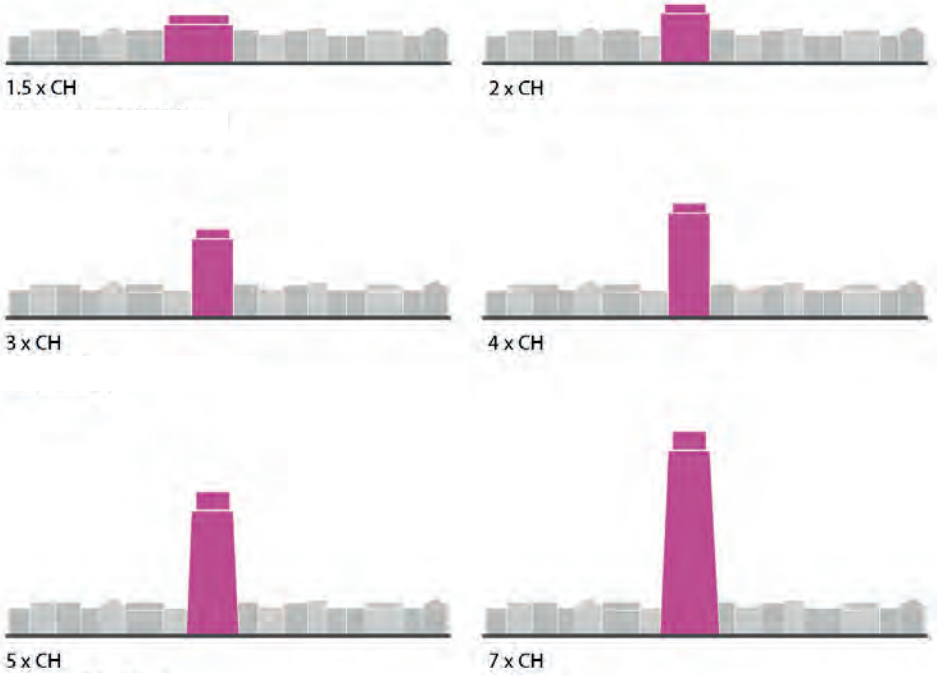

Figure 2.2: The height of buildings can be expressed as 'context height ratio'

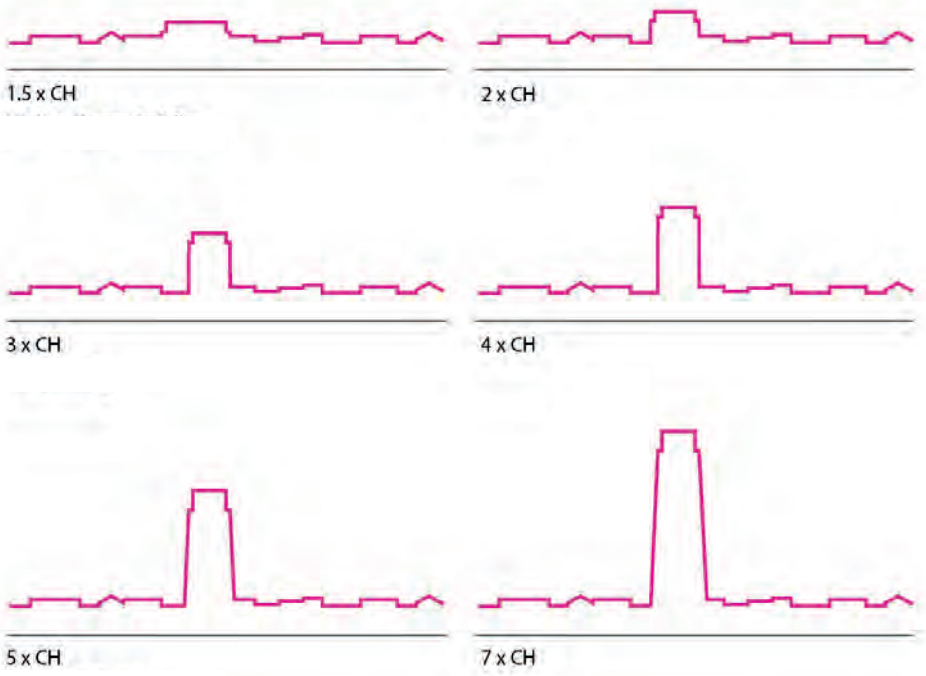

Figure 2.3: The context height expressed as an impact on the skyline

Figure 2.4: Diagram of tall building classifications relevant to context height

TALL BUILDING CATEGORIES

The following tall buildings classification is established in relation to the context height:

- Large Building – up to 2x context height;
- Local Scale Tall Building – 2 to 3x context height;
- District Scale Tall Building – 3 to 5x context height;
- Metropolitan Scale Tall Building – 5x and above;

The area used to establish the context height and the context height ratio will need to reflect the extent of the tall building's impact. Local scale tall buildings can use the context height of their immediate local and wider surroundings, while district landmarks will need to consider heights across the wider district.

Table 2.1 sets out for each of the tall buildings classification the principal perception of a tall building in relation to its context, and its principal impact on the skyline. Figure 2.4 illustrates the classification of tall buildings in relation to context heights.

It is recognised that other contextual factors may also influence how the relationship of a taller building with its context is perceived. These include for example the local topography, the variation in the context height, the form, scale and roofscape of surrounding buildings, other tall buildings in the vicinity, the location of the tall element within the street block, the structure of the area and from where the tall building can be seen. For simplicity these factors are not included in the concept.

Generally the relationship of a tall building with its surrounding will gradually change as its height increases. It is recognised that there may be an overlap at the classification thresholds where buildings can be perceived as part of both adjoining classifications (for example as a Local scale as well as a District scale tall buildings). In many cases however, it will be clearly possible to define a proposed building in one particular classification only.

Table 2.1: Table of tall building classifications relative to context height

Ratio to Context Height (CH)	Building height classification	Perception in relation to its context	Visual impact on the skyline
Up to 2 x CH	**Large building**	Contextual, accented building	Limited impact primarily from adjoining space.
Above 2x CH and up to 3x CH	**Local Scale Tall Building** Tall building of local significance	Outstanding prominent exception, proportionate relationship with context height, perceived as constituent part the urban context	Tall building is notable, yet its impact on the skyline is mainly local.
Above 3x CH up to 5x CH	**District Scale Tall Building** Tall building of district wide significance	Rising out of the fabric, markedly outstanding and pronounced contrast with prevailing urban context	Can be seen across a large part of the city.
Above 5x CH	**Metropolitan Scale Tall Building** Tall building of metropolitan significance	Jarring contrast, disconnected from the prevailing urban context height across the place, often requires increased heights in its surrounding to mediate the impact on its context	Can be seen across the city and from far away.

Image 2.2: Example: Large Building

Image 2.3: Example: Local Scale Tall Building

Image 2.4: Example: District Scale Tall Building

Image 2.5: Example: Metropolitan Scale Tall Building

2.5 TALL BUILDINGS AS LANDMARKS

Tall buildings are often described as landmark buildings. As taller buildings will have a greater visibility and a significant impact on their surrounding, it is principally considered important that they help to improve the legibility of an area, define points of townscape interest or mark public functions or facilities such as hospitals or transport hubs. Landmark buildings attract people, help orientation and contribute to local identity. Well-designed local landmarks can be a positive feature of new developments within a place if they integrate well with their context, respond appropriately to the setting of heritage assets and the landscape/townscape character, and contribute to the sense of place.

Landmark buildings offer distinctiveness to particular locations in the urban fabric. They contribute to the character of an area, enhance its distinctiveness and make it easier to recall. They can enhance the legibility of an area, by providing place markers that assist orientation and way finding. People recognise them as special features and include them in their mental map of a place.

In his seminal text *The Image of the City* (1960), urban theorist Kevin Lynch argued that a landmark's key characteristic was 'singularity': 'some aspect that is unique or memorable in the context', and that 'spatial prominence' can establish elements as landmarks by making them visible from many locations and/or creating contrast with nearby elements. Landmarks with a clear form contrasting with their background, and a prominent spatial location, are more easily identifiable and likely to be significant to the observer. Landmarks do not need to be tall but can be equally expressed through their special form, architecture, use or other features that make them stand out from their context.

Landmarks can operate on different scales. On a local scale a landmark is a notable building that makes its presence felt in the local context when experienced from within the urban fabric, primarily in views from streets and open spaces, and over rooftops. A building does not necessarily need to be tall to be a local landmark, but can stand out through other characteristics of its form, architecture and appearance that make it distinctive within its context.

Potential locations where tall buildings can act as landmarks in the urban fabric and assist legibility and orientation are:

- Nodal points where important movement corridors come together or intersect;
- Arrival and departure points in the urban fabric, such as transport interchanges and stations;
- Gateway locations at the edge or border of neighbouring urban areas; and
- Prominent focal points at the end of vistas or important streets, that can emphasise the importance of a route or mark an important destination.

As building height increases tall buildings become visible over large parts of urban areas on the scale of a district or the wider town. Besides operating locally as landmarks, they also become notable markers on the skyline, and affect panoramic views and the image of a district or settlement. If they have a distinct shape and silhouette, which is identifiable from far, then they can become iconic place symbols and integral to a place's image and identity.

Image 2.6: In traditional settlements, tall buildings act as landmarks for places of importance (Avignon, France)

THE LEGIBILITY PARADIGM

Historically in cities, towns and villages tall buildings and structures were associated with a clear meaning. The landmarks that stood out were symbols of public life; they advertised civic priorities and made palpable the hierarchy of public institutions. Churches, palaces, town halls, and later industrial buildings and infrastructures signifying industrial progress, were allowed to dominate the skyline while ordinary development did not compete with these landmarks.

In the British and European context, tall buildings have remained a relatively recent phenomenon and largely an exceptional typology, and for this reason, culturally, we remain wired to associate greater height and prominence with civic importance. However this intuitive understanding of settlements and places is at risk from an uncoordinated approach to tall buildings, which lacks inherent legibility and meaning.

Prominence should be meaningful and proportionate. This is the legibility paradigm, which is a central pillar to a coordinated and strategic approach to planning for tall buildings.

Legible towns or cities are those where the prominence of tall buildings correspond to a clear meaning either by marking special places in the urban fabric or by having a particular, important function. Where a landmark is expressed through a tall building, its height should be proportionate to the relative civic importance of the place or function it marks in the wider context of the town or district. This could be by being associated with a special function such as a transport hub, civic building, infrastructure or facility, or an important place like a centre, gateway or node. The marking of a development project per se is not by itself a sufficient justification for a tall landmark building.

Generally local landmarks should be marking places or functions of local importance. District landmarks should be marking places of district wide importance, while Metropolitan landmarks should be reserved for the exceptional occasion when the building represents a significant aspect of metropolitan or city wide importance.

The scale and height of a landmark building should provide cues to the role and importance of a place in the hierarchy of the settlement or wider area. When seen from further away, a tall building in the urban fabric usually denotes a concentration of activity, a centre with a mix of uses and / or potentially a transport node.

A disjuncture between the prominence of a building and the function and role of its location undermines the legibility and common understanding of the urban fabric. It is confusing, disorientating and detracts from the 'sense of place'.

Being a 'landmark' and 'enhancing the legibility' are common arguments for taller buildings. However, not every tall building will qualify as a landmark and enhance legibility. Despite its height, a tall building may not be recognised as a landmark due to its lack of 'singularity' in form, height, expression or architecture, or when situated amidst other buildings of similar height or characteristics. If the 'landmark' building is not located in an exposed and notable position or at an important node within the urban fabric, then it is unlikely to support the landmark argument. For example, a tall building located in the middle of a street frontage amidst other buildings will be perceived as a lesser landmark (if at all) than the same building at an important junction or terminating a particular view. Therefore proposals for 'landmark' buildings that are not genuine landmarks are not justified.

To help shaping places that 'make sense' it is important to guide the location and height of tall buildings in respect to the character, function and structure of an area. The quality of a tall building and its response to its surrounding context need to ensure that it offers sufficient distinctiveness and contrast to justify the term landmark building.

LEGIBILITY AND TALL BUILDINGS

Tall buildings are highly prominent and so should be clearly associated with places or functions of importance and meaning. Where a landmark is expressed through a tall building, its height should be proportionate to the relative civic importance of the place or function it marks in the wider context of the town or district. The scale and height of a landmark building should provide cues to the role and importance of a place in the hierarchy of the settlement or wider area. Generally local landmarks should be marking places or functions of local importance. District landmarks should be marking places of district wide importance, while Metropolitan landmarks should mark places of metropolitan or city wide importance.

2.6 CLUSTERING OF TALL BUILDINGS

The classification of tall buildings as landmarks is focused specifically on single stand-alone tall(er) building proposals. However, if several tall buildings are co-located in a confined area, such as a city centre or a Central Business District, they will form a tall buildings cluster. In clusters a tall building will not be perceived as an exception, but as an integral aspect of an area's townscape and character. Tall building's clusters provide a positive means of grouping tall buildings together in areas that in accordance with their vision should deliver higher density development, intensification of activities and a strong sense of urbanity.

Clustering of tall buildings can create powerful and distinctive features on the skyline and contribute to the image and identity of a place. Concentrating tall buildings in small geographically defined areas can contribute to a legible skyline where tall building's clusters can be associated with specific places, which assist the spatial understanding of a settlement especially in panoramic views across the urban landscape. It also prevents the fragmentation of the skyline from the scattering of taller buildings across the wider urban landscape.

For clusters to establish and remain distinctive features on the skyline they require management and coordination in respect of the location and height of potential tall buildings. Competition between sites for the 'tallest' building may shift the centre of gravity around and affect the reading of a cluster on the skyline. Tall buildings proposed outside a cluster can weaken its distinctiveness and legibility on the skyline. If not carefully managed, clusters can mutate into an

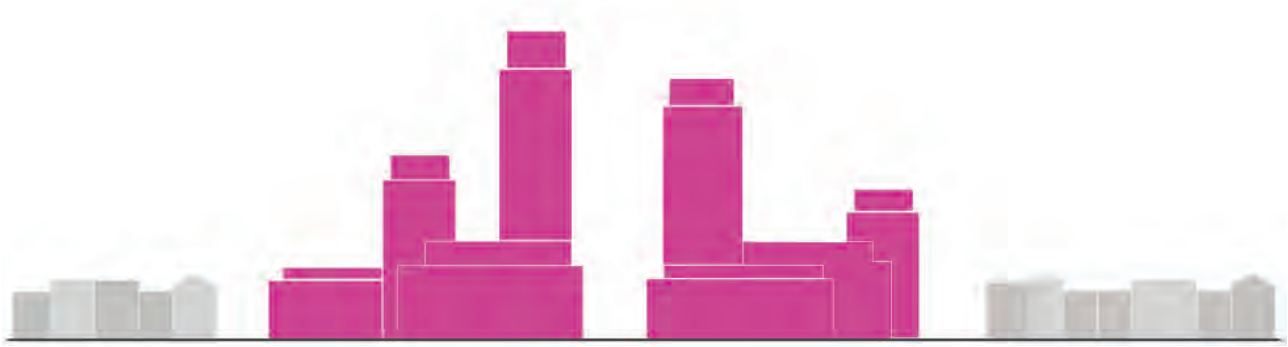

Figure 2.5: Diagram of a cluster of tall buildings - higher and taller buildings concentrated in a confined location

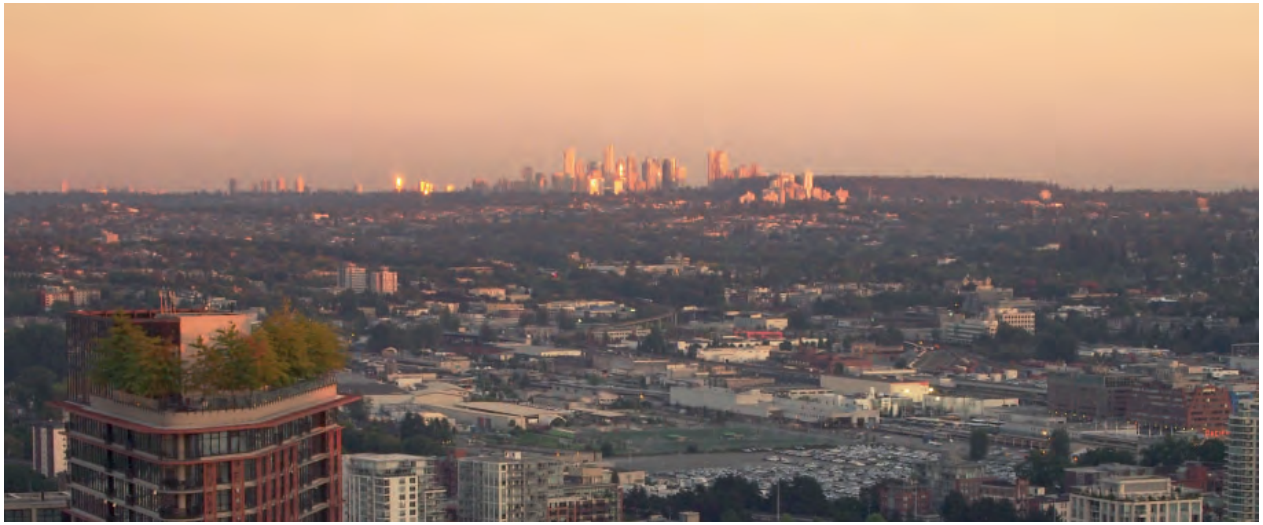

Image 2.7: Tall building cluster defines the skyline and creates a contrast with the lower context height (view of Burnaby, British Columbia, Canada)

uncoordinated sprawl of taller buildings over time, and undermine the legibility and uniqueness of the skyline.

Ideally the tallest building is situated central to a cluster to provide a constant visual focus in the cluster from all viewing directions. The height of other taller buildings should decrease the further they are away from the centre. Tall buildings need to stand sufficiently close together to be read as part of the cluster on the skyline. A cluster should be confined to a limited geographical area and not allowed to stretch out too far in certain directions, for example along a street, to ensure its skyline appearance is similar and compact in views from all directions, and it remains clearly identifiable from wherever seen.

A related concept to a cluster is the skyline composition. This is deliberate or incidental assemblage of landmarks or taller buildings within their particular setting, that generate a striking spatial composition, for example experienced from a waterfront view. A major skyline composition often is part of the urban image and strongly valued by residents, and highly sensitive to taller buildings that undermine its defining characteristics.

The legibility paradigm extends also to clusters. Heights within a cluster should respond to the relative importance, role and function of the cluster location within the wider urban settlement. Generally only the tallest building(s) in a cluster should be of a scale associated with the relative importance of a cluster location, while other supporting buildings should clearly be stepping down and normally be of a lower category. For example, a cluster location of district wide importance in principle can have a central tall building of a height according to a district landmark, while the expectation would be that other tall buildings in this cluster would be of a local landmark height or lower. This principle takes account of the cumulative impact of taller buildings, and the relative greater impact a cluster will have on the skyline when seen in the context of single landmarks buildings.

Heights in a cluster should vary so they contribute to a lively skyline and an aesthetically pleasing form of the cluster, mediating its high point with the lower context around.

Image 2.8: Cluster of tall buildings visible above the lower context height (Woodberry Down, London)

Tall building's clusters require clear guidance and consideration of the cumulative impact that results from co-locating of taller buildings in close location, including their impact on townscape, local character, micro-climate, overshadowing, and tunnel effects along corridors, in addition to aesthetic considerations of the shape and distinctiveness of a cluster on the skyline and its impact on views and the setting of heritage assets.

CLUSTER PRINCIPLES

Clustering of tall buildings can create powerful and distinctive features on the skyline and contribute to the image and identity of a place. Heights within a cluster should respond to the relative importance, role and function of the cluster location within the wider urban settlement. Heights in a cluster should vary so they contribute to a lively skyline and an aesthetically pleasing form of the cluster, mediating its high point with the lower context around.

2.7 SKYLINE AND CITY IMAGE

As cities and towns evolve, so do their skylines. While their principal structuring features, such as topography, rivers, road corridors, streets and open spaces experience little change if at all, its quarters, neighbourhoods, buildings and structures are subject to a continuous rhythm of decay, modernisation and change. The physical spaces together with the people and activities constitute the everyday environment of the settlement. Every day, people observe and participate in this environment, and as such, perceive the settlement with all their senses, forming a collective image of the specific environments they are in and the settlement as a whole.

The city image is a generalised mental picture of the physical, social and cultural environment, and involves the recognition of its pattern and specific elements. It is the collective product of immediate sensation and memory of past experience.

The city image is used to interpret information and to guide action. As such it helps legibility, on various scales, assists orientation and give cues to help navigation through the urban environment. A clear image of a particular 'special' feature or activities may become part of the collective memory of a place, be a signifier or symbol for this place, and may instil a sense of emotional security and belonging.

"*The sense of home is strongest when home is not only familiar but distinctive as well.*" (Kevin Lynch, 1960, The Image of the City).

The city image is not only connected to the physical attributes of a place. The meaning people associate with buildings and places also plays an important role. This may include a place's historical dimension, its role as a setting for current or past activities, or the significance of a place's or building's role in society. Beyond the realm of its spatial configuration this also affects whether an environment is liked or disliked.

The city image is not static. With time, as the physical environment and pattern of activities change, the image of the city changes. New development and other interventions can enhance or weaken the image.

In an environment where cities compete on a regional, national or international scale, places strive to outperform others on many fronts, by focusing for example on the uniqueness of their heritage, the attractiveness of their urban spaces, their friendliness to business, their green credentials or a high quality of life. Places that focus on the protection and enhancement of their distinctive features and characteristic will naturally excel in projecting a distinctive image that contributes to their uniqueness as a place in this contest.

The skyline of a place often contributes significantly to the city image. Due to their prominence and height tall buildings can have a significant impact on the skyline.

Historically the urban silhouette (or 'the city portrait') was a result of a cumulative process, and its reading was calculated. The landmarks that stood out in this picture were symbols of a

TALL BUILDINGS AND CITY IMAGE

The city image is a generalised mental picture of the physical, social and cultural environment, and often includes natural features, historic landmarks, hubs of activity and the skyline.

The skyline of a place often contributes significantly to the city image. Views of the skyline from particular viewpoints are often popular with residents and tourists, and used in promotional material for a place. New tall buildings can become proud additions to a skyline, but can also detract from it if improperly located and designed.

Image 2.9: Uncoordinated tall buildings creating a fragmented, incoherent skyline (Stratford, London)

collective life; they advertised civic priorities, and made palpable the hierarchy of public institutions.

Up to the late 19th century taller buildings were usually public beacons, those of religion, government, or technological progress. The height of churches or palaces was often not particular useful except in the symbolic sense.

The skyscraper in contrast was the product of private enterprise, stacking up building mass for their functional payoff, with the symbolism as a bonus. From the end of 19th century this started to visually dominate cities in the new world. A city image dominated by skyscrapers, particular in the American context became symbolic of the prosperity and commercial vitality of a place. The only other private structures that began to populate the skyline of cities were artefacts of the industrial revolution - smoke stacks, water towers and cranes.

Since the advent of the private skyscraper alternate and opposing views have emerged on who should be allowed to dominate the skyline. One side of the debate focuses on the common 'ownership' of the city skyline, and argues that in a democratic system *"a minority of private interests should not be allowed to dominate the town architecturally anymore than it should be socially"* (Thomas Sharp, 1963). The other side argues that today's settlements have their own socio-economic foundations that, with their modern practices, have set aside the traditional cities, and deserve their own skyline.

Whatever their political outlook, the shape of the skyline matters to residents. A distinctive skyline may present a fond icon of the city form, a vision to cherish and come home to, the urban advertisement to the world, and panorama one can present to visitors. Taller buildings, with their outstanding height, impact on the skyline. They also affect the perception, identity and attachment that people hold for their city. When a building is associated with a negative connotation this can be particularly harmful.

A distinctive and attractive skyline is frequently used for the presentation of a place to the outside world, and plays an important role in place marketing and branding. This can include historic church spires, natural features and modern buildings. Panoramic view points or prospect views along rivers, from where a particular skyline composition can be appreciated, often are highly popular with residents and tourists alike.

Understanding the make-up of a place's skyline with its unique and valued townscape features, and the short, medium and long distance views through which they can be experienced and appreciated will be important when planning for a distinctive skyline. The impact of proposed tall buildings on the city images will need to be tested and understood to prevent unintentional harm to valued views and compositions and to ensure new tall development integrates harmoniously and enhances the skyline.

Image 2.10: The skyline of the new business district of Milan as viewed from the roof of the Duomo cathedral (the main landmark of the historic city)

2.8 TOWNSCAPE, CHARACTER AND PLACE MAKING

Due to their exceptional height and scale tall buildings can be transformational and bring significant, permanent and irrevocable change to the townscape, character and activities of a place (for better or worse). They will affect the everyday environment of residents, the way a place is perceived and the image people hold of it. Given the significance of this impact the acceptability of a tall building proposal on the local townscape and character will need to be rigorously tested.

The spatial characteristics of the immediate and wider area surrounding a tall building will be the context within which a tall building is perceived and its impact felt. A tall building proposal will need to consider and appropriately respond to the following contextual attributes:

- The height, scale and massing of buildings, its coherence or variation;
- The urban grain (sub-division of blocks and plots) and townscape;
- The streetscape, including the scale of streets, the alignment of buildings and the building interface and the street level experience;
- The building composition, silhouette and skyline characteristics;
- Aspects of built form and articulation of building elements, such as the base, body and roofscape;
- Architectural language, materials and detailing; and
- The spatial response to special morphological situations such as open spaces, waterways and railway lines.

The NPPF states that development should be '*sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities*)'(para. 127c) and '*establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit'* (para. 127d).

The NPPF further emphasises that while '*great weight should be given to outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area*', this is acceptable '*so long as they fit in with the overall form and layout of their surroundings.'* (para. 131)

Image 2.11: Making use of traditional materials can help to integrate new development into the local context

CHARACTER-LED APPROACH

Tall buildings, due to their height and scale, can have a transformative effect on the surrounding character, townscape and sense of place. In areas with a well-established sense of place and strong local townscape characteristics, the height, scale and grain of a tall building may be incompatible with the established character. In areas that are fragmented and lacking a strong sense of character, a transition towards a new character through targeted development (or redevelopment) may be appropriate. A tall building can play a role in this process, but it is by no means the only way of achieving this, and its suitability and appropriateness will depend on local circumstances.

This makes clear that tall buildings need to respond sympathetically to their context and should generally not be perceived to be 'out of character' with an area's prevailing (or emerging) characteristics. Some areas will have a particularly coherent townscape, while others are naturally more varied and diverse. Some places are well established and have little or a slow degree of change. Other areas instead may be targeted for regeneration or are in the process of transition and change.

In areas with a well-established sense of place and strong local townscape characteristics, especially where they are unique, sensitive and valued, maintaining and enhancing an area's prevailing character will be highly desirable (see also reference NPPF para 122d). In some places the prevailing townscape, character and sense of place may be as such that it is incompatible with the height, scale and grain of a tall building, which therefore should not be permitted.

Some areas are fragmented, have a weak townscape, and lack a strong sense of place. Often these are areas in transition, situated at the fringes of established areas, and targeted for regeneration. In these areas development should contribute to the establishment of coherent and distinctive townscape characteristics and a strong sense of place. The same applies for large greenfield or brownfield lands that offer the opportunity for establishing their own character. A tall building can play a role in this process, but it is by no means the only way of achieving this, and its suitability and appropriateness will depend on local circumstances.

There are three principle means by which tall buildings can contribute to place making, enhancing an area's townscape and character, and instilling a strong(er) sense of place:

i. By performing the role of a landmark building that supports local and wider legibility and way finding, and enhances the distinctiveness of a location;

ii. By individually or as part of a group providing a distinctive skyline feature and as such contributing to a desirable image of a place; or

iii. As a necessary typological solution to deliver the vision of a place as part of a plan-led and comprehensive development, where tall buildings form an intrinsic aspect of its character and distinctiveness. This could lead to the clustering or grouping of tall building, but establishing a tall building cluster on its own is not a sufficient argument for tall buildings.

The above means are not necessarily mutually exclusive and often will be interrelated. For example, a tall building can be a landmark locally but also be a distinctive skyline feature; while the clustering of taller buildings as a necessary character and functional aspect of an area will also result in an impact on the skyline that will need to be considered. Tall buildings proposals must consider and be justified through all of the place making principles that are relevant.

Image 2.12: Harsh contrast in scale between the Gherkin and the historic, fine grain surroundings (City of London)

2.9 DENSITY, SUSTAINABLE DEVELOPMENT AND MAKING EFFICIENT USE OF LAND

Tall buildings due their very nature have a greater capacity to deliver floor space on a certain footprint than buildings of lower height. As such they can help to increase the density of development and intensify associated activity levels in an area. Optimising the density of urban areas especially where they are well served by existing or planned infrastructures is a national policy objective aimed at making efficient use of land and delivering sustainable development. Social benefits of higher density include that they can bring economic activity to an area, footfall to shops, vibrancy, the development of more mixed communities and the delivery of more housing in a context of constrained supply of land.

The NPPF stipulates that '*significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes'* (para 103). As such high density development and by extension tall buildings should be concentrated in central areas that already provide a wide range of facilities and that benefit from good accessibility from walking, cycling and public transport. '*Development should maximise the catchment area for bus and other public transport services … (to) encourage public transport use.*' (para 110a)

However, tall buildings are not the only way of achieving higher densities. There is a growing body of evidence that illustrates that high density residential and commercial development can also be delivered with compact low to medium rise developments and do not require tall buildings (see Figure 2.6). Studies have found that net densities of 80 to 150 units per hectare can be delivered with 3-4 storey compact urban blocks, while 5 storey compact apartments blocks can delivery up to 280 units per hectare. Recent development examples show that densities of 450 units per hectare or more can be achieved with heights of eight and less storeys (Housing Density Study, Maccreanor Lavington, 2012).

Low to medium rise developments more easily can be made to fit in with the prevailing character of an area, limit impact on heritage assets and their setting, and also are likely to have a lesser impact on the amenity of neighbouring properties in terms of overshadowing and daylighting.

Tall buildings are not the only way to achieve high-density development, and in many places compact low and medium rise development solutions will be more appropriate forms to intensifying the urban fabric. Nevertheless, tall buildings can play a role in creating superdensities in highly accessible, central and urban locations, or delivering housing on highly constrained sites unsuitable for conventional lower rise development, if appropriate.

Figure 2.6: Comparison of residential density (units per hectare) across developments of different heights (Housing Density Study, Maccreanor Lavington, 2012)

2.10 SOCIAL ASPECTS OF TALL BUILDINGS

A study by Jan Gehl (cited in his book Cities for People, 2010) on perception and building scale has shown that beyond a height of five storeys people cannot recognise facial expression any longer and there is less scope for meaningful communication and engagement of activities at street level, which are essential for social engagement and community life (Figure 2.7). As such, developments of up to five storeys offer more sociable environments with a greater relationship between dwellings and (communal and public) outdoor spaces and hence are more suitable (and a preferred choice) for family accommodation.

Research has found that occupants of higher rise development generally have a lesser sense of connection with the community in the wider neighbourhood. In turn, people living in courtyard style lower rise development reported the strongest sense of community within the wider area. The same pattern was found for the sense of connection with the community within a development, where residents in taller buildings were less likely to feel part of the community within the development than occupants of courtyard style lower blocks (Lessons from Higher Density Development, Report to GLA, 2016, para. 6.16-6.19).

This research suggests that the greater sense of community within lower courtyard style development may be explained by the greater use of communal amenity spaces, the limited number of units per core (support familiarity with the people living within a building), and the greater concentration of family accommodation, which foster a greater degree of social interaction. Conversely, units in taller buildings are often privately rented, smaller, and targeted at a younger professional audience. Turnover in young and mobile households will be generally higher, while their network of friends and family is usually widespread and less confined to a certain locality.

Given these characteristics tall buildings are more likely to be suitable for younger professionals that have a lesser reliance on local networks compared to families or older residents. Furthermore, tall buildings are better located in lively urban and central areas, rather than in residential neighbourhoods and other places where the establishment of social networks and a sense of community is highly desirable, and where lower rise courtyard style blocks may provide a better typological solution.

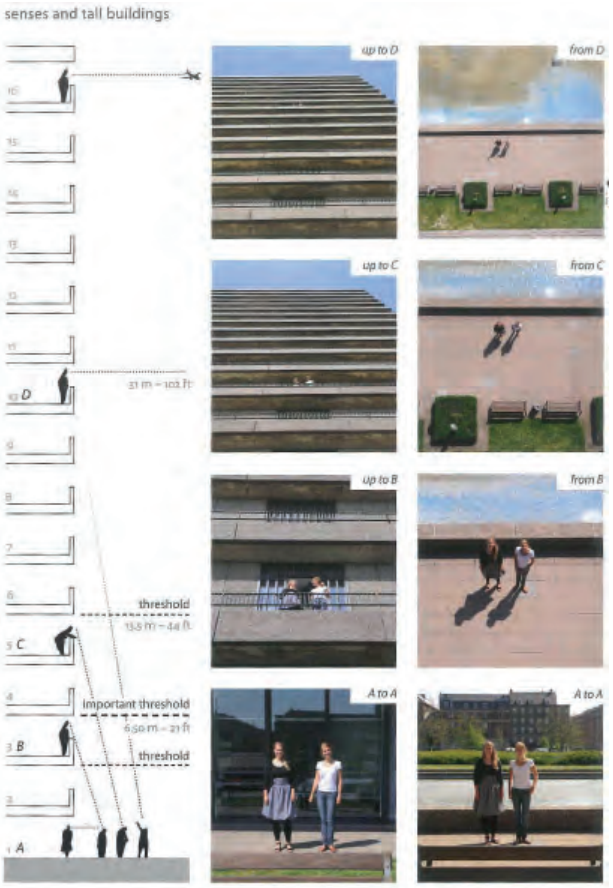

Figure 2.7: Building height effects the ability to interact with street level (Jan Gehl, 2010, Cities for People)

2.11 TALL BUILDINGS DEVELOPMENT COSTS AND VIABILITY

Generally, tall buildings are more expensive to build and cost more per square feet than low or medium rise buildings.

Tall buildings generally have a less efficient net to gross floor space ratio than lower rise buildings. This is due to additional requirements for the sub-structure and frame of the building to respond to its height, greater weight and higher wind loadings. Tall buildings require larger cores to provide for vertical transportation requirements, servicing and emergency access. They also require larger capacities of plant and distribution systems and potentially need intermediate plant floors. Due to their form the wall to floor space ratio is less efficient than in compact lower rise development where buildings join up at party walls.

Tall buildings are usually 25-40% (offices) and 30-40% (residential) more expensive to build than low-rise buildings (Barton and Watts, *Office vs. Residential: The Economics of Building Tall*, CTBUH Research Paper, 2013). Generally the form, shape and complexity of tall building projects are cost drivers in tall buildings. Aspects that drive the cost in tall buildings are:

i. Iconic architecture and more complex design
ii. Structural solutions to respond to lateral and vertical loads require additional restraints
iii. Slenderness ratios which reduces floor plate efficiencies and shape of a floor plate which affects wall to floor space ratio
iv. Quality and materiality of the façade
v. Impact of solar gain from large amounts of glazing and associated mitigation
vi. Recesses balconies and winter gardens at higher levels to maintain their amenity
vii. Servicing, especially the need to boost water supplies and pressurisation of heating and cooling solutions
viii. Sprinkler systems are generally required over a certain height
ix. Vertical transportation and emergency access requirements, which may increase the size of the core if height increase, public access to the upper floors or a mix of uses is promoted

Given the façade and structure are important cost factors in tall buildings, pressure to reduce costs may result in the provision of simpler structures, the loss of slenderness and a greater bulk, uniform buildings with a lesser articulation of the overall form and the use of cheaper materials and façade systems, affecting the appearance and longevity of the building. There is a risk that cost savings due to viability concerns in tall buildings can result in a bland and poor quality solutions that fail to bring positive change to an area and its skyline. Given the visual impact of a tall building on the cityscape, cost savings that affect the quality and appearance of tall buildings are undesirable and should be avoided.

The higher cost of tall buildings needs to be passed on to the end-user in the form of higher rental or purchase prices. Generally tall buildings can demand a premium for the views over the city and a more exclusive environment. Values tend to increase with height and top floor penthouses often demand an additional premium. Tall buildings therefore require a healthy market that is able and willing to pay the additional cost in comparison to more conventional properties in the market.

Research in London found that tall buildings are only viable in higher value areas and that viability weakens where values drop. The same study finds that small high-density infill development of four storeys (that can deliver 150 units per hectares), remains viable in areas with lower values. This highlights the opportunities for intensification especially of lower value area where there is an availability of sites suitable for this type of development (Lessons from Higher Density Development, Report to GLA, 2016, para. 9.34-36).

VIABILITY OF TALL VERSUS LOW OR MID-RISE BUILDINGS

Tall buildings are more expensive to build than low or mid-rise buildings and are typically only viable in high value areas. While individual, small, high-density, infill schemes will deliver less units than a tall building on a site, cumulatively they can contribute to the significant intensification of urban areas. They are also cheaper to build, more affordable to local occupants, help to repair and modernise the urban fabric and can create more sociable environments. As such they can present a suitable development approach for the intensification of areas where tall buildings may be inappropriate or unviable, especially in historic city centres and town centre fringes.

2.12 TALL BUILDINGS AND REGENERATION

More recently institutional investors are stepping into the Private Rental Sector (PRS) to provide managed Built to Rent (BTR) accommodation on a bigger scale. BTR provides renters with a choice of professionally managed property, that offer greater levels of security, high levels of management often supported by other lifestyle amenities such as shared facilities, social spaces and gyms. BTR have a longer time horizon and an interest in the continued performance and quality of the accommodation.

The holistic and strategic approach by BTR investors to the long term management of the buildings should better enable them to put in place strategies to undertake and pay for the significant repair and refurbishment cost that will come with the natural life span of services and façade systems in taller buildings, and thereby ensure the upkeep of quality and maintenance of the building over its lifetime. In schemes with a large amount of individual lease holders (owner occupation or small buy to let investors), sudden large costs for necessary refurbishment works or the replacement of broken parts (such as lifts or services) can be unexpected and highly challenging to individual owners, if not properly planned by the management company and covered through a sinking fund. This was recently exemplified in private towers with Grenfell type façade systems where leaseholders were faced with significant and unaffordable bills for the replacement of façade systems.

Tall buildings are often argued to have a role in regeneration projects. Regeneration is about bringing new activities to underperforming areas through changing the area's image, creating a new focus, promoting new uses and revitalising its activities. Regeneration generally brings higher densities and a greater mix of uses into an area and tall buildings could have a role in delivering these.

It is argued that tall buildings can have a catalytic role in regeneration projects, as they can provide a widely visible landmark to the area, signal change, raise the profile and generate confidence of investors. However, regeneration projects are highly place and context specific, and what works in one area may be not be desirable in another. For example, public realm and environmental improvements, the introduction of new activities or the establishing of a new connection could be more effective means to instil regeneration into a failing areas than the delivery of a tall building. While tall buildings can form a part in regeneration they will need to be complemented by other interventions as part of a coherent regeneration strategy.

A tall building promoted to landmark a regeneration area will have its biggest impact at the time when it is newly built and is seen as the beacon of change. It is important that it remains a vital and successful building once the initial effects of novelty and gloss have worn off, and that it continues to contribute positively to the area over the medium and long term.

Image 2.13: Tall buildings form part of the regeneration of former industrial land at Porta Nuova, Milan

Tall buildings have the tendency to increase land values in their surrounding of a scheme due to speculation. The permission or even only the planning of a tall building in an area can result in other sites in the vicinity being promoted for tall buildings, often of similar or greater height. While increasing the land value expectation may stimulate development interest in a regeneration area it also can have detrimental impacts on the viability of other development projects with lesser density.

Tall building projects can fall foul of natural development cycles. Often they are being promoted when the market is on the up, but then fail to be delivered as the market contracts, viability margins shrink and funding sources dry up. Failed tall buildings sites can leave painful holes in the urban fabric where little development takes place until the market has recovered or unrealistic land value expectations have been written off. Similar impacts can be seen from 'flipping', when developers promote a tall building on a site, realise a planning permission, and then sell the site on with the permission for higher density in place, without an intention to build the scheme out. In the meantime the site sits empty, land values stifle alternative development schemes, and regeneration is stagnating.

Due to higher rental or purchase costs and increased service charges tall buildings will be less affordable than other development types and only appeal to more affluent sections of the society. This can result in gentrification as people with higher spending power move into an area. It can also mean that tall buildings do little to resolve a shortage of homes in an area if they are too expensive for local people to afford.

The impact of tall buildings on land values, the realistic prospect of being delivered, and the local socio-economic conditions will need to be carefully considered when assessing the appropriateness and desirability of a tall building proposal in an area.

Given the prominence and transformative impact a tall building will inevitably have on its surrounding context and the skyline, there is a general expectation that where they are permitted they should deliver tangible regeneration benefits, beyond mere token gestures. Thus while regeneration projects do not necessary require tall buildings, where a tall building is being brought forward there is a general expectation for it to deliver wider public benefits to its locality beyond its simple function.

Image 2.14: Tall buildings often form a prominent part of large scale regeneration schemes - Old Gas Works, Sutton (Source: Google Street View)

Image 2.15: North Road Estate Renewal - successful regeneration project providing street blocks of coherent height that enhance the setting of the historic clock tower (Camden, London)

2.13 HERITAGE IMPACT

IMPORTANCE OF HERITAGE IN POLICY

The NPPF states that "*heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value. These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations.*" (Para 184).

"*When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be).*" (Para 193).

"*Substantial harm to or loss of:*

(a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;

(b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional*" (para 194).

TALL BUILDINGS AND HERITAGE

Tall buildings by their very nature will have a visual impact that needs to be thoroughly considered. Individually or cumulatively the visual presence or prominence of tall buildings can cause harm to the significance of heritage assets and their setting, even when located further away.

Heritage assets are sources of distinctiveness, meaning and quality of a place. As a shared cultural resource of cultural identity they need to be managed carefully and nurtured for the benefit of future generations. Positive conservation of heritage values should enable cities to respond to social, economic and technological change in a manner that allows change to sustain and reinforce these values.

The height and scale of development should respect, respond and contribute to characteristic places, building on their heritage and the values associated with them. The impact and design of a tall building, in respect of heritage assets in its immediate, and wider surrounding, will need to be assessed and guided by an experienced heritage expert.

Tall buildings must be carefully sited so as not to have an excessive intrusive impact on the historic environment and to damage historic settings. World Heritage sites and their buffer areas, registered parks and gardens and their settings, conservation areas, and listed buildings in most cases will be highly sensitive to tall buildings.

The Planning (Listed Buildings and Conservation Areas) Act 1990 states that local planning authorities should pay special attention to preserving the character, appearance and setting of heritage assets.

Image 2.16: Modern tall buildings contrast markedly with and visually intrude on with the historic fine grain Georgian townscape in Angel, London

TESTING AND MODELLING

Recognised local views, vistas or panoramas that show a heritage asset in its setting are also particularly vulnerable to damaging intrusion by insensitive tall, or massive-scale development. Harmful impact from intrusion of a tall building for example could include an altered sense of scale, undermining the relationship of built form to the sky or landscape, or detract from the colour, materiality and form that typifies what is special about a historic place, and what essentially contributes to its heritage value.

Image 2.17: Tall building development visually intruding on a key view in St James Park, Grade I Registered Park and Garden

The height of tall buildings should be tested and calibrated to avoid an aggressive domineering effect that tall new structures can have on heritage assets. Modelling of tall buildings should aim to soften their profile and reduce their monumental impact. Choice of facing materials is important to assist in visually weaving the new building into its established surroundings.

A heritage impact statement will need to be produced that identifies the heritage assets that the proposal has taken into account. This should demonstrate how the tall building proposal has responded to these heritage assets and their respective significance, and how the proposal has mitigated its potential adverse impact to avoid or minimise harm to the heritage asset and its setting. This should be supported by a visual impact assessment that illustrate and evaluate the impact of the tall building proposal on heritage assets and their setting where this is relevant. The scope of the heritage impact statement and supporting Visual Impact Assessment (VIA) should be discussed and agreed with the Planning Authority.

This should include a computer-generated zone of visual influence and the impact on local, medium and long distant views which should be carried out through accurate visual modelling of proposals represented in photomontages that show the ‘before’ and ‘after’ view. Relevant views should be defined by the Council and may include views from outside the city when appropriate.

It is recommended that Planning Authority utilises a fully interactive 3D computer model (such as VUCity) of the wider city area in order to test and evaluate the potential impact of tall building proposals. Proposals for tall buildings as part of pre-application discussions and the planning application should be required to provide massing (for the former) and accurate architecturally detailed 3d inset models (for the latter) to be assessed and evaluated within this model.

A tall building proposal will need to take account of and avoid harm to the significance of heritage assets and their settings. The preservation and enhancement of heritage assets and their settings should be given significant weight. Proposals resulting in harm will require clear and convincing justification, demonstrating that alternatives have been explored and there are clear public benefits that outweigh that harm, in line with the NPPF.

Figure 2.8: Example of a 3d model used to test building massing

2.14 VISUAL IMPACT

Due to their massing and height, tall buildings can have a positive or a negative impact on important views, prospects and panoramas, and the wider visual experience of a place, its character and skyline. Relevant views may include views of iconic buildings and landmarks, distinct townscapes, topographical features, waterfronts, and more broadly the skyline, especially where they are prominent, accessible and highly valued.

Local Plans and conservation area statements make reference to protected strategic vistas and local views that will need to be protected. There will be many more undesignated views on a local, as well town or city wide scale, that are cherished by people and important for the collective understanding of a place, and to 'make sense' of a building in its setting. Views from rivers are especially significant because of the openness of the water space that allows for panoramic or prospect views and enable the recognition of the wider settlement characteristics in its setting. The same applies to large parks and open spaces, especially where they comprise of open grass lands or are elevated and allow the unrestricted views over the cityscape. Viewpoints may be within or outside the administrative boundary.

To evaluate the impact of a tall building on the skyline one needs to understand the aesthetic characteristics of the skyline and their relevance for the image and identity of a place. This should consider strategic landmarks, the roofscape and other skyline features, the visible setting and backdrop, and relevant viewing points from where wider skyline characteristics and compositions can be appreciated. Highly distinctive skyline aspects that are intrinsically linked to the identity of a place should be protected. Tall buildings should only be permitted where they do not undermine the essence of highly valued skyline characteristics or genuinely enhance a place's skyline image in a meaningful and considered way. Where specific skyline characteristics can be appreciated from key views, they should be identified as test views in which the impact of a tall building proposal should be modelled and assessed.

Any tall building proposal will need to establish its zone of visual influence that shows from where it potentially can be visible from. This should assist in the identification of sensitive areas or viewing location where the building could have a visual impact. A visual impact assessment (VIA) will needs to test and assess the impact of its tall building proposals on designated and non-designated short, medium and long distance views, including panoramic or prospect views, linear views to landmarks, approach road views, wider townscape or landscape views, local and other views as relevant. The VIA should visualise, describe and assess the impact of the tall building on views, and demonstrate how it has considered its findings and mitigated adverse impacts or enhanced the distinctiveness of the skyline. VIAs should follow the latest guidance on visual impact assessments of the Landscape Institute. This should make use of 3d modelling and representation techniques discussed earlier. Views should be discussed and agreed with the Planning Authority.

Image 2.18: Tall building in Eastbourne highly visible from the South Downs National Park

2.15 SITING, LAYOUT AND URBAN FORM

Tall buildings due to their greater height and contrasting scale, organisation and design can have a significant impact on the form of an urban area, the sense of scale and the quality of the spaces around the building. The way a tall building is designed, sited and orientated will have an important impact on the integration and quality of a proposals response in relation to its context and if it contributes or detracts from local character.

LOCATION AND ROLE AS LANDMARKS

Where a tall building is proposed to perform a landmark role (as discussed in section 2.5), it should be carefully sited to magnify its visibility. This could mean a location in the focus at the end of a street, at a prominent street corner or in an exposed location along an approach route or other vista.

The siting and orientation of a landmark building within its context should consider the specific views from where it is expected to be seen, and maximise on its distinctiveness in these views. Responding to a particular linear view however should not undermine the wider legibility principle that tall buildings when seen on the skyline should clearly be recognisable as one and the same building from what ever direction its is observed.

To ensure its presence and singularity, the landmark building should not be obscured or detracted from by other (tall) buildings, for example in the background, and its silhouette should be clearly visible and contrasting before the sky.

TALL BUILDINGS AND TOPOGRAPHY

The topography of a place can have an important impact on the perceived prominance of a tall building. A tall building located on elevated position will be more prominent and striking because they will appear as a silhouette against the sky.

Conversely tall buildings located on lower lying land will be less prominent as they more often will be seen against the backdrop of the urban fabric or landscape beyond. Tall buildings on higher ground will gain extra height in relation to lower lying areas and so will have a greater risk of affecting sensitive townscape or landscape characters.

When discussing tall buildings, their height above ordnance datum (AOD) must be understood as it is a measure of their true height, including the underlying topography. They can then be compared to the AOD height of other buildings to ensure that the most important parts of the skyline are most prominent and to avoid lower buildings on higher ground appearing more prominent than is appropriate.

Generally, unless there is a specific reason for the landmarking of a hill top location, tall buildings on elevated land should be avoided due to their increased affect on the skyline and surrounding character.

Image 2.19: This tall building acts as a landmark for the wider development and creates a clear sense of a destination

Image 2.20: The Parkinson Building's location on higher ground enhances its prominence and role as a landmark for the University of Leeds

INTEGRATION OF TALL BUILDINGS WITHIN LARGER DEVELOPMENT SCHEMES

Tall buildings have significant access, servicing and (often) car parking requirements, which require a resolution at the base of the building at street level. While the front of the building with its entrance and lobby, and potential commercial spaces is usually well designed, the sides and backs can fail to establish a positive and active interface with the public realm, especially where sites are relatively small. Entrances to car parks and exposed parking areas, loading and service bays, emergency exits, technical facilities, blank walls and left-over spaces can compromise the quality, passive supervision and animation of the adjoining street space.

Appropriately mitigating these impacts on the street space can require expensive technical solutions such as locating the technical, servicing and parking facilities underground, especially in the case of freestanding towers. In many places this solution will be financially prohibitive. An alternative and more realistic solution is to integrate tall buildings within a larger development scheme. Providing parking, servicing and technical spaces within the envelop of a larger development will release the pressure at the foot of the tower and make for a better street environment. Integrating taller buildings with a courtyard type street block can have further benefits, as it can help to mediate the scale of the taller building with lower buildings in the surrounding. Associated lower rise development may also more suitable for family accommodation to complement smaller units in the tower and to provide a balanced housing mix. Equally they could accommodate affordable housing where they could more easily be managed separately by a registered provider.

Image 2.21: Example of a tall building integrated into a larger development block

2.16 STREETS, PUBLIC SPACES AND INTERFACE

TALL BUILDINGS AND PUBLIC SPACES

The argument has been made that one of the benefits of tall buildings is that they stack up floor space to greater height and thereby make room at street level for the establishment of public spaces, especially in dense street based urban settings where there are little public spaces amenities. Tall buildings bring a greater concentration of activities and therefore increase the need for the provision of breathing, breakout and meeting spaces in the urban fabric. To be successful public spaces need to be in the right place and located where they can benefit from footfall. While it would not be useful or practical to require every tall building to deliver a new public space, generally tall buildings should contribute to the provision of quality public spaces in their wider vicinity.

Tall buildings cast shadows and can reduce daylight reaching public spaces. Their impact on natural lighting levels in public spaces will therefore need to be carefully considered when deciding on the layout of a development and the location of a tall building in relation to public spaces. People enjoy sun exposed public spaces and overshadowed and gloomy environments are less popular.

Tall buildings should avoid creating significant overshadowing of a public space especially during times of the day when they are more intensively used. Public spaces are often more used from lunch time onwards, during the afternoon and early evening, although some spaces that for example are used by schools may see more intensive use before midday. A tall building located to the north of a public space would

cause no impact in terms of overshadowing, while a tall building located to the south would have its shadow travelling over the spaces as the day passes by and possibly affect significant parts of the space. A tall building located to the east of a public space would affect it during the early parts of a day, while when located to the west it may cast long shadows over a space as the sun is setting. Generally locating tall buildings to the south or the west of public spaces should be avoided.

Tall buildings, especially where they are stand-alone or rise straight up from the street space will benefit from a greater sense of space around their base to provide an appropriate setting of this height and mass. The space at the base of tall buildings should feel proportionate to their height and prominence and normally should be greater than around lower rise buildings. Setting a tall building back from the footway behind a plaza, a wider footway or landscaped areas, or the creation of dedicated public spaces are means by which designers can create establish an appropriate setting for a tall building.

Image 2.22: Example of a positive active frontage of a tall building

Image 2.23: Example of a high quality public space integrated into a larger development

HUMAN SCALE AND THE SENSE OF STREET ENCLOSURE

Jan Gehl's research explores human senses in city environments. It finds that narrow streets and small spaces convey a corresponding experience of warm and intense city environments, while environments where distances, urban space and buildings are huge generally signal an impersonal, formal and cool environment. As such the distance and height of a building will have an impact on the character of a place and how personal, friendly and welcoming it is perceived. This can explain the popularity of historic town centres that offer intricate environments, a small scale and a rich experience.

"Our horizontal field of visions means that when we are walking along a buildings façade only the ground floors can offer us interest and intensity. If ground floor facades are rich in variation and detail, our city walks will be equally rich in experience…From the street, we can only experience with difficulty events that take place higher up in buildings. The higher up the more difficult to see … Connection between street plane and tall buildings is effectively lost after the fifth floor" (Gehl, 2010, Cities for People, p.41).

An important way by which people experience cities is by moving through its streets and spaces. Perspective views along streets and onto the foreshortened rhythm of buildings and facades provide an understanding of the scale of buildings, the sense of enclosure, and the pattern, materiality and colours that characterise the environment.

Sideway views help appreciate the articulation and detailing of facades and activities within buildings. Only buildings at the end of streets, at junctions or visible from a greater distance for example across a public space are observed in their entirety.

Considering the human perspective in the design of places is important. For designers this means to create spaces and buildings with proportions and details that reflect a human scale and respond to people's sensorial facilities. This is particularly relevant when designing tall buildings, which are naturally larger than the typical surrounding. The detailing of the lower floors will be of particular importance as well the siting, integration and articulation of tall building elements. Tall buildings integrated with their lower rise context will be more successful in establishing a human scale response than standalone buildings that are separate from their context.

The sense of enclosure, level of coherence in heights and relation of heights across the street are important attributes that determine the character and feel of a street, if it feels balanced and harmonious or fragmented and uncoordinated. More enclosed streets feel intense and urban, while lesser enclosed streets can feel spacious and grand.

TALL BUILDINGS AND THE HUMAN SCALE

Tall buildings can have an adverse effect on street enclosure and the sense of human scale. A tall building in a street frontage can create a significant imbalance in a street scene. Tall buildings located on opposite sides of a street can create excessive enclosure and an undesirable 'canyon' effect. The impact of tall buildings on the enclosure and balance of street scenes should be mitigated by situating the tall building element on top of an urban block and away from the street frontage, to effectively limit the visual impact of greater height on the street space, or alternatively by moving the tall building significantly back from the building line.

Tall buildings, with their large grain, substantial bulk, clean lines and modern materials can represent a jarring contrast when next to smaller scale housing, and indeed can have the effect of visually demeaning the surrounding area. Tall buildings are often impersonal and therefore weaken the sense of ownership of an area by its people. The domineering impact of tall buildings can be avoided by reducing the height of a tall building, locating it further away from finer grain townscapes or by introducing buildings of intermediate heights that visually help to mediate between the smaller and larger scale.

Image 2.24: Tall buildings failing to create a human-scaled street environment

INTERFACE WITH THE STREET SPACE

In the past many taller buildings have failed to establish a positive relationship with the public realm. Many towers in post-war housing estate developments provide infamous examples for this, often exhibiting large windswept and underused green spaces around the tower base, blank walls and inactive ground floors, poorly marked entrances and over dominant servicing arrangements.

To ensure a tall building sits comfortably within an urban environment it needs to establish a positive relationship and interface with the street space. The building interface with the public realm should generally provide well-defined edges and activated frontages with transparent facades. Leftover spaces and set-backs that create hidden or unsupervised corners in the street space should be avoided. The design will need to contribute to the safety, diversity, vitality, social engagement and 'sense of place' of the building's surroundings, and maximise access for people of all abilities.

Entrances and lobbies should be clearly recognisable, be proportionate to the size and use of the building, while also reinforcing the fine grain of activity at street level. Usually the ground floor of towers should also provide retail or commercial uses that are active, outward looking and help to animate the street space. Blank frontages should be avoided. These spaces together with internal circulation areas within a building should be designed to encourage interaction and foster social cohesion and increase liveability.

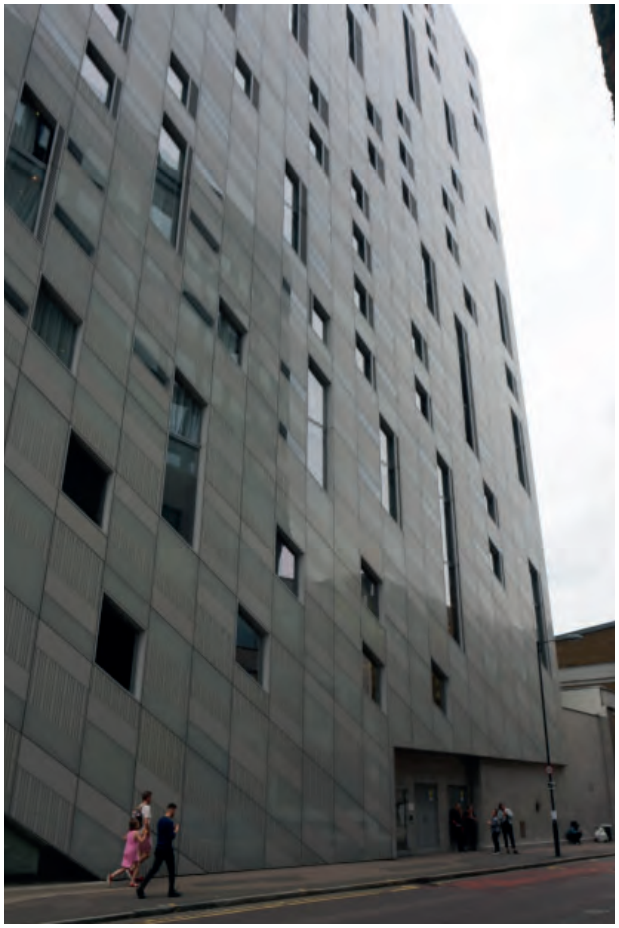

Image 2.25: Example of a tall building with a negative frontage and poor relationship with the street (Old Street, London)

QUALITY OF THE PUBLIC REALM

The public realm outside the entrance of a tall building should be generous and provide appropriately for the increased pedestrian activity of the building as well as for waiting and mingling of people. Adequate gathering space must be provided around the building to facilitate the evacuation of the building in case of an emergency.

The vehicular drop off for the building should be at the back of the carriageway or otherwise away from the main entrance to avoid conflicts with pedestrian activity. Access to servicing should be realised at the side or rear of the building away from pedestrian activity. The width of driveways and vehicular entrances should be consolidated and minimised, and routes should not create barriers at street level.

Image 2.26: Example of a high quality public realm at the base of a building

PARKING

The Royal Greenwich Core Strategy Policy IM(c) states that development must provide the minimum of car parking provision necessary, with support for car-free developments in areas of high public transport accessibility and within Controlled Parking Zones.

The way that parking is designed within a tall building scheme is important to the quality of place. Surface car parking surrounding a tall building results in a poor pedestrian experience and is an inefficient use of land. Undercroft parking, where cars are essentially parked at ground floor level underneath the building are unsightly and sever the buildings connection to the street, affecting the quality and animation at ground level.

In the European context, underground parking garages in tall buildings are common place. These are a good solution as they are largely hidden, have a smaller impact on the streetscene and free up the ground floor for other uses. However, they are expensive to construct and so may be resisted in contexts of lower viability. A potential solution for larger sites is to locate parking central to a development block, with a communal open space on top. This retains active frontages on the perimeter and makes good use of the parking structure itself.

Tall buildings should also integrate cycle parking. An issue faced by apartment buildings with no communal cycle parking is that cyclists have to carry their bikes up stairs or in lifts, potentially creating an increased need for cleaning and maintenance of communal spaces. Without formal parking facilities, it is common for residents to lock bikes to handrails in communal hallways, creating a fire risk. The provision of secure, well-lit communal cycle parking that is easily accessible from the street solves these issues and encourages active travel.

HIGH QUALITY URBAN DESIGN

Tall building proposals need to demonstrate their understanding of the urban design and movement issues within the wider and immediate site context and establish how the proposal contributes to the enhancement of the connectivity, function, amenity and character of the surrounding area.

As with any other development, the authority's design policies apply in guiding an appropriate and high quality design response. However, given their prominence and size, tall building developments should bring forward an exceptionally well considered and exemplar urban design response including, but not limited to, the following aspects:

- A tall building development should appropriately address the connectivity of the site and the permeability of the wider area;
- Through the location of height and expression of the built form a scheme should contribute to the legibility of the townscape, for example by opening up or terminating views or by articulating a point of significance;
- The height and massing of the development needs to consider how it integrates the tall building element and prevent it from feeling 'overbearing' onto surrounding streets, and existing and new developments;
- The distance between buildings, which must demonstrate the quality of accommodation and residential experience;
- A development proposal should demonstrate how it has considered the scale of surrounding streets and spaces, their sense of enclosure and the quality of the ground floor experience;
- Parking and servicing provision should be integrated within the development and avoid dominating the public realm or detract from the animation of the street space, and
- Excessive enclosure or the creation of a 'canyon' effect should be avoided, for example by applying set-backs to effectively limit the visual impact of greater height on the street space.

2.17 MICROCLIMATIC IMPACT

Tall buildings, due to their size and their significant extension above the typical height in an area, have significantly greater impacts on the local microclimate than other ordinary building types. If not carefully located, scaled and designed, tall buildings can cause increased wind in streets and open spaces around their base, significantly overshadow or restrict daylight from entering homes and open spaces, and cause light pollution and glare.

WIND IMPACT

Tall buildings, as they reach above the general height of an area, disturb wind patterns. They can create downdraughts, turbulence, as well as higher wind speeds, especially around building corners. Proximity between tall buildings can create a wind canyon effect with intense wind acceleration. These wind features can have a significant impact on the quality and safety of the public realm around the building. Airflows can also create noise when interacting with a buildings form or detailing, which can be annoying and detract from the amenity of spaces and building uses.

Buildings with a height of 1.5x the surrounding context height are likely to deflect wind downwards, which could result in discomfort or unsafe conditions for pedestrians. Tall building proposals should be tested and refined with the aid of physical wind tunnel testing or computational fluid dynamics modelling. This should consider all wind directions (not only prevailing winds) and be carried out at concept design stage.

Following testing, the design of tall buildings and the positioning, orientation and form of height on the buildings base should consider and aim to mitigate the impact of redirected wind, especially where it directly affects people. Setting back of the taller building element on the base or the provision of low-level canopies can help to reduce the impact of wind on the public realm. The design of the building and detailing of the façade should consider and mitigate against wind noise.

Image 2.27: Pedestrians shielding themselves against the wind beneath a tall building

OVERSHADOWING AND DAY LIGHTING

As the sun moves throughout the day tall buildings create a wandering shadow pattern that can significantly affect the quality and amenity of surrounding areas and uses. It can block sunshine from reaching neighbouring uses and overshadow public spaces, courtyards or gardens.

Direct sunlight has a clear amenity value and is important for the enjoyment particularly of balconies, private outdoor spaces, communal courtyards as well as public spaces. As part of the design phase the massing and siting of a development and its elements should be tested to minimise impact of shadowing, on it surrounding spaces and buildings.

Placing more floor space in lower parts of the building and moving the tall building element back from the open space or other sensitive area where shadowing is pronounced, can help to alleviate the problem.

Development should also consider daylighting, that is the amount of skyview visible, not only from indoors (within development and affected neighbouring developments), but also from open spaces, courtyards and the street space. Adequate skyview can make an area feel more pleasant. The skyview can be enhanced through the setting back of taller building elements from the building front or the modulation of its shape and form.

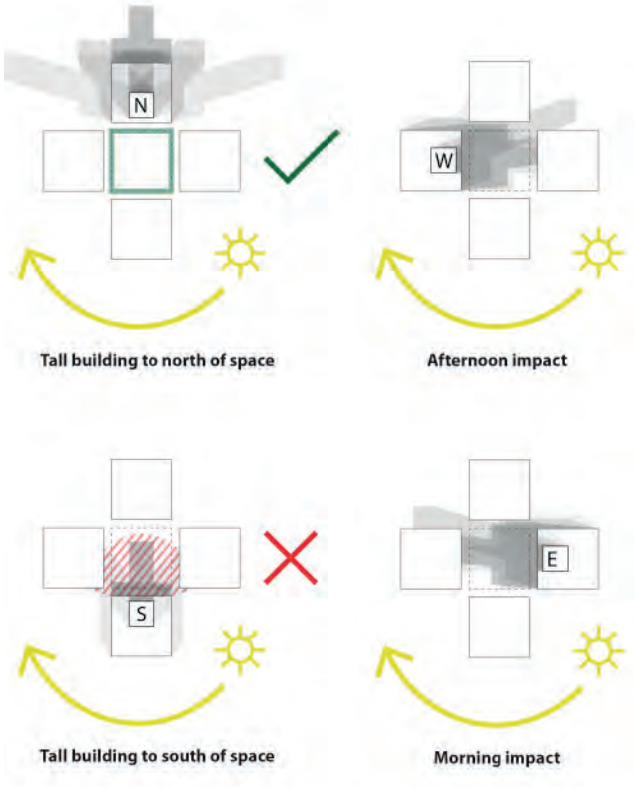

Figure 2.9: The orientation of tall buildings in relation to open space will effect levels of overshadowing and daylighting

LIGHT POLLUTION AND GLARE

Tall buildings, particularly if they are designed with large amounts of glazing can cause light pollution at night and glare from the sun during the day.

Excessive light pollution can be caused by light from within the building shining out of windows, which is particularly the case with office buildings that keep internal lights on at night. It can also be caused by feature lighting to the building or illuminated signs. In either case, there can be a negative impact on neighbouring residential amenity. Light pollution also has effects on wildlife, disrupting bats and migrating birds.

The design of tall buildings must consider light pollution and demonstrate that measures have been taken to reduce its effects, which may include a reduction in the amount of glazing.

Glare is caused by the sun reflecting off a building's facade and disturbing nearby residents and motorists. Glare is largely determined by the type of materials used (their finish and reflectivity) and the form of the building. Certain facade designs can concentrate the reflection of sunlight and in some cases can pose a safety risk by dazzling motorists. The design of tall buildings must demonstrate that they will not cause excessive levels of glare.

2.18 RESIDENTIAL AMENITY

Tall building design needs to pay particular attention in residential environments, to privacy, amenity and overshadowing. Inappropriately planned, designed and located tall buildings can detract seriously from the quality of a residential environment. Tall buildings may overshadow, overlook and dominate their immediate surroundings and have harmful effects on living conditions, private gardens, patios and public spaces.

Tall buildings can represent a jarring contrast when built in low-rise housing areas, and have the effect of visually demeaning the surrounding area. Tall buildings are often impersonal and therefore weaken the sense of ownership of an area by its people.

They may also undermine residential amenity and privacy of existing and future residents through loss of day and sun-lighting and overlooking.

SUN AND DAYLIGHTING

Central core in higher and tall developments make provision of dual aspect dwelling difficult often leading to a prevalence of single aspect units. Single aspect units can cause issues of insufficient levels of ventilation and overheating from sun exposure. Overheating can be a particular problem in taller buildings as they are generally more exposed to the sunlight and less able to benefit from contextual shading. Furthermore, tall buildings often have a greater level of glazing to maximise on views from the building, which without effective levels of (external) shading may create sun-traps. Overheating of homes in tall buildings may be exacerbated where the ability to open window is restricted for safety reasons.

North facing single aspect units are problematic as they do receive little or no direct sun-light, and in taller buildings are less likely to benefit from reflected secondary light. As a general principle north facing units should be avoided. Single aspect units, especially where they are set back behind or underneath balconies may also suffer from lack of daylight, especially in the inner parts of the accommodation, where they may require artificial lighting even during day-time.

Image 2.28: Tall buildings, if improperly sited and designed, can block daylight and result in dark spaces in residences and public realm

OVERLOOKING, PRIVACY AND OUTLOOK

High density development that includes tall buildings on compact sites can result in overlooking between dwellings and lack of privacy. This is largely to do with an overdevelopment of sites where dwellings are facing one another without adequate separation. In this scenario, residents can feel like their homes are on show and exposed. It may result in curtains and blinds being constantly closed to avoid real or perceived overlooking, which further reduces daylighting and the quality of life of residents. Other impacts of too-close development is that the outlook from dwellings, particularly those on lower floors, can be dominated by other buildings, creating a claustrophobic and dark outlook, a lack of sky view, and reduced daylight reaching the interior of buildings.

To combat this, many authorities stipulate a minimum separation distance between buildings, which may be different for tall buildings compared to lower rise development. For instance, the City of Toronto stipulates a minimum separation distance of 25m between tall buildings and this distance is expected to increase as buildings become taller. This approach is usable as the city is organised on a grid with standard road widths and development blocks. However, in more complex environments where each tall building proposal will have unique circumstances, a minimum separation distance may be restrictive or arbitrary.

However, local authorities can be proactive in setting preferred separation distances on a site by site basis. Promoters of tall buildings should demonstrate that adequate separation has been incorporated into their scheme. Sites where adequate separation cannot be maintained may be inappropriate for multiple tall buildings. Proposals near to existing tall buildings, especially in clusters, must demonstrate that they will be appropriately separated. Privacy should also be safeguarded through the design of the building and aspect of dwellings and private open spaces, for instance through orientation, articulation and setbacks.

Image 2.30: This development makes use of a central open space to provide a wide separation distance between residential units (Sluseholmen, Sweden)

COMMUNAL AND PRIVATE AMENITY SPACES

Living in a tall building, particularly in the upper floors, can result in a sense of separation from the outside world. Local authority planning policy usually stipulates minimum outdoor private amenity space. This may be in the form of communal courtyards and gardens, private gardens at ground floor level, balconies, terraces or communal rooftop open space. These spaces are important within tall buildings to reduce any feeling of isolation or claustrophobia.

Where communal open space is provided, it should typically be at the centre of the development with substantial overlooking. These spaces should be accessible for those who require level access, such as wheelchair users, and should be orientated to maximise sunlight and daylight. An appropriate separation and buffer between private open space (such as ground floor gardens and patios), residential windows and communal open space should be created, to maintain privacy and make clear what areas can be used by anyone.

On upper floors, typically balconies will be the main outdoor amenity space for residents. Balconies should be large enough so residents can make effective use of them, for instance for a table and chairs. Tall buildings with dual aspect dwellings should explore the potential of having more than one balcony on different sides of the building to maximise use throughout the day. However, excessive or poorly designed balconies can add considerable bulk to a building and result in overshadowing of windows, and so should be designed carefully.

External balconies can provide generous amenity space beyond the footprint of the building. However, on upper floors where wind speeds are higher, external balconies can feel exposed and unsafe. In these situations, recessed balconies may be more appropriate as they provide a sense of shelter and enclosure and may therefore be used more by residents. The perception of safety on balconies should be considered through the use of deep sills, recessed balconies, and the materiality of the balcony and balustrades.

Developments that feature family housing units should provide outdoor play space for children based on an assessment of estimated child occupancy. Play spaces should be accessible for children who require level access. The internal arrangement of the building should be designed so family sized units overlook children's play areas.

Image 2.29: Example of recessed balconies (Fitzrovia, London)

2.19 INFRASTRUCTURE REQUIREMENTS FOR TALL BUILDINGS

ACCESS AND SERVICING

Tall buildings by their nature require space for services such as utilities, central rubbish disposal, deliveries, loading and maintenance. In standalone tall buildings, these “back of house” activities can take up significant amounts of the ground floor frontage, creating a poor pedestrian environment and unattractive facades. Generally, in tall buildings that are incorporated above a podium or larger development block, back of house activities can be incorporated with less impact on the streetscene.

Servicing should be concealed behind and within buildings, and generally access should be provided at the rear of the building via a separate lane, away from the public realm. The extent of the site dedicated to these activities can be minimised through shared access, a comprehensive design approach and efficient layouts. If servicing must face the public realm, due to site constraints or to optimise the distribution of active frontages around the building, it should be designed in such as way as to minimise its visual impact.

Service entrances should use high quality materials and can become a design feature of the building, incorporating artwork or interesting architectural detailing. Entrances should be recessed to reduce their prominence in the streetscene, and can be screened with landscaping or architectural elements.

Tall buildings can place a greater demand on infrastructure as a consequence of a large number of people locating to an area in a comparatively short period of time. This can have a number of consequences:

UTILITIES AND WASTE

Tall buildings tend to use more energy due to the requirements for lifts, servicing, water, mechanical ventilation, cooling and lighting. This places a particular strain on utilities providers to respond quickly and effectively to meet the residential or commercial requirements. Utilities planning needs take place as early in the development cycle as possible to avoid problem later on relating to utilities provision. Waste management and disposal can also be challenging with sufficient space required for storage and additional strain placed on the waste collections and the local road network.

COMMUNITY FACILITIES

Tall buildings, particularly those with family sized residential units can lead to significant additional pressure and demand for community facilities including schools places and on social and health care. This need must be planned early with educational, social and health care providers. Where possible these requirements should be planned into schemes as sites that can accommodate such provision may not be available.

TRANSPORT AND CONNECTIVITY

Planning for tall buildings close to existing stations and public transport provision is essential. However, assessment of capacity is required and a multi modal approach should be taken that considers the potential to enhance connectivity through new bridges, cross river access and enhanced public realm to overcome infrastructure barriers. The location, design and facilities of tall buildings, as well as the design of the surrounding street network should encourage walking and cycling over private car use.

Figure 2.10: Tall building at Holloway Tube Station, London

2.20 TALL BUILDINGS AND SUSTAINABILITY

SUSTAINABILITY

Tall buildings are less sustainable than medium rise buildings of similar floor space. Due to greater structural and servicing requirements, tall buildings are more resource and carbon intensive to construct per unit of floor area than low or medium rise buildings[1].

The operation of tall buildings is also more energy intensive and expensive, due to the vertical travel and servicing needs, the high façade to floor area ratio, the need for mechanical ventilation and cooling, as well as the challenges of maintaining and replacing cladding and other building components at height. Due to the prevalence of glass and other light façade materials tall buildings are susceptible to solar gain and overheating, often requiring intensive mechanical ventilation and hence greater amounts of carbon energy. A research project at University College London[2] calculated that *'electricity use, per square metre of floor area, is nearly two and a half times greater in high-rise office buildings of 20 or more storeys than in low-rise buildings of 6 storeys or less'.*

Shadows from towers may result in the loss of daylight and solar gain in neighbouring developments, resulting in greater reliance on artificial light in affected properties.

Tall buildings are highly specialised structures. They are also typically less adaptable to changing economic circumstances and use requirements, and often need resource intensive and expensive refurbishment, or even complete re-development, when they become dated in layout, performance or appearance.

Tall buildings should aim to enhance their energy efficiency through the use of latest sustainable design and construction practices and technologies, with detailed consideration given to the built form configuration and orientation, energy sources and conservation, material source and lifecycle, internal temperature control and use of natural ventilation, water use and conservation and mitigation of water run-off, waste management and on-site ecology.

Consideration should also be given to how to reduce the embodied energy in the building and enhance the long-term energy and resource efficiency by designing for flexibility and building adaptation. Renewable energy generation and the installation or future proofing for Photo Voltaics (PVs) should also be considered.

Figure 2.11: External shading can help to control indoor air temperature, reducing the need for air conditioning during hot weather (Millenium Village, Greenwich)

1 https://www.theguardian.com/artanddesign/2020/jul/11/skyscrapers-wasteful-damaging-outmoded-time-to-stop-tall-buildings

2 https://www.ucl.ac.uk/news/2017/jun/high-rise-buildings-much-more-energy-intensive-low-rise

CLIMATE RESILIENCE

Tall buildings, particularly their upper floors, are typically exposed to direct sunlight much more than lower rise development. This is particularly true when they are designed with large amounts of glazing and floor to ceiling windows. Whilst this may be welcomed during cooler parts of the year, during the summer it can lead to overheating.

Summers in Britain are projected to become hotter with more frequently occurring heat waves as a result of climate change. The design of tall buildings should take into account how the local climate will change so residents are protected from extreme weather. In the instance of heat waves, this may include external shading structures and the ability for residents to control the amount of shading, for instance through shutters.

Instances of flooding are also expected to increase in Britain and this must be taken into account when locating tall buildings. In certain instances, it may be inappropriate to include residences on ground floor if these would be at risk of flooding.

Innovative solution to urban greening, green and blue infrastructure should be explored in the design of tall buildings. This may include vertical greening, green walls and green or blue roofs.

Image 2.31: Bosco Verticale ("Vertical Forest") In Milan is a pioneering example of vertical greening on a tall building

2.21 APPEARANCE, DESIGN AND MATERIALITY

Due to its wider visibility and prominence the architectural quality of a tall building needs specific attention. This should cover the following aspects:

ARCHITECTURAL FORM

Depending on its width and depth a building might appear very different from various angles. Generally it can be distinguished between a point block, where the width and depths are similar, and a slab block where the width sometimes significantly exceeds the depth of the building. The impact of tall slab blocks on their immediate surrounding is usually more severe, particularly in terms of overshadowing and wind funnelling. They also can appear very different from different directions, slender from one angle and bulky from the other, which might affect their distinctiveness and legibility.

SLENDERNESS

A slender tower with a strong sense of verticality, 'reaching to the sky', is commonly considered more attractive and elegant, while a large and bulky tall building can be found intrusive and out of scale in the skyline. The slenderness of a tower can be expressed through the height to width ratio - the greater the ratio - the more slender the building. The slenderness of a building typically is appreciated only from further away, along a vista, across a water body or across the rooftops of the surrounding buildings.

Image 2.32: The skyline of Vancouver is characterised by slender towers

Floor plan efficiencies that require a certain footprint size within the tower element can make designing a slender tall building challenging, especially in areas where heights are limited to local landmarks only. Here the modulation of the building form and other design measures can help achieve a sense of verticality. For example, the bulk of a building can be subdivided to visually appear composed of a number of vertical elements rather than a single form.

COMPOSITION AND SUB-DIVISION

A tall building can benefit from its form, or architecture, changing with its height. As the eye wanders up and down the shaft of the tower and its supporting base, subdivision and other modulation of form and the façade will make the building more interesting and distinctive. Amenity spaces may be used as dividers within a tall building.

Stepping floors back with increasing height can also make a building appear more slender. A tower that is a simple extrusion of a typical floor plan with a repetitive façade may appear monotonous and unexciting.

A tall building has three compositional elements that should be expressed: the base, the shaft and the top. The top part of a tall building, as it ends the vertical mass of the body, needs careful articulation. A tower that lacks an expressed top usually appears incomplete and unfinished. The top is normally seen in views from further away and its shape and impact on the skyline will need to be considered.

Some feature towers apply a sculptural approach to the entire building, where the shaft and top of the building flow into each other and are expressed more subtlety through the modulation of the form of the building. In more traditional tall buildings the distinction between the shaft and top should be more clearly expressed. The base of the tall building is where it meets the ground, which determines how it is experienced from the street and how well it integrates with and responds to the townscape.

In relation to their base two principal types of tall buildings can be distinguished, the stand-alone tower, and the tower that sits on top of a podium or develops out of an urban block.

Stand-alone towers can be more iconic sculptural features. However, due to the concentration of functions at the bottom of the tower and limited footprint, they often establish a poor relationship with the public realm around the base. Towers that develop out of an urban block or podium can usually better internalise their servicing requirements and establish an active relationship to the street space all around the block. The more the tower element sits back from the building line of the street block the lesser will its impact be on the scale and enclosure of the street space and the character of an area.

Setting back the tower can also improve the micro climatic condition in the street space around the building. Towers developing out of urban blocks relate better to the human scale perception of the street space, and are generally the preferable type of tall buildings in an urban context.

Image 2.33: Tall building in Barcelona that makes use of a novel sculptural form

ORIENTATION

As a tall building will be visible from many places it must have an outlook to all sides. In some instances a tall building may benefit from a principal orientation towards a particular side or direction, for example to address an important view or to orientate toward river, waterfront or open space. However, buildings that are recognisable as a single coherent sculptural object from all around are easier to recognise than buildings that appear different from different angles. While a tall building may assume a special response towards a particular side or direction, all facades should have openings or windows and provide an active frontage. No blank frontages should be permitted.

MATERIALITY AND DETAILING

The materiality, detail and texture of façade, its colour in relation to its back-drop, such as the sky or other tall buildings, its night time impression, feature and aircraft warning lighting, are all important aspects that affect the appearance and impact of a tall building in views both from afar as well as close up.

The choice of facing materials is often important to assist in visually weaving the new building into its established surroundings, or where appropriately provide a contrast.

At design stage they need to be carefully tested through three-dimensional modelling and visualisations to fully understand their impact.

Consideration should be given to how design detailing is perceived both from close up and in long distance views. Materials should be durable and offer longevity, and should be fully justified in relation to the typical palette of materials and colours in its location.

All aspects of the design should be represented in accurate visualisations including façade details to allow a detailed three dimensional understanding of the tall building proposals from all sides and from important views and to allow an assessment of its landmark qualities.

Image 2.34: Many contemporary tall buildings have a two-dimensional and artificial appearance

LIGHTING

As previously discussed, the lighting of buildings can have negative impacts on residential amenity and wildlife. However, the careful design of architectural lighting can enhance the night time appearance of a building and contribute to an interesting skyline.

In the case of special, district landmark scale tall buildings, it may be encouraged to light the facade of the building to celebrate the building and enhance its appearance at night. However, it must be carefully designed to avoid excessive light pollution and nuisance to residents of the building and surrounding homes. Lighting should always be energy efficient and designed in consultation with an ecologist to minimise impact on biodiversity, if relevant.

However, tall buildings should avoid excessive illuminated signs and advertisements that do not contribute to the architecture of the building or its place within the skyline.


MASSIVE
STOCK
Lebara
Local area map

3 DEFINITION OF TALL BUILDINGS

3.1 INTRODUCTION

This chapter provides a method for defining and classifying tall buildings that is specific to RB Greenwich. Understanding at what height a building becomes “tall” is essential for applying the relevant policies and design principles to a development proposal.

The definition is based on the definition of tall buildings as tall relative to their surrounding context, as discussed in Chapter 2 of this document. This definition classifies local, district and metropolitan scale tall buildings.

This chapter provides a resource for understanding building heights in the Royal Borough and categorising tall buildings. It covers the following aspects:

- Building heights above ground;
- Building heights above Ordnance Datum;
- Context heights;
- Tall building definition for RB Greenwich; and
- Existing and proposed buildings above 10 storeys in the borough.

BUILDING HEIGHTS

Figure 3.1 illustrates the maximum heights of all the buildings in RB Greenwich. Building heights are presented in metres above ground, based on the best available Lidar data. Some small parts of the borough have no Lidar data available and so are shown in grey as the building heights here are unknown. The number of storeys is provided alongside the metre range based on a standard of 3m per storey, which is typical of residential buildings. This is included for the benefit of the reader as using metres alone is difficult to visualise. In reality, the number of storeys each building has may differ depending on the floor to ceiling heights or the presence of tall elements such as spires.

Generally, the majority of buildings are low-rise, being 1-4 storeys in height. Height increases at Woolwich, Greenwich town and, to a lesser extent, Eltham. Greenwich town and Woolwich display a wide variety of building heights, from 1-2 storeys up to the equivalent of 20 storeys. Greenwich Peninsula is emerging as a cluster of taller buildings, with towers of roughly 30 storeys and mid-rise block development.

Outside of the centres, local high points can be seen at churches, post-war estates and contemporary high rise apartment buildings. The Millennium Dome stands out as a high point and landmark for the borough.

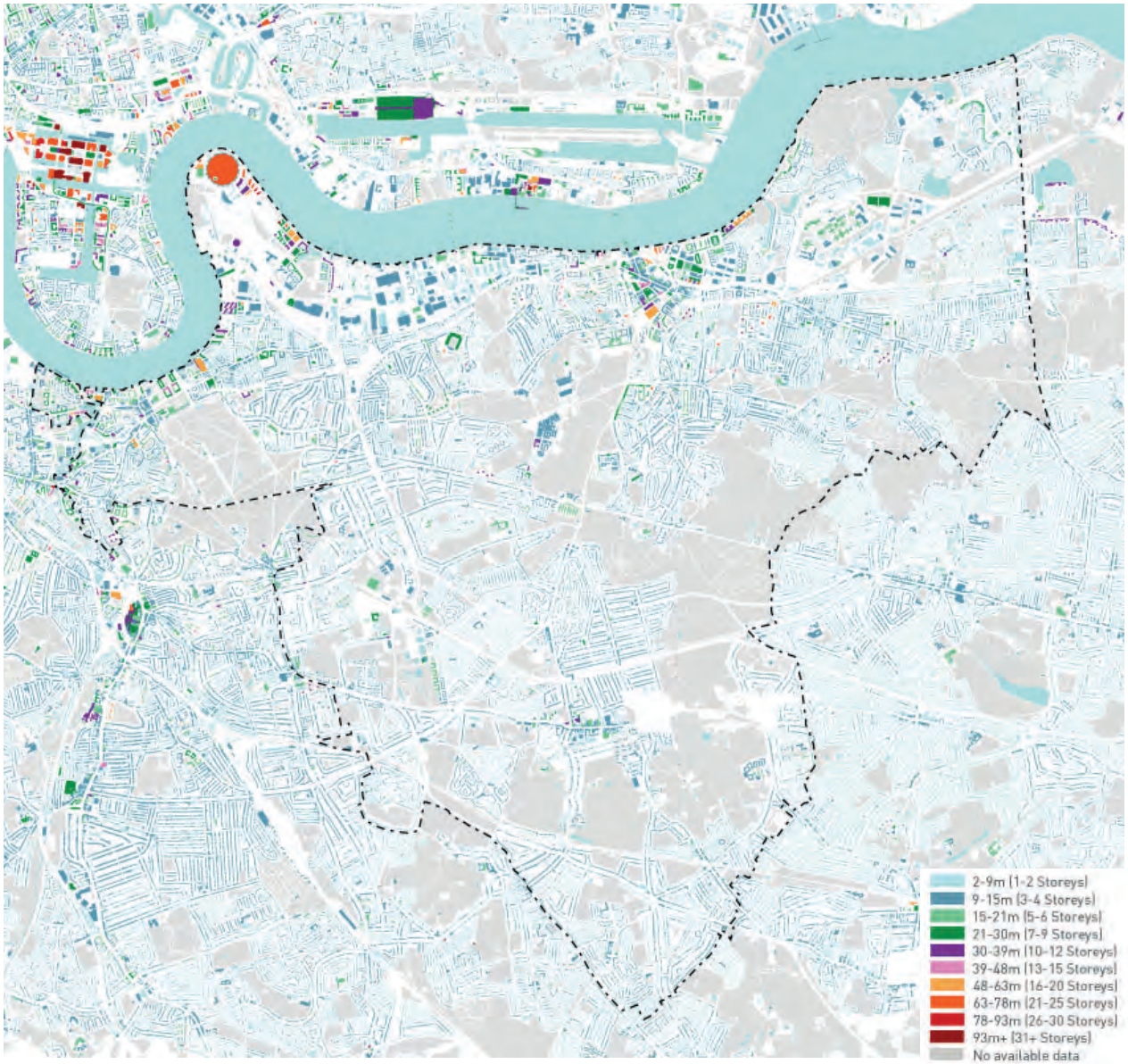

Figure 3.1: Existing building heights

BUILDING HEIGHTS ABOVE ORDNANCE DATUM

Figure 3.2 displays the height of buildings in RB Greenwich above ordnance datum (AOD).

Height above ordnance datum (AOD) essentially means the height of an object or area above the standard mean sea level. This can be used to express the “true height” of a building taking into account the underlying topography. This is key to understanding the skyline of a place and how topography makes some buildings more prominent and others more hidden.

The topography of the borough means that the highest buildings above sea level are in fact the modest 2 storey houses and Memorial Hospital at Shooter’s Hill, which rise to approximately 140m AOD.

In contrast, the much taller buildings on the banks of the Thames appear much lower due to the topography sloping down towards the river.

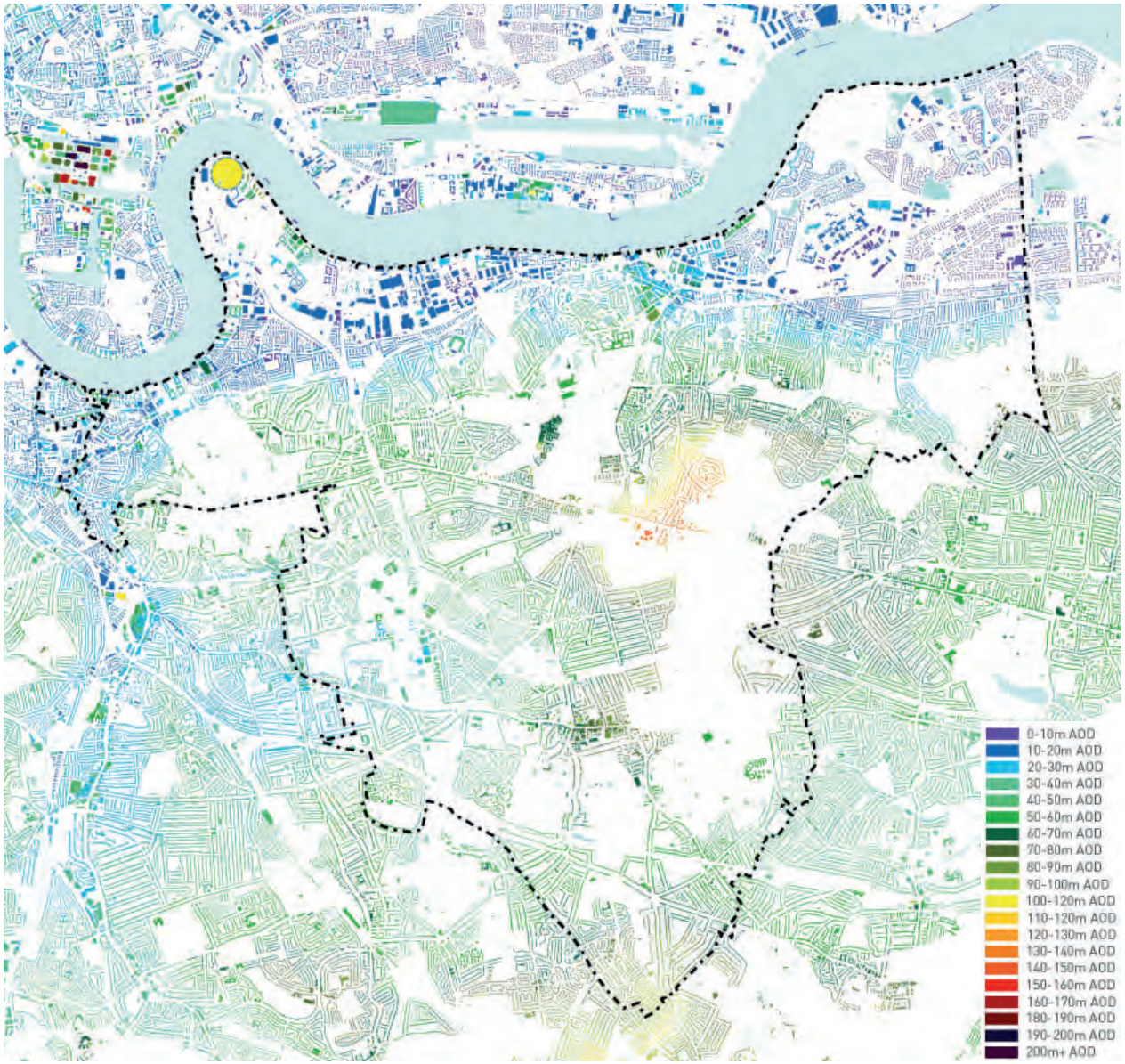

Figure 3.2: Existing building heights above ordnance datum (AOD)

3.2 CONTEXT HEIGHTS

As previously discussed, tall buildings are tall relative to their context. As such the context height is an important factor in defining a tall building and in determining whether or not its height is proportionate to its wider role and significance in the context of the city.

Building heights tend to vary between and within areas, and it requires urban design expertise to establish what is the relevant context height for a development to consider in a certain area. To assist in this process, this study provides detailed mapping of context heights across the city shown in Figure 3.1 on page 54. Areas shown with a hatch are those that have a high variance in heights, indicating a lack of coherence.

Table 3.1 provides a description of each context height category. The majority of the borough is in category B, displaying a context height of 2 storeys, which reflects the domestic scale of the borough's suburban residential areas. Context heights are higher in town centres and many post-war estates (3-5 storeys). The most intense context heights are post-war high rise estates and intense contemporary mixed use developments. Three sites are in the category of 10+ storeys, which reflects high density clusters of high rise buildings that create their own character.

Proposals for tall buildings will be expected to refer to context heights in justifying the approach to the height of a tall building. Where more than one context height area is present around a site, at the interface between context height areas, or where a new general height is emerging, it is good practice to consider the proposals in the round and to establish an understanding of the prevailing height context from within which the development is going to be experienced.

Table 3.1: Context height categories

Code	Context Height	Range (m)	Area Description
A	**1 storeys** (4m)	4 - 6m	Small domestic scale
B	**2 storeys** (6m)	6 - 9m	Domestic scale
C	**3 storeys** (9m)	9 - 12m	Local centres, large domestic scale, industrial
D	**4 storeys** (12m)	12 - 15m	Peripheral urban scale
E	**5 storeys** (15m)	15 - 18m	Intense urban scale
F	**6 storeys** (18m)	18 - 21m	High density urban development
G	**7 storeys** (21m)	21 - 24m	High density urban development
H	**10+ storeys** (30m+)	30m+	High rise cluster

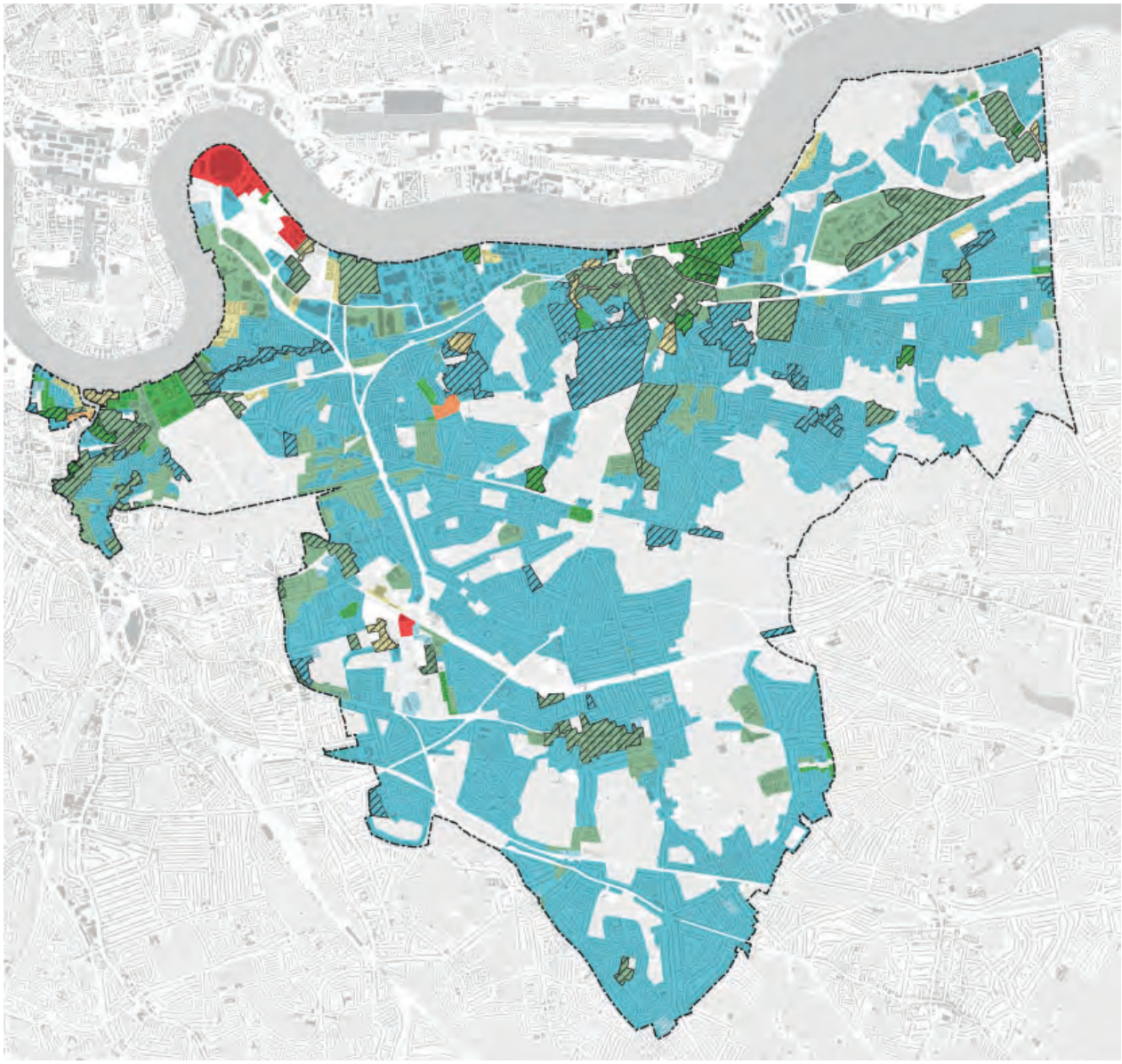

Figure 3.3: Context Heights - Borough

Figure 3.4: Context Heights - West District

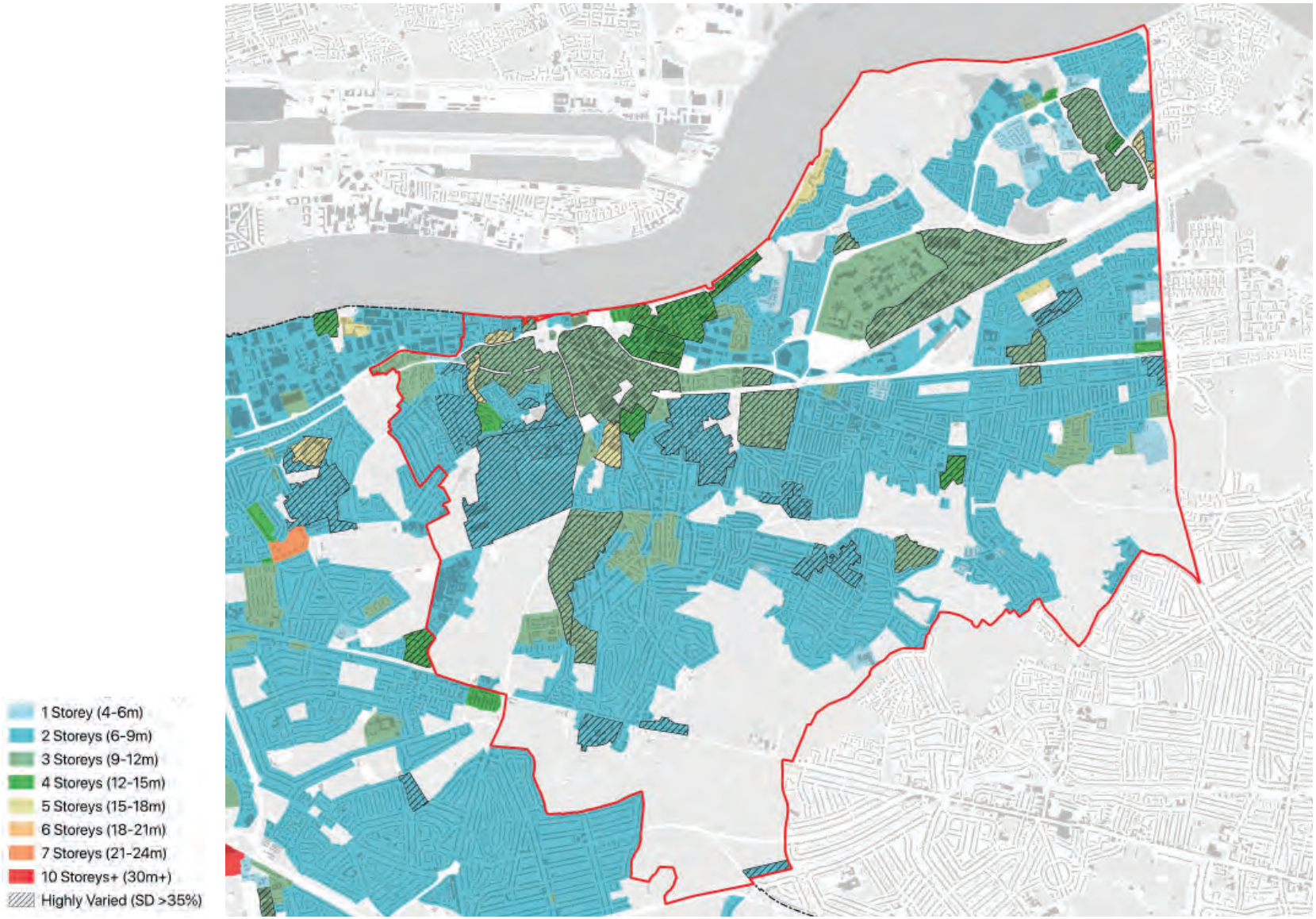

Figure 3.5: Context Heights - East District

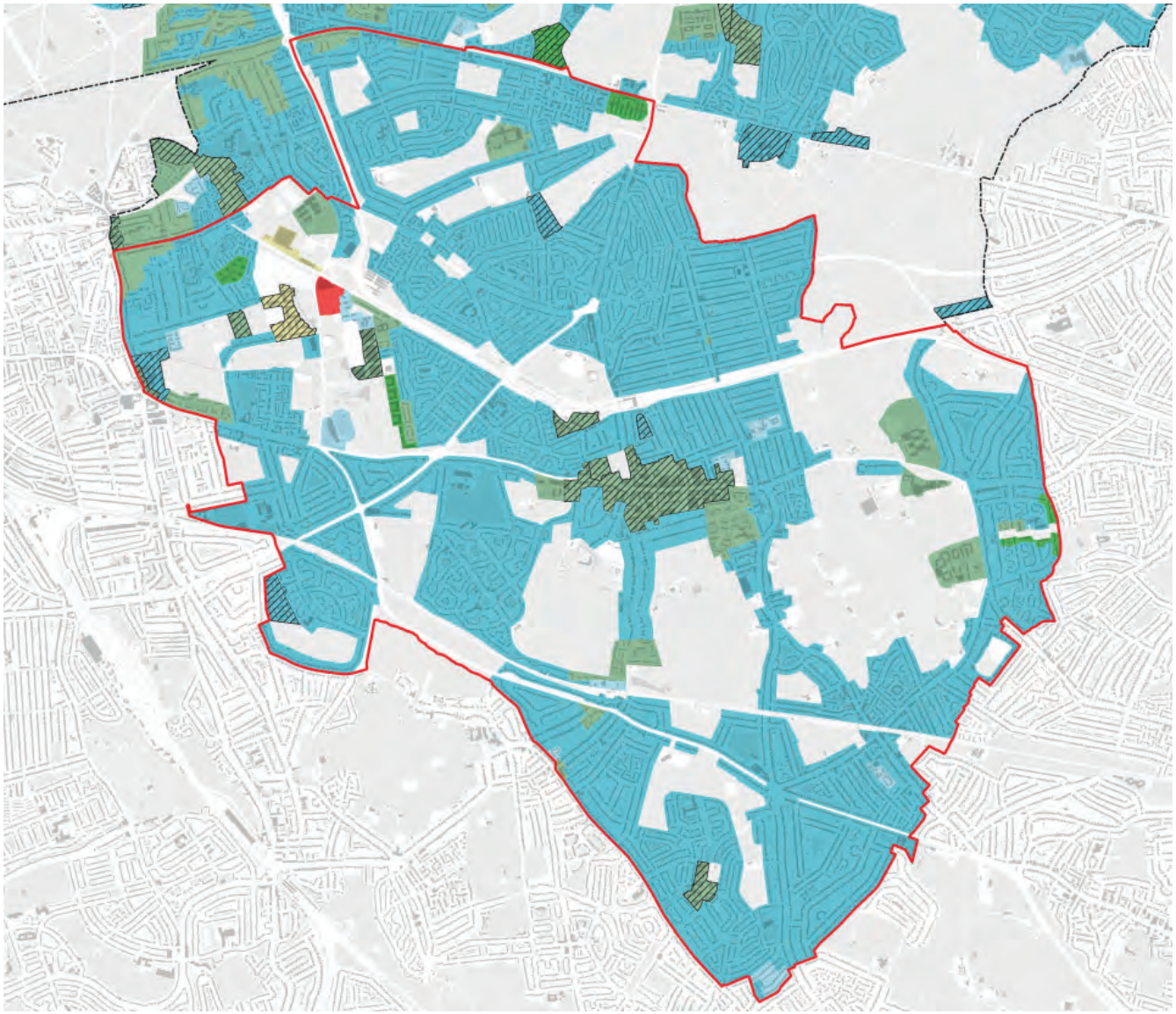

Figure 3.6: Context Heights - South District

3.3 DEFINITION OF TALL BUILDINGS IN RB GREENWICH

The definition of tall buildings presented in this study (see Chapter 2) defines a tall building in relation to its context height. This theoretical approach has been adapted specifically to the RB Greenwich context and presented here.

Buildings that are less than twice (2x) the context height are not considered to be tall buildings, but merely "Large Buildings". Large buildings may still have a considerable impact on their local context but should be considered in respect of the authority's general design policies. A building that is twice the context height or above is considered a tall building. Within that broad definition are three categories:

- A **Local Scale Tall Building** is defined as between 2x and 3x the context height. They are the most common type of tall building and have a localised level of significance and impact. The London Plan (2021) Policy D9 states that the local definition of a tall building must not be less than 6 storeys (18m). Table 3.2 defines Local Scale Tall Buildings against each context height found in the Royal Borough, and reflects the London Plan's guidance on this matter.
- A **District Scale Tall Building** is defined as between 3x and 5x the context height. They are of a significant scale and have impacts over a wide area.
- A **Metropolitan Scale Tall Building** is defined as being over 5x the context height. There will naturally only be a small number of opportunities for Metropolitan Scale Tall Buildings in London, and each must be robustly justified.

District or metropolitan scale building therefore relate to the wider context height against which a tall building will be experienced, not the local context height.

Broadly speaking, the wider context height in the north of the Borough is four storeys, whilst in the south it is three storeys. In this context a district scale building would be between 12 and 20 storeys in the north, and between 9 and 15 storeys in the south, whilst a metropolitan scale building would be above 20 and 15 storeys respectively. In reality the definition of a building is considered a district or metropolitan tall building is more complex and no general definition can be provided.

Table 3.2 provides the contextual definition for tall buildings. However, any building above 30m must undergo additional design scrutiny as if it were a tall building due to its substantial height, even if locally defined only as a 'Large Building'.

LOCATION OF TALL BUILDINGS

District and metropolitan scale buildings should only be promoted in urban areas well served with infrastructures and facilities that have a character and built form that can assimilate the height, scale and massing of these buildings and accommodate associated activities. There will only be a few places in the Borough where district or metropolitan scale buildings are appropriate (see Chapter 8). Local Scale tall buildings should generally only be promoted in areas identified in Chapter 8. Other locations for Local Scale Tall Buildings may be identified if they are strongly justified against the Tall Buildings Objectives (Chapter 4).

Table 3.2: Local Scale Tall buildings definition for RB Greenwich

Code	Context Height	Large Building Less than 2x Context Height	Local Scale Tall Building 2-3x Context Height
A	**4m** 1 storeys	Less than 18m Less than 6 storeys	18m - 27m 6 - 9 storeys
B	**6m** 2 storeys		
C	**9m** 3 storeys		
D	**12m** 4 storeys	Less than 24m Less than 8 storeys	24 - 36m 8 - 12 storeys
E	**15m** 5 storeys	Less than 30m Less than 10 storeys	32m - 48m 10 - 15 storeys
F	**18m** 6 storeys	Less than 36m* Less than 12 storeys	36m - 54m 12 - 18 storeys
G	**21m** 7 storeys	Less than 42m* Less than 14 storeys	42m - 63m 14 - 21 storeys
H	**30m** 10+ storeys	Less than 60m* Less than 20 storeys	60m - 90m 20 - 30 storeys

* All buildings above 30m will require additional design scrutiny as if they are tall buildings, due to their significant absolute height.

3.4 EXISTING AND PROPOSED BUILDINGS ABOVE 10 STOREYS

Existing and emerging buildings above 10 storeys in height are shown in Figure 3.7, with extracts of the three Districts shown on the following pages. As discussed in Section 3.3, buildings of 6 storeys or above could be considered as tall buildings depending on their context height. However, to provide a simpler snapshot of substantially tall buildings in RB Greenwich, this section only discusses those above 10 storeys (or equivalent).

The Royal Borough of Greenwich has historically seen tall building elements in the form of church spires and industrial chimneys, which are identified on the adjoining with stars. These are most present in historic Greenwich town, but also form part of the skyline of Woolwich, Eltham and other historic centres in the borough.

Other significant, historic tall buildings include the towers of the Old Royal Naval College and Shooter's Hill Water Tower.

During the post-war period, tall buildings were built to house a growing population and regenerate bomb damaged or failing urban areas. These estate towers are particularly present around Woolwich town centre and are typically 10-15 storeys in height. These tend to have a disorienting effect on the urban fabric as they usually do not mark places of significance.

In the last 15 years, the Royal Borough has seen significant amounts of new tall building development, with more coming through the planning system. These are largely concentrated

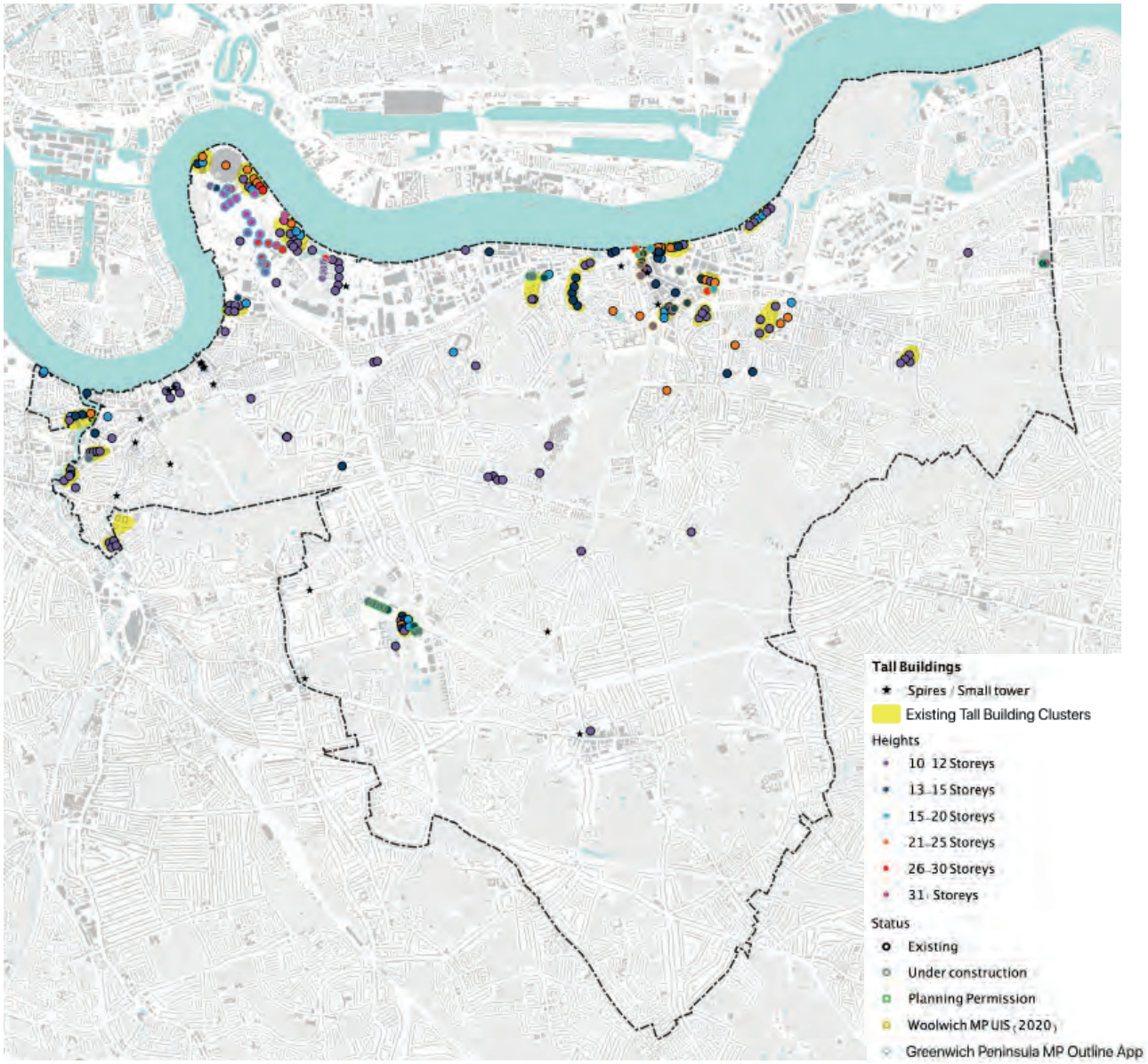

Figure 3.7: Existing and proposed buildings above 10 storeys - Borough

in Greenwich Peninsula, with heights rising above 31 storeys, Woolwich riverfront and Greenwich riverside/Deptford Creek. This reflects the city-wide housing shortage and rising land values, which encourage high density development forms.

A cluster of tall buildings has formed as part of the Kidbrooke Village regeneration in the south district, in an otherwise low-lying area.

Planning applications for tall buildings have been granted permission or are under consideration in Greenwich Peninsula and Woolwich town centre, which would have a transformative effect on these locations.

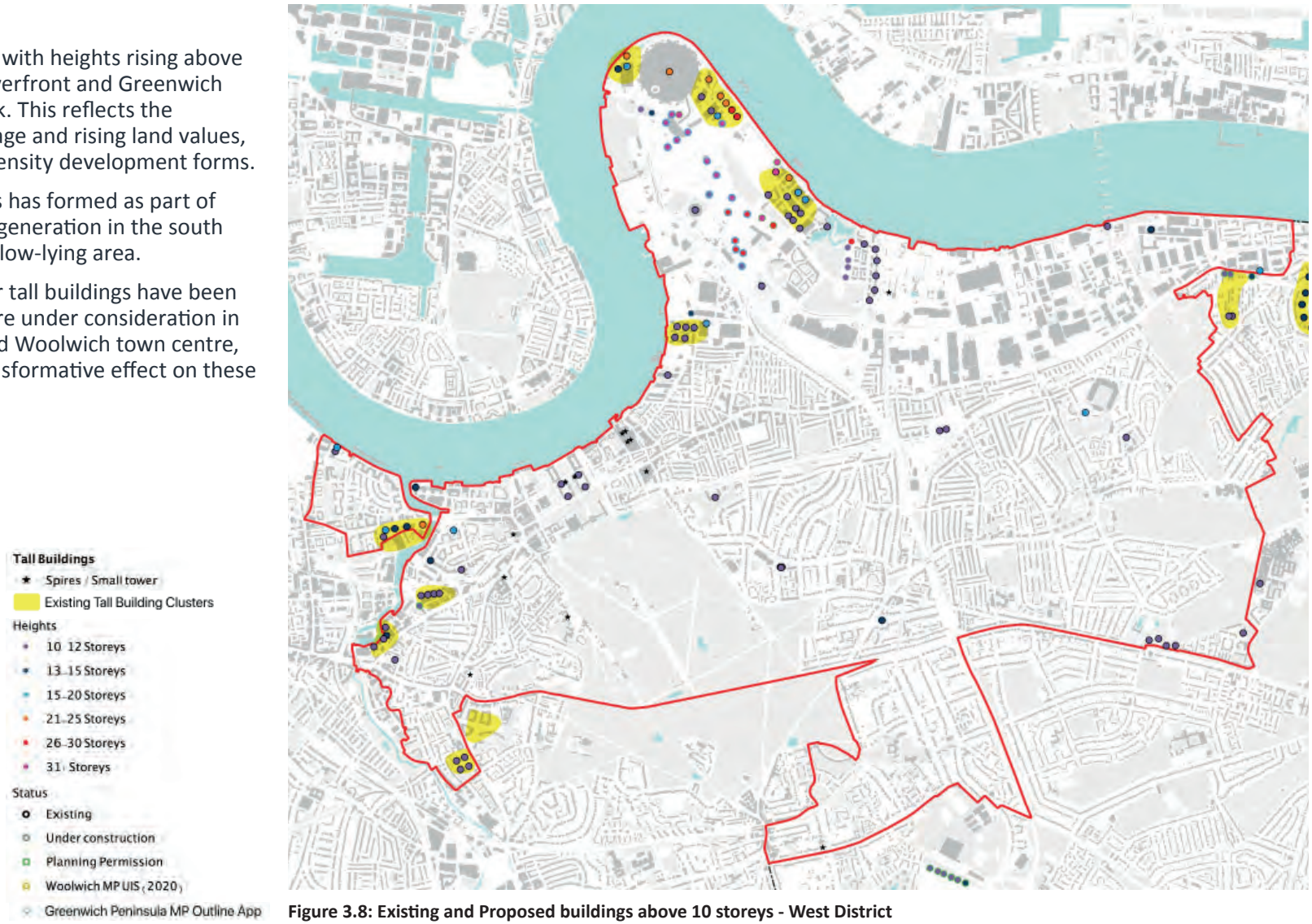

Figure 3.8: Existing and Proposed buildings above 10 storeys - West District

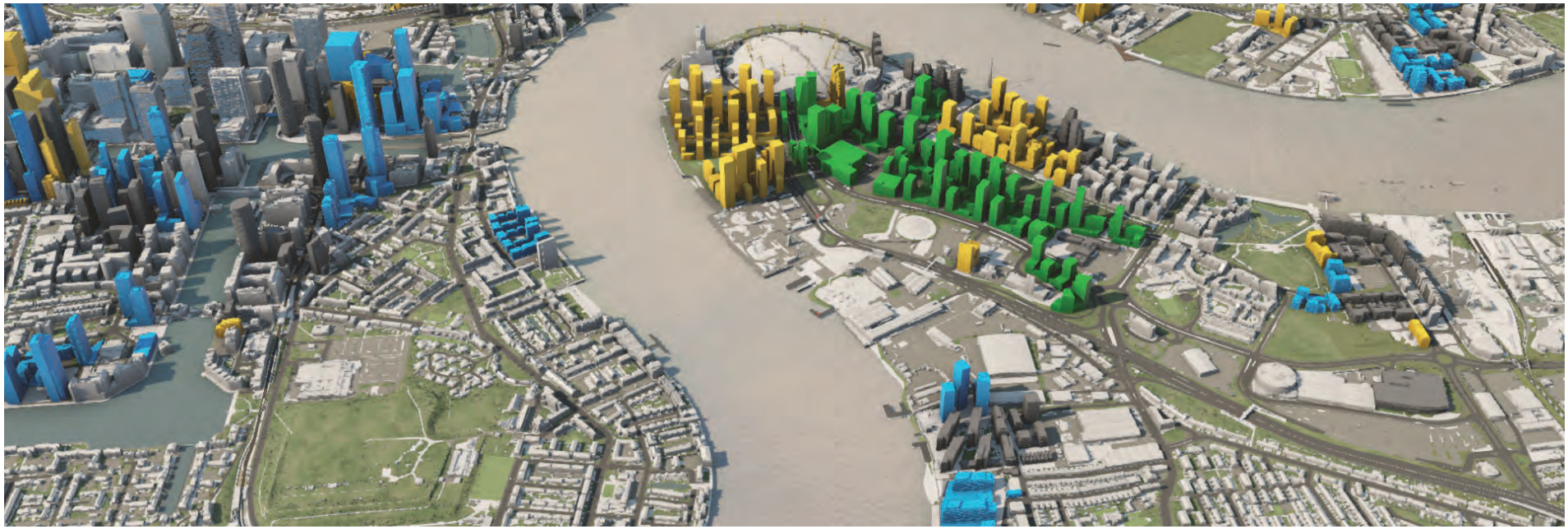

Figure 3.9: Greenwich Peninsula - existing, permitted and under construction developments (VUCity)

Recently Built

Under Construction

Permitted (Full Planning)

Outline Consent (showing maximum height envelope)

Figure 3.10: Greenwich - existing, permitted and under construction developments (VUCity)

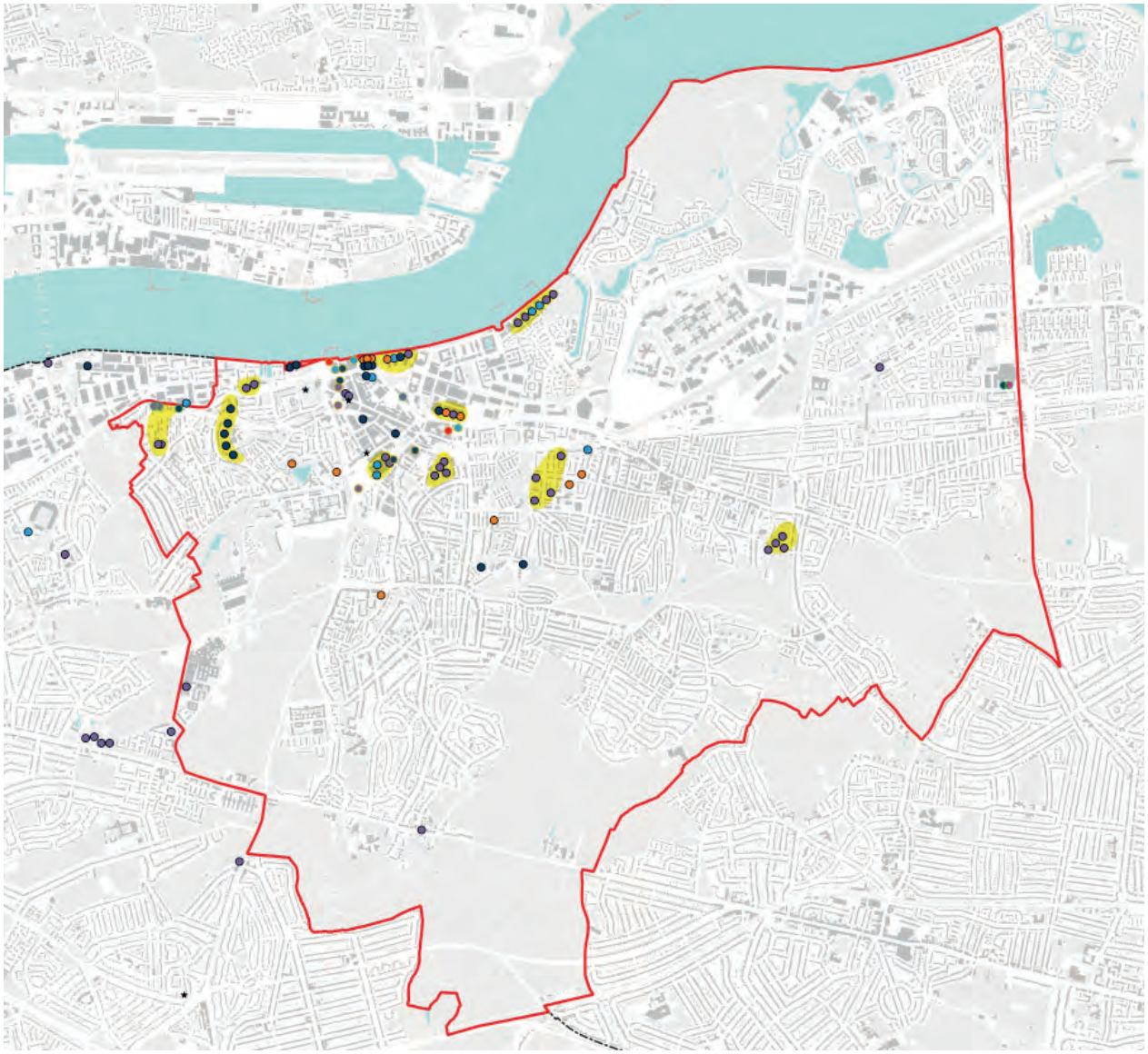

Figure 3.11: Existing and Proposed buildings above 10 storeys - East District

Figure 3.12: Woolwich - existing, permitted and under construction developments (VUCity)

Figure 3.13: Abbey Wood - existing, permitted and under construction developments (VUCity)

Recently Built

Under Construction

Permitted (Full Planning)

Outline Consent (showing maximum height envelope)

Figure 3.15: Kidbrook Village - existing, permitted and under construction developments (VUCity)

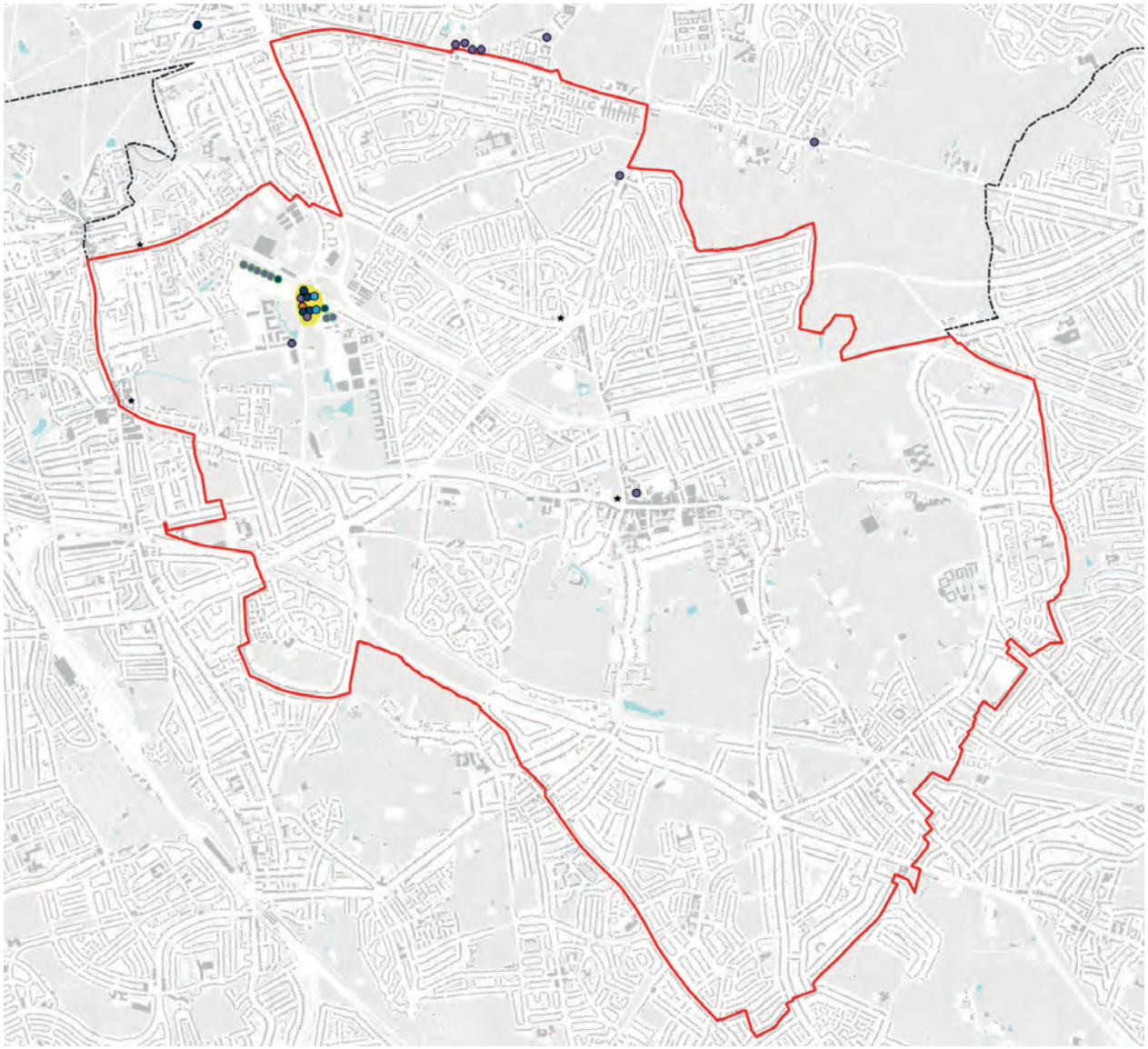

Figure 3.14: Existing and Proposed buildings above 10 storeys - South District


GIVE
WAY

4 TALL BUILDING OBJECTIVES

4.1 INTRODUCTION

Nine objectives have been identified, which guide the role of tall buildings in RB Greenwich. Proposals for tall building should aim to fulfil all objectives. The objectives are listed in no particular order and all have equal importance. Tall buildings should:

- Preserve the Outstanding Universal Value of Maritime Greenwich World Heritage Site and the significance of heritage assets;
- Be sustainable and innovative developments;
- Be of high quality architectural design and appearance;
- Have a clear and justified purpose;
- Deliver comprehensive development as part of a proactive, plan-led approach;
- Protect and enhance the Royal Borough's landscape character and river front;
- Enhance legibility and enable a meaningful understanding of the urban fabric and wider Borough;
- Protect and enhance townscape views and the skyline;
- Result in high quality places where people want to live and spend their time; and
- Respond and integrate well with the existing townscape and character, and to strengthen the sense of place.

PRESERVE THE OUTSTANDING UNIVERSAL VALUE OF MARITIME GREENWICH WORLD HERITAGE SITE AND THE SIGNIFICANCE OF HERITAGE ASSETS

The Maritime Greenwich World Heritage Site (WHS) is a key differentiator for the Royal Borough, showcasing its rich history and providing a protection against the loss of important historic fabric. Maritime Greenwich was inscribed on the World Heritage List in 1997 due to what is known as "Outstanding Universal Value" (OUV). This means that the WHS is of such cultural significance as to be considered exceptionally important not just for Greenwich and Britain, but for the entire world. The OUV of the WHS relates to the site's exceptional architecture, the masterplan of buildings and design landscapes that includes the Queen's House, the Royal Hospital (designed by Christopher Wren), the Royal Observatory and Greenwich Park, and the "Grand Axis", among other aspects.

The Grand Axis aligns the site's key architectural and landscape elements along a line from the General Wolfe statue on top of Greenwich Park through the Queen's House and Royal Hospital over the River Thames to Island Gardens. This Axis is fundamental to appreciating the design of the masterplan composition and views in both directions along the Grand Axis are hugely significant. The hilltop of Greenwich Park also provides commanding views towards central London, with a clear vista to St Paul's cathedral that is protected by the London View Management Framework.

Prior to inscription, the views to and from the WHS were altered to an extent by tall building development in Tower Hamlets and Lewisham. With the growth of Canary Wharf, this pressure has increased and it is clear that the presence of tall buildings in the area pose a risk to the appreciation of the WHS OUV.

Any proposals for tall buildings in the Royal Borough must carefully consider and mitigate their impact on the WHS and the elements that contribute to its OUV.

Outside of the WHS, the Royal Borough contains a wide variety of listed buildings, conservation areas and registered parks and gardens. Tall buildings in the wrong places can cause significant and irrevocable damage to the significance of heritage assets by intruding into their setting and being overbearing or detracting from the appreciation of a heritage asset and its values.

Harm to the significance of heritage assets should generally be minimised or avoided, and great care should be taken in testing and mitigating against harm. Tall buildings should mitigate against impact to the setting of heritage assets, including important views to and from heritage assets.

Image 4.1: Old Royal Naval College in Maritime Greenwich World Heritage site, with Canary Wharf in the background

BE SUSTAINABLE AND INNOVATIVE DEVELOPMENTS

Tall buildings may be used to optimise density on a site, thereby making sustainable use of land. However, tall buildings are generally more resource intensive to build and to run compared to low or mid-rise buildings. Therefore, they should only be promoted where they clearly support the wider sustainability of an area.

The construction and operation of tall buildings must be designed to high sustainability standards to minimise their impact on the environment. Tall buildings must respond to the climate emergency by ensuring they are designed to adapt to and mitigate climate change.

From the outset of design, the embodied energy and life cycle of the building should be considered, prioritising local materials with good longevity. Tall buildings should also be designed for future retrofitting and adaptation to other uses through adequate floor to ceiling heights and flexible spaces. This will reduce the need for carbon-intensive redevelopment in the future.

Detailed consideration should be given to the building's form, configuration and orientation, energy sources and conservation, material source and life cycle, internal temperature control and use of natural ventilation, water use and conservation and mitigation of water run-off, waste management and on-site ecology. Renewable energy generation and the installation or future proofing for Photo Voltaics (PVs) should also be considered. Tall buildings should be encouraged to be innovative with regards to sustainability. Tall buildings should be located in areas with high quality public transport, walking and cycling links to facilitate low carbon transport modes over private car use.

BE OF HIGH QUALITY ARCHITECTURAL DESIGN AND APPEARANCE

Tall buildings are highly visible and, depending on their stature, are a key part of the skyline and image of a place. Therefore they should be of high quality architectural and urban design. They are natural beacons for the borough and should represent its aspiration for quality development.

Tall buildings should be more than simple extrusions of a standard floorplan and their architecture should articulate the building's base, shaft and top as discrete yet interconnected parts.

The base should present a proportionate response to the surrounding context and contribute to a friendly, active and human scale environment around the building. The top is the most visible part of a tall building in views over the city, and like a crown should be carefully designed to provide a visual focus and distinctiveness, rather than a sudden end to the shaft and place for technical equipment.

Tall buildings should be designed to express elegance, proportionality and verticality in a form that is consistent from every angle. To that end, generally slab blocks and bulky forms should be avoided. Through careful detailing and choice of materials, tall buildings should age well and be designed for longevity, while relating to the character of their location. Tall buildings should also consider the impact of lighting and mitigate negative impacts.

HAVE A CLEAR AND JUSTIFIED PURPOSE

Tall buildings are only a means to an end, not an end by themselves. As such they need a clearly defined and justified purpose as either a landmark, a means of densification or a necessary typological response.

From a positive planning and place making perspective there are three principle purposes for tall buildings in RB Greenwich:

1 **Landmarks:** Individually or collectively, tall buildings can be landmarks that help to bring distinctiveness and legibility by being exceptional markers in the urban fabric. The height and design of Landmark buildings should be proportionate to the respective role or function of a location in the hierarchy of places. Landmarks should be located in highly prominent and visible locations, provide a high quality and distinctive design and should be 'singular' in having an aspect that is unique and memorable in the context.

2 **Densification:** In exceptional circumstances tall buildings (and clusters of tall buildings) could be part of a new urban character that delivers great intensification to highly central urban areas, especially where concentration of smaller apartments for young urban professionals is desirable to support the livelihood of a centre or place, or in a location where the delivery of commercial or other type of floor space is a strategic planning objective. It should be demonstrated that alternative contextual approaches to intensification or the delivery of a planning objective are not feasible or viable. A super-densification approach can deliver a stark contrast leading to a rupture in the character of the existing townscape, and should only be pursued in places where this level of development can be accommodated as part of the existing or emerging character.

3 **Necessary typological response:** Where the delivery of a specific planning objective requires a tall building or structure in a certain location and it can be demonstrated that other contextual solutions have been explored and would be less effective, efficient and feasible.

DELIVER COMPREHENSIVE DEVELOPMENT AS PART OF A PROACTIVE, PLAN-LED APPROACH

A place making approach should always be followed; a tall building must relate and contribute to the wider area and improve the sense of place, or have a clear role in the creation of a new "place".

The NPPF makes clear the need for a genuinely plan-led and proactive approach to development. Tall buildings should only be considered where they are part of a plan-led strategy for change and regeneration of a place led by a comprehensive and widely supported vision, and where it has a clear purpose in delivering this vision.

Tall buildings should generally only be part of a comprehensive masterplan-led approach to a larger site, rather than being promoted speculatively on smaller sites. Well planned larger sites can better integrate tall buildings and mitigate their impact on the street space, deliver better servicing and parking arrangements and consider the wider townscape and skyline impact of tall buildings.

Speculative proposals for tall buildings on smaller sites can often feel out of place and can lead to a fragmented townscape, an illegible skyline, undermine regeneration and can weaken the distinctiveness and image of a place. Proposals for individual tall buildings will need to justify why the building is appropriate and demonstrate the benefits of the proposal.

PROTECT AND ENHANCE THE BOROUGH'S LANDSCAPE CHARACTER AND RIVER FRONT

The presence of the River Thames is an important element in the identity and character of the northern part of Royal Borough of Greenwich. Tall buildings and clusters along the River Thames are highly visible across the city and play a key role in our understanding of the spatial structure of both London and RB Greenwich. Tall building development must be coordinated to avoid the creation of a wall or canyon along the riverfront. Instead tall buildings should form clusters in specific locations, whose importance warrants highly visible landmarking along the river.

Tall building developments along the River Thames should enhance the public realm and natural environment, improve access for people to walk and cycle along the riverside and enhance views to and from the river Thames.

RB Greenwich has a unique landscape character due to its undulating topography and vast amounts of metropolitan open land, nature reserves, registered parks and gardens and other landscapes. The raised elevation of land at Shooters Hill, Greenwich Park, Eltham Common and elsewhere creates a leafy green backdrop to wide views of the Borough from the north (including the northern side of the river Thames) and in approaches from the south. Equally, these raised green spaces provide panoramic views of the borough and across London, which are greatly valued by residents and visitors.

The location and height of tall buildings in RB Greenwich must be carefully considered to avoid competing for prominence with raised landscape spaces, blocking views to and from green spaces or detracting from their open and tranquil character.

In particular, tall building applications should be thoroughly tested from popular viewing points on elevated land to ensure continuity of the view and enhancement of the skyline.

Image 4.2: View towards Central London from Shooter's Hill

ENHANCE LEGIBILITY AND ENABLE A MEANINGFUL UNDERSTANDING OF THE URBAN FABRIC AND WIDER BOROUGH

Because they are highly visual, tall structures have always acted as landmarks in cities. In the British and European context we are hardwired to understand this connection of a tall building signifying an important location. Therefore, new tall buildings must play a positive role in landmarking important locations, improving legibility and fitting in to the hierarchy of tall buildings, where tallest equals the most important.

Individually or collectively, tall buildings can be landmarks that help to bring distinctiveness and legibility to the urban fabric. The height and design of landmark buildings should be proportionate to the respective role or function of a location in the hierarchy of places. The tallest buildings, particularly if clustered, will naturally read as the most important and central focus of the city. Tall buildings of lesser height should reflect the subordinate nature of other locations.

When acting as a landmark for a place of significance, a tall building should also serve to enhance local legibility and wayfinding. This can be achieved by locating the tall building in prominent places such as local hubs and destinations, at street corners, public spaces or in vistas along routes. A principle quality of landmarks is their singularity and proposed tall buildings should avoid detracting from the prominence and role of existing landmarks.

PROTECT AND ENHANCE TOWNSCAPE VIEWS AND THE SKYLINE

Wider townscape views and views of the skyline are important aspects of the image of the Borough and its places. They provide an overview of RB Greenwich in its wider setting and a spatial understanding of its defining characteristics.

Tall buildings can have an irrevocable impact on the skyline and views, and the impact will be commensurate with the height of the building. Panoramic and prospect views that allow the appreciation of distinctive and valued characteristics of the skyline and townscape, especially if they are from popular or frequented viewing points, should be preserved and enhanced.

The impact of a tall building proposal on these views should be thoroughly tested during the design phase, and demonstrate how the tall building design responds to the view and its valued characteristics.

Integrating a tall building in the skyline can include measures such as limiting their height and prominence, where they would detract from existing landmarks or skyline features, stepping down or altering their form to fit in and complement clusters of taller buildings.

Alternatively, where appropriate, a tall building could establish a proud new skyline feature by being a landmark of a meaningful place or function with a highly distinctive design that matches or exceeds the quality of successful existing skyline landmarks.

The incremental cumulative impact of tall buildings needs particular attention. In areas where taller buildings are promoted they should be clustered in confined locations to reinforce distinctiveness and legibility of the skyline rather than a scattering of tall buildings over a larger area. The shape and appearance of a cluster and the cumulative impact of existing and future tall buildings will need careful consideration and aesthetic judgement.

Clusters of tall buildings when seen on the skyline denote centrality and a concentration of activity, and should only be permitted in locations with such characteristics.

Clusters will be more distinctive and recognisable from all around if the tallest building is situated central to a cluster and heights drop away from the centre, and if the central building is an iconic landmark that makes the cluster instantly recognisable on the skyline.

RESULT IN HIGH QUALITY PLACES WHERE PEOPLE WANT TO LIVE AND SPEND THEIR TIME

Tall buildings are dense urban forms of development that concentrate accommodation in a small area. They need to be designed carefully to ensure they contribute and not detract from the amenity of existing or future residents.

Aspects that need to be considered are the quality and amenity of dwellings and private outdoor spaces in respect of privacy, outlook, day and sun-lighting; the quality, quantity and usefulness of shared amenity space provision; access to quality public spaces in the vicinity; and the size and quality of the public realm around the building as a pleasant place to move and congregate.

The microclimatic impact of the buildings on the outdoor spaces from wind funnelling, overshadowing or solar glare will need to be tested and appropriately mitigated to provide inviting, usable and safe places.

RESPOND AND INTEGRATE WELL WITH THE EXISTING TOWNSCAPE AND CHARACTER, AND TO STRENGTHEN THE SENSE OF PLACE

Without careful consideration of the surrounding character, tall buildings can appear disjointed and out of place. This makes them less likely to be accepted by the local community and limits their positive role in placemaking.

Tall buildings should only be located in areas that are of a character that can assimilate their scale and associated activities, without domineering visual intrusion.

For instance, it would generally be more difficult to assimilate a tall building into a coherent, low-rise residential area compared to a more mixed central part of the borough.

Tall buildings must, through careful design, integrate into the existing built fabric rather than appearing as separate. This can be achieved by integrating tall buildings within urban blocks and responding to the grain and scale of the surrounding area. Stepping the height of a tall development may be used to mediate between the existing context and the tall element.

In new development areas, tall buildings may play a role in creating a new character, as part of a wider development. This must be supported by a clear vision and purpose for the tall buildings.

5 TALL BUILDING SENSITIVITIES

5.1 INTRODUCTION

This chapter presents the various physical characteristics and designations that are sensitive to the impacts of tall buildings. Their presence does not necessarily preclude tall building development but they should be taken into account when considering the location, scale and design of tall buildings.

This chapter discusses:

- Heritage assets;
- Protected views;
- Topography; and
- Low rise residential areas.

SENSITIVITY DEFINITION

A 'sensitivity' is an area where the presence of a tall building would likely cause some negative impact on character and sense of place.

In this chapter, areas are categorised as 'Highly Sensitive' or 'Sensitive'. For Highly Sensitive areas, tall build development should generally be avoided as their presence would likely cause significant harm to the Royal Borough's character and amenity. For areas that are Sensitive, the location, scale and design of tall buildings must be carefully considered to mitigate potential impacts.

5.2 HERITAGE

DESCRIPTION

RB Greenwich is a historic place with world renowned examples of architecture and landscape design. The most significant example in the borough is Maritime Greenwich World Heritage Site. Woolwich, Eltham, Plumstead and Blackheath also contain a variety of heritage assets and designations that are protected by law and worthy of conservation.

More details of the borough's heritage assets can be found in the RB Greenwich Character Study report.

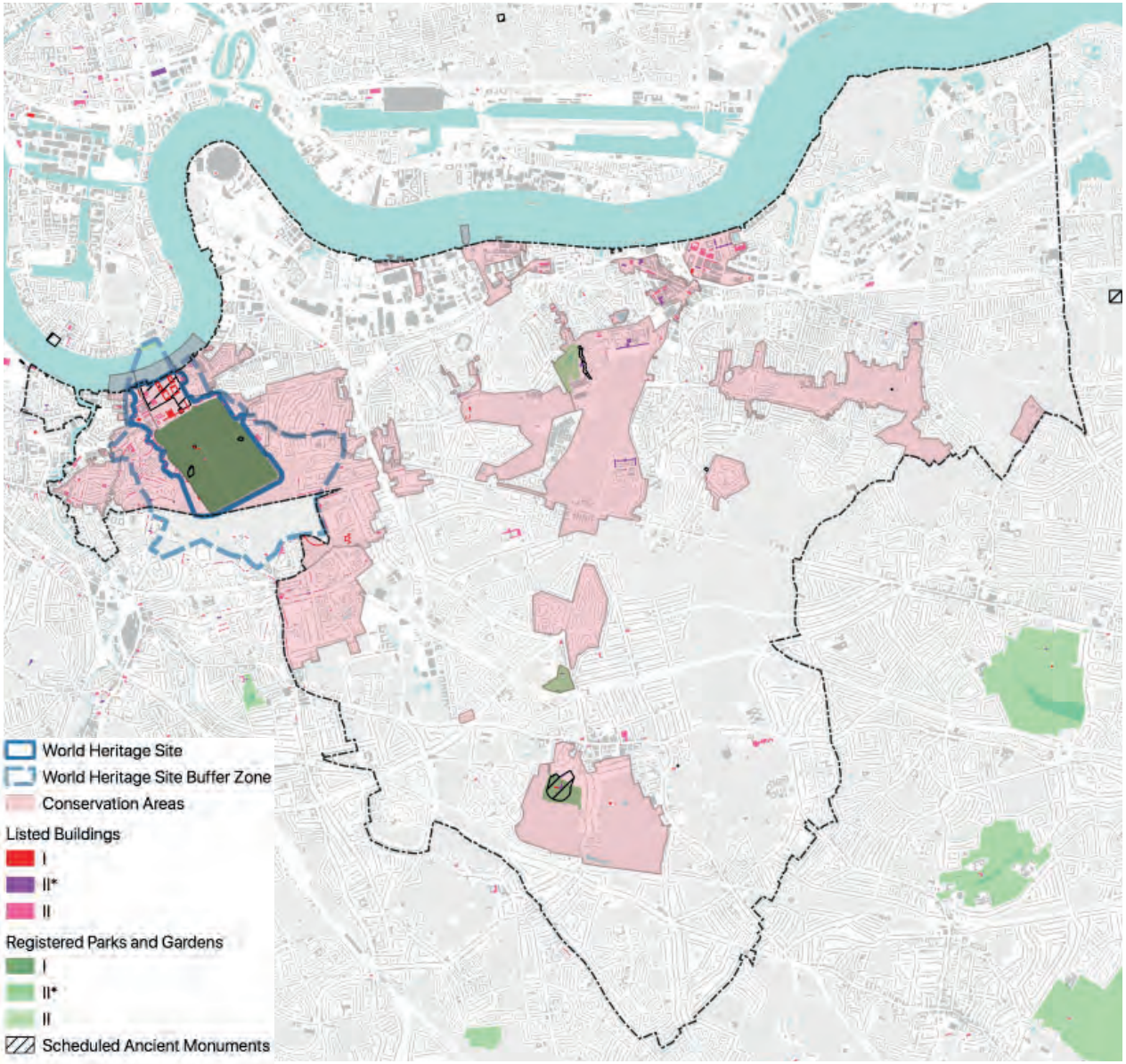

Figure 5.1: Heritage Designations

SENSITIVITY

Maritime Greenwich World Heritage Site (WHS) is the most significant heritage designation within the Royal Borough. It is of international importance and is protected from harm by international agreement between the United Kingdom and UNESCO. Therefore it has been categorised as Highly Sensitive in Figure 5.2, with the rest of the borough's heritage assets shown as Sensitive.

The World Heritage Site Buffer Zone is also categorised as Highly Sensitive, because the purpose of the Buffer Zone is to provide added protection to the WHS's immediate setting. The *Maritime Greenwich World Heritage Site Management Plan (2014)* states that the main threat to the WHS is from nearby insensitive development, and especially tall buildings, 'which may have the potential to impact adversely on its visual integrity.' This concern is echoed in the adopted Royal Greenwich Core Strategy, which states, 'Change or development within the setting, including the buffer zone, of the Site are capable of having an adverse impact on the values. This applies particularly to tall buildings which may impact on views to and from the Site.' (para. 4.4.31). London Plan policy DH4 states that development in WHS Buffer Zones 'should conserve, promote and enhance their Outstanding Universal Value'.

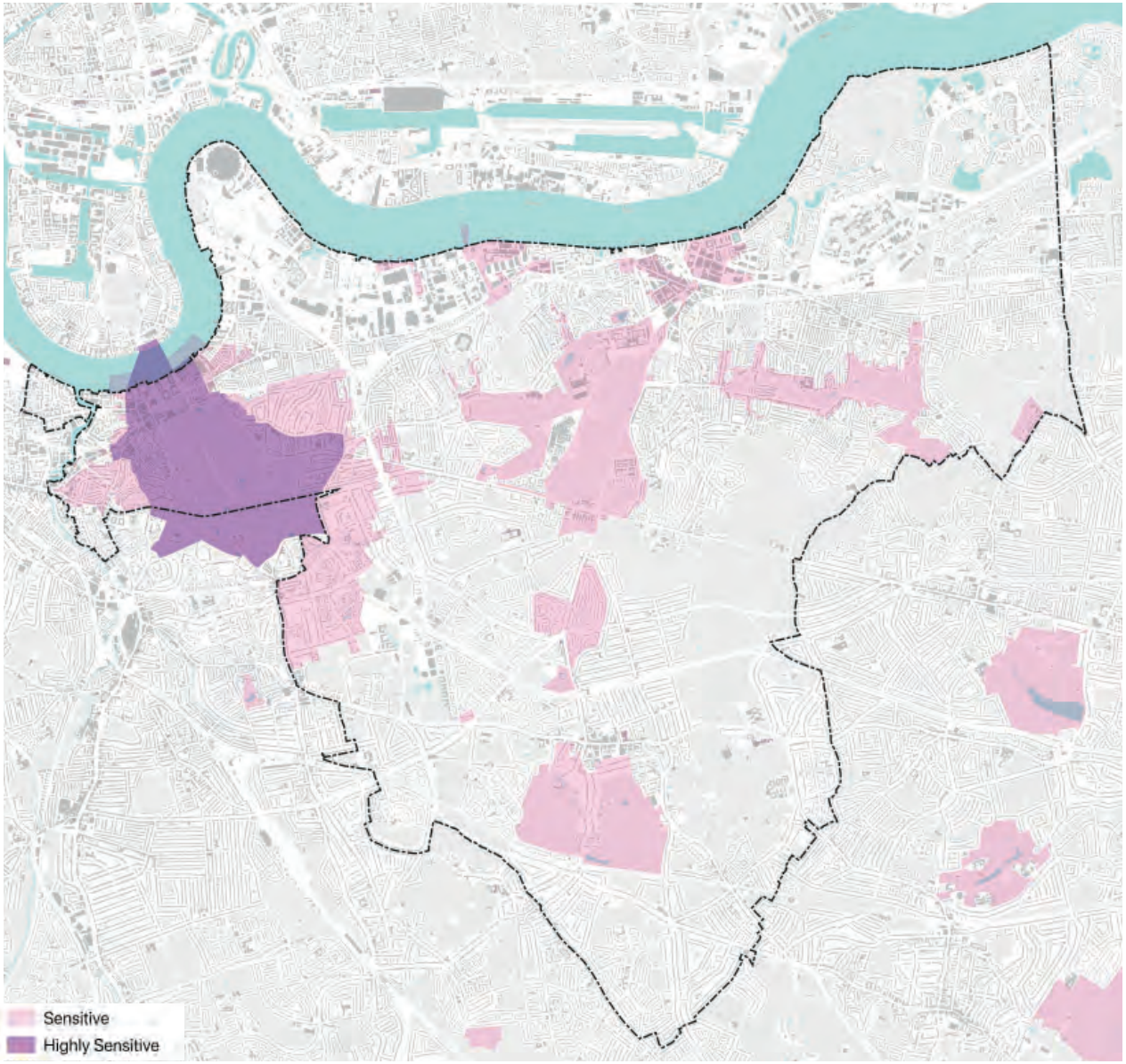

Figure 5.2: Heritage Designations Sensitivity

5.3 TOPOGRAPHY SENSITIVITY

DESCRIPTION

The Royal Borough of Greenwich has a dramatic topography, rising from near sea level at the riverside up to c130m at Shooters Hill, one of London's highest points. Land rises again to the south of the borough. These rolling hills, which are topped with green spaces and historic buildings such as Severndroog Castle and the Royal Observatory, appear in the backdrop of views from the River Thames, and are important for the unique character of the borough.

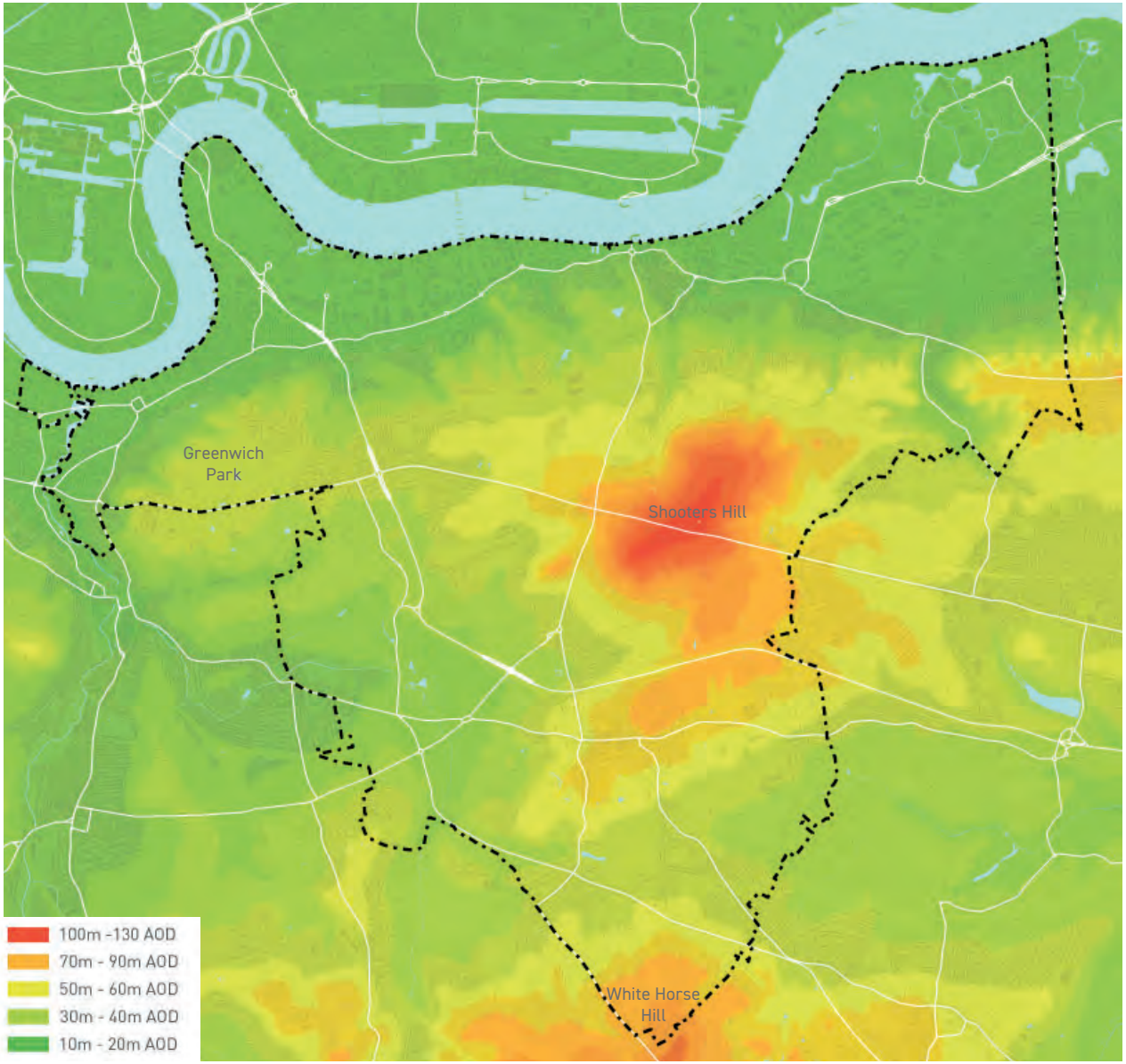

Figure 5.3: Topography

SENSITIVITY

Tall buildings on elevated land appear more prominent. In the case of historic landmarks this can be a welcome effect, which brings interest and character to the borough, as well as helping with legibility. However, contemporary tall buildings that are located on higher ground risk becoming over-dominating, upsetting the skyline and harming nearby residential amenity. Therefore, the highest points in the borough, above 90m at Shooters Hill and above 70m at White Horse Hill, are categorised as Highly Sensitive.

Land that is above 20m is categorised as sensitive, to signify that a tall building in these areas must be carefully considered to avoid negative impacts.

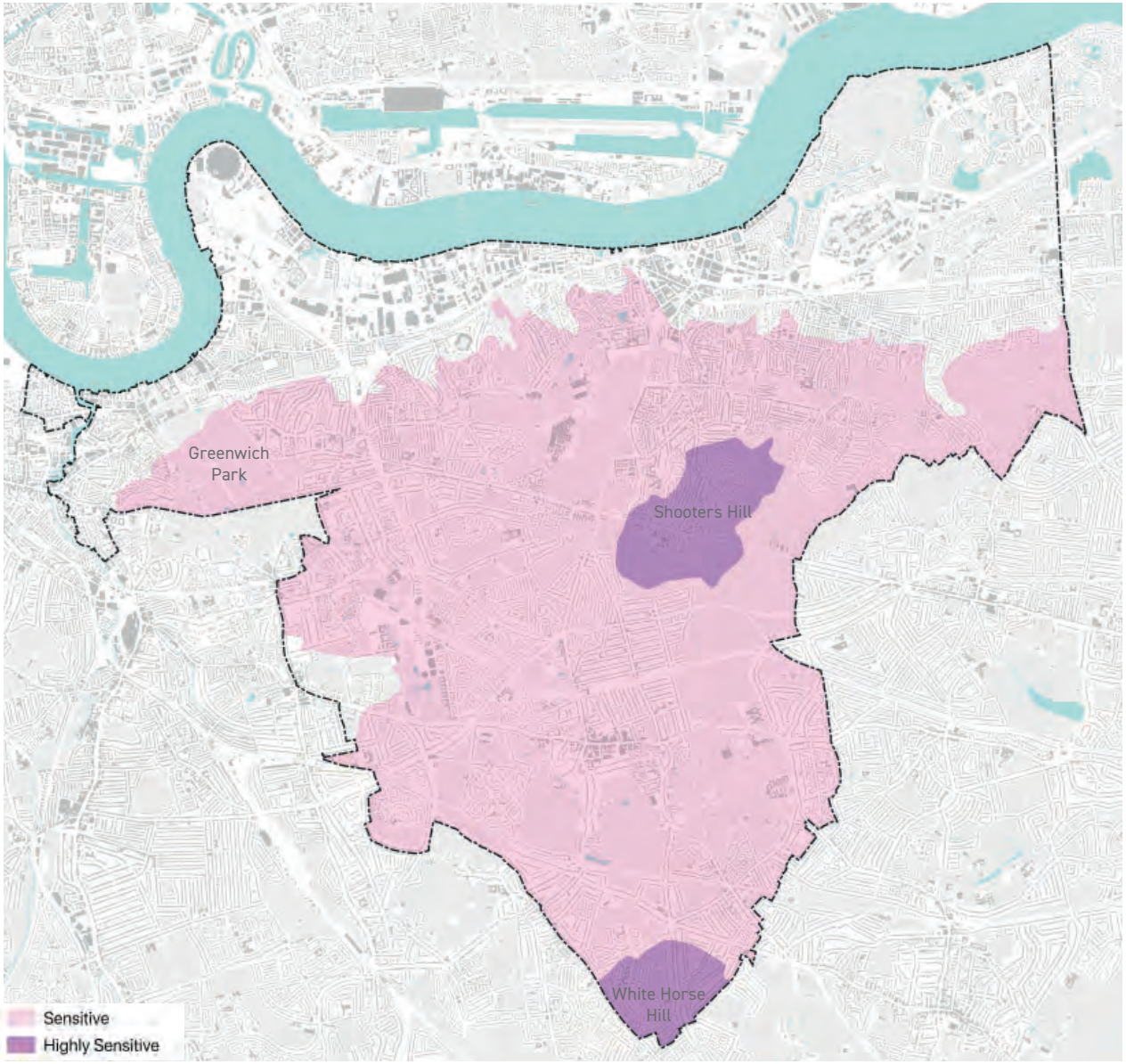

Figure 5.4: Topography Sensitivity

5.4 LOW-RISE RESIDENTIAL AREAS

DESCRIPTION

Much of the Royal Borough's suburban area is comprised of low-rise (1-2 storeys) residential homes in a coherent urban form. These areas are pictured in Figure 5.5. These areas are largely coherent in height and character

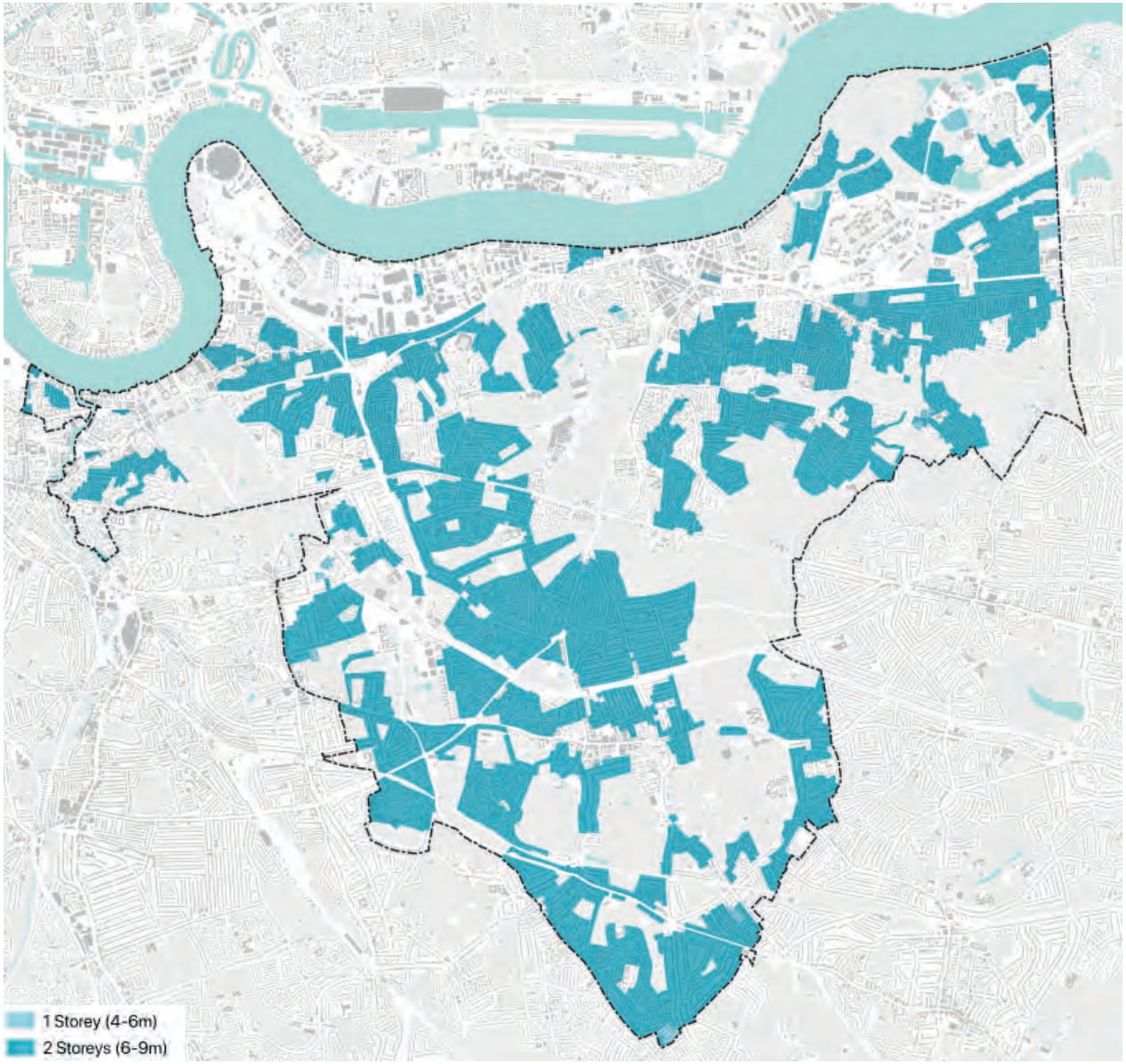

Figure 5.5: Low-rise Residential Areas

SENSITIVITY

Buildings that are significantly taller than the established context height of these areas risk harming the residential amenity of established neighbourhoods through overshadowing, overlooking and appearing overbearing. The potential negative impact on existing residents must be considered at application stage and will depend greatly on the size, design and orientation of the tall building in question.

These residential areas tend to be quite coherent in scale and architectural style and so a tall building here may appear alien and intrusive, disrupting the urban form. Therefore, low-rise residential areas are categorised as sensitive.

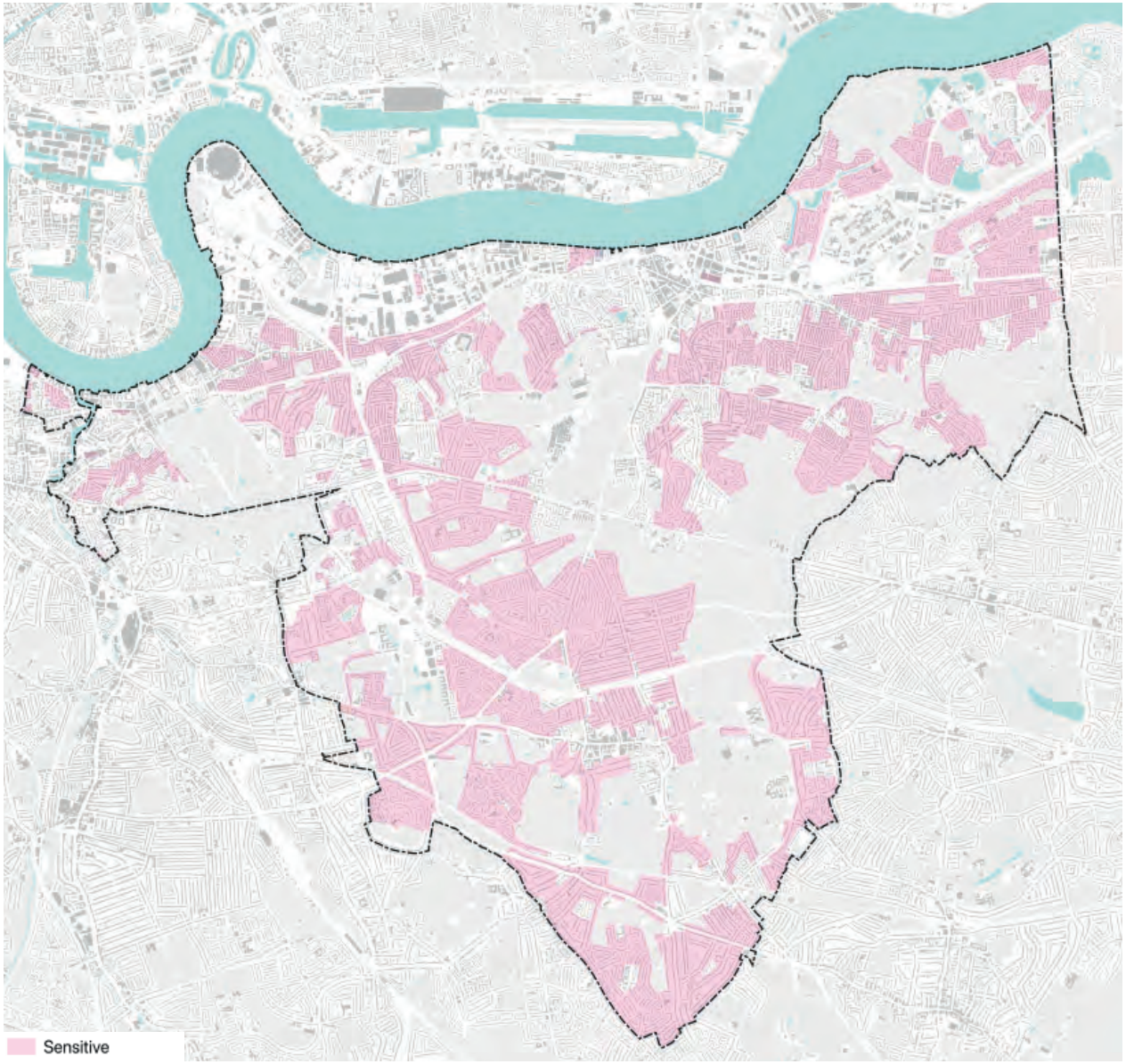

Figure 5.6: Low-rise Residential Areas Sensitivity

5.5 PROTECTED VIEWS

DESCRIPTION

The London View Management Framework (LVMF) identifies and protects important strategic views in the city. Two of these views to St Paul's Cathedral originate in Greenwich, and are shown in orange in Figure 5.7. These view cones must not be disrupted or obscured by tall building development.

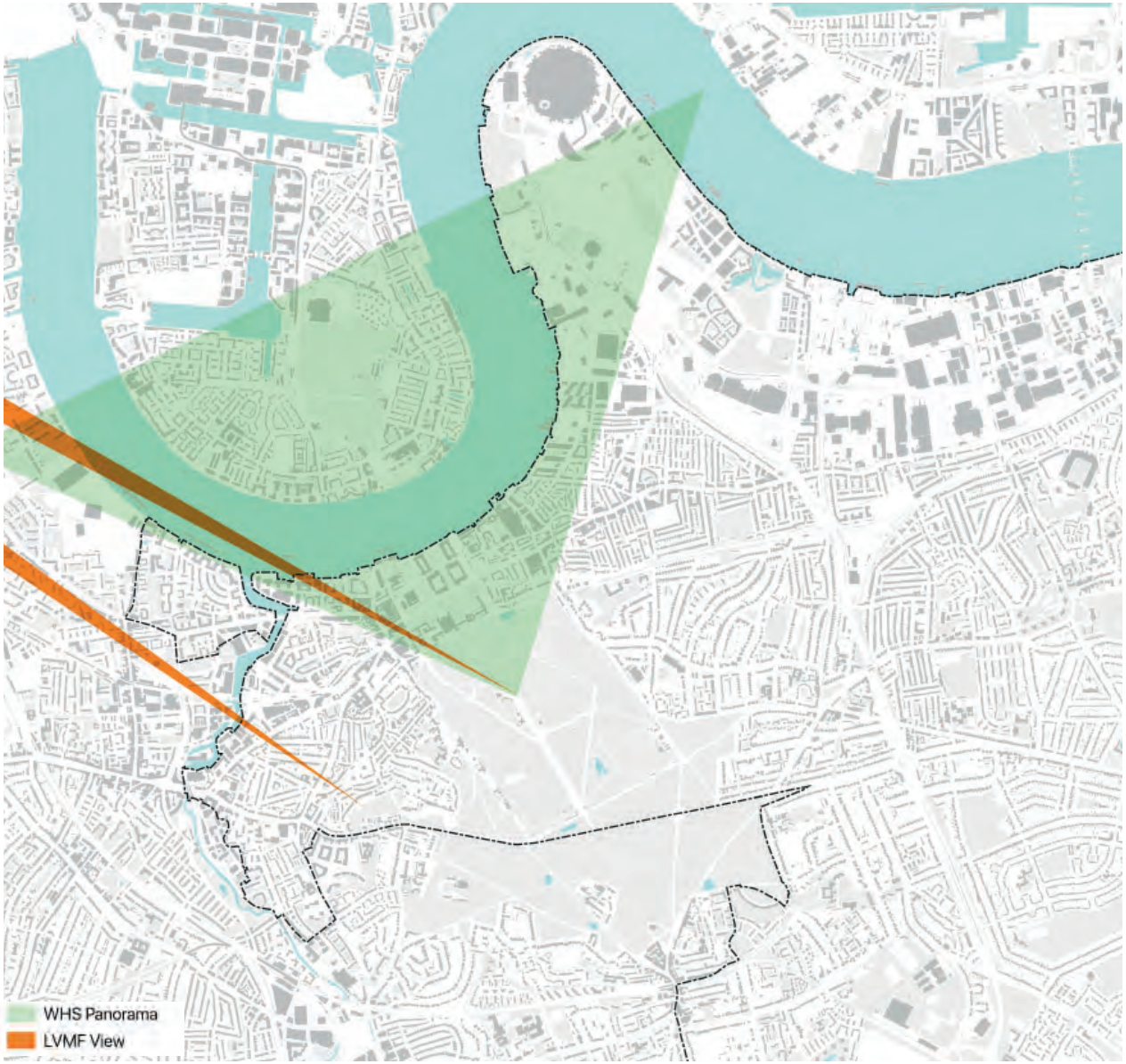

Figure 5.7: LVMF and WHS view cones

Shown in Figure 5.8 are the local views identified in the RB Greenwich Core Strategy (yellow). These identify panoramic views across the borough and beyond from popular viewing points on high ground. Typically they indicate wide sweeping views where tall buildings could have an impact on the character and image of the place.

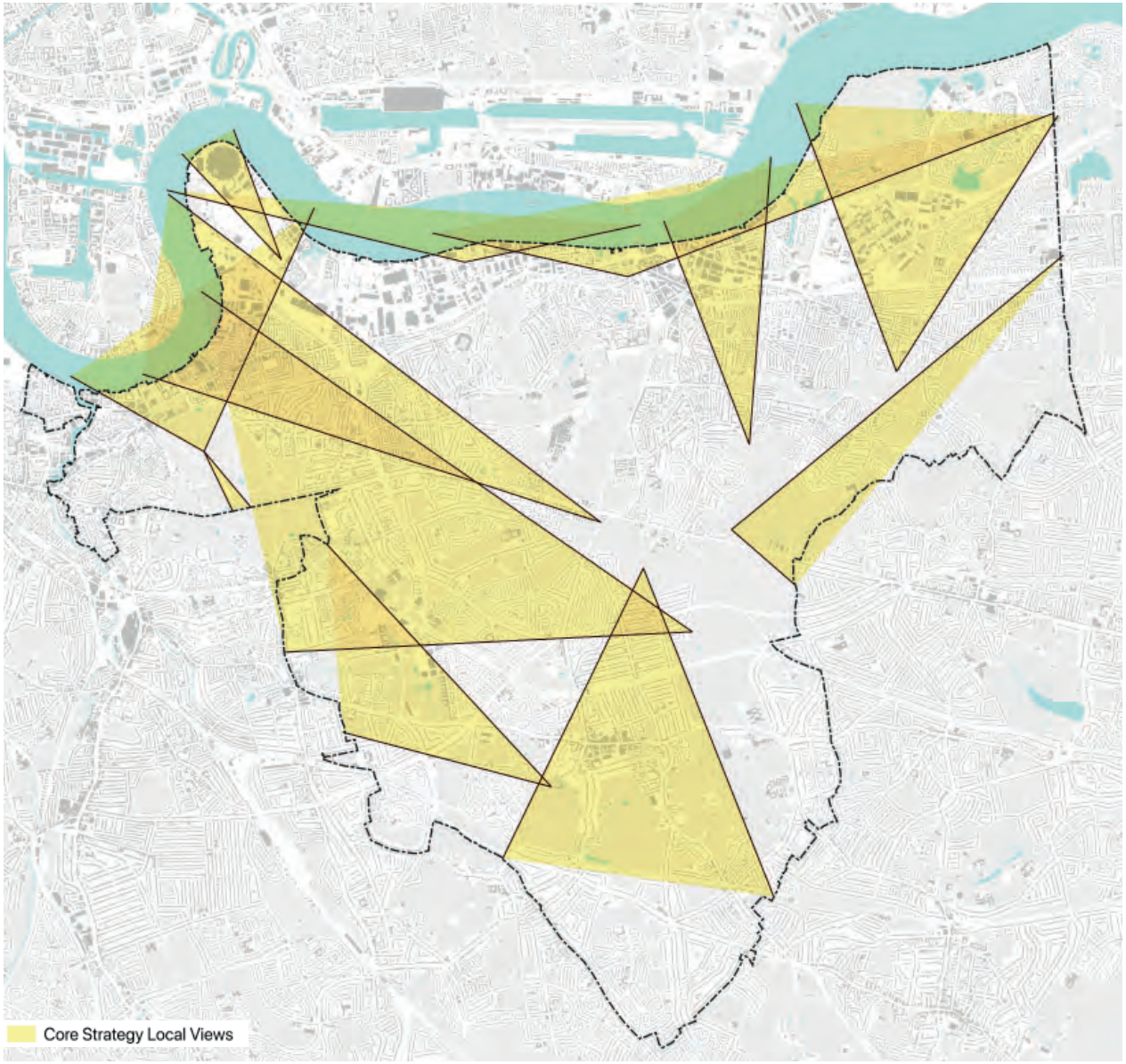

Figure 5.8: RB Greenwich Core Strategy Local Views

SENSITIVITY

Due to their level of protection and strategic importance, the view cones to St Paul's Cathedral identified in the London View Management Framework are categorised as Highly Sensitive.

The World Heritage Site panoramic view cone from the General Wolfe Statue is categorised as Sensitive as this designed view is central to our ability to appreciate the site's Outstanding Universal Value.

The Core Strategy local views have not been included as a sensitivity because of their wide-ranging and non-specific nature. However, proposals for tall buildings should consider how they affect these views.

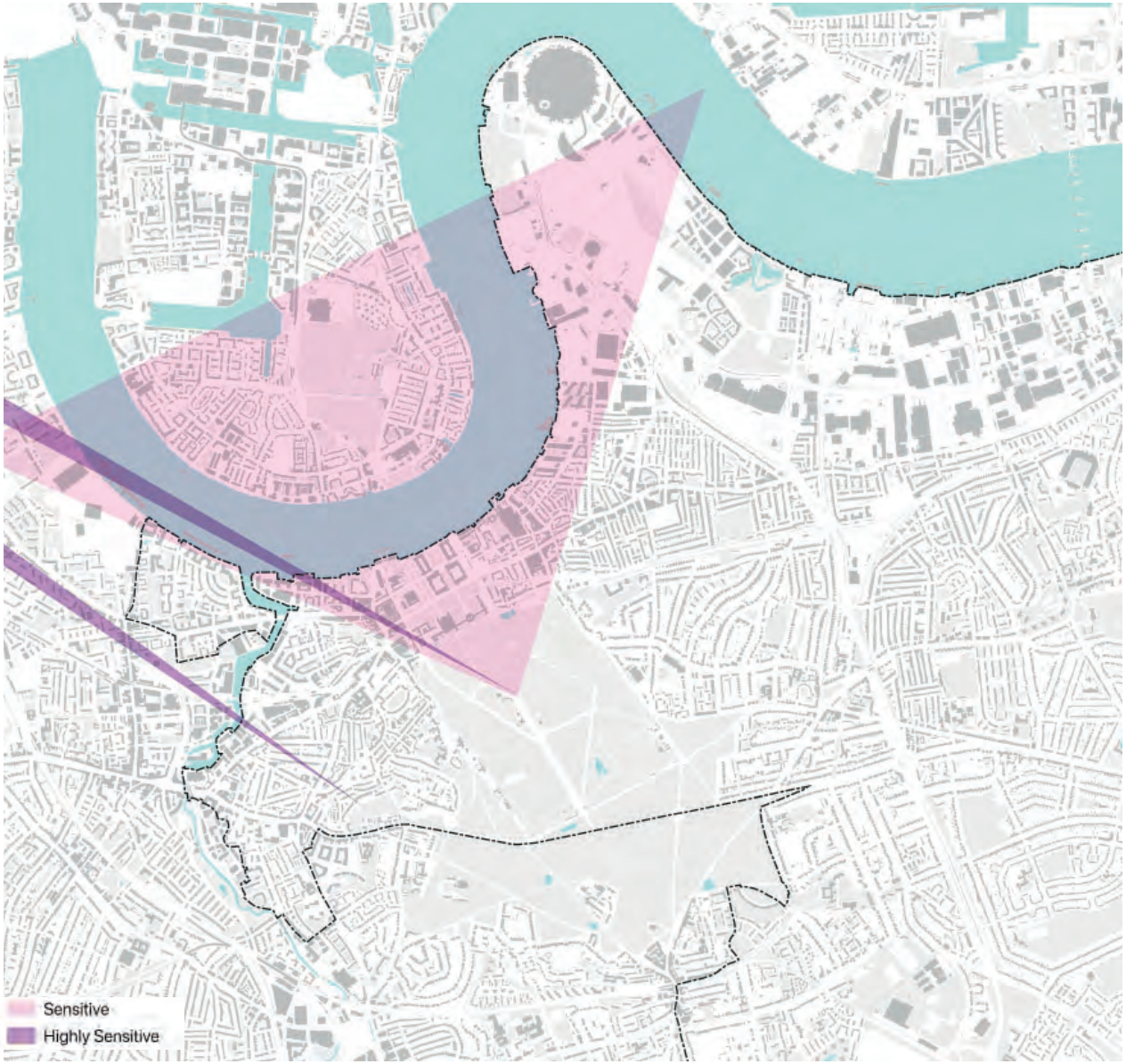

Figure 5.9: LVMF and WHS view cones Sensitivity

5.6 ALL SENSITIVITIES COMBINED

Figure 5.10 illustrates all of the previously discussed sensitivities overlaid on one plan. Areas shown in a darker shade of pink have more than one sensitivity. For instance, the Progress Estate is a conservation area, a low-rise residential area and is located above 20m. It therefore has three layers of sensitivities. In contrast, Eltham town centre only has one sensitivity, which is its location on elevated land.

Four locations are considered Highly Sensitive to tall buildings, the World Heritage Site, its Buffer Zone, the land at Shooters Hill above 90m and land at White Horse Hill above 70m. Furthermore, the LVMF views from Greenwich to St Paul's Cathedral result in two narrow cones of Highly Sensitive area.

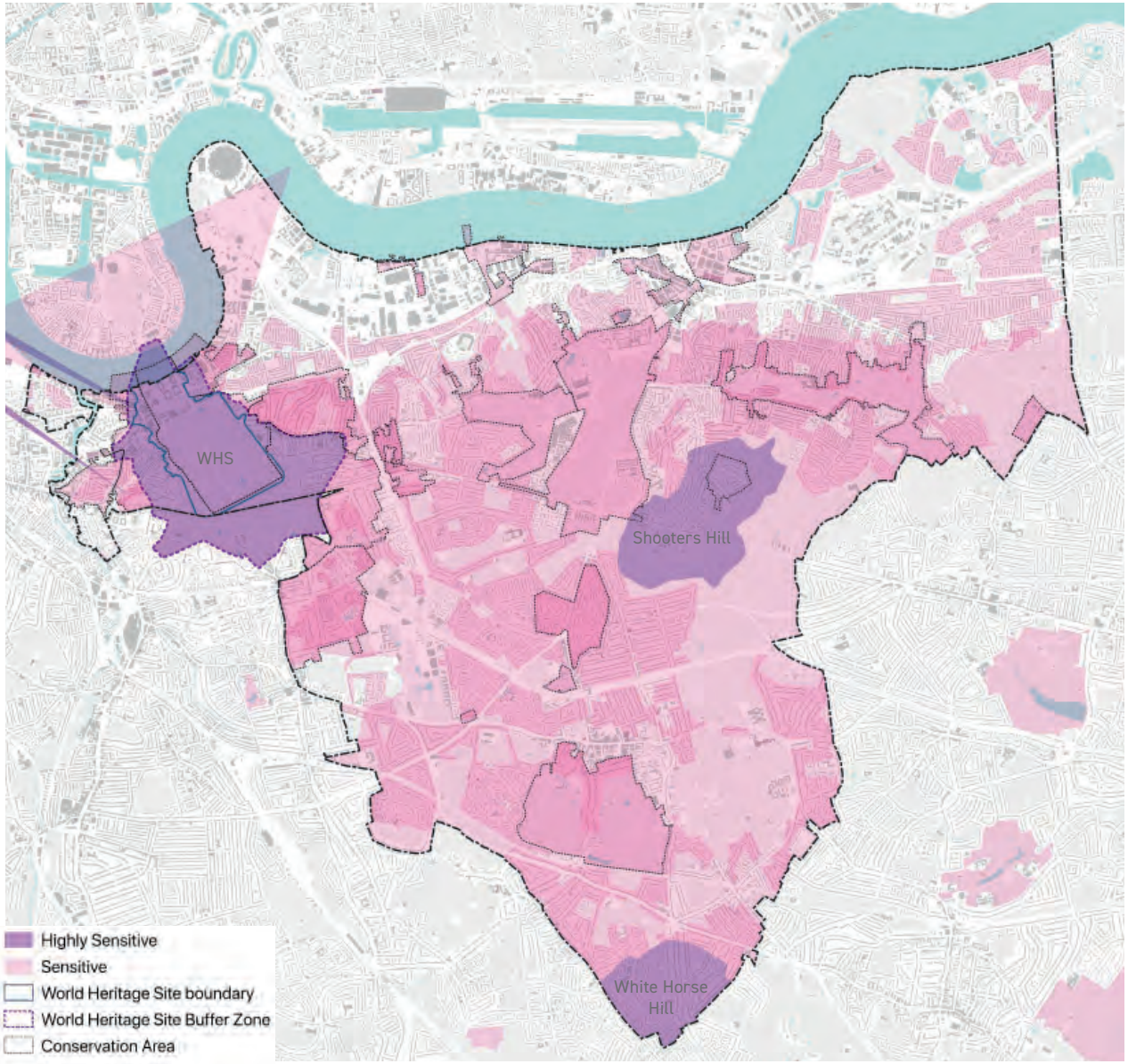

Figure 5.10: Sensitivities Combined

6 POTENTIAL OPPORTUNITY AREAS

6.1 INTRODUCTION

This chapter presents areas within the borough that by their nature may hold some opportunity for tall building development and present a starting point for identifying appropriate areas for tall buildings. Note that these areas are not necessarily appropriate for tall buildings and detailed recommendations are provided in Chapter 8.

6.2 CENTRES AND STRATEGIC DEVELOPMENT LOCATIONS

The RBG Core Strategy identifies town centres, district centres and Strategic Development Locations, which are shown in Figure 6.1. Tall buildings, whether residential or commercial, create intense activity levels and should generally be supported by other services and activities. Furthermore, tall buildings can play an important role in landmarking important locations such as local centres.

Town and district centres, as hubs of retail and services, and as important locations for local residents, could potentially provide opportunity for tall building development.

Strategic Development Locations are areas where substantial development and regeneration is promoted. As part of a wider masterplan and vision, there may be opportunity for tall buildings to play a role in intensifying, regeneration and landmarking these areas.

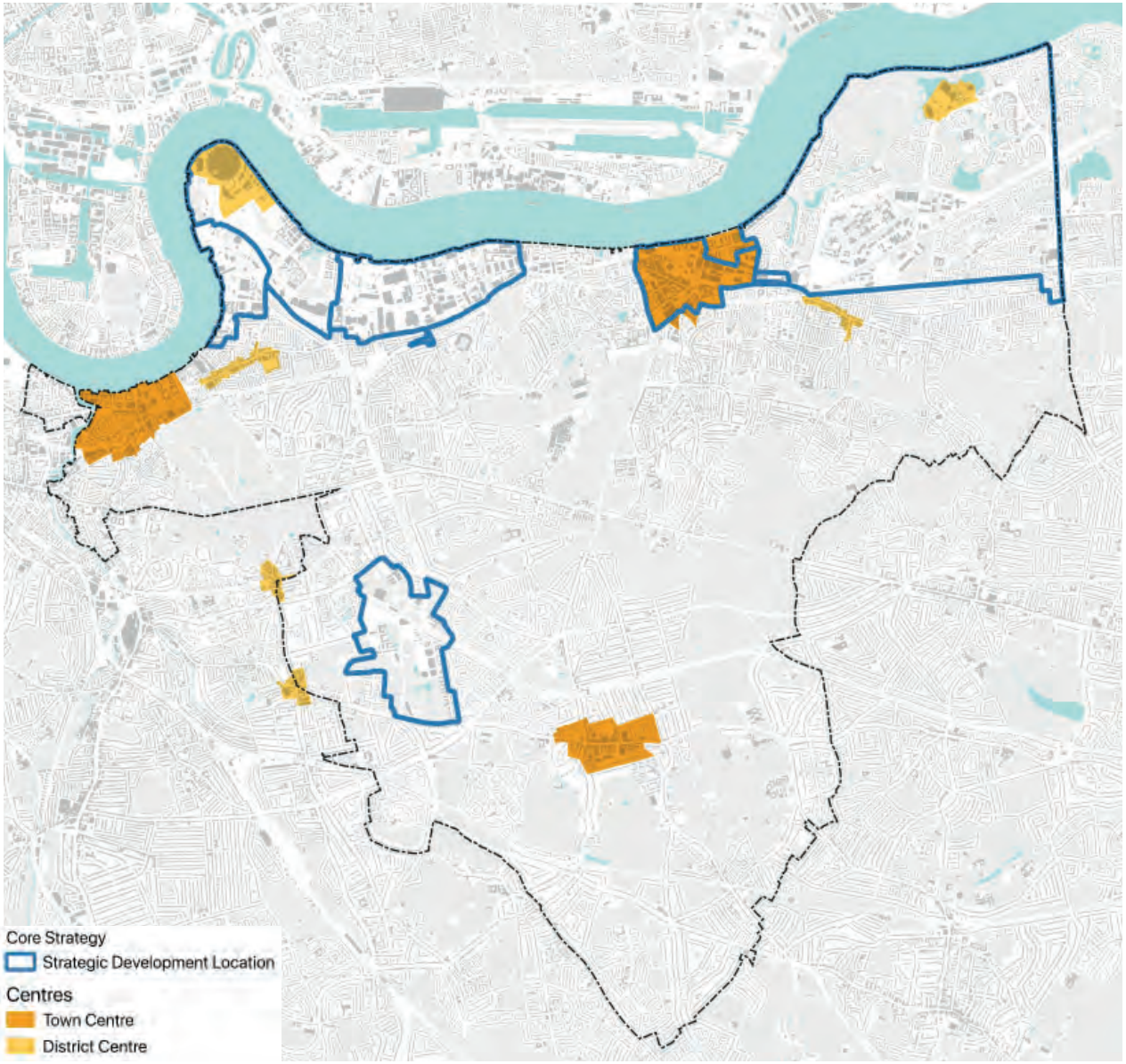

Figure 6.1: Centres and Strategic Development Locations

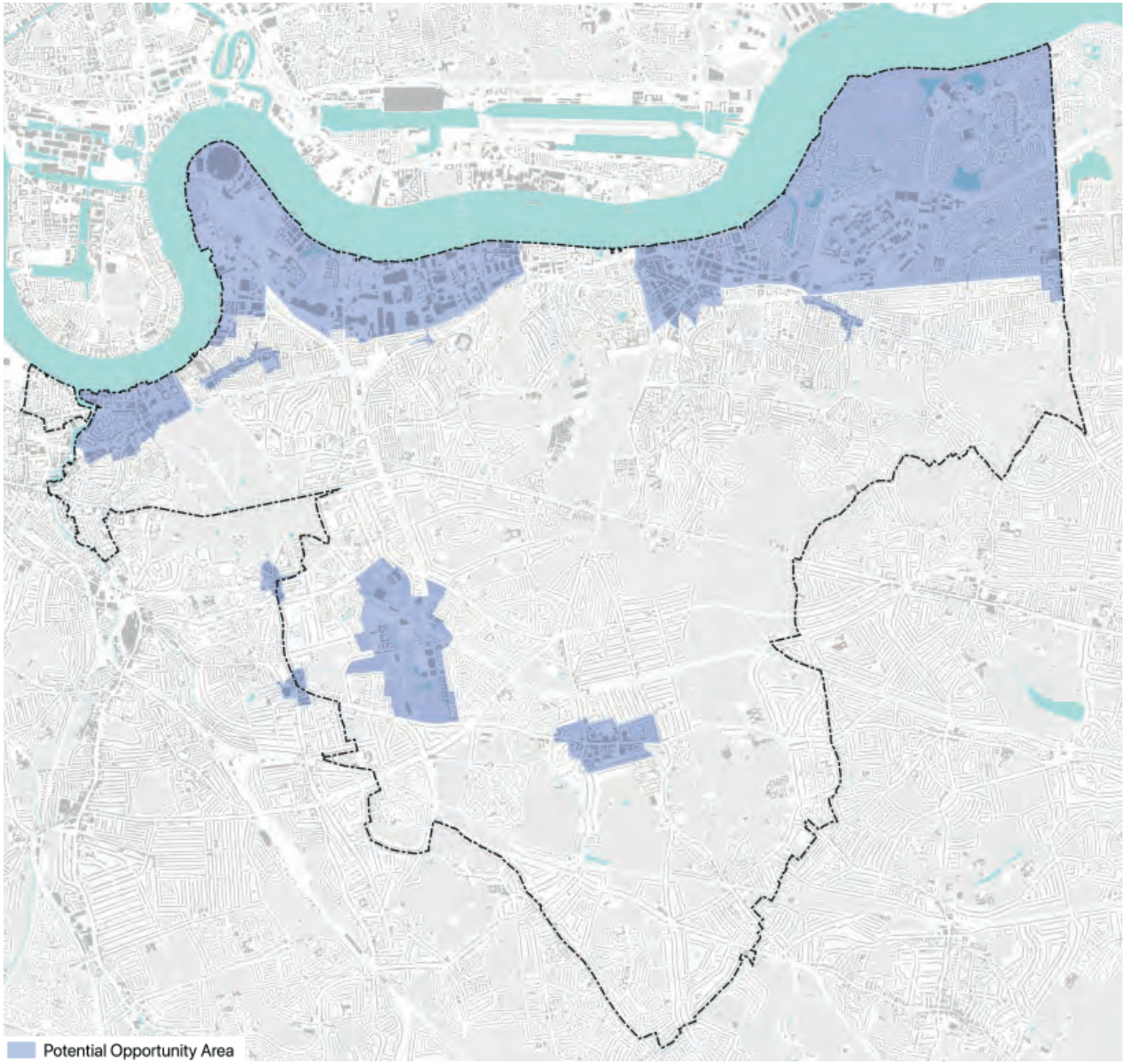

Figure 6.2: Centres and Strategic Development Locations Opportunity

6.3 PUBLIC TRANSPORT STATIONS

RB Greenwich is generally well served in the north and south by the national rail network, which provides direct services to London Bridge. In the north are also a number of DLR stations for local travel and into central London, along with a tube station at Greenwich Peninsula. There are two Crossrail (Elizabeth Line) stations in the Royal Borough, at Abbey Wood and Woolwich.

Public transport stations are important hubs and destinations within the urban fabric and could offer potential for a tall building to mark their locations, increasing legibility. In Figure 6.3, a 100m radius has been drawn around each station to signify potential opportunities for tall buildings in close proximity to transport hubs.

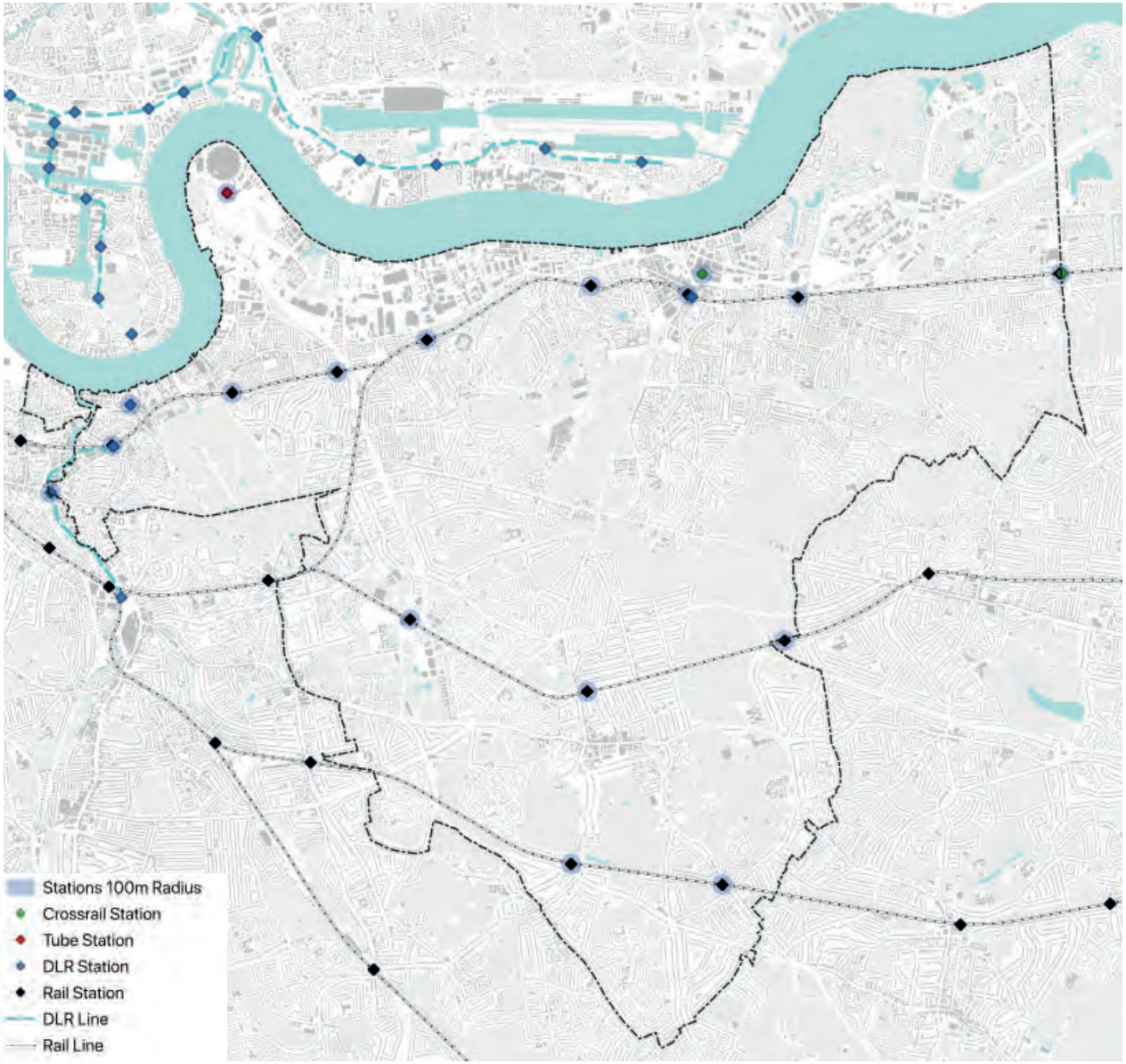

Figure 6.3: Public Transport Stations 100m Radius

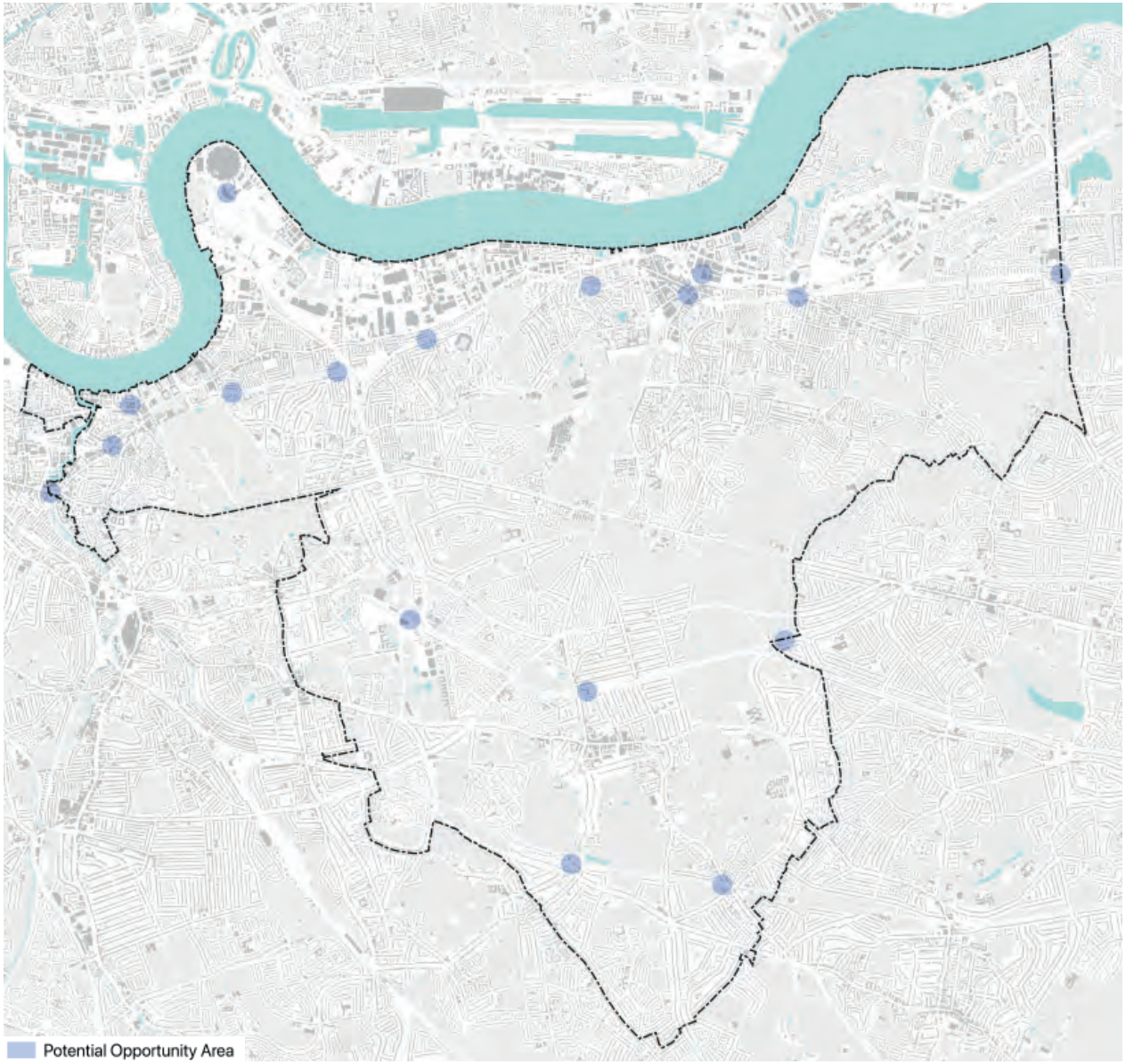

Figure 6.4: Public Transport Stations 100m Radius Opportunity

6.4 ACCESSIBLE LOCATIONS

As tall buildings create intense levels of activity, it is vital that they are highly accessible by public transport to avoid the need for residents and visitors to use private cars. This is especially important as RB Greenwich has announced a Climate Emergency and increasing public transport use will play a role in achieving carbon emissions reductions.

Figure 6.5 shows areas with a PTAL level of 3 or above, indicating areas with moderate to excellent public transport accessibility. The presence of a high PTAL value by itself is not considered to be an opportunity for tall buildings. However, it is an important consideration is sifting for potential locations and is discussed further in Chapter 7.

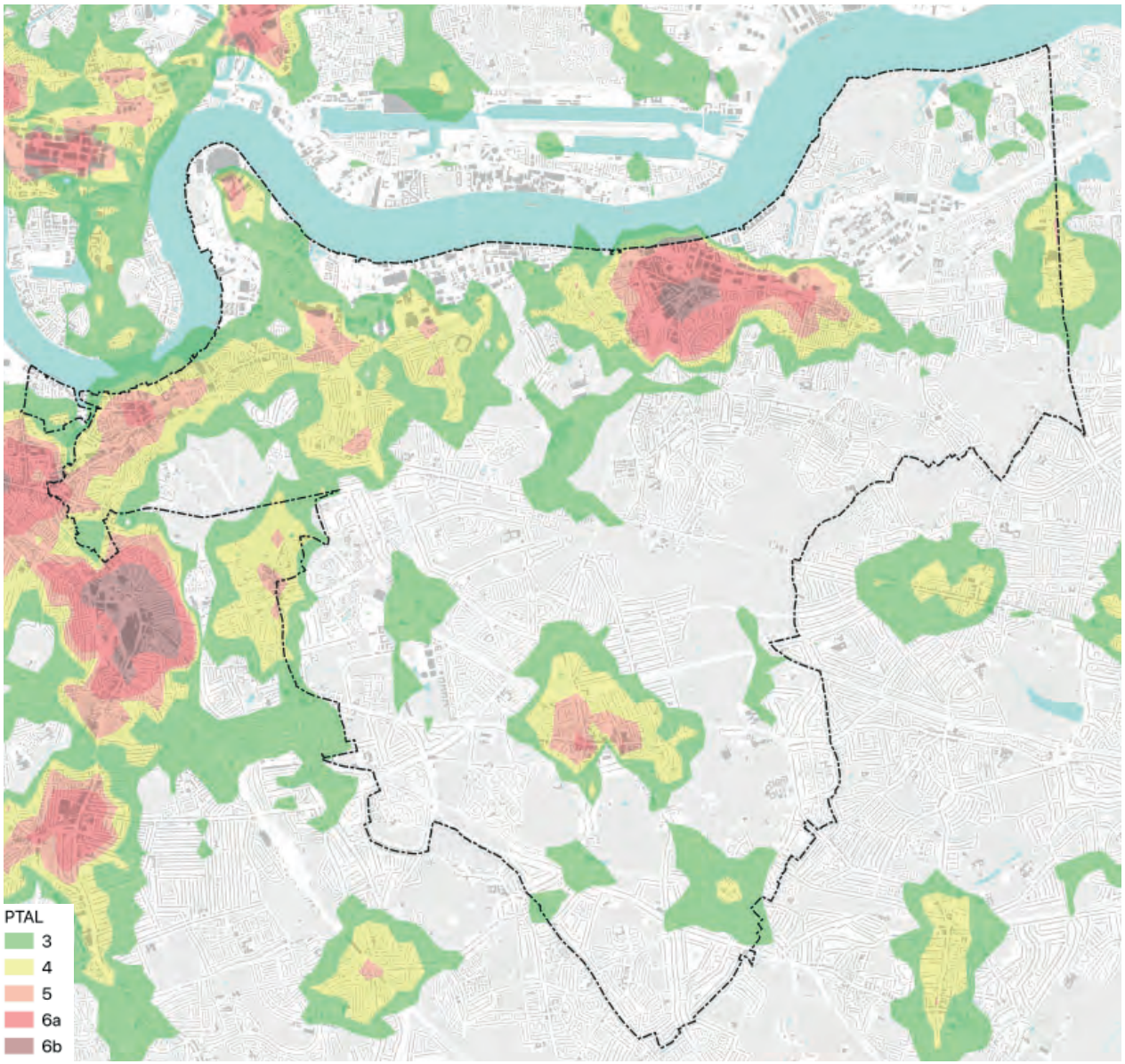

Figure 6.5: PTAL Levels above 3

6.5 POST WAR HOUSING TYPOLOGIES

Figure 6.6 shows the post-war housing typologies identified in the borough Character Study. These estates are not inherently opportunities for tall buildings. However, many of them contain tall building already and if they were to come forward for redevelopment, it would likely include some tall buildings as part of a high density scheme.

These sites are only provided here for information, but have not been formally included in the sifting process in Chapter 7. Some postwar estates that have been identified by the character study as offering opportunities for change and intensification have been included in the recommendations in chapter 8.

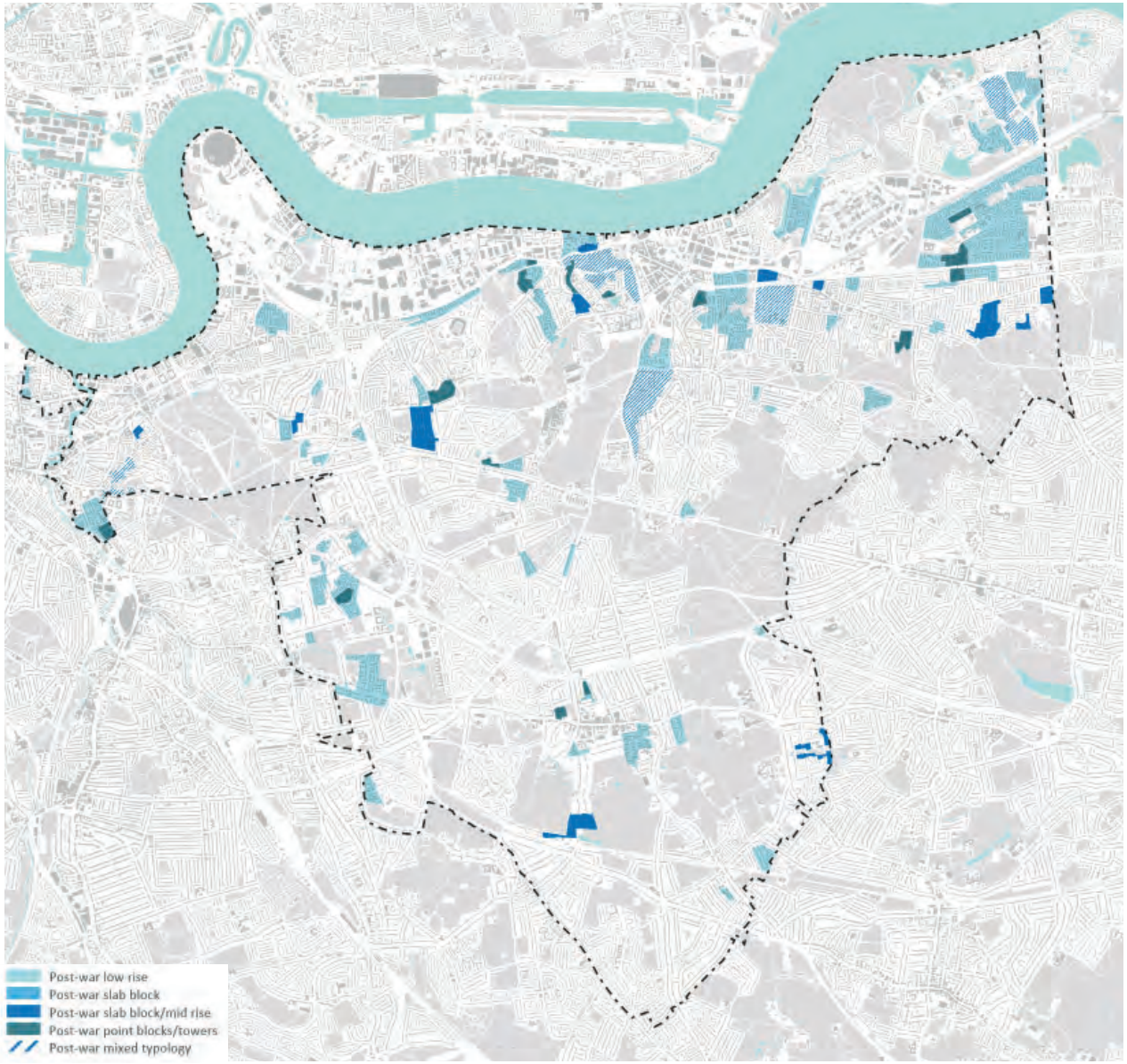

Figure 6.6: Post-war housing typologies

6.6 POTENTIAL OPPORTUNITIES COMBINED

Figure 6.7 shows all potential tall building opportunities combined This shows that there is most potential in the north of the borough, along the River Thames. However, Eltham and Kidbrook also offer some potential. These areas are sifted further in the next chapter.

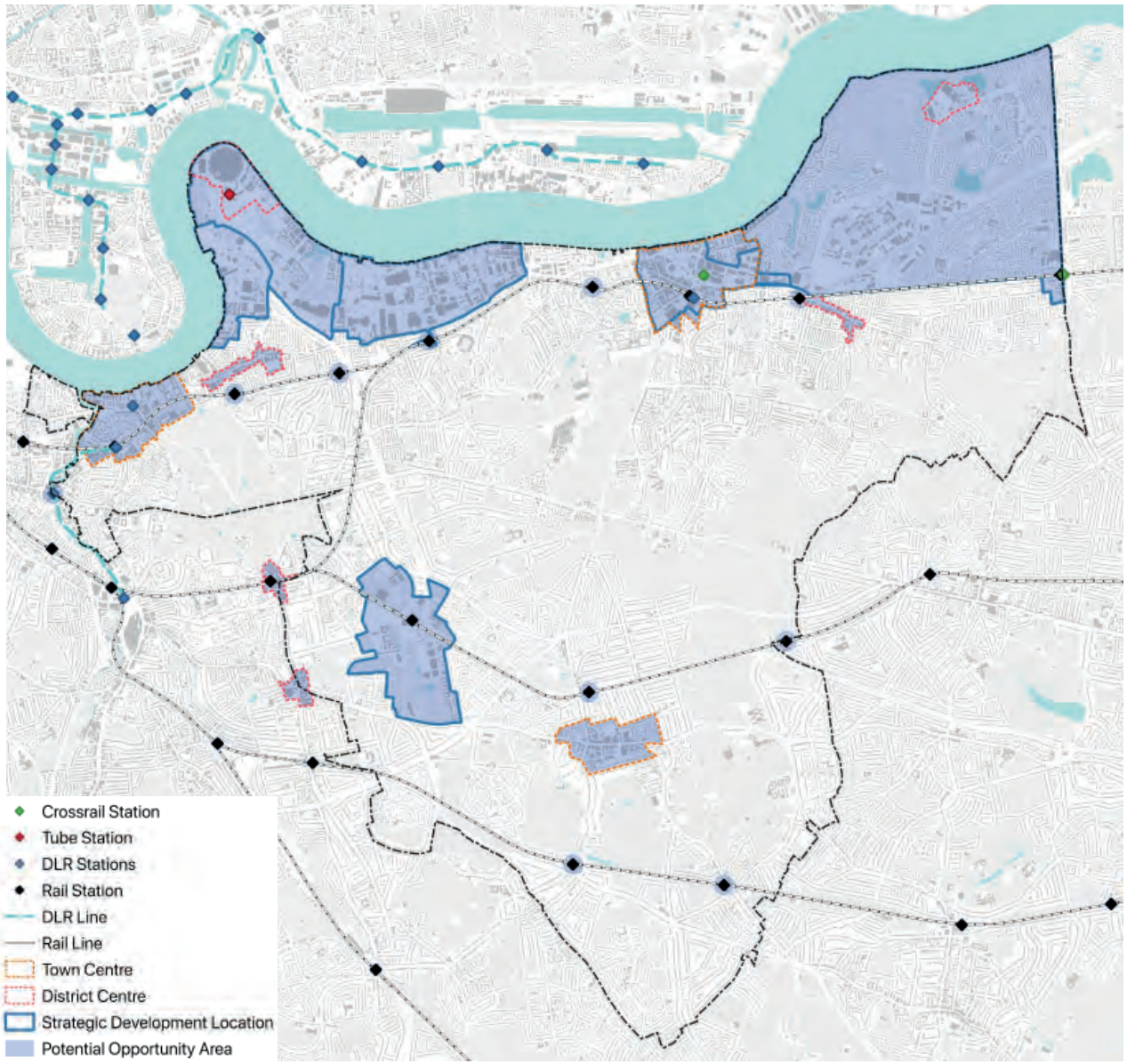

Figure 6.7: Centres and Strategic Development Locations Potential

7 SIFTING FOR POTENTIAL TALL BUILDING LOCATIONS

7.1 SIFTING PROCESS

This chapter provides an overview of the process undertaken to sift out potential areas for tall buildings. The four stages of the sifting process are:

- **Stage 1:** Identify areas with opportunity for tall buildings
- **Stage 2:** Remove areas with low public transport accessibility (PTAL less than 3)
- **Stage 3:** Remove Highly Sensitive Areas to identify Areas of Search
- **Stage 4:** Overlay sensitivities on Areas of Search

These stages are discussed further on the following pages.

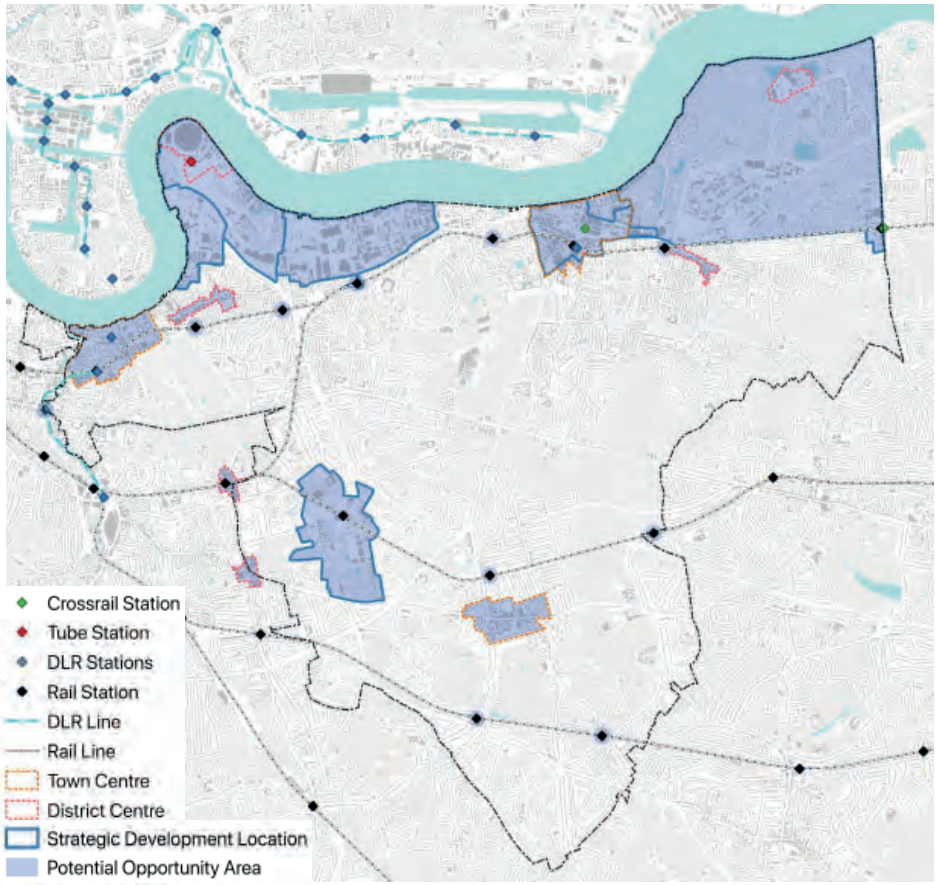

Figure 7.1: Sifting Stage 1

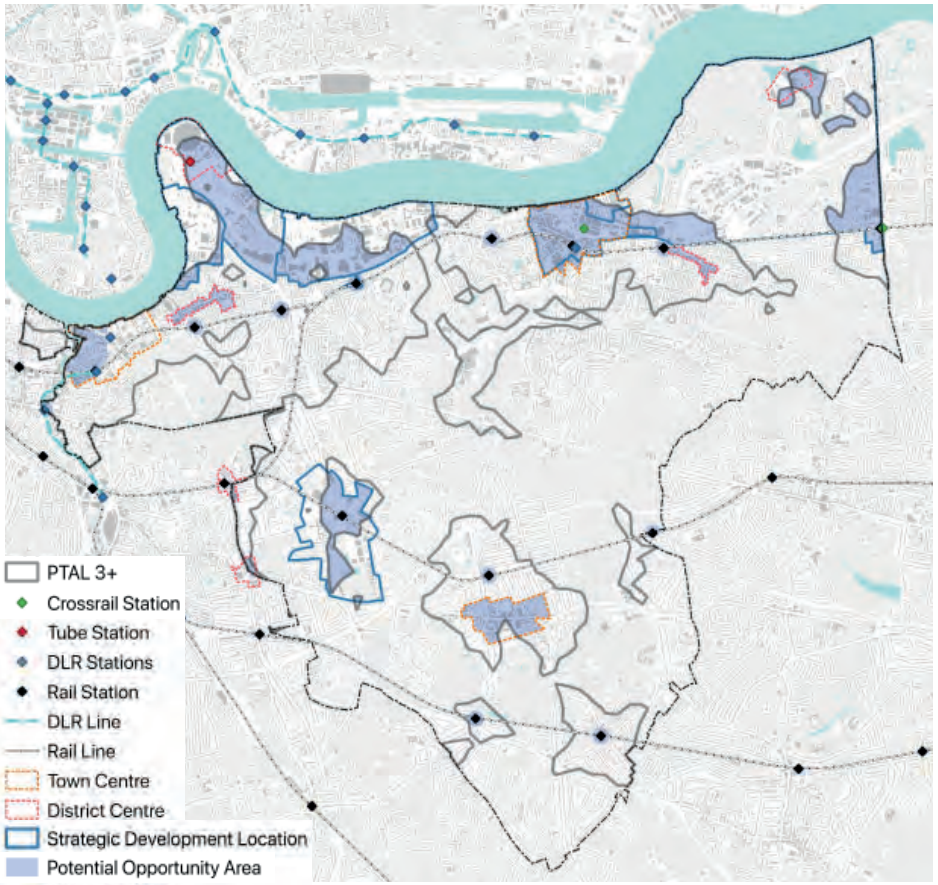

Figure 7.2: Sifting Stage 2

STAGE 1: IDENTIFY AREAS WITH OPPORTUNITY FOR TALL BUILDINGS

The areas identified in Stage 1 are town and district centres, Strategic Development Locations and 100m buffers around public transport stations. These are identified in Chapter 6.

STAGE 2: REMOVE AREAS WITH LOW PUBLIC TRANSPORT ACCESSIBILITY

As discussed in Chapter 6, tall buildings must be highly accessible by public transport. In Stage 2, all areas with a PTAL of less that 3 are removed.

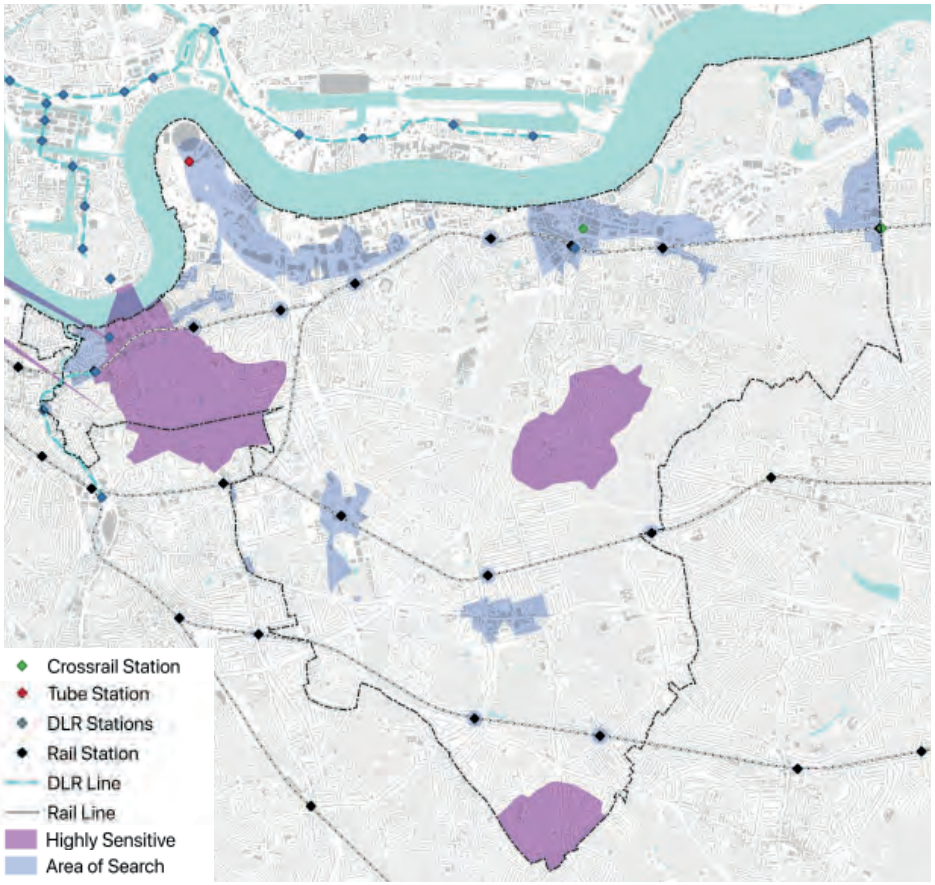

Figure 7.3: Sifting Stage 3

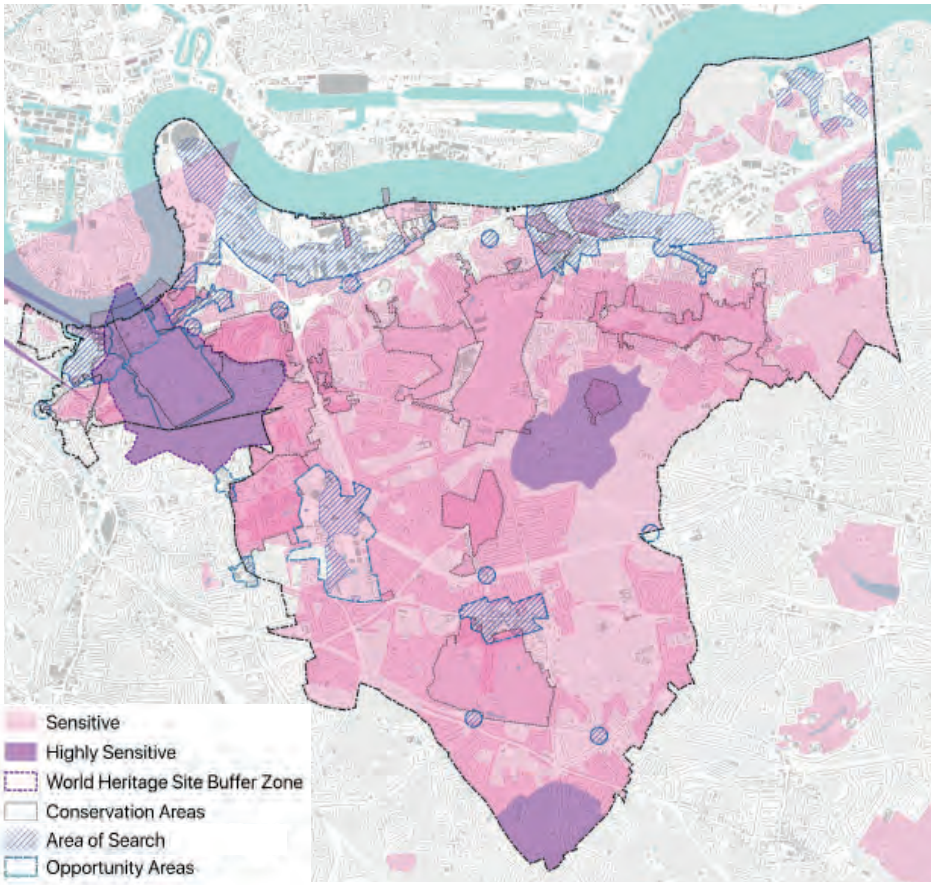

Figure 7.4: Sifting Stage 4

STAGE 3: REMOVE HIGHLY SENSITIVE AREAS

Highly Sensitive areas are presented in Chapter 5. In Stage 3, these areas are removed as potential tall building areas. This discounts part of Greenwich town centre that is within the World Heritage Site and Buffer Zone and LVMF viewcone. The potential opportunity areas that are left are now called the Areas of Search.

STAGE 4: OVERLAY SENSITIVITIES

In the final stage of sifting, the sensitivities identified in Chapter 5 are overlaid on the Areas of Search to ascertain what sensitivities need to be considered in further detailed work.

7.2 AREAS OF SEARCH

Figure 7.5 presents the Areas of Search, the areas in RB Greenwich with the most potential for tall buildings. Further detailed work is needed to determine the optimal location and height of tall buildings within these areas, where they are appropriate.

What is clear is that Greenwich Peninsula, Charlton and Woolwich/Plumstead are likely to have the most potential to accommodate tall buildings within the borough. Kidbrooke and the western edge of Greenwich town may also offer potential if their relevant sensitivities can be successfully mitigated.

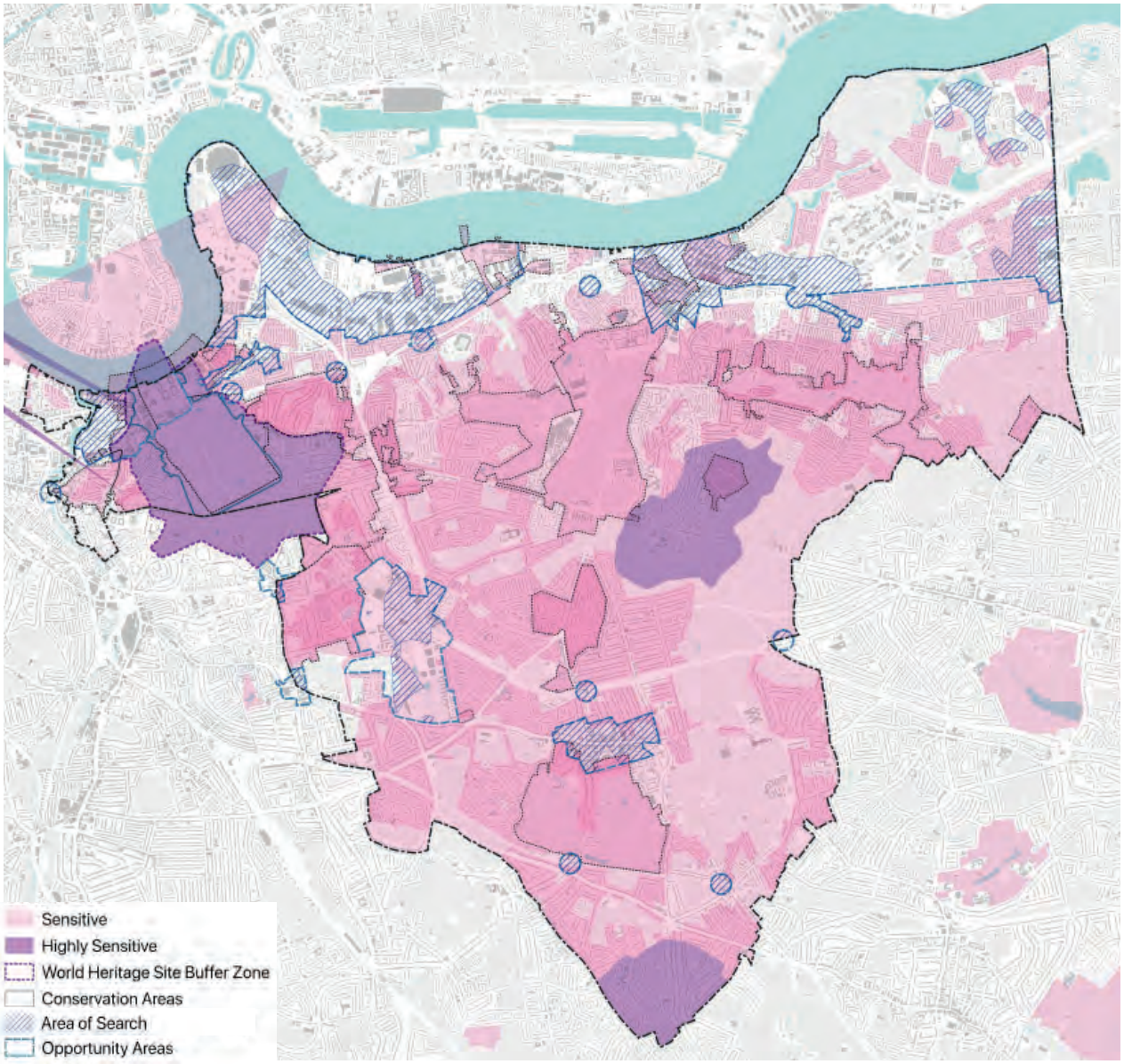

Figure 7.5: Areas of Search

Image 7.1: Plumstead High Street

7.3 IDENTIFICATION OF AREAS APPROPRIATE FOR TALL BUILDINGS

The Areas of Search have been thoroughly analysed and reviewed to determine what locations are appropriate for tall buildings, in the context of:

- Character areas (identified in the RB Greenwich Characterisation Study);
- Their opportunity for change;
- Local sensitivities and views;
- Context heights; and
- Topography.

It was then considered what specific place making role a tall building could fulfil, how one could guide legibility or help with intensification or regeneration. Where a role is identified, a judgement has been made on the scale of tall building (local, district or metropolitan) and height that would be appropriate. These tall buildings have been tested in 3d using VUCity. Some Areas of Search have been ruled out for tall buildings due to their sensitivity. The analysis identified Tall Building Cones, Limited Opportunity Zones, Tall Building Clusters and Landmarks.

The process led to the identification of areas appropriate for tall buildings and indicative heights. Figure 7.6 illustrates the findings of this process in the context of the identified sensitivities. Figure 7.7 on page 105 shows only the tall building recommendations for the borough. Full details for each Place are provided in Chapter 8.

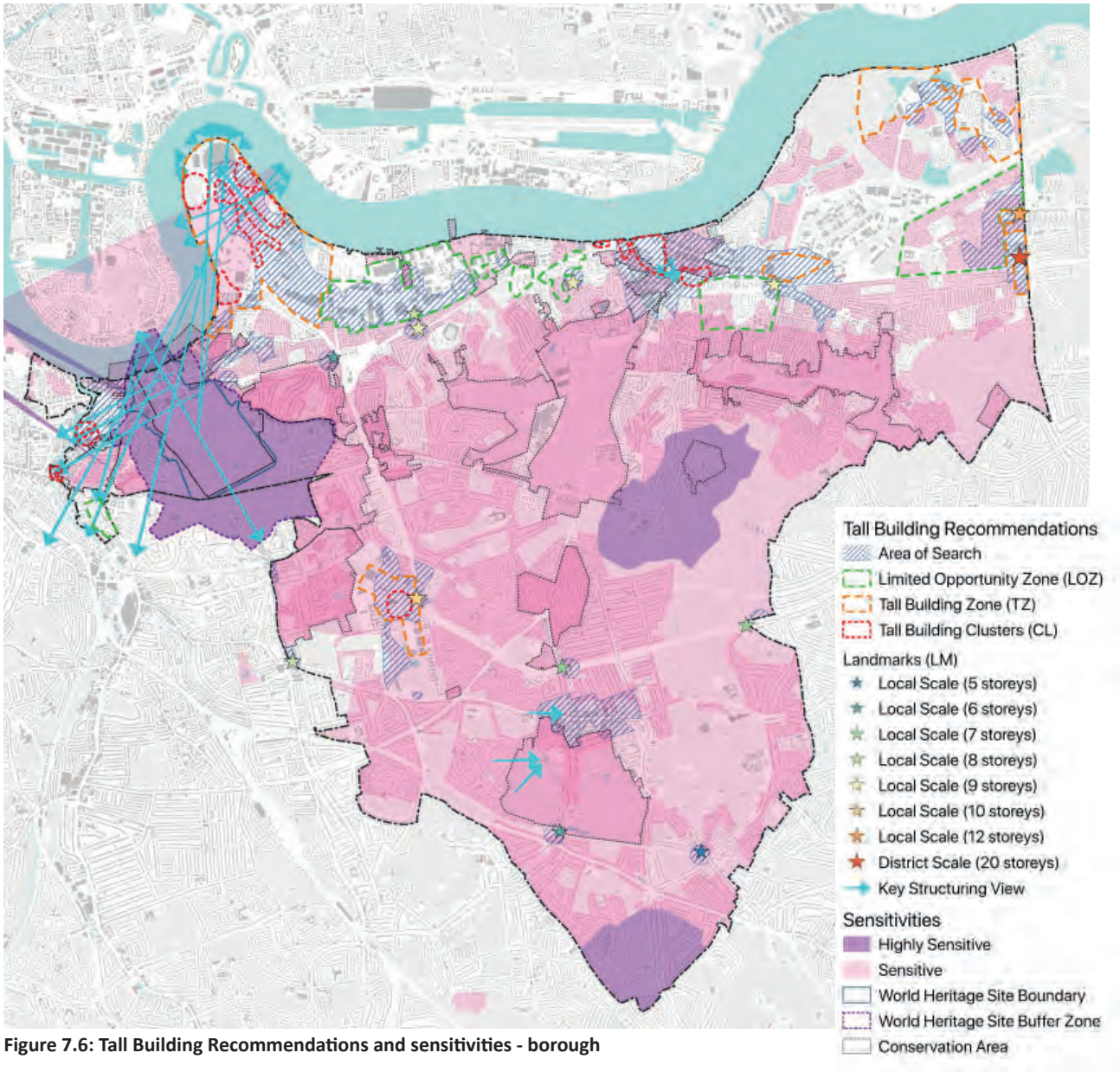

Figure 7.6: Tall Building Recommendations and sensitivities - borough

Inclusion of an area in the recommendations does not mean that a tall building would be automatically permissible. Full tests and justification for each proposal are necessary.

RECOMMENDATION TERMINOLOGY DEFINITIONS

Tall Building Zone (TZ): Areas where there may be potential for usually local scale tall buildings to aid place making or regeneration, subject to locally specific principles.

Limited Opportunity Zone (LOZ): Areas with minor potential for modest tall buildings as part of a comprehensive approach to change or renewal.

Tall Building Cluster (CL): Discrete areas where tall buildings could be concentrated subject to locally specific and cluster principles.

Landmark (LM): Locations that are appropriate for a single tall building up to perform a landmarking function, at a height relative to its importance.

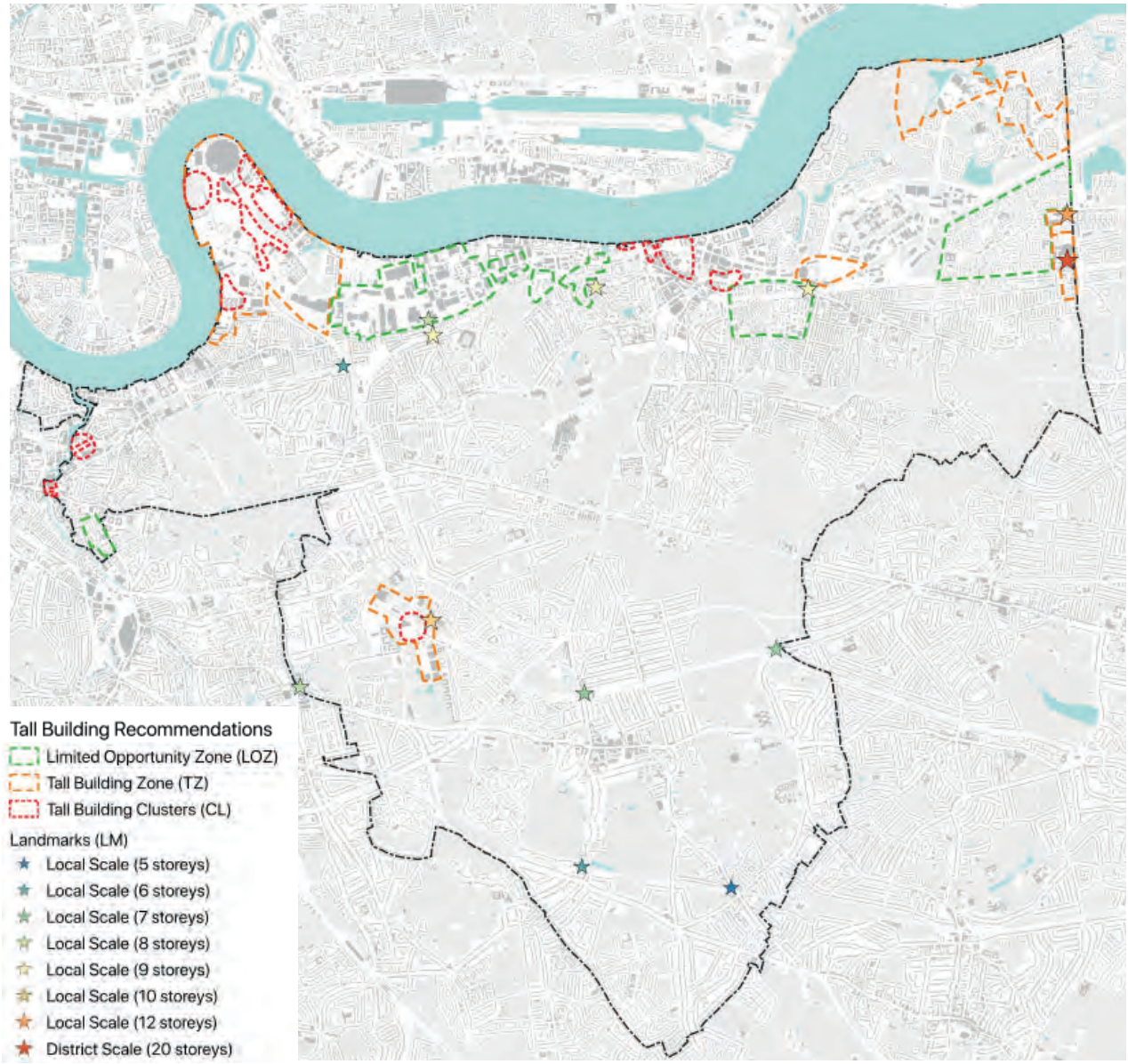

Figure 7.7: Tall Building Recommendations - borough

8 TALL BUILDING RECOMMENDATIONS

8.1 INTRODUCTION

This chapter presents recommendations for appropriate locations for tall buildings throughout the Royal Borough of Greenwich, under the following topics:

- Tall Building Zones (TZ) - areas where there may be potential for usually local scale tall buildings to aid place making or regeneration, subject to locally specific principles;
- Limited Opportunity Zone (LOZ) - Areas with minor potential for modest tall buildings as part of a comprehensive approach to change or renewal;
- Tall Building Clusters (CL) - discrete areas where tall buildings could be concentrated subject to locally specific and cluster principles;
- Tall Building Landmarks (LM) - locations that are appropriate for a single tall building to perform a landmarking function.

All tall buildings are subject to meeting the tall building objectives in Chapter 4 and mitigating any identified sensitivities.

This chapter also identifies a small number of structuring views, which should not be interrupted or blocked by tall buildings, to safeguard the borough's image and identity.

Recommendations are provided for each Area of Search (AS), and organised by Place.

8.2 WEST DISTRICT

GREENWICH

Figure 8.1 shows the tall building recommendations for Greenwich. Details are provided in Table 8.1 on page 112

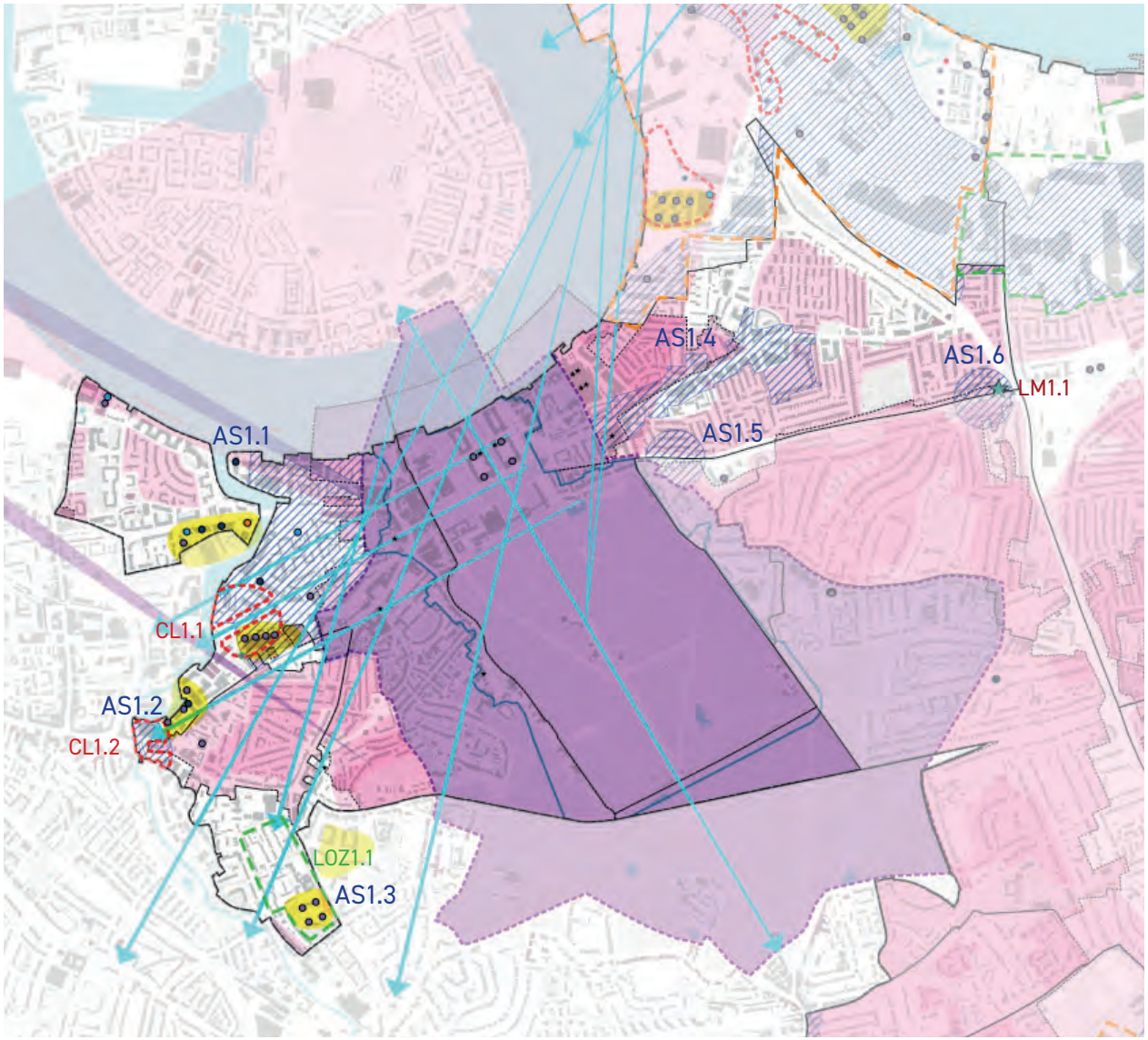

Figure 8.1: Tall Building Recommendations - Greenwich

Figure 8.2: View from General Wolfe Statue towards St Pauls - existing

Figure 8.4: View along Romney Road towards St Alfege's Church - existing (no permitted developments visible in this view)

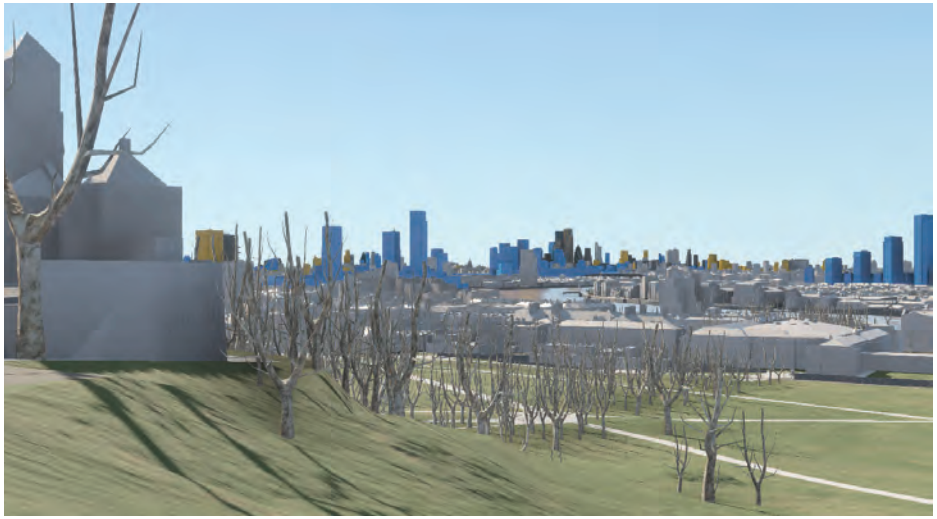

Figure 8.3: View from General Wolfe Statue towards St Pauls - permitted and under construction developments

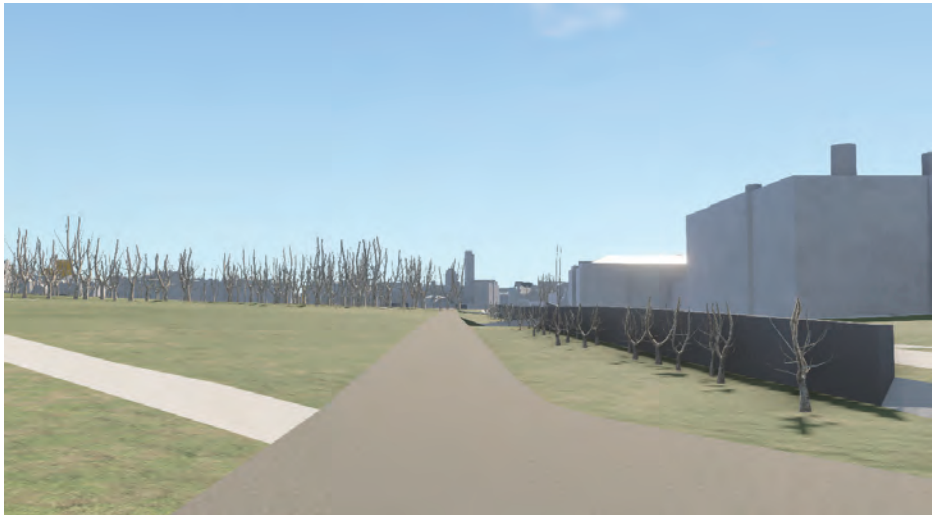

Figure 8.5: View from Greenwich Park to Town Hall - existing (no permitted developments visible in this view)

Recently Built

Permitted (Full Planning)

Under Construction

Figure 8.6: View to Maritime Greenwich WHS from Morden Wharf - existing

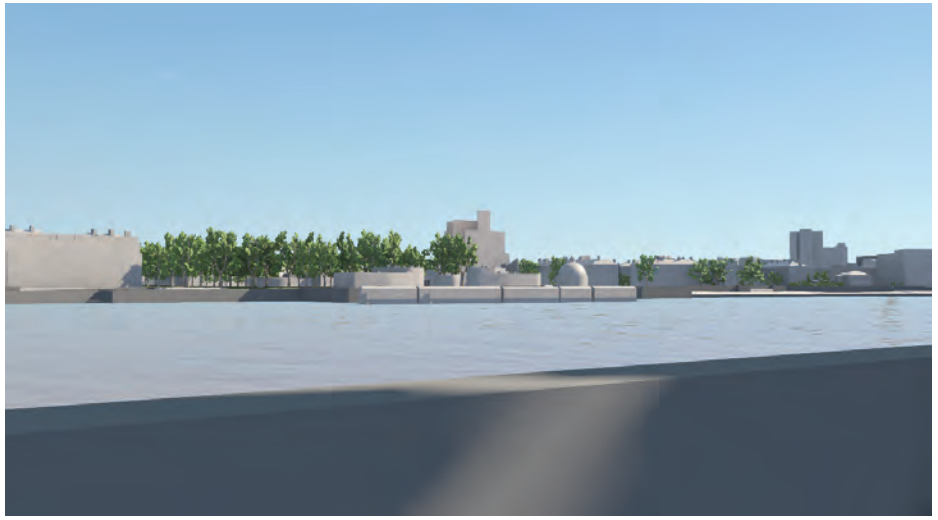

Figure 8.8: View from Island Gardens toward Cutty Sark - existing

Figure 8.7: View to Maritime Greenwich WHS from Morden Wharf - existing, permitted and under construction developments

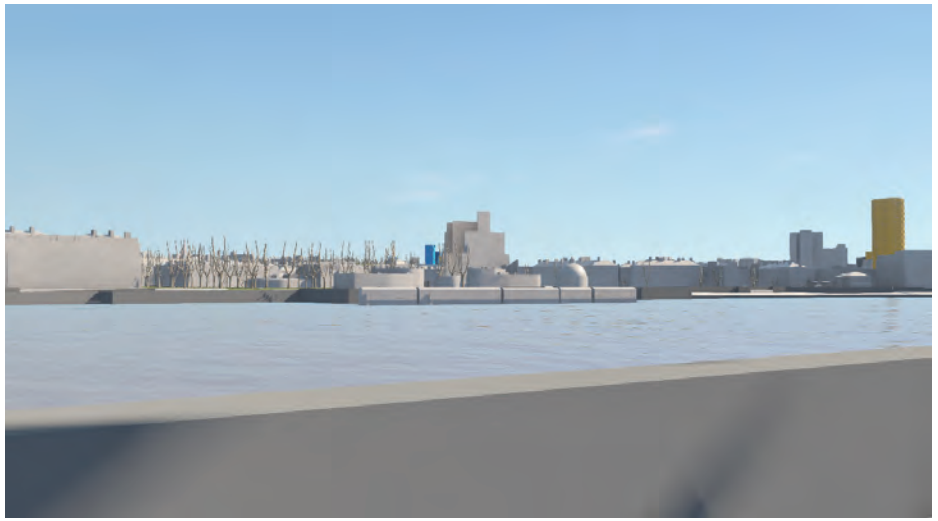

Figure 8.9: View from Island Gardens toward Cutty Sark - existing, permitted and under construction developments

Recently Built

Under Construction

Permitted (Full Planning)

Figure 8.10: View from Island Gardens towards Maritime Greenwich WHS - existing (permitted developments not visible in this view)

Table 8.1: Tall building recommendations - Greenwich

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS1. 1	Greenwich Town Centre	CH: 2-5 storeys (varied) TB: 11-17 storeys	• Intensify Town centre with high PTAL and facilities	• WHS Buffer Zone • WHS Grand Axis view • View along Romney Road towards St Alfege Church • View along College Way towards town centre • View from Herbaceous Border towards town hall tower • West Greenwich Conservation Area • Ashburn Triangle Conservation Area • Proximity to WHS • Proximity to Registered Park and Garden • Proximity to LVMF view cone	Majority of area unsuitable for tall buildings due to: • proximity to WHS and visual prominence in views affecting the setting of the WHS and views to and from the WHS; and • being situated within or in the setting of West Woolwich CA and listed buildings and affecting their significance. Existing /permitted cluster around Adagio Point / permitted Creek-side Village East towers, should not be extended further to avoid further eroding the ensemble and low rise and natural setting of Maritime Greenwich, the Park and Greenwich town centre. Potential for small cluster (CL1.1) of buildings of up to 42m AOD (approximately 12 storeys) with the exception of buildings located in the view cone from the eastern end of Romney Road, where they should be no more than 36m AOD (up 10 storeys) in the Brookmarsh Industrial Estate as part of a comprehensive development, subject to: • avoiding any intrusion into the view along Romney Road (eastern end) towards St Alfege Church. • avoiding adverse impact on heritage assets and other strategic or local views. • creating a varied skyline with different heights. • Avoiding creating a wall of tall buildings along the Creek.
AS1.2	Deptford Bridge Area	CH: 3 storeys (varied)	• Intensify central location around Rail station in area of high PTAL	• Ashburn Triangle Conservation Area	Opportunity for limited number of midrise buildings (CL1.2) of up to 40m AOD (approximately 10-11 storeys) to enhance density around station node without undermining the landmark function of the Distillery tower, subject to avoid adverse impact on the Ashburnham Triangle Conservation Area and low rise development on Greenwich High Road.
AS1.3	Orchard Hill and Colbath Estates	CH: 3 storeys (varied)	• Support regeneration of post war estate	• Proximity to low-rise residential area • Located on rising and visually prominent land	• Estate development could explore a modest number of midrise buildings (LOZ1.1), subject to avoiding visual impact onto the WHS and views towards Maritime Greenwich from downriver. • Development to respond sensitively to low-rise context. • Heights of up 10 storeys (3x context height).

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS1.4	Trafalgar Road	CH: 2-3 storeys	• To enhance legibility and intensify district centre in areas of high PTAL 3+	• WHS Buffer Zone • WHS Grand Axis view • East Greenwich Conservation Area • Proximity to WHS • Proximity to Greenwich Park Registered Park and Garden • Low-rise residential area	No opportunity for tall buildings due to low rise and intricate character of the high street, the low rise residential hinterland and modest scale existing landmarks.
AS1.5	Maze Hill	CH: 2-3 storeys (varied)	• To enhance legibility of rail station and intensify area of higher PTAL	• WHS Buffer Zone • WHS Grand Axis view • Greenwich Park Conservation Area • East Greenwich Conservation Area • Proximity to WHS • Proximity to Greenwich Park Registered Park and Garden • Low-rise residential area	No opportunity for tall buildings due to visually sensitive location in close proximity to WHS, Registered Park and Garden and East Greenwich Conservation Area.
AS1.6	Westcombe Park	CH: 2 storeys	• To enhance legibility of rail station and intensify area of higher PTAL	• Low-rise residential area • Greenwich Park Conservation Area	Opportunity for a singular local landmark building (LM1.1) of up to 3x context height (up to 6 storeys) to mark the station approach on the A2 to enhance wayfinding and deliver improved station environment, subject to avoiding adverse impact on neighbouring low rise buildings, Greenwich Park Conservation Area and local views.

GREENWICH PENINSULA

Figure 8.11 shows the tall building recommendations for Greenwich Peninsula. Details are provided in Table 8.2 on page 117.

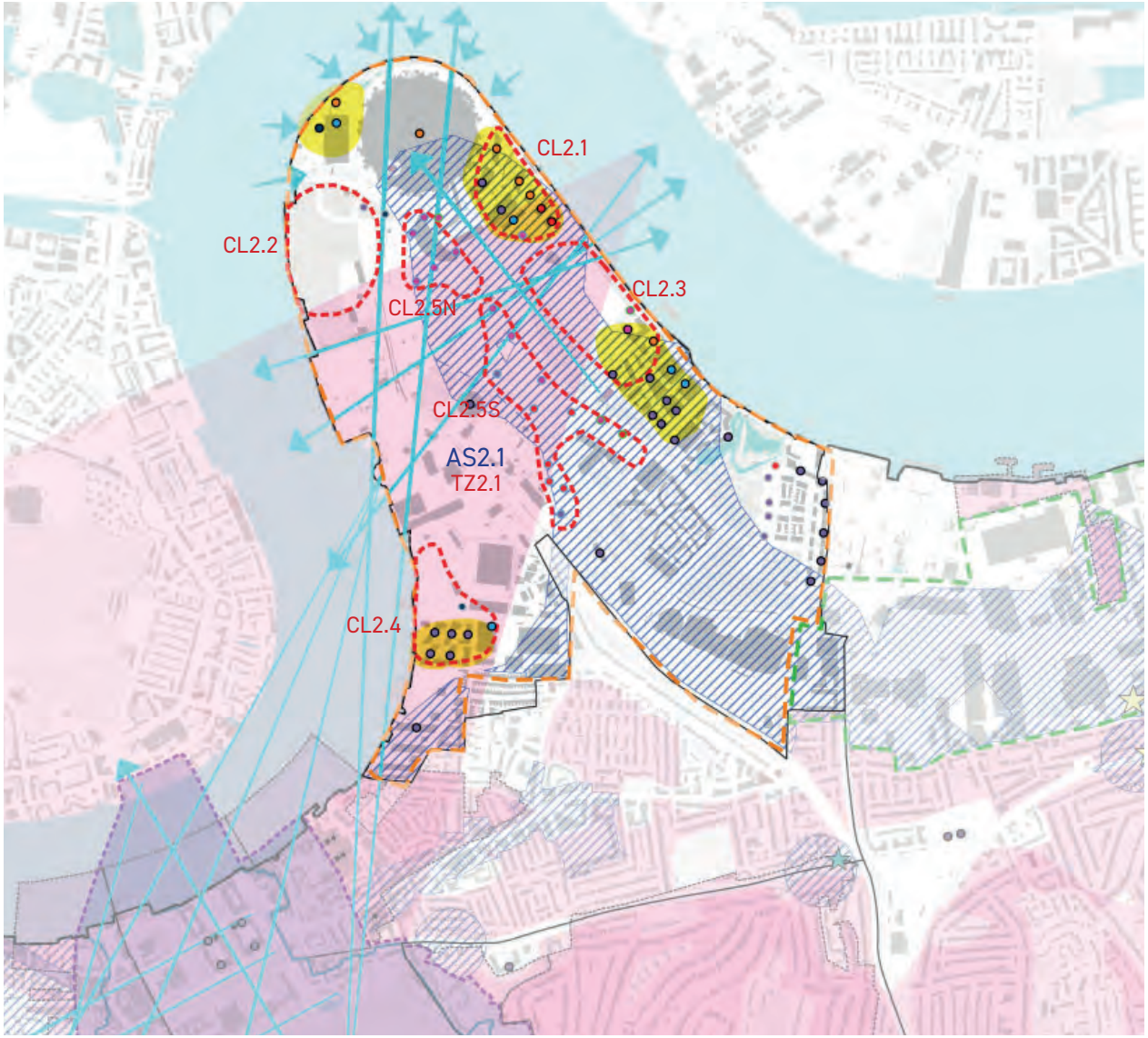

Figure 8.11: Tall Building Recommendations - Greenwich Peninsula

Figure 8.12: View from General Wolfe Statue toward Greenwich Peninsula and O2 Arena - existing

Figure 8.13: View from General Wolfe Statue toward Greenwich Peninsula and O2 Arena - exiting, permitted and under construction developments

Figure 8.14: View from entrance to Blackwall Tunnel to O2 Arena - existing

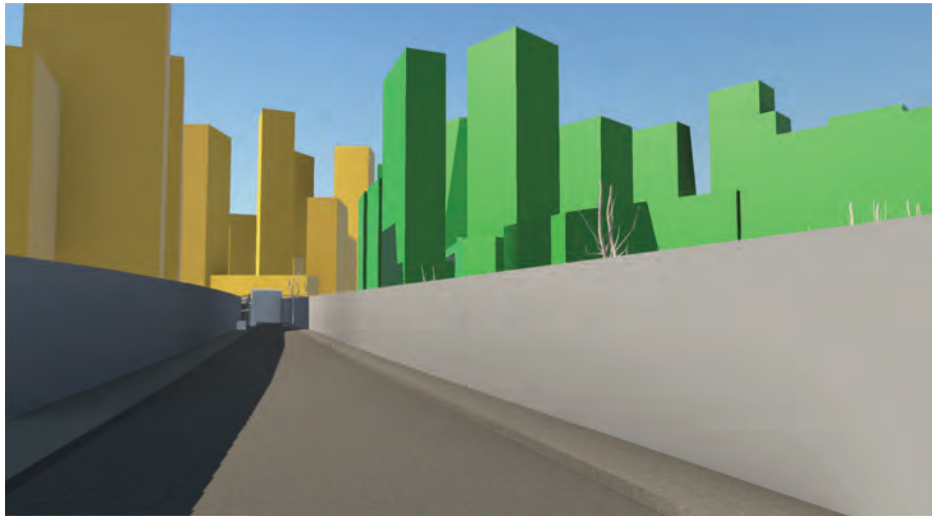

Figure 8.15: View from entrance to Blackwall Tunnel to O2 Arena - existing, permitted and under construction developments

Recently Built

Under Construction

Permitted (Full Planning)

Outline Consent (showing maximum height envelope)

Figure 8.16: View from riverside adjacent to Trafalgar Tavern towards Greenwich Peninsula and O2 Arena - existing

Figure 8.17: View from riverside adjacent to Trafalgar Tavern towards Greenwich Peninsula and O2 Arena - permitted and under construction development

Recently Built

Under Construction

Permitted (Full Planning)

Outline Consent (showing maximum height envelope)

Table 8.2: Tall building recommendations - Greenwich Peninsula

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS2.1	Greenwich Peninsula	CH: 2-10 storeys (varied) TB: 10-32 storeys	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL	• WHS Grand Axis view • Metropolitan City Image Landmark – O2 Arena • City Image River views	Peninsula generally suitable for tall buildings, subject to a masterplan-led approach where tall buildings are an integral part of a coherent, place making approach (TZ2.1). Tall Building General Principles (notwithstanding Outline Planning Consent 19/2733/O): • Protect views and the prominence of the London-wide landmark, the O2 Arena: - Retain open views from the river curving around the O2 to appreciate the dome and pylons against the sky, so that its scale and architecture can be fully appreciated. - Retain open views from WHS Grand Axis View (minimum central part of dome with four pylons clearly visible against sky). - Retain open view from northbound A102 behind gate house towards the O2 arena. • Avoid creating a wall of towers lining the riverfront and retain visual open corridor across the peninsula from east to west. • Establish a few discrete clusters of tall buildings that are clearly separate from each other. Tall buildings clusters at the peninsula should be clearly sub-ordinate in their height to the central Canary Wharf cluster. Heights of tall buildings should notably vary to deliver a lively skyline and not normally exceed 5x context height. Clusters should have their own visual distinctiveness and with their height clearly express the hierarchy of places on the skyline: - Highest order place - northern end of the central cluster at Jubilee Line station (CL2.5N) - Medium order place - south east and south west of the O2 (CL2.1 and CL2.2) and southern end of central cluster (CL2.5S) - Lower order place - Enderby Wharf (CL2.4) and Central Park South (CL2.3) • Location and height of tall buildings within clusters should be established through a masterplan led place making approach that responds to sensitive views. • Potential for singular local scale tall buildings of up to 12 storey to mark places of visual significance, such as main gateways or important street where they do not undermine above strategic principles.

BLACKHEATH

Figure 8.18 shows the tall building recommendations for Blackheath. Details are provided in Table 8.3 on page 119.

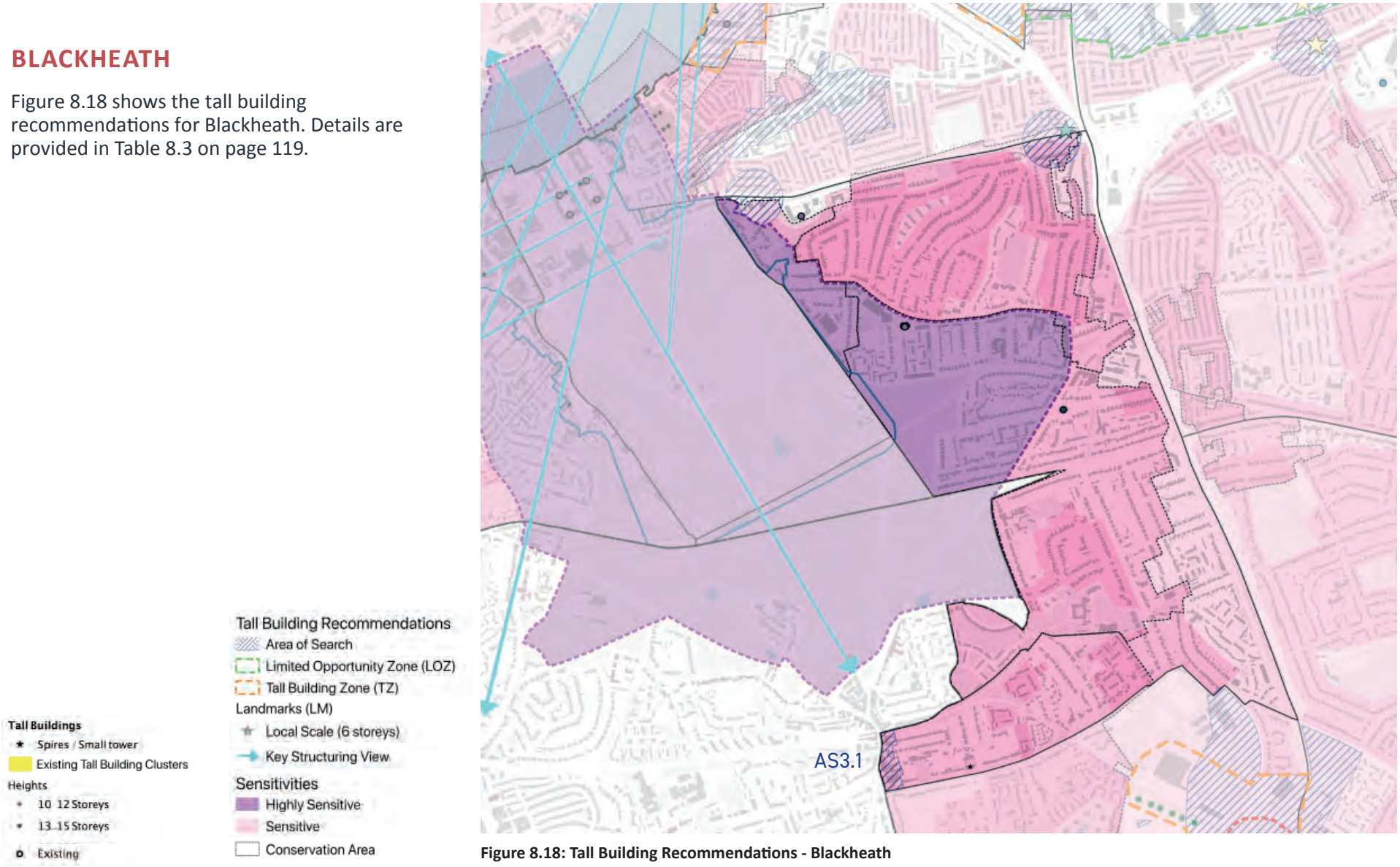

Figure 8.18: Tall Building Recommendations - Blackheath

Table 8.3: Tall building recommendations - Blackheath

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS3.1	Blackheath	CH: 3 storeys (varied)	• To intensify district centre in area of high PTAL and enhance legibility of the station	• WHS and Buffer Zone • WHS Grand Axis view towards All Saints Church • Blackheath Park Conservation Area • Low-rise residential area • Elevation above 20m	No opportunity for tall building due to highly sensitive location, potential intrusion into WHS Grand Axis View and risk of over dominating the intricate fine grain character of the streets in the centre.

CHARLTON

Figure 8.19 shows the tall building recommendations for Charlton. Details are provided in Table 8.4 on page 121.

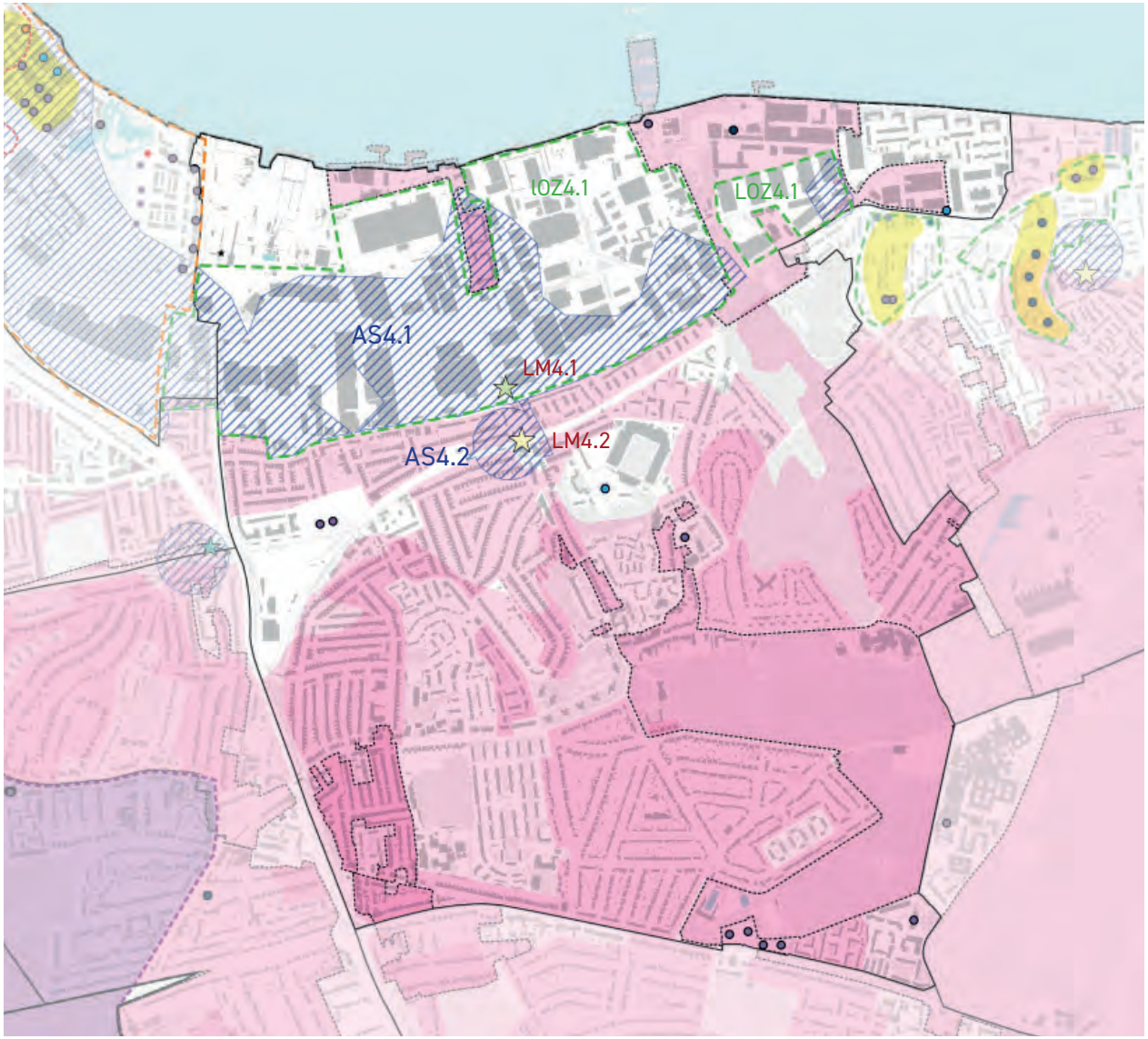

Figure 8.19: Tall Building Recommendations - Charlton

Table 8.4: Tall building recommendations - Charlton

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS4.1	Charlton Riverside	CH: 2-3 storeys	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL	• Charlton Riverside Conservation Area • Thames Barrier and Bowater Road Conservation Area • Thames Barrier City Image Landmark • Industrial Heritage	Some opportunity for modest tall buildings as part of a coherently planned and delivered approach to placemaking for the Charlton Riverside area, outside Conservation Areas (LOZ4.1). Tall buildings primarily to be considered as singular local landmarks to enhance distinctiveness, legibility and wayfinding, in line with the opportunities identified in the Charlton Riverside SPD. Potential locations: • The main entrances into the area on Woolwich Road (LM4.1) - up to 9 storeys (3x context height) • Significant local activity hubs (local centre, new major green space etc.) – (up to 2.5x context height) • Key riverfront locations (up to 2.5x context height) • Other visually prominent location at important routes and intersections to aid wayfinding and enhance legibility (up to 2x context height) Height should be proportional to the significance and hierarchy of place in Charlton Riverside and generally not exceed 10 storeys. Avoid continuous runs of tall buildings along the riverfront – only emphasise a number of separate locations. Tall buildings not to compete with or detract from designated and non-designated heritage assets or the Thames Barrier Metropolitan Landmark.
AS4.2	Charlton Rail station	CH: 2-3 storeys	• To enhance legibility of rail station and intensify area of higher PTAL	• Low-rise residential area	Opportunity for a singular local landmark building (LM4.2) of up to 3x context height (maximum 9 storeys) to mark the station on Charlton Church Lane to enhance wayfinding, deliver an improved station environment and intensification around the station. Tall building to avoid adverse impact on neighbouring low rise buildings or to detract from historic public house at the corner with Woolwich Road.

8.3 EAST DISTRICT

WOOLWICH

Figure 8.20 shows the tall building recommendations for Woolwich. Details are provided in Table 8.5 on page 123.

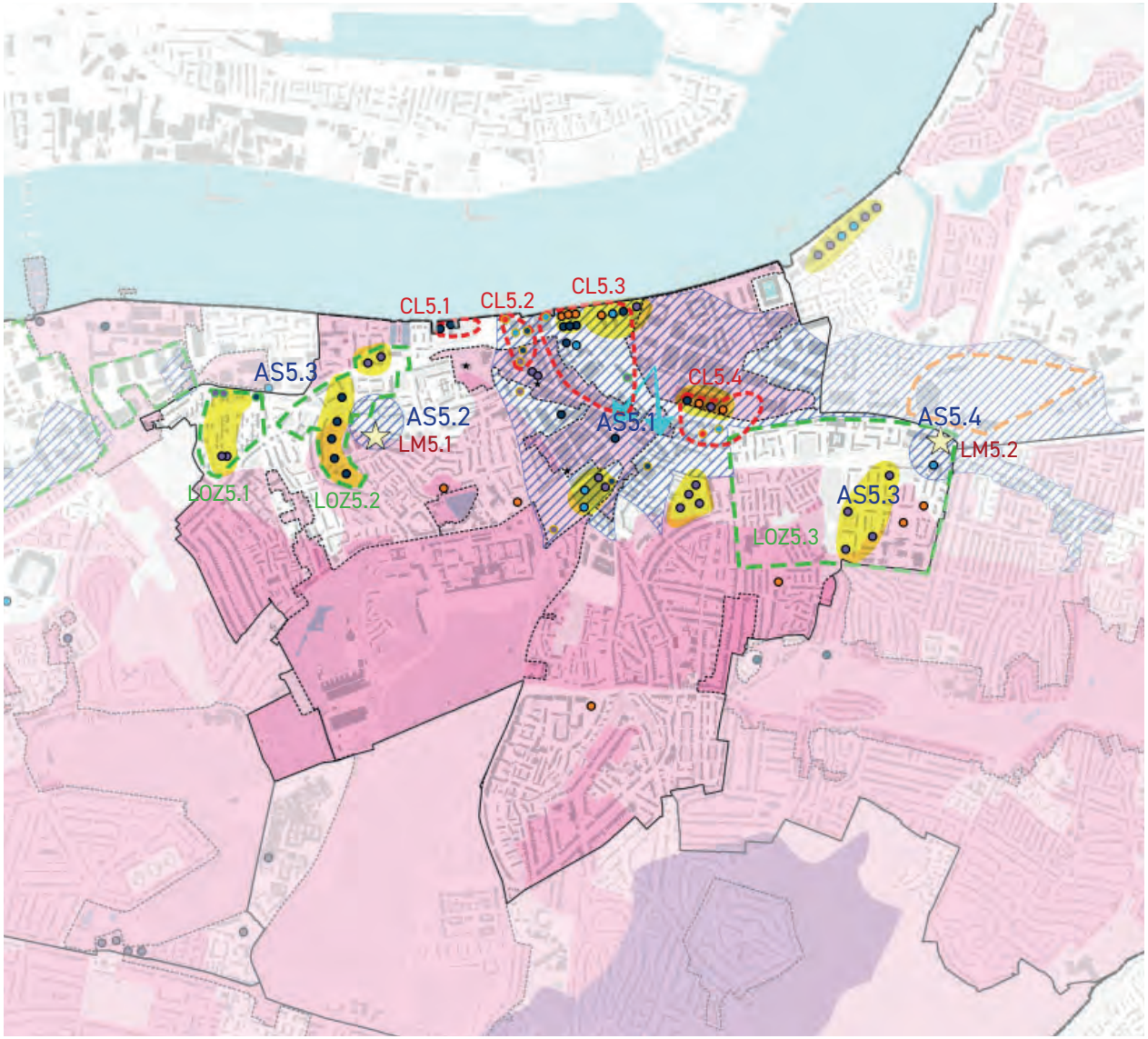

Figure 8.20: Tall Building Recommendations - Woolwich

Table 8.5: Tall building recommendations - Woolwich

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS5.1	Woolwich Town Centre	CH: 3-4 storeys (varied) TB: 10-22 storeys	• Town Centre • PTAL 3+ • Strategic Development Location	• Woolwich Conservation Area • Royal Arsenal Conservation Area • Low-rise residential area • View and backdrop of view toward Bell Foundry from No.1 Street	Four tall building clusters (CL5.1, CL5.2, CL5.3, CL5.4), with buildings ranging in height from 12-15 storeys, if set back from the building line within blocks, and up to 25 storeys in prescribed locations in Local Plan.
AS5.2	Woolwich Dockyard	CH: 2-3 storeys (varied)	• To enhance legibility of rail station and intensify area of higher PTAL	• Low-rise residential area • Listed St. Michaels and All Angels Church	Opportunity for a singular local landmark building (LM5.1) of up to 3x context height (maximum 9 storeys) to mark the station on Belson Road to enhance wayfinding, deliver an improved station environment and intensification around the station. Tall building to avoid adverse impact on neighbouring low rise buildings or to detract from St. Michaels and All Angels Church.
AS5.3	Woolwich Housing Estates	CH: 3 storeys (varied) TB: 11 storeys	• Support estate regeneration of post war estate	• Low-rise residential area • Rising land with exposed visibility	• Comprehensive estate regeneration could explore a modest number of midrise buildings to assist regeneration (LOZ5.1, LOZ5.2, LOZ5.3). • Taller buildings to be located on lower ground. • Be part of a comprehensive approach to place making and help to enhance legibility and/or establish an discrete area with a distinct new character. • Development to respond sensitively to remaining low-rise context. • Variation of heights of up to 3x context height (no more than 12 storeys), lower heights on elevated lands.
AS5.4	Plumstead Station	CH: 2-3 storeys (varied) TB: 18 storeys	• To enhance legibility of rail station and intensify area of higher PTAL	• N/A	Opportunity for a singular local landmark building (LM5.2) of up to 3x context height (maximum 9 storeys) to mark the station on Plumstead Road to enhance wayfinding, deliver an improved station environment and intensification around the station.

PLUMSTEAD

Figure 8.28 shows the tall building recommendations for Plumstead. Details are provided in Table 8.6 on page 125.

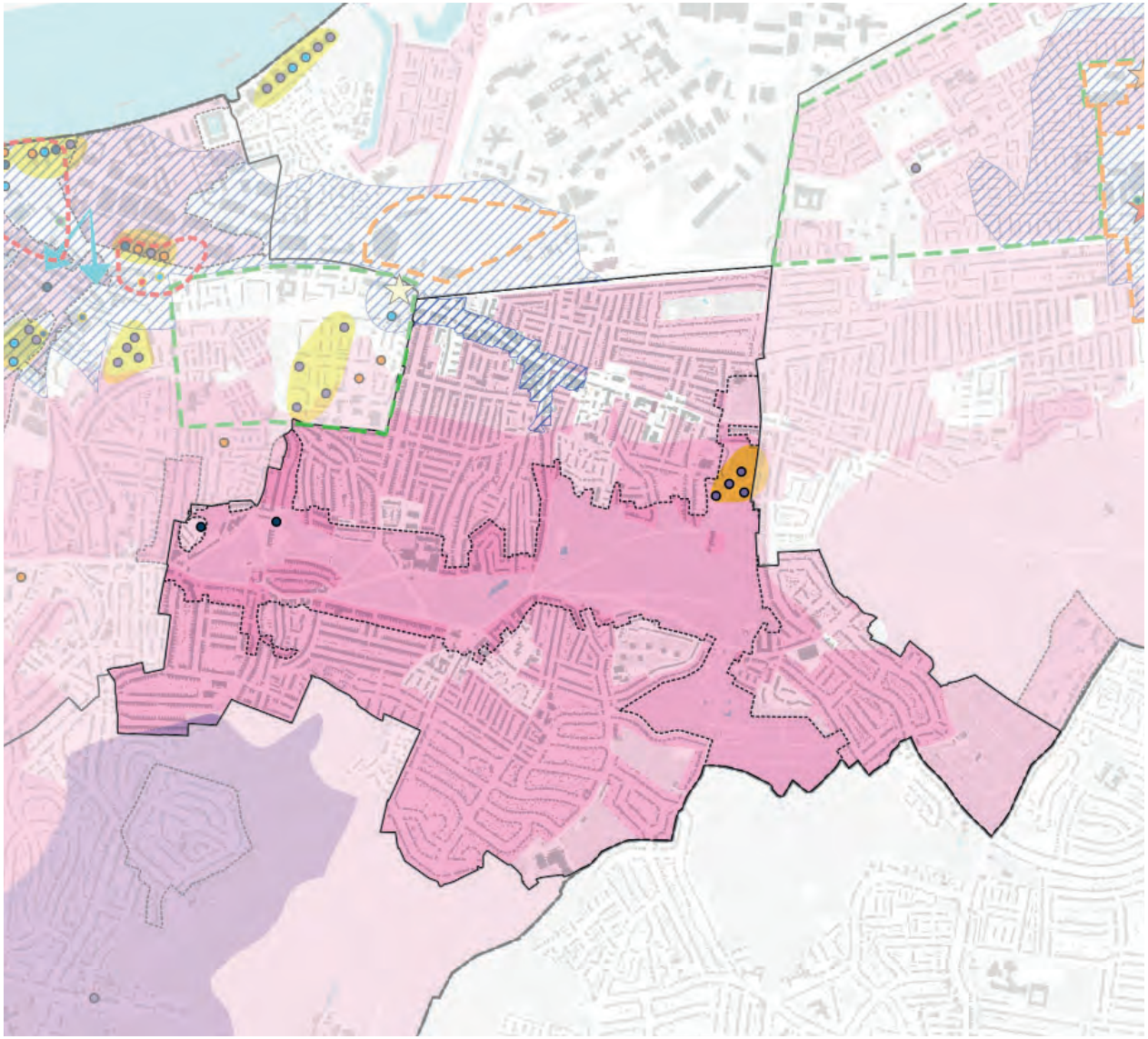

Figure 8.21: Tall Building Recommendations - Plumstead

Table 8.6: Tall building recommendations - Plumstead

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS6.1	Plumstead High Street	CH: 2-3 storeys	• To intensify district centre in area of high PTAL	• Fine to medium grain high street of relatively consistent height • Undesignated heritage buildings that contribute to local character • Views from Plumstead Common Conservation Area • Low rise residential area	• No opportunity for tall buildings due to the low scale and fine grain nature of the High Street and lack of opportunity to create a meaningful landmark.

SHOOTER'S HILL

Figure 8.22 shows the tall building recommendations for Shooter's Hill. Details are provided in Table 8.7 on page 127.

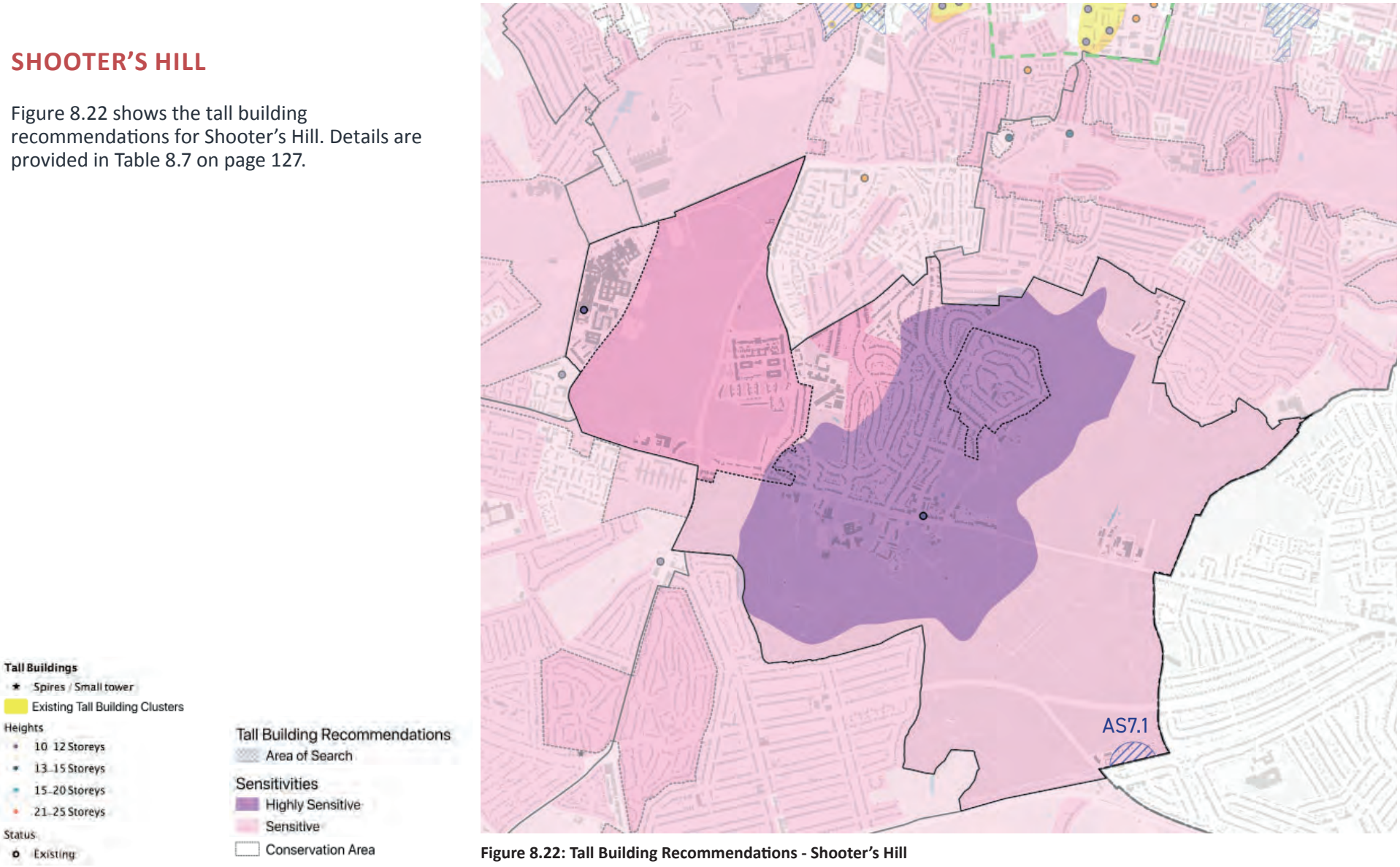

Figure 8.22: Tall Building Recommendations - Shooter's Hill

Table 8.7: Tall building recommendations - Shooters Hill

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS7.1	Falcon Wood Station	CH: 2 storeys	• To enhance legibility of rail station	• Elevated location within the borough in close proximity to Shooters Hill • Adjoining low rise development • Edge of settlement adjoining Shepherdleas Wood	No opportunity for tall buildings due to elevated and sensitive location, poor PTAL and lack of urbanity.

ABBEY WOOD

Figure 8.23 shows the tall building recommendations for Abbey Wood. Details are provided in Table 8.8 on page 129.

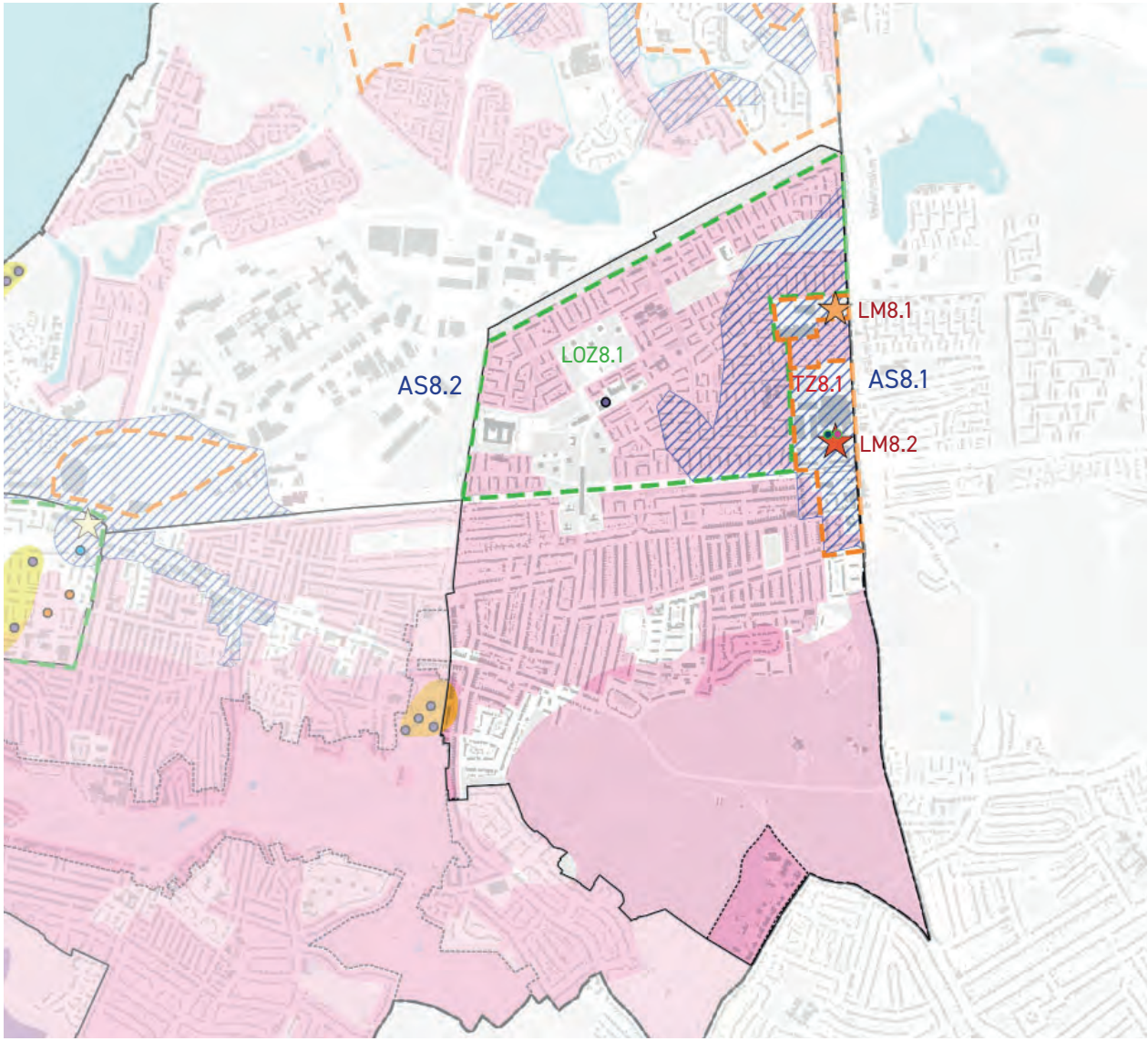

Figure 8.23: Tall Building Recommendations - Abbey Wood

Table 8.8: Tall building recommendations - Abbey Wood

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS8.1	Abbey Wood Station and Harrow Manor Way frontage	CH: 1-4 storeys (varied)	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL and landmark the railway station	• Low-rise residential area • Open landscape	• Potential for tall buildings as part of the comprehensive masterplan-led approach to regeneration of the tall building zone (TZ8.1) • Opportunity to landmark two specific locations along Harrow Manor Way: - Junction with Eynisham Drive (LM8.1) – local landmark up to 12 storeys, to respond to the new context height of 4-5 storeys that is emerging with permitted development in the area. - Sainsbury and Abbey Wood Station (north side) (LM8.2) – district landmark to mark the station node – up to 20 storeys • Opportunity for other taller buildings as part of the emerging place character. Their heights should be clearly subordinate and step down from the Local and District Landmarks. • Tall buildings should avoid having an overbearing impact on low rise housing, private and public amenity spaces or detract from the fine grain high street to the south of Abbey Wood Station. • Avoid creating a string of taller buildings along Harrow Manor Way and the joining up of clusters . • Tall buildings should avoid creation of a canyon effect on Harrow Manor Way.
AS8.2	Abbey Wood Estate	CH: 2-3 storeys (varied)	• To optimise development of Strategic Development Location and deliver estate regeneration	• Low-rise residential area	• Potential for modest scale local landmark buildings up to 2.5x context height (maximum 8 storeys) as part of a coherently planned and delivered approach to estate renewal approach (LOZ8.1) to assist with placemaking, enhancing distinctiveness and wayfinding, and to support delivery of estate renewal • Local landmark buildings should mark places of significance within the estate such as the local centre, an important open space or intersection of key routes • Tall building to be situated in places where they benefit from good public transport • Tall building should avoid overbearing impact on low rise housing, private and public amenity spaces

THAMESMEAD

Figure 8.24 shows the tall building recommendations for Thamesmead. Details are provided in Table 8.9 on page 131.

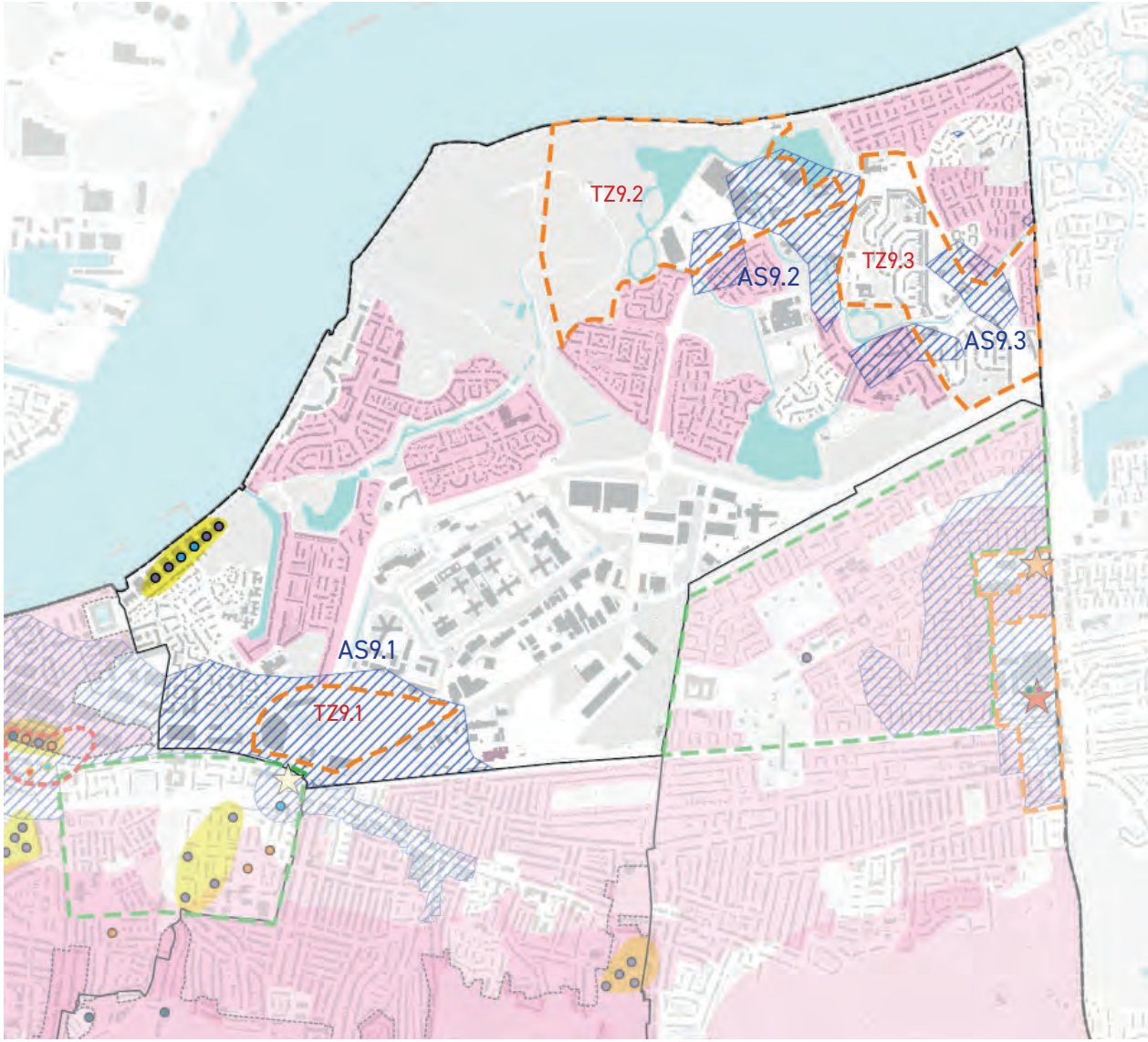

Figure 8.24: Tall Building Recommendations - Thamesmead

Table 8.9: Tall building recommendations - Thamesmead

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS9.1	Pettman Crescent	CH: 2-3 storeys	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL	• N/A	• Potential for tall buildings as part of a comprehensive, masterplan-led, place making approach to regeneration of the tall building zone (TZ9.1). • Taller buildings should provide occasional highpoints and variety in the skyline to deliver distinctiveness of the quarter with heights of 8 to 12 storeys, and should not be the prevailing building typology. • A few landmark buildings of up 15 storeys could be proposed to mark special places of significance such as the intersection of Western Way with Plumstead Road. • Tall buildings should significantly contribute to the regeneration, environmental enhancement and creation of attractive pedestrian and cycling connections between Plumstead Road and Thamesmead.

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS9.2	Thamesmead Sites	CH: 1-5 storeys (varied)	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL and landmark the potential future DLR station	• Low-rise residential area • Open landscape • Riverfront	• Potential for tall buildings as part of the comprehensive masterplan-led approach to the development of the new Thamesmead town centre and the creation of a distinctive character (TZ9.2). • Taller buildings could form part of a typological response to the development and be part of the character of discrete areas where they provide occasional high points and variety in the skyline, enhance distinctiveness, but are not the prevailing building form - tall building heights up to 3x context height (not exceeding 12 storeys). • Tall buildings could also be considered as singular local landmarks to enhance distinctiveness, legibility and wayfinding by marking special places of significance such as the proposed DLR station, the new centre or a gateway into the area – heights should be proportionate to the relative significance of the landmark location. Height should not normally exceed 3x context height, but there may be opportunity for one district scale landmark (up to 5x context height) that marks the new DLR station and centre. • Avoid continuous runs of tall buildings along the riverfront – only emphasise a number of separate, special locations. • Tall building should avoid overbearing impacts on low rise housing, private and public amenity spaces. • Tall buildings in this area must consider the flight path of London City Airport, and consult with the airport authority as appropriate.
AS9.3	Thamesmead Postwar Estate	CH: 1-5 storeys (varied)	• To optimise development of Strategic Development Location and deliver estate regeneration	• Low-rise residential area	• Masterplan-led approach to comprehensive estate regeneration could explore a modest number of midrise buildings to assist with placemaking and the delivery of estate renewal (TZ9.3). • Tall buildings to provide verticality and variation in height and to interject with the horizontal emphasis of slab-blocks. • Heights should be no more than 12 storeys and generally below. • Development to respond sensitively to remaining low-rise context. • Tall buildings in this area must consider the flight path of London City Airport, and consult with the airport authority as appropriate.

8.4 SOUTH DISTRICT

KIDBROOKE

Figure 8.25 shows the tall building recommendations for Kidbrooke. Details are provided in Table 8.10 on page 134.

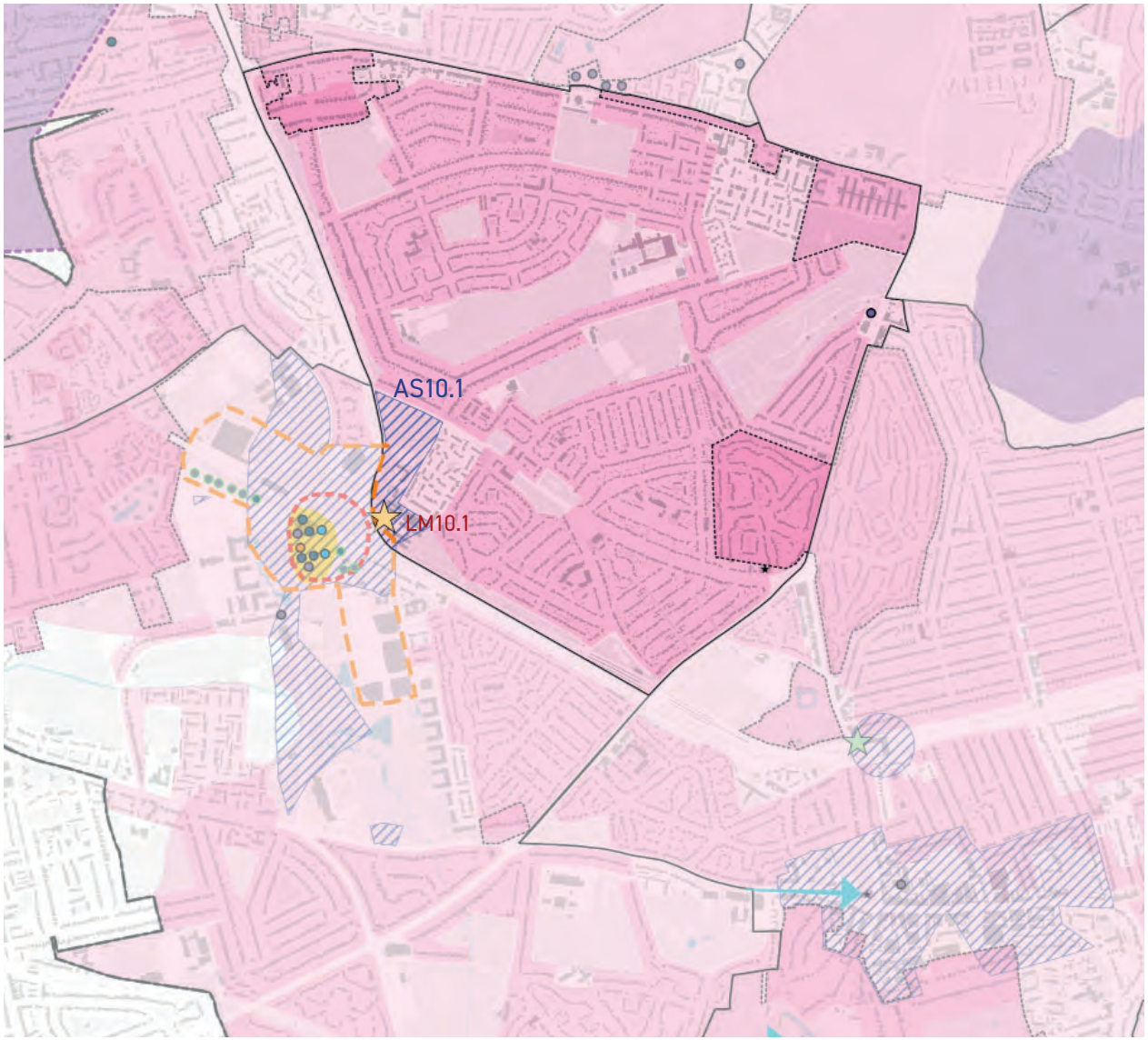

Figure 8.25: Tall Building Recommendations - Kidbrooke

Table 8.10: Tall building recommendations - Kidbrooke

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS10.1	Kidbrooke Village East	CH: 2 storeys	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL	• Low-rise residential area • Open space and Nature Conservation Site • Elevation above 20m	• Limited opportunity for tall buildings due to proximity to existing low rise housing and poor accessibility of site. • Potential for local landmark (LM10.1) of up to 10 storeys (assuming new context height of 5 storeys along A2 and development stepping down towards existing houses to north). • Tall building to mark, overlook and animate the pedestrian underpass with Kidbrooke Village and to provide accent at corner of A2.

KIDBROOKE VILLAGE & MIDDLE PARK

Figure 8.26 shows the tall building recommendations for Kidbrooke Village and Middle Park. Details are provided in Table 8.11 on page 136.

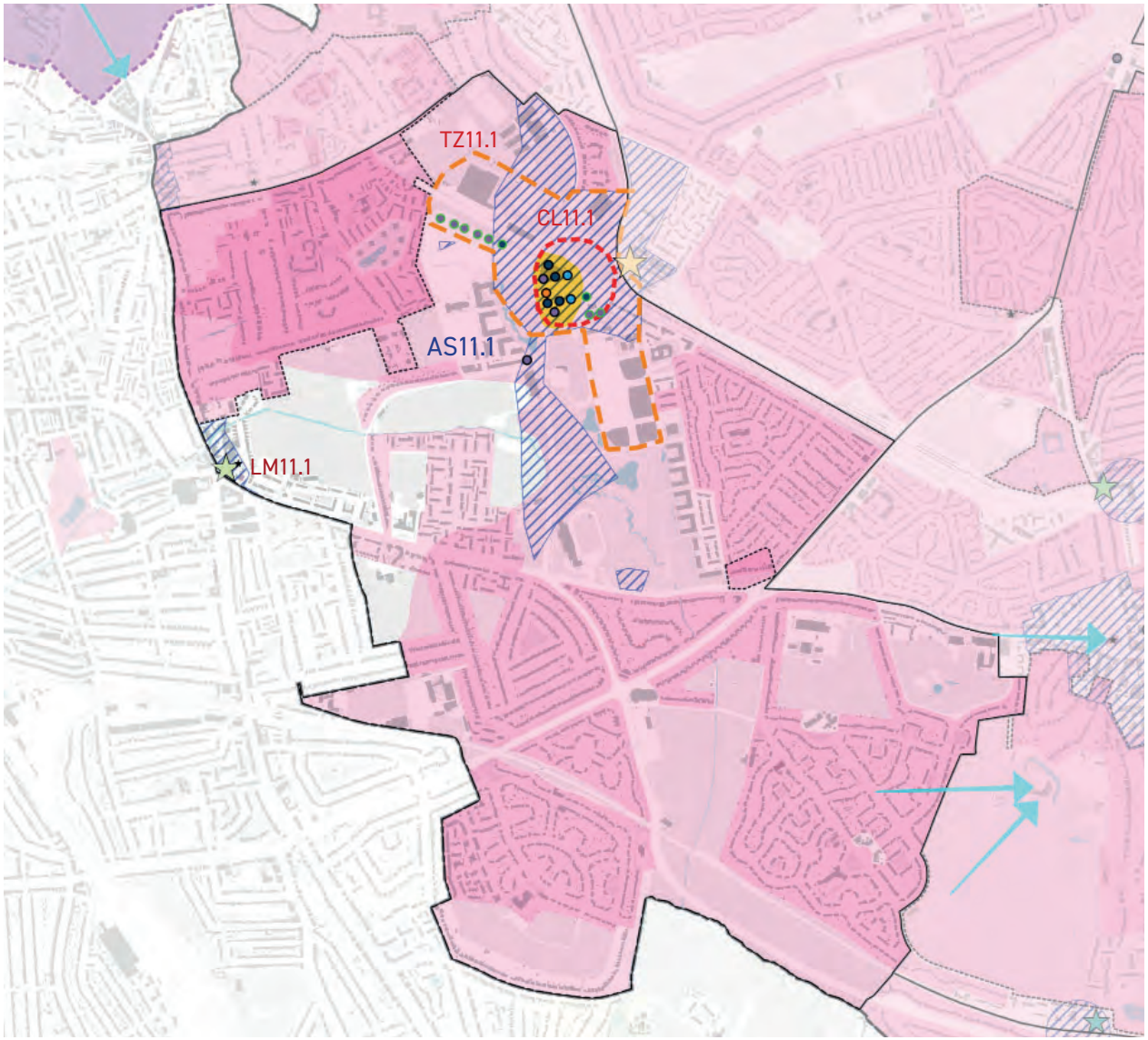

Figure 8.26: Tall Building Recommendations - Kidbrooke

Table 8.11: Tall building recommendations - Kidbrooke Village and Middle Park

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS11.1	Kidbrook Village	CH: 1-10 storeys (varied) TB: 12-22 storeys	• To optimise development of Strategic Development Location, deliver place making and intensify in areas of high PTAL and landmark the rail station	• Blackheath Park Conservation Area • Blackheath Conservation Area • Views from Blackheath • WHS views from the river towards Maritime Greenwich • Open space • Elevation above 20m	• The existing masterplan sees the implementation of a cluster of taller buildings to the south of Kidbrooke Station and a formal arrangement of midrise buildings along the western and eastern edges of Cator Park and the railway line. • Potential to extend the cluster of tall buildings to the north of the railway line (CL11.1). Heights to step down notably from the taller buildings in the centre of the cluster towards the northern cluster edge. • Potential for modest scale tall buildings to be part of the comprehensive, masterplan-led, place making approach in the remainder of the tall building zone (TZ11.1) providing occasional high points and variety in the skyline, enhance legibility and deliver distinctiveness with heights of 8 to 12 storeys. • Tall Buildings subject to avoiding adverse impacts on Blackheath Park Conservation Area, Blackheath Conservation Area and other heritage assets, strategic and local views including views towards the WHS from the north and views from Blackheath, and low rise neighbouring development.
AS11.2	Lee Centre	CH: 2-3 storeys (varied) TB: Spire	• To intensify district centre in area of high PTAL	• Blackheath Park Conservation Area • Blackheath Conservation Area - Greenwich • Blackheath Conservation Area - Lewisham • Views from Blackheath • WHS views from the river towards Maritime Greenwich • Open space • Elevation above 20m	• Opportunity for a modest local landmark (LM11.1) of maximum 8 storeys as part of comprehensive development that regenerates the street corner of Eltham Road and Lee Road and enhances the vitality and appearance of the district centre. • Tall building to mark the street corner in vistas from south and west. • Tall building not to adversely impact on the conservation areas and their setting, impact on local or strategic views, detract from existing designated or undesignated heritage assets, break the typical grain of development or appear overbearing on lower rise neighbouring buildings or housing.

ELTHAM

Figure 8.27 shows the tall building recommendations for Eltham. Details are provided in Table 8.12 on page 138.

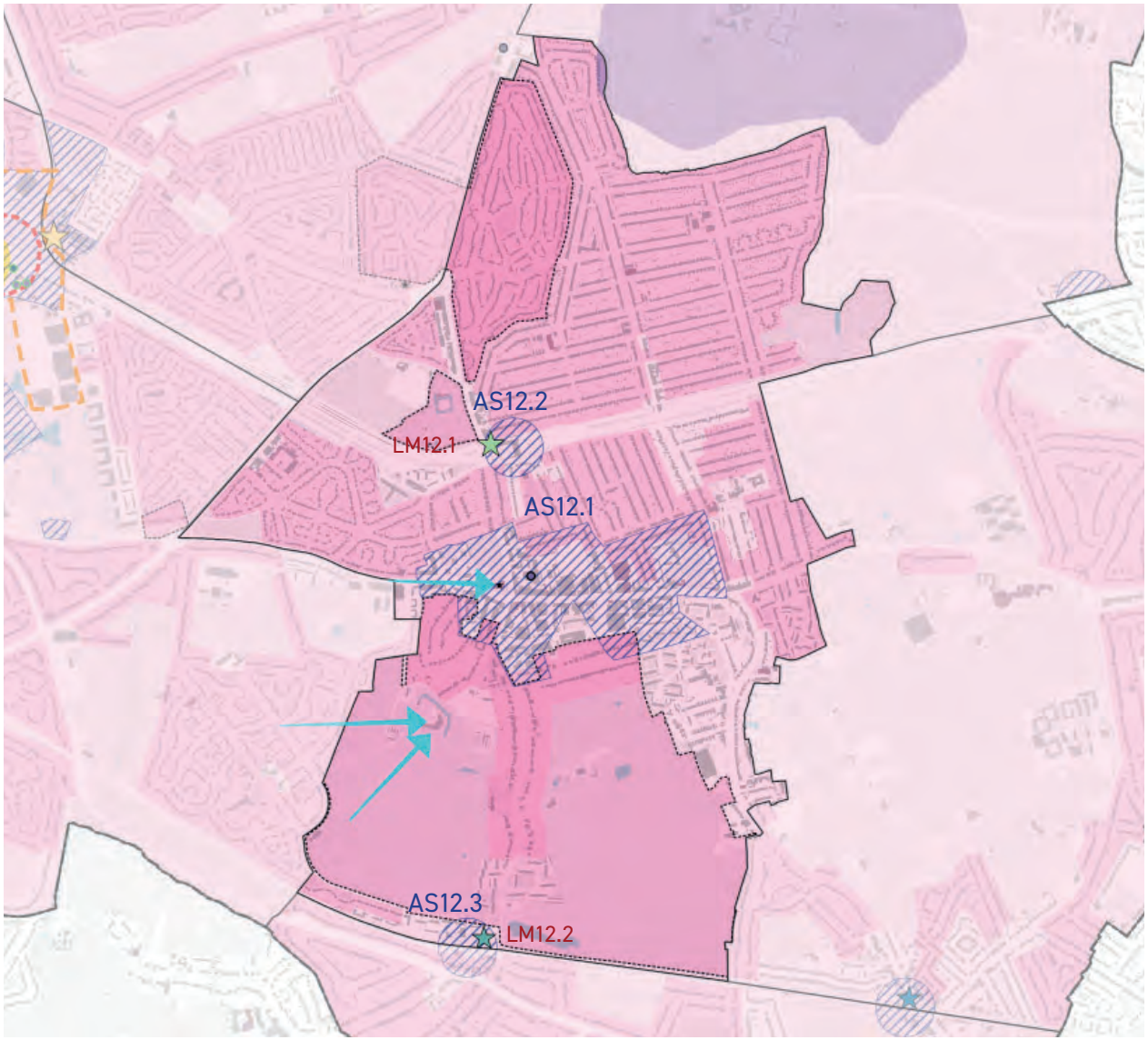

Figure 8.27: Tall Building Recommendations - Eltham

Table 8.12: Tall building recommendations - Eltham

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS12.1	Eltham Town Centre	CH: 3 storeys (varied) TB: 10 storeys	• To intensify the town centre in area well served by public transport and facilities	• Eltham situated on elevated land and highly visible from north, west, south and south-east • Eltham Palace Conservation Area • Well Hall Pleasaunce Conservation Area • Eltham Palace • Local and strategic views • Fine grain townscape of the highstreet with designated and undesignated heritage assets • Low-rise residential area	• No opportunity for tall buildings in Eltham due to the elevated and visually exposed situations, a delicate fine grain historic high street environment with heritage assets, adjoining conservation areas and low rise housing, and to protect its sensitive skyline dominated by the spire of St. John the Babtist Parish Church, and avoid detracting from Eltham Palace and its setting.
AS12.2	Eltham Station	CH: 2 storeys (varied)	• To enhance legibility of rail station and intensify area of higher PTAL	• Well Hall Pleasaunce Conservation Area • Progress Estate Conservation Areas • Local and strategic views • Low-rise residential area	• Opportunity for a singular local landmark building (LM12.1) of up to 3x the context height (no more than 7 storeys) to mark the station on Well Hall Road to enhance wayfinding, deliver an improved station environment and bus interchange, and intensify around the station, as well as to provide a visual marker of Eltham on the A2. • Site is situated on relatively low ground so its height is less pronounced or visible in the wider context of the town. • Tall building to avoid adverse impact on neighbouring low rise buildings or to detract from Well Hall Pleasuance Conservation Area and the Progress Estate Conservation Areas, their heritage assets, strategic and local views.

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS12.3	Mottingham Station	CH: 1-3 storeys	• To enhance legibility of rail station and intensify area of higher PTAL	• Eltham Palace Conservation Area • Eltham Palace • Local views • Low-rise residential area	• Opportunity for a singular local landmark building (LM12.1) of up to to 3x the context height (no more than 6 storeys) to mark the station on Court Road and to assist the intensification and enhancement of the station environment. • Tall building to avoid adverse impacts on neighbouring low rise buildings or heritage assets including views to Eltham Palace.

AVERY HILL

Figure 8.28 shows the tall building recommendations for Avery Hill. Details are provided in Table 8.13.

COLDHARBOUR AND NEW ELTHAM

There are no opportunities identified for tall buildings in this Place.

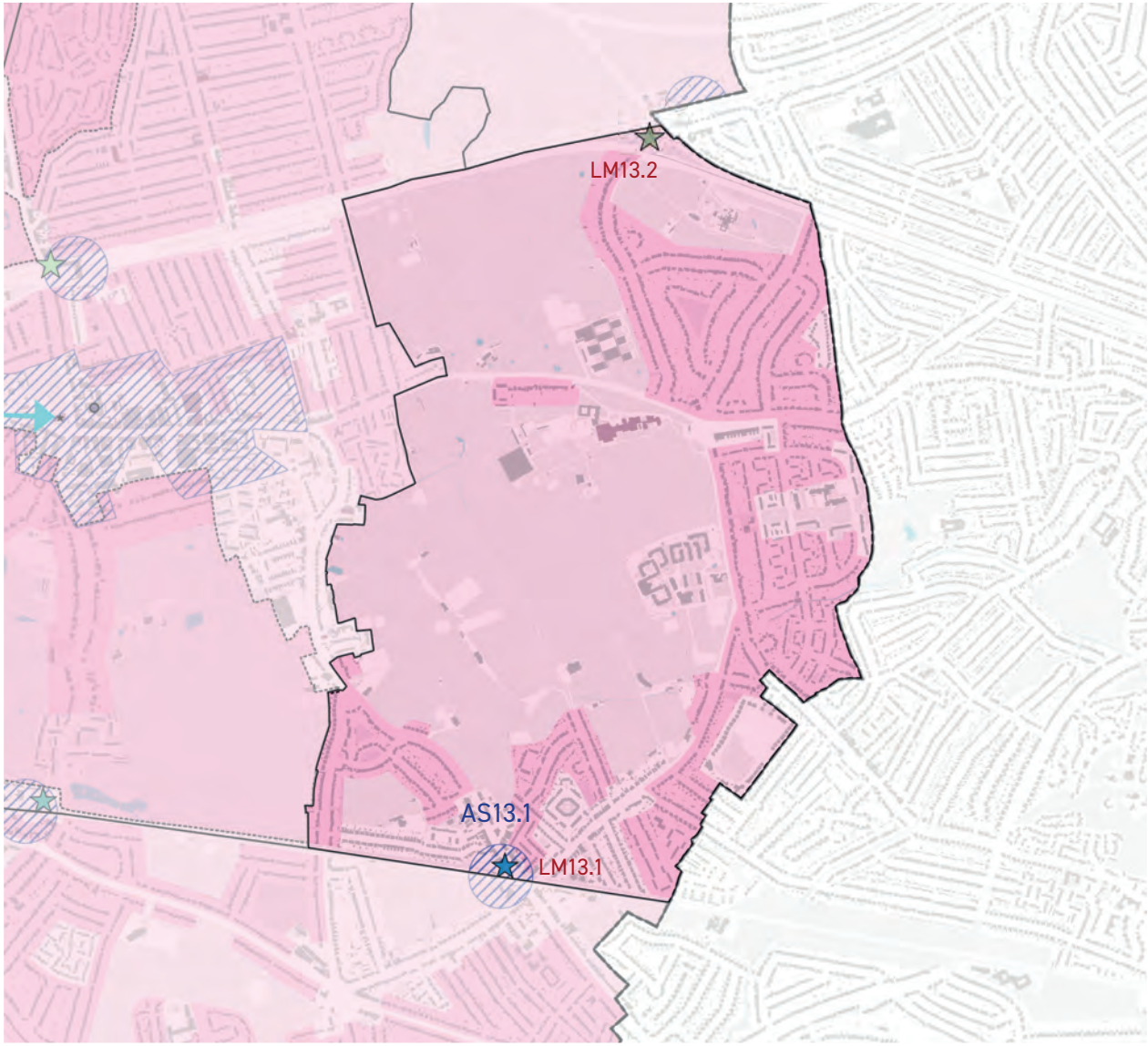

Figure 8.28: Tall Building Recommendations - Avery Hill

Table 8.13: Tall building recommendations - Avery Hill

Code	Name	Existing Context Height (CH) and Tall Buildings (TB)	Promoting Factors	Sensitivities	Recommendations
AS13.1	New Eltham Station	CH: 2 storeys	• To enhance legibility of rail station, animate the high street and intensify area of higher PTAL	• Fine grain townscape of the high street with designated and undesignated heritage assets • Low-rise residential area	• Opportunity for a singular local landmark building (LM13.1) of up to 5 storeys to mark the station on Footscray Road and enhance wayfinding, animate the high street and to assist the intensification and enhancement of the station environment. • Tall building to respond sensitively to the character and fine grain of the high street and avoid an overbearing impact on low-rise houses.
LM13.2	Falconwood Station	CH: 2-3 storeys	• To intensify area nearby the station, while enhancing local character	• Low-rise residential area • Proximity to Shepherdleas Wood and Oxleas Woods, a site of special scientific interest	• Opportunity for a singular local landmark building of up to 3x the prevalent context height (no more than 7 storeys) to mark Falconwood Station and intensify around it, as well as to provide a modest visual marker approaching from Lingfield Crescent, Rochester Way, Riefield Road and the A2.

9 TALL BUILDING DESIGN PRINCIPLES

9.1 INTRODUCTION

This chapter sets out design principles for tall buildings. Proposals for tall buildings should demonstrate how they have responded to all relevant principles. The chapter finishes with recommendations for tall buildings application requirements.

9.2 PRINCIPLES

PRINCIPLE D1
AVOID STARK CONTRAST IN HEIGHT

Taller buildings should avoid stark contrast in height with their lower height context by locating the high point away from lower neighbours or step development down to visually mediate the height difference (Figure 9.1).

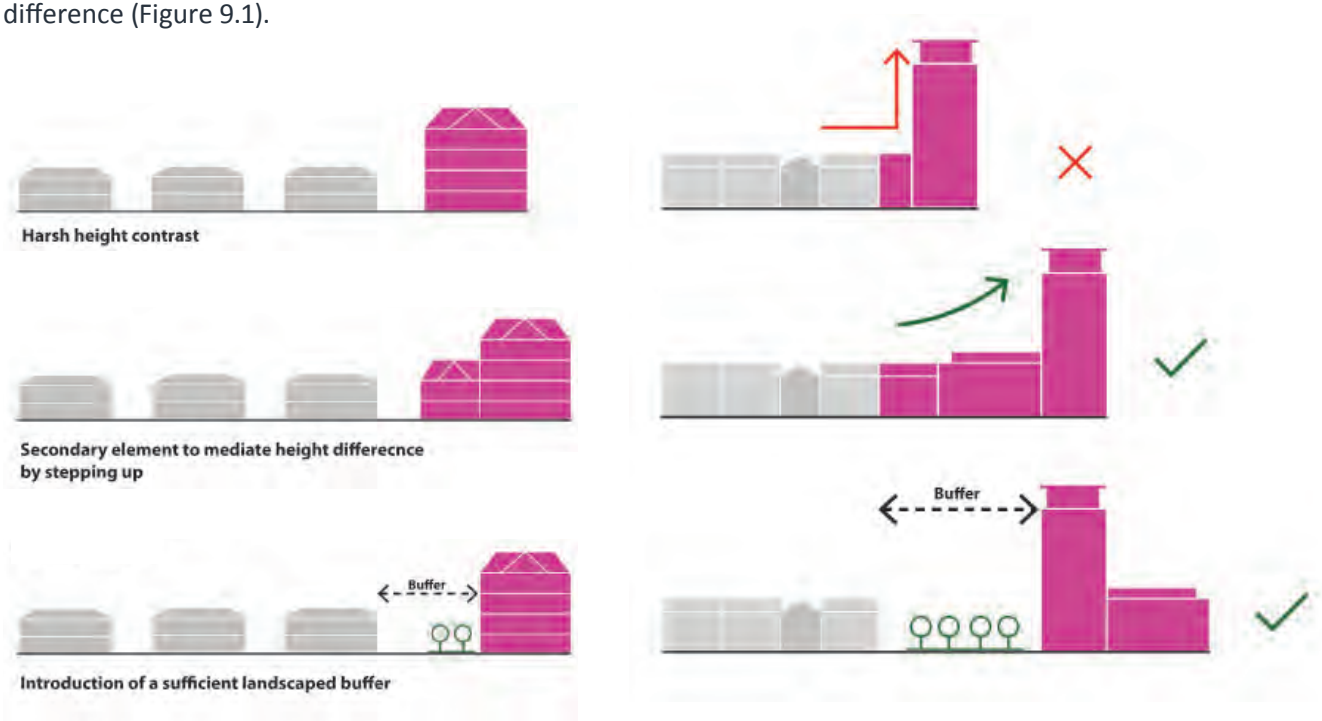

Figure 9.1: Avoid stark contrast in height - examples of mid-rise and high rise tall buildings

PRINCIPLE D2
LANDMARK BUILDINGS SHOULD BE MIXED USE

Tall buildings should generally be mixed use buildings with active ground floors and offer a meaningful facility for the wider public, unless it can be demonstrated that active ground floor uses such as retail, leisure, cultural, community, health, employment are not viable in a location and the landmark is justified purely from a legibility point of view (Figure 9.2).

Figure 9.2: Landmark buildings should be mixed use - examples of mid-rise and high rise tall buildings

PRINCIPLE D3
LANDMARKS SHOULD BE PROMINENT AND VISIBLE

Tall buildings with a landmark role should be prominently located in the urban environment such as at a street corner or overlooking a public space and be visible from approaching routes in short and medium range views (Figure 9.3).

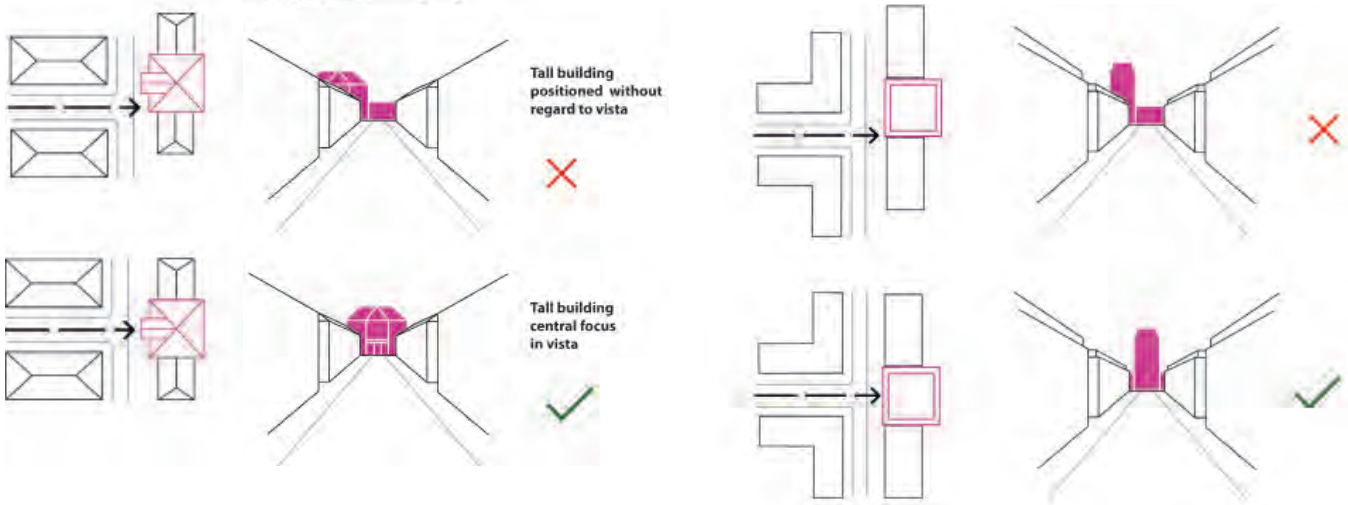

Figure 9.3: Landmark tall buildings should be located in vistas from approaching routes - examples of mid-rise and high rise tall buildings

PRINCIPLE D4
WELL ARTICULATED DESIGN IN RESPONSE TO ITS CONTEXT

A tall building must be a building of integrity that presents a high quality design response to the local character without resorting to pastiche solutions. The design attention should be on the careful articulation of the overall form and design, drawing on local characteristics in terms of rhythm of facades, plot width, materials, details and building articulation (Figure 9.4).

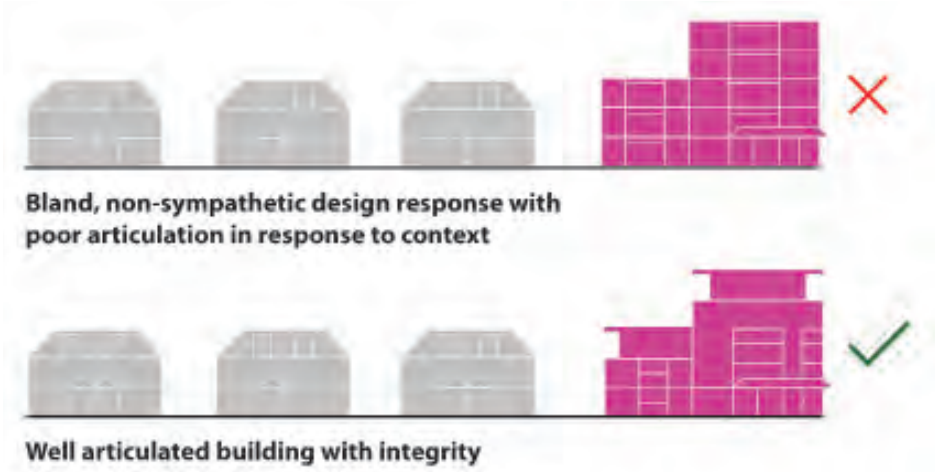

Figure 9.4: Articulation and sensitive architectural response to context

PRINCIPLE D5
COMPREHENSIVE DEVELOPMENT

Generally a tall building proposal should form part of the comprehensive development of a large site where it can contribute to the regeneration and enhancement of a wider urban area. By delivering a tall building as part of a comprehensive development that includes mid-rise elements such as courtyard blocks, many problems associated with standalone tall buildings can be mitigated through design. A comprehensive, masterplanned scheme should provide active frontages and good street enclosure with a greater mix of uses, including a wider range of housing types. Development of a larger site can provide opportunities for public open space and an appropriate setting for the tall building, which can also be set back from the street or integrated within an urban block. Tall building developments should appropriately address the connectivity of the site and the permeability of the wider area, and seek opportunities to create new connections, thereby improving the wider area.

PRINCIPLE D6
LIMIT HEIGHT ON ELEVATED LAND

The underlying topography of RB Greenwich is an important aspect of its urban form and identity. Land of higher elevation has the effect of giving greater prominence to buildings on it. Proposals for tall buildings on elevated land are therefore at higher risk of appearing overly prominent on the skyline and can compete with existing landmarks nearby as well as further away, and by this may affect the legibility of the skyline.

The siting of tall buildings on higher land should generally be avoided unless the intention is to create a highly visible landmark and the broader effects of this on the skyline are acceptable (Figure 9.5). Tall building proposals should be understood both in terms of their height above ground and their height above ordnance datum (AOD).

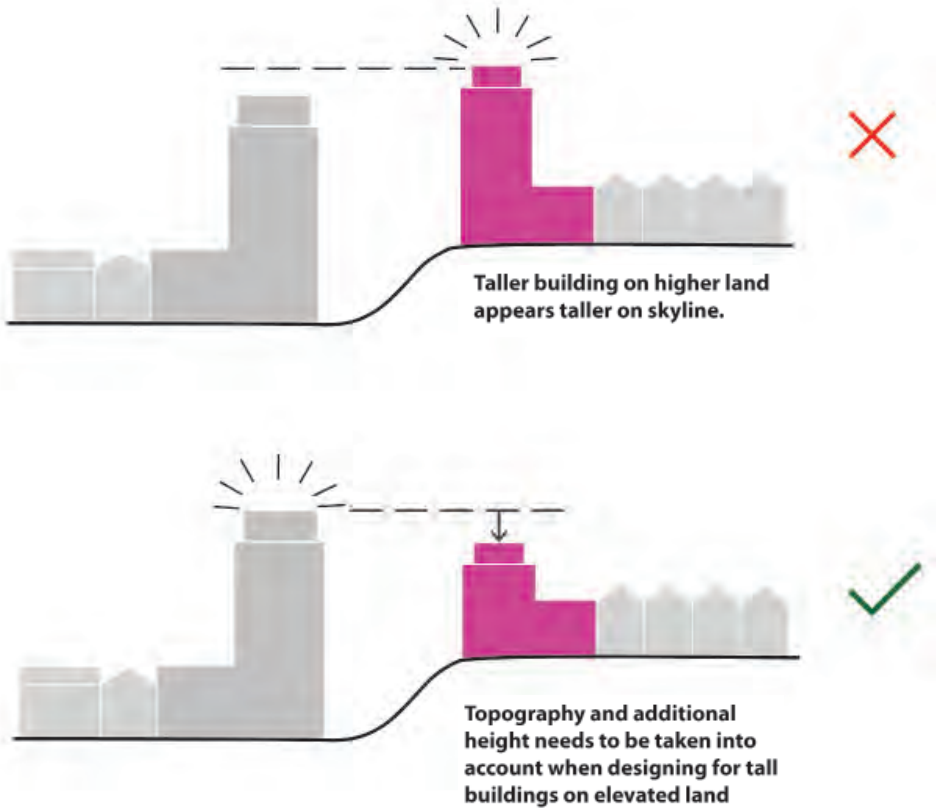

Figure 9.5: Topography affects the prominence of tall buildings

PRINCIPLE D7
ARCHITECTURAL EXPRESSION AND COMPOSITION

Due to their exceptional prominence tall buildings of greater height must have a well-articulated, balanced and coherent overall form, appropriately expressing their base, shaft and top. The upper floors of the buildings will be highly visible and their form, design and lighting will significantly determine the distinctiveness of the building on the skyline. Façade design should be varied and respond to their role and position in the building.

Balconies should be integral aspects of the building design and not appear as later additions. The underside of balconies are highly visible and poor balcony design can detract from the overall quality of a tall building.

The choice of materiality and the palette of colours should assist in visually weaving the new building into its established surroundings, or, where appropriate, provide a contrast. Masonry façades are generally more durable and offer greater longevity than panel systems and should be preferred. At design stage they need to be carefully tested through three-dimensional modelling and visualisations to fully understand their impact. Consideration should be given to how design detailing is perceived both from close up and in long distance views.

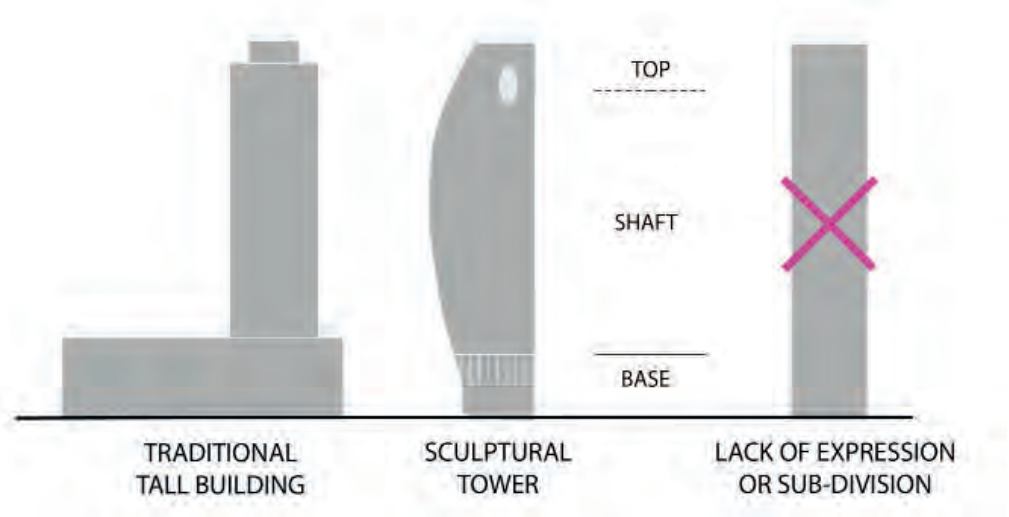

Figure 9.6: Compositional elements of tall buildings

PRINCIPLE D8
SLENDERNESS AND ELEGANCE

The impact of a tall building is not only determined by its height, but also its footprint. Tall buildings that reflect the urban grain and building footprints of the surrounding context, particularly in historic locations, will integrate better and feel like a coherent part of the place. In contrast, buildings with very large footprints, simply extruded into bulky, tall forms should be avoided as they appear out of scale and create poor quality environments.

A slender tower with a strong sense of verticality, 'reaching to the sky', is commonly considered more attractive and elegant. The slenderness of a tower can be expressed through the height to width ratio - the greater the ratio - the more slender the building. The slenderness of a building typically is appreciated only from further away, along a vista, across a water body or across the rooftops of the surrounding buildings.

Floor plan efficiencies that require a certain footprint size within the tower element can make designing a slender tall building challenging, especially in areas where heights are limited to local landmarks only. Here the modulation of the building form and other design measures can help achieve a sense of verticality. For example, the bulk of a building can be subdivided to visually appear composed of a number of vertical elements rather than a single block.

Buildings that are recognisable as a single coherent sculptural object from all around are easier to recognise than buildings that appear different from different angles. While a tall building may assume a special response towards a particular side or direction, all facades should have openings or windows and provide an active frontage. No blank frontages should be permitted.

Tall buildings should be associated with a single core and a limited number of surrounding units. Ideally residential tall buildings should have no more than 6 units per floor, with a maximum of 8 in exceptional cases.

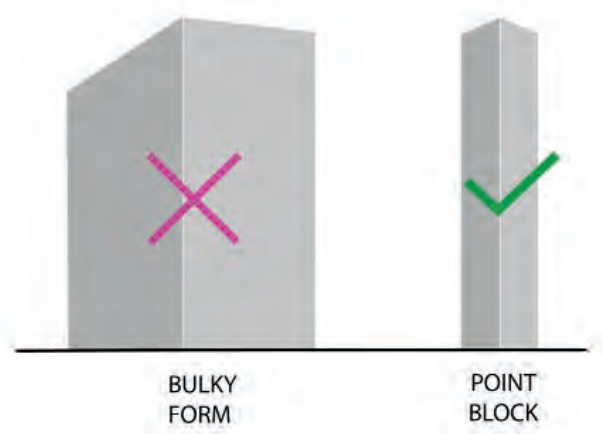

Figure 9.7: Point blocks are more elegant and slender. Bulky forms should be avoided.

PRINCIPLE D9
ACTIVE STREET FRONTAGES

Tall buildings should provide a positive interface with the public realm around the building, and the design and distribution of uses especially at ground floor levels should provide positive overlooking ("eyes on the street") and animation to the street space. Blank frontages and exposed servicing or car parking areas should be avoided. Cycle parking areas, storage and plant space, and other inactive uses should be internalised within the building envelope and wrapped by other active uses. Servicing yards should be integrated in the building, located away from primary pedestrian areas and be appropriately screened from public view. The building entrance should front onto the principal street frontage.

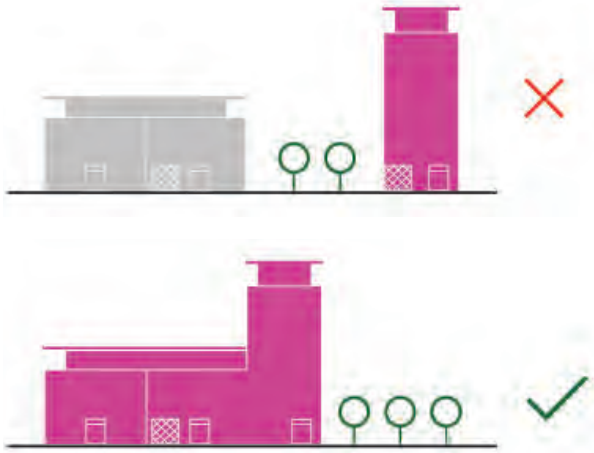

Figure 9.8: Integrating a tall building within a street block helps to internalise parking areas, avoids exposed servicing yards and blank frontages, and provides active frontages

PRINCIPLE D10
A HUMAN SCALE STREET EXPERIENCE

Developments should respond to the scale of surrounding streets and spaces, their sense of enclosure and the quality of the ground floor experience. The height and massing of the development needs to consider how it integrates the tall building element and prevents it from feeling overbearing on surrounding streets, and existing and new developments. Excessive enclosure or the creation of a 'canyon' effect should be avoided, for example by applying set-backs to effectively limit the visual impact of greater height on the street space (Figure 9.9).

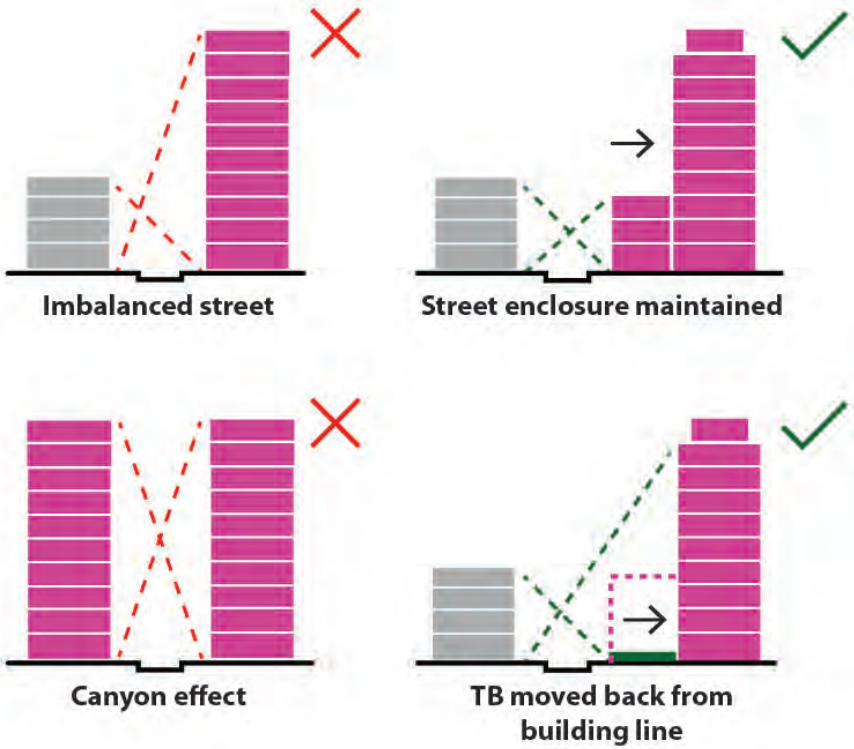

Figure 9.9: Tall buildings must provide good street enclosure without becoming overbearing

PRINCIPLE D11
A HIGH QUALITY PUBLIC REALM

The public realm around a tall building should be of high quality, consider the provision of tree planting, soft landscaping, seating, lighting and public art, and deliver a design that reflects the prominence of the building in the area. The footway at the base of a tall building should be generous and proportionate, and cater for increased pedestrian activity outside its entrance. Drop-offs, service bays and car park entrances should be located away from the entrance of the building and principal routes to avoid conflicts with pedestrian activity.

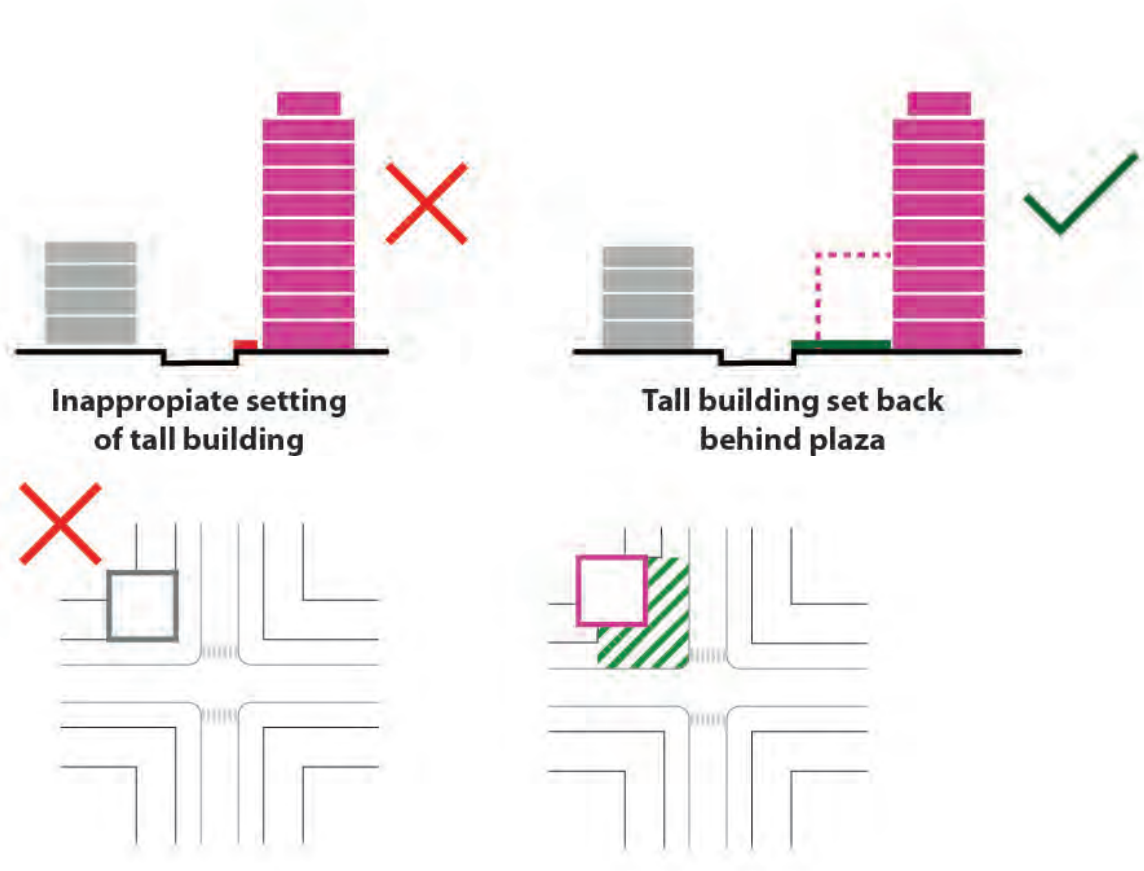

Figure 9.10: Tall buildings should provide an adequate setting within the street space, corresponding to its height and scale. This could include moving the taller element back from the building line (top) or street corner (bottom) and establishing a wider pavement or public space

PRINCIPLE D12
PUBLIC SPACE PROVISION

With their higher density tall buildings intensify the pressure on urban environment and should contribute to the provision of quality spaces in their vicinity. Public open space design should reflect the needs residents and the wider public, where appropriate provide a setting for the tall building, and be orientated to maximise sun exposure. Overshadowing by a tall building located to the south or west of a public space may undermine its attractiveness and amenity and should be avoided (Figure 9.11).

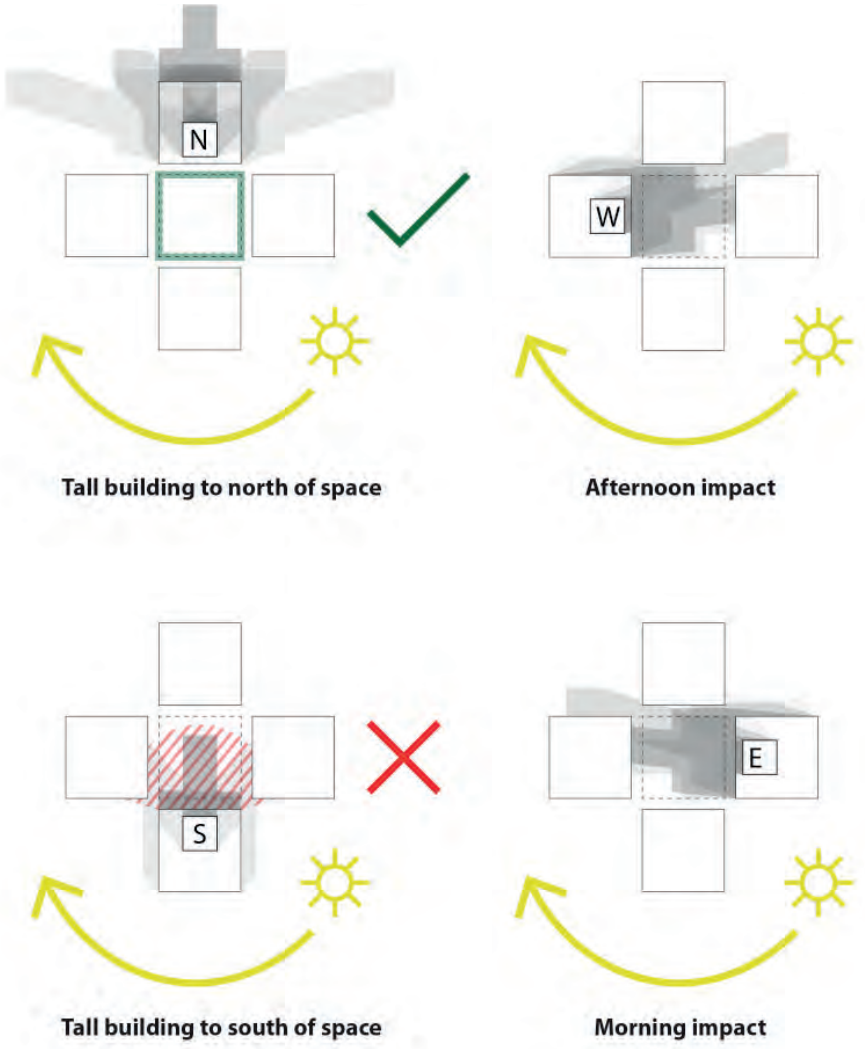

Figure 9.11: Tall buildings should avoid overshadowing open spaces. Proposals must consider the impact of shadow pattern on the amenity and usability of the public space.

PRINCIPLE D13
MICRO-CLIMATE

Tall buildings should be designed to minimise negative microclimate effects (Figure 9.12). The design process should involve wind testing to ensure there is not excessive windiness or wind noise affecting the quality, amenity and safety of spaces around the building. Tall buildings can block sunshine from reaching neighbouring uses and overshadow public spaces, courtyards or gardens. The location, height and design of tall buildings should test and ensure its impact on surrounding spaces and buildings is minimised. Tall building design should minimise adverse impacts from solar glare and limit light pollution.

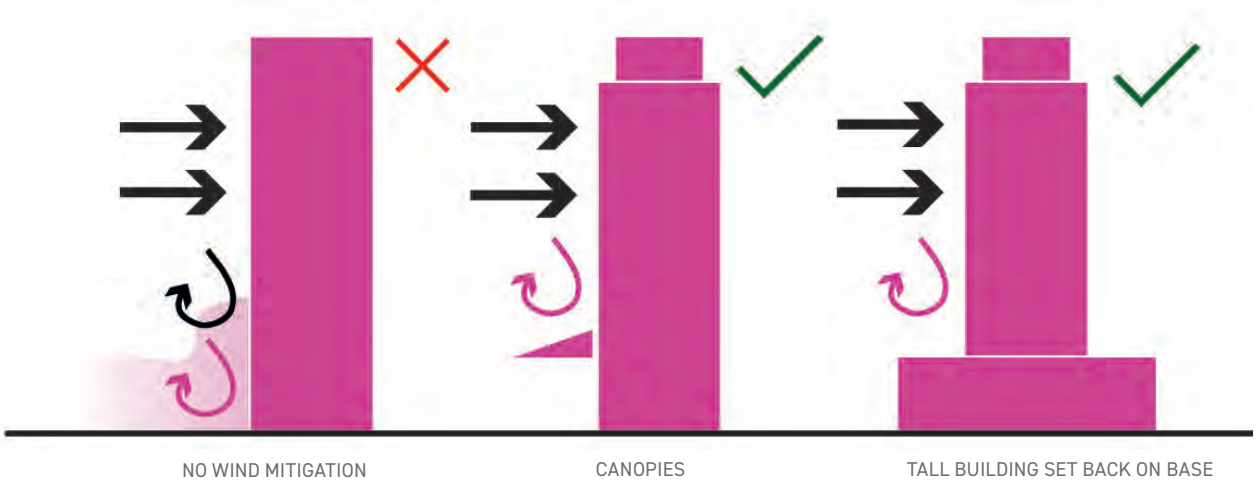

Figure 9.12: Good design of tall buildings should mitigate excessive wind at ground level

PRINCIPLE D14
RESIDENTIAL AMENITY

High density development that includes tall buildings on compact sites can result in overlooking between dwellings and lack of privacy for both existing and new residents in an area (Figure 9.13). The layout of buildings should ensure adequate separation between buildings where dwellings face each other, communal spaces or the public realm. Furthermore design should ensure that all dwellings, especially on lower floors and single aspect units, have an adequate outlook and sky view that is not over-dominated by other buildings, receive adequate day and sunlighting in the interior of units, and comply with BRE's good practice guidance on Day and Sunlight. Consideration should be given to the orientation of units, generally avoiding north facing single aspect units, and the impact of balcony overhangs on the day and sun-light conditions of homes. Units must be designed to avoid overheating from the sun by incorporating appropriate fenestration and adequate external shading. Throughout the building, adequate natural ventilation must be ensured, particularly for single aspect units.

PRINCIPLE D15
AMENITY SPACES

Proposals for tall residential buildings must demonstrate how they will deliver adequate private and communal amenity spaces that are accessible, serve the needs of residents, are sheltered from wind and noise, and maximise on day and sun lighting. These may be in the form of communal courtyards and gardens, private gardens at ground floor level, balconies, terraces or communal rooftop open spaces. Each apartment should have its own private outdoor space in form of a private garden, balcony or loggia and comply with the standards set by local policy. Where a development is unable to provide sufficient outdoor residents amenity space, additional internal amenity spaces should be provided. This could include communal break-out spaces, community, play or party rooms, as well as other facilities such as work spaces, gyms, visitor flats and others that enhance the amenity of high density living.

A contribution to the public space provision in the wider surrounding of a scheme could be required to take account of its use by future residents. Where family housing units are provided this should include outdoor play space for children based on an assessment of estimated child occupancy. Play spaces should be situated in well lit parts of communal spaces and offer protection from excessive sun-lighting, ideally designed so that family units overlook the play area.

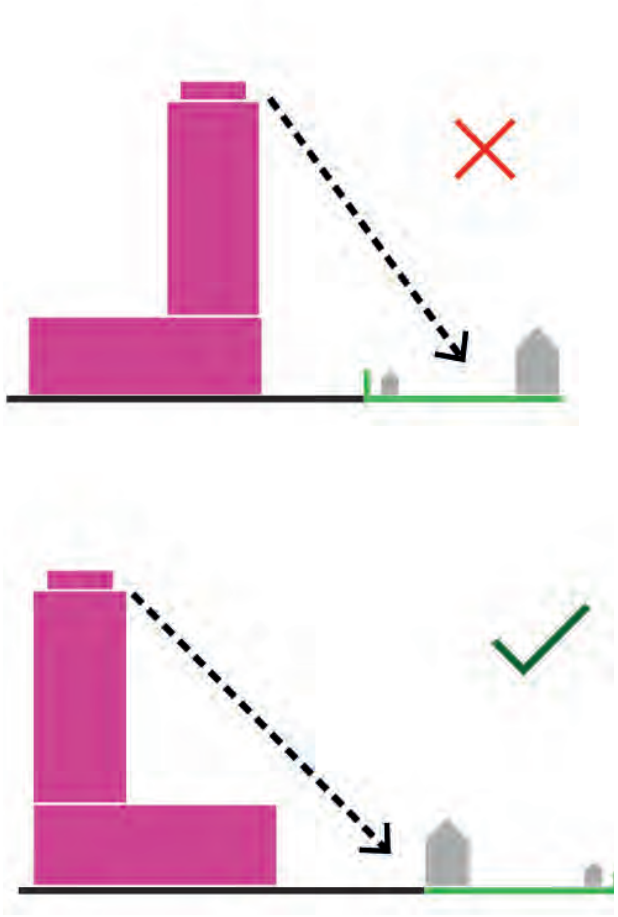

Figure 9.13: Tall buildings should mitigate adverse effects on residential amenity and avoid overdominating existing homes and gardens

PRINCIPLE D16
SUSTAINABILITY

Tall buildings must be sustainable, innovative and efficient buildings that minimise use of resources, are adaptable to change and are long lasting. Tall building proposals should demonstrate how they have minimised the carbon footprint of the building and benchmark the proposal against comparable best practice schemes, and contribute to the city's commitment to tackle climate change. Developments should aim for the highest BREEAM or other equivalent industry standard sustainability rating. The annual carbon emission per floor area (kg/m2/yr) could also be adopted by the Council as a simple and transparent measure to evaluate and compare the energy efficiency of new buildings.

PRINCIPLE D17
CLIMATE RESILIENCE AND GREEN INFRASTRUCTURE

Tall buildings must be take into account how the local climate is expected to change as a result of climate change and be designed to mitigate the effects of extreme weather such as heat waves and flooding. Tall building developments should significantly contribute to the green and blue infrastructure provision both within the development as well as the wider area. This can include landscaping and tree planting, sustainable urban drainage and other measures that mitigate the creation of heat islands, deliver cleaner air, support natural ventilation, mitigate risks from flooding, enhance biodiversity and offer resources for recreational, health and wellbeing benefits.

PRINCIPLE D18
TALL BUILDINGS CLUSTERS

Clustering of tall buildings should follow a coordinated, planned approach and be an expression of a desired character and function of a place such as an urban centre. The tallest building in a cluster should be located centrally and other buildings should step down in height towards the edges of the cluster (Figure 9.14).

A cluster should be confined to a limited area to prevent a spread of tall buildings, therefore harming legibility. Across these areas taller buildings will need to vary in height to achieve a dynamic skyline and to avoid a monotonous mass of buildings at the maximum height.

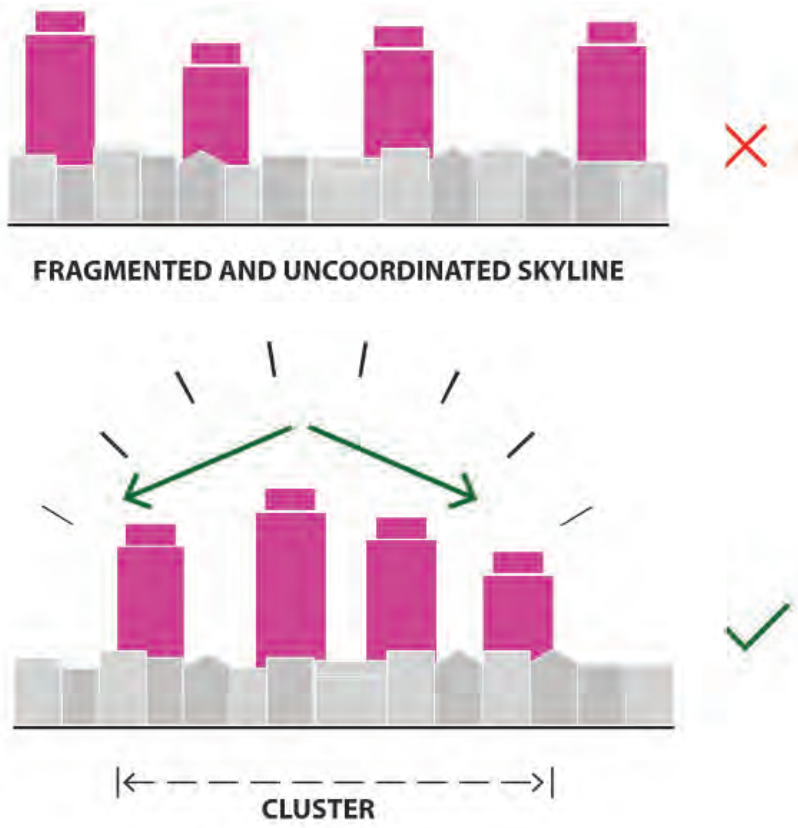

Figure 9.14: Tall building clusters

PRINCIPLE D19
PARKING AND CYCLE STORAGE

Tall buildings can generate a high demand for parking due to high residential density. Parking provision should be integrated into within the building envelope as part of a structured solutions and wrapped with other uses to minimise its visual impact on the street scene. Surface car parking around the building or structured parking exposed to the public realm should not be permitted as it detracts from the quality of the urban environment (Figure 9.15).

Tall building developments should seek to encourage the use of public transport, walking and cycling, support car sharing and minimise its parking provision. Electric charging points should be provided for all car parking spaces. To facilitate cycling as a sustainable transport mode, a secure cycle storage for residents should be provided with easy access from the public realm.

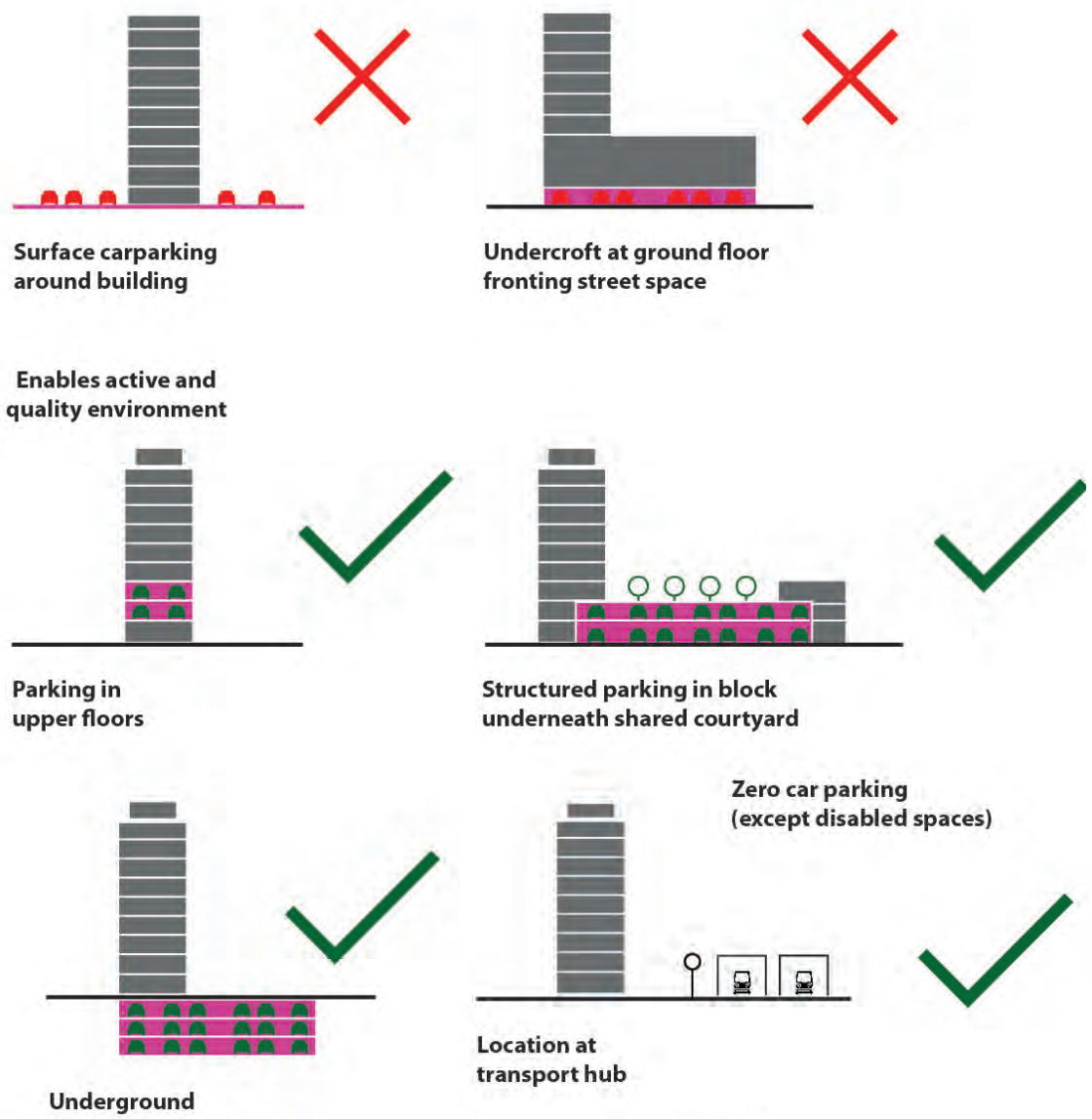

Figure 9.15: Tall building parking solutions

9.3 TALL BUILDING APPLICATION REQUIREMENTS

PRE-APPLICATION PROCESS

Applicants should be strongly encouraged to discuss their proposals for tall buildings with planning and design officers as pre-applications, with discussions beginning as early as the concept stage. Draft plans, initial design statement and impact studies are important to these discussions and should be made available to the officers at the earliest opportunity.

A computer generated viewshed analysis of the proposed tall building should be provided in early discussions with the Planning Authority (and its design and conservation officers) to assist the scoping of the visual impact work and heritage impact statement.

Tall buildings proposals should be subject to a minimum of two design reviews, utilising the Design Review Mechanism available to the Local Authority. The first review should be during the concept and masterplanning stage and the second at draft submission stage. The purpose of the reviews is to ensure design excellence of tall building proposals, the successful integration in their context and maximising the opportunity for place making and an enhanced environment.

Applicants are encouraged to make contact with Historic England at the earliest stage in the planning application process.

SUPPORTING INFORMATION

Tall buildings are a specific and unique form of development and as such require a specific approach in the planning process. The following recommendations for the local authority and applicants are made to ensure that tall buildings proposals are appropriately tested.

Applicants seeking planning permission for tall buildings in the city must submit full planning applications for their proposals. Outline planning applications for tall buildings are not acceptable. Applications for tall buildings above 8 storeys (24 metres), due to their exceptional nature, will need to provide the following additional supporting information to enable a thorough assessment of the proposals and design:

- **Survey plan** and calculations that illustrate the heights of the proposed building in its surrounding context to determine the context height ratio and if the building has a proportional relationship with its surroundings;
- **Tall building statement** that evaluates the benefits and justifications for a tall building on the proposed site in terms of the principles and the design criteria used to assess tall building proposals;
- **Evidence** to demonstrate that the viability and appropriateness of other forms of high density development have been explored;
- **Design and access statement** that sets out the architectural and urban design rationale for the proposal and addresses among other factors the development context, development objectives, relationship with the street and neighbouring buildings, relationship to open space (including waterways) scale and massing, alignment, density, materials, detailing, lighting (day and night time), existing and proposed land and building uses, ground floor uses, treatment of rooftop/ crown, ground floor treatment, landscaping and public realm strategy.
- **Visual impact assessment (VIA)** to illustrate the impact on the context, especially on heritage assets and significant views. This should include a computer-generated zone of visual influence and the impact on local, medium and long distant views which should be done through accurate visual modelling of proposals (buildings fully rendered) – from relevant assessment points defined by the Council. Proposals should be shown in daylight and night conditions and in different seasons.

- **Heritage impact statement** that identifies the heritage assets that the proposal has taken into account. This should demonstrate how the tall building proposal has responded to these heritage assets and their respective significance, and how the proposal has mitigated its potential adverse impact to avoid or minimise harm to the heritage asset and its setting. This should cross reference to the VIA as necessary.
- **Physical impact assessment** to illustrate the impact on micro climatic conditions (wind tunnel studies, sun path studies, overshadowing, heat island and glare studies), privacy and overlooking, telecommunications, and subterranean service infrastructure.
- **Movement statement** that provides a traffic impact assessment, including car parking, pedestrian movement and public transport needs, and a servicing strategy.
- **Building services strategy**, including building systems and enclosure, energy consumption and efficiency, lighting (day and night time), waste storage and disposal, and maintenance.
- **Sustainability statement** outlining how the building will apply best sustainable practices, including energy management and production, resource conservation, materials specification and waste management. A recognised method of sustainability assessment should be used (e.g., BREEAM, Home Quality Mark).

The greater the scale, impact and complexity of the proposals, the more detailed and comprehensive the statements should be. Applications submitted without the above supporting information may lead to a planning refusal on the grounds of insufficient information to allow the application to be fully and effectively assessed.

The potential clustering and cumulative effects of tall buildings must be addressed in the submission. Applications must include adequate information on relevant existing tall buildings, extant permissions or concurrent proposals for tall buildings that have a bearing on the proposal's consideration.