Greater Cambridge
Shared Planning

Appendix B: Tall Building Background Study

Final Report
August 2025

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Contents

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1 Introduction

1.1 Tall buildings are of greater height, scale and often massing than their surrounding context. By their very nature they stand out, are more prominent, operate differently and have a greater impact than smaller, lower rise buildings. Tall buildings tend to strongly divide opinions, and often the discussion around tall building is driven by two vocal camps, those that strongly support tall buildings, and those that vehemently oppose them. To ensure this study is neutral and objective it cannot be unduly influenced by one or the other position and must reach its conclusion based on factual evidence and a transparent approach with a clear methodology.

1.2 This appendix compiles background research undertaken by Urban Initiatives into the tall building topic. It defines a tall building and provides greater clarity on the impacts, effects and opportunities offered by tall building, so these can be taken into account when making decision on the appropriateness of tall buildings in certain areas or assessing a planning application.

Image 1: Cluster of tall buildings at Canary Wharf, London

2 Potential benefits and adverse impacts of tall building

2.1 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. This is especially relevant in a place such as Cambridge, that is rich in heritage and possess an intricate and sensitive skyline.

2.2 Due to their greater height and size tall buildings can amplify their impacts on their immediate and wider context compared to buildings of lower contextual height. Impacts can be beneficial or adverse. A pro-active approach to planning for tall building aims to optimise their impacts, so that beneficial impacts are maximised whilst adverse impacts are mitigated against or avoided.

2.3 In deciding the appropriateness of a tall building, its 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, as well as the building's design response to the surrounding urban fabric and the streets space. The significance attributed to each factor and their relative importance will be different between places and should be subject to local deliberation and negotiation as part of the plan making and development management process.

Potential beneficial impacts of Tall Buildings

- Tall buildings can help to concentrate floorspace and increase density in central locations that are well served by infrastructures, or where new floor space can support the vitality of existing or new activities, such as business hubs, city centres or institutional uses, especially where land is a scarce resource or on significantly constrained sites;
- Tall buildings can contribute to a greater variety in the housing market in a place, and especially cater for young urban professionals in inner city urban locations;
- Tall buildings can create distinctiveness, act as landmarks and as such enhance legibility and support wayfinding;
- Tall buildings can contribute to the character and identity of a townscape, especially where comprehensively planned and developed;
- Exceptionally designed singular tall buildings or well-managed tall building clusters can have a positive effect on the distinctiveness and/or beauty of a skyline or a view, and thereby contribute to the image and identity of a city or town;

- Successful tall building schemes can be a catalyst for development, by landmarking and providing a symbol for regeneration, instilling confidence in a market and attracting further investment;
- Tall buildings can help with project viability in economically challenging schemes and deliver associated planning requirements, such as affordable housing; and
- Tall buildings may offer delivery of complementing public benefits such as:
  - Investment into enhanced public realm or a new public space;
  - Provision of visitor attraction, such as a visitor centre or viewing platform;
  - Cross-subsidy of other planning objectives, such as community facility or service, revitalisation of heritage asset, or new infrastructure or use provision.

Potential adverse impacts of Tall Buildings

- Tall buildings with their scale, massing and height can affect the coherence and detract from the character and quality of established townscapes;
- Poorly integrated tall buildings can create stark contrasts, break the continuity and cohesion of the urban fabric;
- Tall buildings can visually intrude and detract from landscape characters;
- Tall buildings may appear in views to or from heritage assets and can cause harm to their significance of heritage assets and their setting;
- Individually or in groups, tall buildings can intrude into established views, affect or undermine the balance between characteristic elements, dominate or detract from existing landmarks or features, and alter their focus, composition and/or sense of beauty;
- Poorly managed tall buildings can cause a fragmentation of the skyline and lessen the distinctiveness of the image of a place;
- The position and design of a tall building can affect the definition, sense of enclosure and quality of a street space, and the animation, overlooking and perceived safety of the public realm;
- Improperly sited and designed tall buildings can cause adverse microclimatic and environmental impacts from wind funnelling, overshadowing, sun reflection and light pollution; and
- Tall buildings can have an adverse impact on the amenity and privacy of existing and new residents through overlooking, blocking outlook, impacting on day and sun lighting, and affecting the quality of private and communal amenity spaces.

3 Positively Planning for Tall Buildings

3.1 A pro-active approach to planning for tall buildings is anchored in the NPPF and informed by the Historic England Advice Note 4, 2nd edition 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 and unambiguous policies that make it "evident how a decision maker should react to development proposals". Historic England notes that tall buildings should 'Form part of a coherent plan-led place-shaping strategy, contributing towards well-designed places sympathetic to local character and history, including the surrounding built environment and landscape setting.' (Historic England Advice Note 4, 2nd edition)

3.2 Pro-active planning for tall building should include the following components:

1 **Tall building definition** - a clear and practical definition to establish if a building is considered tall in a specific location

2 **Tall building sensitivities** - identification of areas or factors that could be impacted on or harmed by tall buildings and that require impact testing by tall building proposals;

3 **Tall building criteria / principles** to establish if a tall building may be appropriate in a specific location and at what height

4 **Identification of appropriate areas** where tall buildings could be considered together with provision of site-specific guidance on height and design

5 **General design guidance** for tall buildings that sets principles on the expected design quality and response of tall buildings to their context

6 **Application requirements** to set out the process and requirements for planning application for tall buildings

3.3 Above components are best established through the undertaking of a dedicated building heights or tall building study for an entire local authority area (or sub-areas). Such a study will need to be based on a comprehensive understanding of a place and its relevant physical, social and cultural characteristics, and the applicable policy context. The study should define what constitutes a tall building, establish relevant heritage, landscape, visual, townscape and other sensitivities to tall buildings and may use a sifting approach to identify areas where tall buildings may be appropriate or not. Assessment criteria and their relative weighting should be established based on existing policy and best practice, and reflect local priorities, visions and aspirations.

3.4 In areas with little pressure for tall buildings the framing of tall building principles and identification of sensitivities may be sufficient to guide development through the development management process. In areas that experience pressure for intense and tall development it is preferable to provide more detailed location specific guidance on the appropriateness and height of tall buildings together with other relevant design criteria. This should be based on detailed area studies that explore the location, principal massing and height of tall buildings, their role in

supporting the vision of change, and their potential impact on identified sensitivities, which may be tested through 3d modelling. Based on this a location specific framework could be set out that provides height and design guidance and identifies tests that should be undertaken at application stage to establish the impact on sensitive views, areas or other factors. The provision of more detailed guidance on tall building provides more clarity to developers and certainty in the development management process on what is acceptable and where. It is also more likely to result in the delivery of tall buildings in identified locations, and therefore has to be carefully prepared and tested to ensure all relevant aspects have been considered by the guidance.

3.5 To be effective tall buildings should be addressed in a specific policy in the development plan, which sets out how the authority will respond to a tall building proposal. As a minimum this should include a definition of tall buildings, identification of sensitivities to tall buildings that must be considered, and other principles that allow an assessment of the location, height and design of a tall building. In areas with pressure for tall buildings this should also include area specific policies that identify areas that are potentially appropriate, inappropriate or sensitive for tall buildings. Where appropriate areas for tall buildings are identified, Supplementary Planning Guidance could be prepared to provide more detailed guidance on how to apply the policy in areas identified with potential for tall buildings. Alternatively, location specific guidance could be provided through design codes.

4 Tall Building Definition

Relative Height Definition

4.1 Tall buildings are commonly understood as buildings that are significantly taller than their context and that have a notable impact on the skyline.

4.2 A 'tall building' is a relative concept. A five storey building will be a tall building in a predominantly two-storey suburban area, yet would be considered a contextual building in a five storey urban context. Thus, by definition, a tall building is considered 'tall' in respect of the height of its context above which it stands, and to which it forms an exception. This relative definition of 'tallness' aligns with the Historic England Advice Note 4 (2022) definition (Section 3.4).

4.3 To establish whether or not a building is considered tall, its height will need to be compared to the general height of its surroundings from where it will be appreciated. The general height is also called the context height, which is the height that an observer would read as the typical or defining height of a particular area. In places with a coherent townscape, the context height may be the most commonly occurring building height. In areas where building height is more varied, the context height is the average height of around which buildings heights fluctuate.

4.4 The 'tallness' of a tall building can be measured as a multiplier of the context height. The context height ratio (CHR) sets out 'how many times taller' a building is compared to its context. It provides a relative measure of the height of a tall building that is independent from actual height in storeys and meters, and that can be applied in all height contexts. The context height ratio provides a means to discuss the spatial and proportional relationship of a tall building within its surrounding immediate and wider the townscape.

4.5 Figure 1, Figure 2 and Figure 3 diagrammatically depict a large or tall building within its context, considering different townscape contexts. They illustrate how the relationship changes between a tall building as its height increases with surrounding context changes as its height increases, both in suburban and urban height contexts.

4.6 Based on the context height ratio tall(er) buildings can be classified into the following types:

- **Higher building** – up to tall building threshold (TBTH, which is normally between 1.4 to 1.6x CH);
- **Tall building** - tall building threshold up to 2.5x context height;
- **Very tall building** - 2.5x up to 4.5x context height;
- **Super tall building** - 4.5x context height and above.

4.7 The extent of the area used to define the context height, in order to establish the context height ratio of a tall building, needs to reflect the tall building's impact. The greater the height of a tall building, the further will be its impact, and the larger must be the area that should be considered. Higher and tall buildings can use the context height of the wider surrounding local context, whilst very tall or super tall buildings should consider heights across a wider district or city.

4.8 Table 1 sets out the tall building's classification including the principal perception of a tall building in relation to its context, and its principal impact on the skyline.

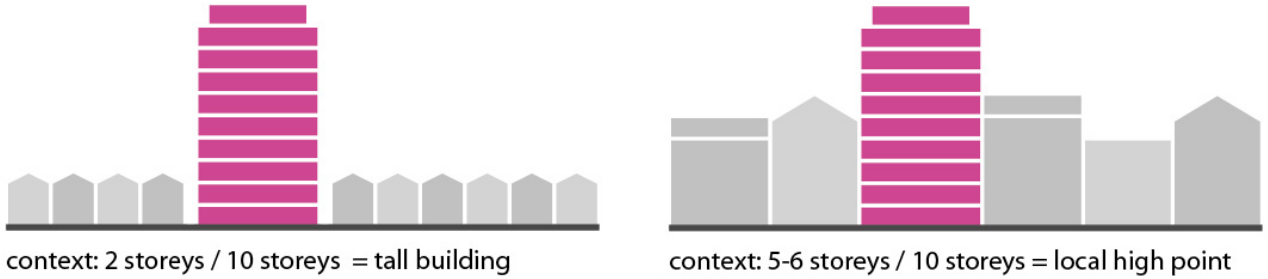

Figure 1: The impact of a tall building is related to its context

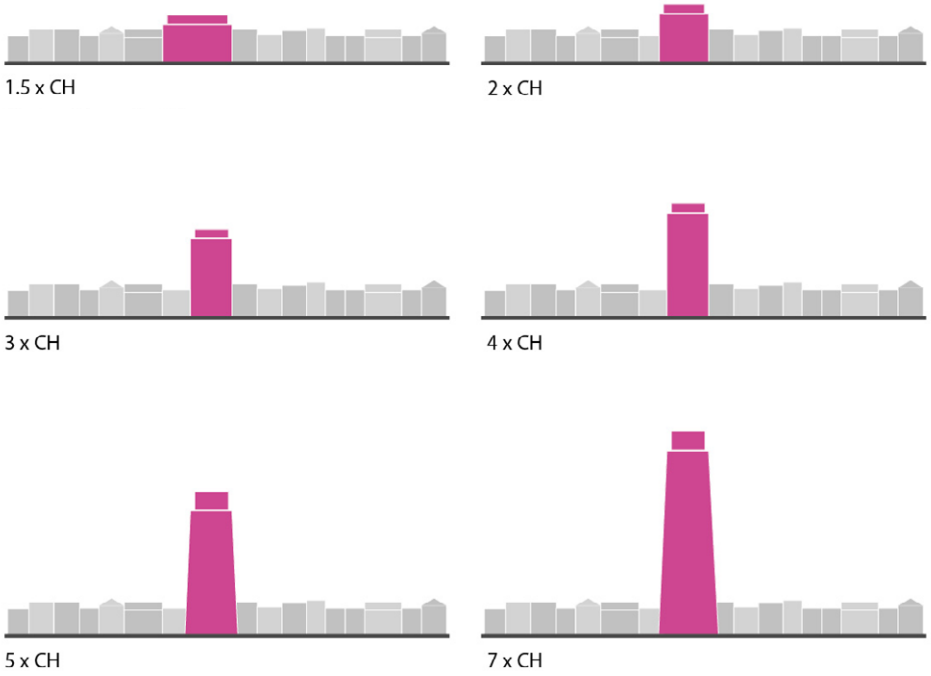

Figure 2: The height of buildings can be expressed as 'context height ratio'

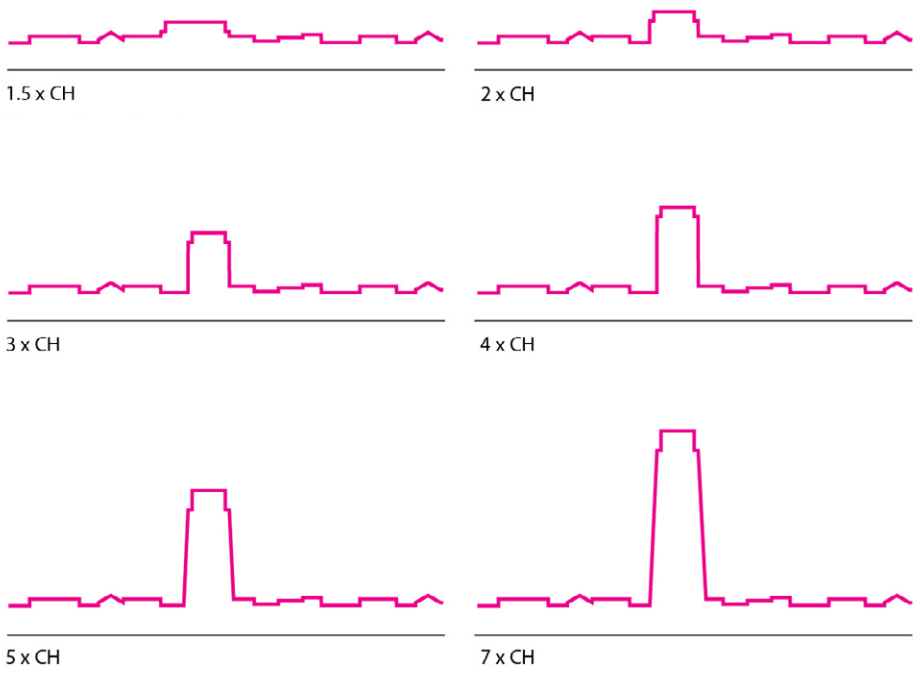

Figure 3: The context height expressed as an impact on the skyline

Table 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 1.5x CH	**Large/higher building**	Contextual, accented building	Limited impact primarily from adjoining space
Above 1.5x CH and up to 2.5x CH	**Tall Building**	Outstanding prominent exception, proportionate relationship with height context, perceived as constituent part the urban context	Tall building is notable, yet its impact on the skyline is mainly local.
Above 2.5x CH up to 4.5x CH	**Very Tall Building**	Rising out of the urban fabric, markedly outstanding and pronounced contrast with prevailing urban context	Can be seen across the town and from surrounding country
Above 4.5x CH	**Super Tall Building**	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 town, from surrounding country and from far away

Image 2: Example: Large / Higher Building

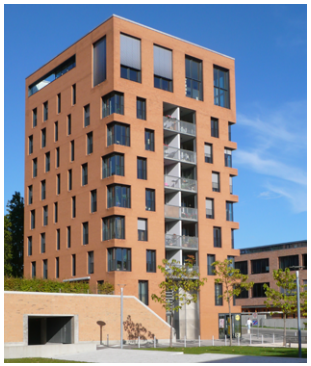

Image 3: Example: Tall Building

Image 4: Example: Very Tall Building

Image 5: Example: Super Tall Building

4.9 It is recognised that other contextual factors may also influence how the relationship of a taller building with its context is perceived. In areas of coherent height, a building at the lower tall building threshold (CHR=1.5) will be considered tall, whilst in areas that have more variation in height the threshold for a tall building will increase up to twice the context height (CHR=2).

4.10 Other factors that may affect how a tall building with its height is experienced from its surrounding context are:

- **Topography** – whether it is located on lower or raised land, which affects its general visibility;
- **Integration with development** – whether it is situated on its own, at the edge or centre of a development, and how it is perceived from the street space;
- **Scale, massing and form** – whether its form is bulky and squat or slender and elegant;
- **Roof and townscape** – whether it responds to or contrasts with the scale, grain and roofscape of the surrounding urban fabric;

Figure 4: Diagram illustrating local landmarks relative to their context height (1.5x and 2.5x context height)

Image 6: An 8 storey building appears tall in a 3 storey context

- **Clustering** – if the building will be perceived in the context of other tall buildings in the vicinity; and
- **Prominence and visibility** – whether the building can be seen from important or frequented places in the urban fabric, such as in the vista along streets or across open spaces.

4.11 These factors should be considered alongside when establishing the appropriateness of height of a tall building proposals, but for simplicity they are not included in the concept.

4.12 The relationship of a tall building with its surrounding will change as its height increases. Height thresholds identified in the concept are indicative of the transition of a tall building from one to the other category, which will happen around this point. Buildings on either side of the threshold should always be considered as being part of both adjoining categories (i.e. at the top-end of one or the bottom-end of the other).

Absolute height definition

4.13 Notwithstanding the above relative definition, a building can also be perceived as tall from a purely human scale perspective, considering our ability to perceive and make sense of our surrounding environment. 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 (13.5m) people cannot recognise facial expression any longer and there is less scope for meaningful communication and engagement of activities at street level. (Figure 5). As we "crane our necks" and are less able to see details and activities at higher levels we will also perceive a building as 'tall', independent from the context where it is located.

4.14 30m (10+ residential storeys) is a practical absolute height threshold for a building to be considered as tall from a human scale perspective. A building above 30m will be perceived as more detached from the human scale urban realm at street level and thereby can have a greater impact on the character of a place. At this height and above buildings are also

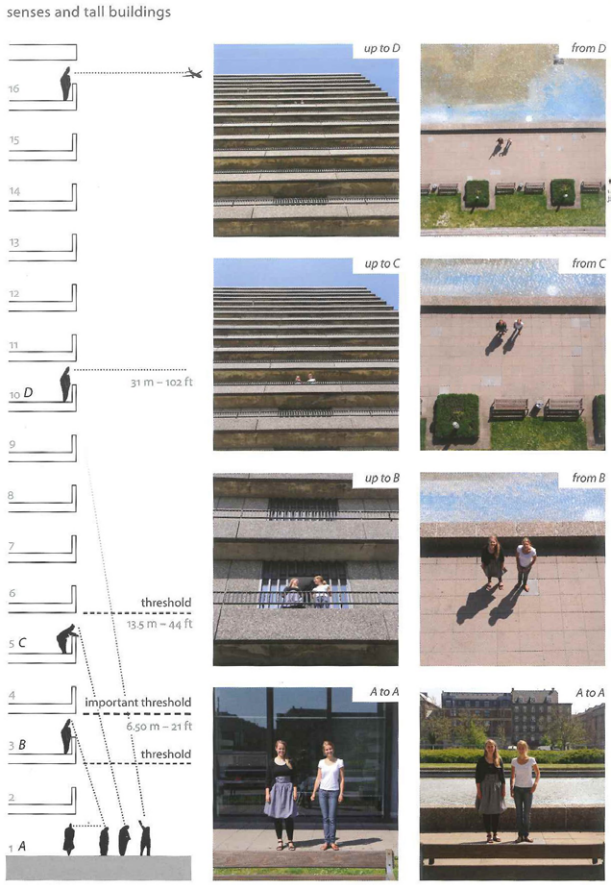

Figure 5: Building height effects the ability to interact with street level (Jan Gehl, 2010, Cities for People)

of a scale that will have more significant effects on the quality of their surrounding environment in respect of overshadowing, daylighting and wind impacts, which will need to be properly considered and mitigated against. As such it makes sense to define buildings above 30m generally as 'tall' to highlight the greater need for scrutiny even if they do not stand out significantly above their urban context.

4.15 Another absolute definition for the 'tallness' of a building may arise in areas where tree cover forms the principal skyline, and where the majority of development is generally not seen above the trees. Any development that rises above or becomes visible behind or in-between trees could affect the prevailing landscape or townscape character and thereby be considered as 'tall'. This is especially relevant in smaller settlements that are nested in the landscape, as well as places where verdant tree-cover makes a significant contribution to a place's character and how it is perceived in views. The height at which a building is considered tall in respect of the tree cover

will depend on the locally specific context, including the maturity and intensity of the cover, as well as typical species and other factors, but it may range from above 7m (above 2 Rst) in areas dominated by lower vegetation and less mature trees to above 15m (above 4 Rst) in areas with a greater number of mature trees.

Local definition of tall buildings

4.16 As set out above, the relative definition of a tall building in respect of its context is an important concept in discussing the impact of a tall building on its context and the urban realm. Especially in areas with lower height context, some buildings may be locally perceived as 'tall' at heights well below of 30m at which a building is perceived tall by itself.

4.17 However, whilst accurate and context specific, a relative height definition can provide a level of ambiguity as to when a building would formally be considered a tall building, without establishing what is considered the local height context against which the definition is applied. Context height mapping of areas with broadly similar heights and characteristics can be a helpful starting point in establishing a baseline position of what is considered tall.

4.18 In areas with greater pressures for tall buildings absolute definitions of what is considered tall will be more practical as they establish clarity from the outset of what is considered tall and what not, and can thereby establish clear policies requirements for tall development. This is the approach advocated by the London Plan, which requires local authorities in the capital to define what is considered a tall building for specific locations based on local context.

4.19 Local definition of what is tall will need to be specific to its urban context, and also consider the objective it is trying to achieve. It may consider a number of factors, including the typical height of development within an area, the relative height at which a building becomes outstanding in its context, the sensitivity of the skyline to buildings rising above the context or tree cover, and if a building is consider tall in its own right from a human scale perspective or for other reasons.

4.20 Setting the tall building threshold for places can be an effective tool in helping to deliver desirable planning outcomes. In areas that are highly sensitive to tall(er) buildings impacting on the coherence of an area and its character, or appearing on the skyline, the tall building threshold may be set lower than what would be perceived

as tall from within the street space to allow additional levels of scrutiny of development that raises above. Conversely, in areas that are already varied in height and that are targeted for intensification, the tall building threshold may deliberately be set more generously to provide opportunity for buildings to moderately increase in height through context responsive design, and thereby evolve an area's local character, without being formally considered as tall buildings and subject to additional levels of scrutiny.

5 Tall Buildings as Landmarks

5.1 Tall buildings are often referred to synonymously as ‘landmarks’ due to their greater visibility and prominence in the urban fabric. A single exceptional tall building will stand out from its surrounding context, and naturally be a notable visual marker in its environment. Inevitably it will become part of the mental map of an area, and people use it as reference points for orientation and wayfinding. It also will enhance the recognisability and distinctiveness of a place, simply by virtue of its contrasting height. As such tall buildings can be used as positive townscape design features, to help improve the legibility of an area, mark activity hubs, points of interest or civic facilities, such as hospitals or transport hubs. Landmark buildings can emphasise a location in views from further away, help orientation, visually reinforce significant places in the urban hierarchy, and contribute to local identity. A well-designed local landmark can be a positive feature of a new development within a place if it integrates well with its context, responds appropriately to the setting of heritage assets and the landscape/townscape character, and contributes to the sense of place.

5.2 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.

5.3 Landmarks can operate on different scales. A local scale landmark is a tall building that makes its presence felt in its immediate and wider local context, when experienced in views from surrounding

Image 7: Historic painting of Cambridge with tall buildings acting as landmarks by James Ward, 1840 (Source: Museum of Cambridge)

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.

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

- Nodal points where important movement corridors join or intersect;
- Arrival and departure points in the urban fabric, such as transport interchanges and stations;
- Gateway locations at the entrance or transition point between 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.

5.5 As the height of a tall building increases it will become more visible over large distances, on the scale of a district or the wider town. Besides operating locally as landmarks, they will also be 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.

The legibility paradigm

5.6 Historically in British and European cities, towns and villages tall buildings and structures were often 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. This is also a very apparent feature on Cambridge's skyline that is dominated by towers, turrets and spires of churches and college buildings.

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

5.8 In a well-planned and legible place, the prominence of tall buildings should be meaningful and proportionate. This legibility paradigm is a central pillar to a coordinated and strategic approach to planning for tall buildings.

5.9 In a well-planned place the prominence of a tall building will be meaningful and justified by clear townscape purpose, such as marking a special place in the urban fabric or having a particular, important function. Where a landmark is expressed through a tall building, its height (and massing) should be proportionate to the relative civic importance of the place or function that it marks in the urban hierarchy of a place or city. Buildings of greater height and bulk could be associated with a location that has a wider meaning due to its function, such as a transport hub, civic building, infrastructure or facility, or its significance as a place, such as a town centre, gateway or node. Providing emphasis to a development project per se is not by itself a strong justification for a tall landmark building.

5.10 The scale and height of a landmark building should provide important cues to the role and significance 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'.

5.11 Generally **local** scale tall buildings should be marking places or functions of **local significance**. **District** scale tall buildings should be marking places of **district wide** importance, while **Metropolitan** scale tall buildings should be reserved for the exceptional occasion when the building represents a significant aspect of **metropolitan or regional** importance. In smaller or medium sized cities, such as Cambridge, it is unlikely that a Metropolitan scale tall building will be justifiable.

5.12 Being a 'landmark' and 'enhancing the legibility' can be valid 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 the lack of 'singularity' in its 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.

5.13 To help shaping places that 'make sense' and are meaningful to its people, it is important that the location and height of a proposed tall building is well considered in respect to the character, function and structure of an area. The building will need to be positioned in an

appropriate and prominent location and be of sufficient distinctiveness and contrast to be legible in its context. Proposals for a landmark building will need to be well justified through a townscape study that demonstrates how it will enhance legibility through options and visualisations. Further the proposed building will need respond and integrate well with its surrounding context and provide a design that is of the highest quality to be perceived as a positive landmark worthy of its place and context.

6 Clustering of Tall Buildings

6.1 The concept that tall buildings can have a landmark role 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 the station area of Cambridge, they will form a tall buildings cluster. In a cluster, a single tall building will not be perceived as an exception, but as an integral aspect of the area's townscape and character. Tall building's clusters can 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 (Figure 6).

6.2 The clustering of tall buildings can create powerful and distinctive features on a skyline. In the right places they can positively contribute to the image and identity of a place (Image 8). However, due to their compounded mass they can be dominant features, and as such may affect or detract from established skyline characteristics, especially where they are more modest in scale or composed of intricate spires and towers, such as in Cambridge city centre.

Figure 6: Diagram of a cluster of tall buildings - higher and taller buildings concentrated in a confined location

Image 8: Tall building cluster defines the skyline and creates a contrast with the lower context height (view of Burnaby, British Columbia, Canada)

6.3 Similar to landmarks, clusters of tall buildings can be associated with specific places and assist with the spatial understanding of a settlement especially in panoramic views across the urban landscape. Clustering of tall buildings in certain location can be an effective approach to manage tall buildings as it prevents a fragmentation of the skyline that would result from a looser approach that scatters taller buildings across the urban landscape. A cluster should be confined to a limited geographical area and not allowed to stretch out too far in certain direction, for example along a corridor. Tall buildings proposed outside a cluster can weaken its distinctiveness and legibility on the skyline.

6.4 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. Often clusters are more distinctive when focused around a central building that forms a clearly recognisable central feature. Competition between sites for the 'tallest' building may shift the centre of gravity around and affect the reading of a cluster on the skyline. Peripheral buildings in a cluster should be lower than those in the centre, and heights should be clearly lower at the edge of a cluster to create a layering effect in views and avoid cliff-edges and stark contrasts with adjoining areas. Following these principles will result in a distinctive cone-shaped cluster on the skyline. If not carefully managed, clusters can mutate into an uncoordinated sprawl of taller buildings over time and undermine the legibility and uniqueness of the skyline. Cluster management principles are more relevant when they include tall buildings of district and metropolitan scale, when absolute heights are greater and they will be seen over large distances. This is evidently less relevant for Cambridge where heights are lower, and the emphasis on clusters will be more about limiting adverse cumulative impacts from massing on the skyline, rather than creating highly visible new features.

6.5 A related concept to the cluster is the skyline composition. This is the 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 an iconic image and strongly valued by residents, and as such highly sensitive to taller buildings that undermine its defining characteristics. Again, this management approach is less relevant in Cambridge. Whilst there are places for example along the River Cam meadows or other open spaces that offer longer open views, their characteristics are already defined and valued, and thereby highly sensitive to tall buildings intruding into view.

6.6 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. Given the compounded mass of buildings on the skyline, 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 other tall buildings in this cluster would be expected to be of a height corresponding to a local landmark or large building. 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. Notwithstanding the above principle, 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.

6.7 Tall building 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.

Image 9: Cluster of three tall buildings visible above the lower context height

7 Skyline and City Image

7.1 Cities, towns and villages evolve, as do their skylines. While their principal structuring features, such as topography, rivers, road corridors, streets and open spaces experience little change, its quarters, neighbourhoods, buildings and structures are subject to a continuous rhythm of aging, 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.

7.2 The environmental 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.

7.3 The environmental 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.

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

7.5 The settlement 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 settlements 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.

7.6 In an environment where towns and villages compete on a regional or national 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 openness to business, their green credentials, or a high quality of life. Places that focus on the protection and enhancement of their distinctive features and characteristics will naturally excel in projecting a distinctive image that contributes to their uniqueness as a place in this contest.

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

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

7.9 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.

7.10 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 the skyscraper 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.

7.11 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 town 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.

7.12 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.

7.13 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. The tree cover in the city and presence of large trees that form a backdrop area key attribute of the Cambridge skyline. Taller buildings are the exception that rise up above this tree line.

7.14 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.

7.15 Cambridge historic city centre has a unique skyline that is linked with the cities' history and identity. The sensitivity of the skyline is discussed more in Section 2.6 of this report.

Image 10: Uncoordinated tall buildings creating a fragmented, incoherent skyline (Stratford, London)

8 Considering the impact on townscape and character

8.1 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.

8.2 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 character attributes of its surrounding context :

- The structure of the area and how the place is shaped by its streets and spaces, and how it responds to the underlying landform, open spaces, water bodies and manmade structuring elements such as major infrastructures .
- The urban grain (sub-division of blocks and plots) and pattern of development;
- The prevailing height, scale and grain of development, including the degree of coherence or variation between buildings;
- The streetscape, including the scale of the street space, the level of enclosure, the buildings line and interface design, and the street level experience;
- The prevailing characteristics of buildings, including the building line, form of buildings, articulation of facades, roofscape, materiality and colours;
- Landscape characteristics and its relationship with development;
- Architectural languages and styles of the local vernacular;

8.3 Pattern of activities, land uses and socio-economic aspects of a settlement.

8.4 The **NPPF (December 2024)** 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. 130c) 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. 130d). The NPPF further emphasises that while 'significant 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. 134).

8.5 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.

8.6 In areas with a well-established sense of place and strong local townscape characteristics, especially where they are unique, sensitive and valued, such as the Cambridge historic core, maintaining and enhancing an area's prevailing character will be highly desirable (see also reference NPPF para 124d). In some places the quality of 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.

8.7 Other areas, however are fragmented, have a weak townscape, and lack a strong sense of place. Often, they are areas in transition, situated at the fringes of established places, and may already be targeted for regeneration, such as Cambridge's growth areas NEC and Cambridge East. Development in such areas should contribute to the establishment of a more coherent and distinctive townscape and a stronger sense of place. The same applies for large greenfield or brownfield sites that offer the opportunity for establishing their own character through a place making approach. Whilst tall buildings in some places may contribute to a place making approach, they are by no-means essential or necessary, and their appropriateness will depend on local circumstances.

8.8 Tall buildings can contribute to an enhanced character, distinctiveness or place-making in three principle means:

- Providing a landmark feature that supports local and wider legibility and way finding, and enhances the distinctiveness of a location;
- Contributing individually or as part of a group to a distinctive skyline or urban silhouette; or
- Creating a townscape ensemble that has its own distinctive character and purpose, which is consistent with the vision for a place and supports its function and amenities. The last may involve the clustering of taller buildings amidst lower rise development, but establishing a tall building cluster on its own is not a sufficient argument for tall buildings.

8.9 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.

9 Tall Buildings and Density

9.1 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.

9.2 The NPPF (2024) 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 105). As such high-density development 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.

9.3 Density is the degree to which an area is occupied by development. This is principally measured in two ways: the number of residential dwellings per hectare (Units/ha) or the floor area ratio (FAR - representing total floor space divided by the site area). The more development there is on a site, the greater will be the density of this development. Given that most development consists of multi-floor development, building height has therefore has an impact on density. The greater the height of buildings, the greater the density of a scheme.

9.4 Beside increasing the building height, other factors, such as the layout and form of development will also have an impact. Density can range considerably subject to whether development is spaced out, with wide streets and large open areas, or if it is built in a compact urban form, with terraced blocks and confined spaces, even if heights remain the same. Bringing forward more efficient block layouts, with deeper floor plans, can also increase density.

9.5 There is a growing body of evidence that illustrates that higher density residential and commercial development can also be delivered with compact low to medium rise developments and do not require tall buildings (see Figure 7). Studies have found that 'gentle 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).

9.6 To understand whether or not tall buildings are necessary to increase density, a distinction needs to be made between single tall buildings that are an exception to the typical height in an area (i.e. the classical landmark building that rises above the surrounding context), the general increase of building height in an area that may be perceived as 'tall' because of heights greater than in the surrounding context, or the clustering of tall buildings in an area.

6 storeys - 145 u/ha

6 storeys - 157 u/ha

7 storeys - 346 u/ha

6 storeys - 460 u/ha

4 -8 storeys - 460 u/ha

7 -13 storeys - 320 u/ha

Figure 7: Comparison of residential density (units per hectare) across developments of different heights (Housing Density Study, Maccreanor Lavington, 2012)

Single tall building

9.7 A tall building will be able to deliver more floor space on a certain footprint than buildings of lower height, and as such will increase the density of development on a certain site. A typical floor plan for a residential tall building has between two (inefficient but slender) to eight (efficient but bulky) residential units per floor. The additional floor space that a tall building generates is in the part of the building that rises above the surrounding context. An eight storey residential building with four units per floor, situated in a four storey residential context, therefore delivers sixteen more units on the same site (4 units x4 floors = 16 units, total 32 units). If the tall building height is increased to 12 storeys, this increases to 32 units (total 48 units), which represents the tripling of the density on its site. Whilst this is a significant increase in density for this site, its impact on the overall density of a wider area (within which the tall building is located) is relatively minor. For example, if the overall area was 4 hectares and delivers 500 homes (125 units/ha), the resultant density would be 129 units/ha for 8 storeys or 133 units/ha for 15 storeys, presenting only a four or eight unit per hectare increase in the density of the area. This calculation also does not factor in the increased need for open spaces that arises from additional residential units, which will reduce the effective density increase further.

9.8 Whilst the increased height of a single landmark building results in a gradual linear increase in the density of an area, its visual and townscape impact increases exponentially. With every additional storey the building will become larger, more visible and prominent, potentially causing harm to heritage assets, impact on views and the city image, and affecting the amenity of surrounding uses. In many places this impact can outweigh any of the benefits derived from the marginally higher densities that result from a tall building. As such the merit of a single tall building should be judged less in respect of the density increase it would deliver and more in respect of its positive townscape impacts, for example by marking as special place and enhancing legibility.

General increase in building height

9.9 New development that increases height more generally in an established context often is often perceived as ‘tall’, even though the actual height increase might not be more than 1 or 2 storeys. This is especially the case in areas that are relatively low rise and coherent, such as rural landscapes, historic villages and suburban housing areas. Here the increase in height from 1-2 storeys to, for example, 3 storeys can be very notable (50% increase in height), and is likely to affect the character of an area. However, the townscape impact of minor increases in height (1 or perhaps 2 storeys) is likely to be less in more urban areas (3 or more storeys), especially where they have a more varied height scape.

9.10 Raising the general height across an area by one or two storeys can be a very effective measure in increasing the density and activities supported by a place. The impact of increased height can be further compounded by delivering more compact and efficient development, including changing typologies from houses to apartment buildings and the provision of mixed use. For example, moving from a 2-storey suburban layout to a 3-storey terraced layout, can increase density (FAR) from 0.6 to 1.28 (Fulbourn vs. Accordia). Increasing the height further and moving to an apartment based typology of 4 and 5 storeys can increase densities further to a FAR of 1.66 (see Figure 8 - Figure 19 & Table 2).

9.11 Both the layout and form of development, as well as the height will have an impact on the character of an area and how well development integrates with their context. However, often increases in height are more notable from the urban fabric, as they affect the sense of enclosure along streets, and therefore can have a greater effect on how an area feels. Areas that are sensitive to a change in height due to their heritage or townscape will require contextual development and therefore the ability to increase density will often be limited to more efficient buildings and layouts, and perhaps minor height increases behind the building parapet.

9.12 Generally, larger development schemes, for example at the scale of a new settlement in a suburban or rural setting, or a number of street blocks in an urban setting, have the capacity to establish their own character, which could be different from their surroundings. Appropriately mitigated at the interface with the existing context, this could allow for a modest to moderate increase of the general height within the core of the scheme, without having a detrimental impact on the wider character and other sensitivities. However, where development mass as a whole reaches above the height of vegetation (2-4 storeys subject to maturity) it may cause a wider visual or landscape impact that will need to be tested and mitigated against.

9.13 Increasing the general height on smaller development sites is more challenging. In an open and sub-urban two storey setting the increase by a single storey may already be perceived as ‘tall’ and out of context, whilst in an urban setting additional heights of one storey may be easier to accommodate (for example

as a ‘set back’ storey) without a significant impact on the overall character. The impact of the additional height of smaller developments on the overall density of an area is generally negligible. However, if they form part of incremental development to a larger number of sites, that change the height more generally, then cumulatively they may have a notable impact on density.

Site 1

Figure 8: Aerial Site Image

Figure 9: Figure Ground Plan

Site 2

Figure 10: Aerial Site Image

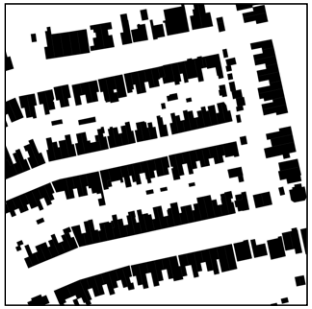

Figure 11: Figure Ground Plan

Site 3

Figure 12: Aerial Site Image

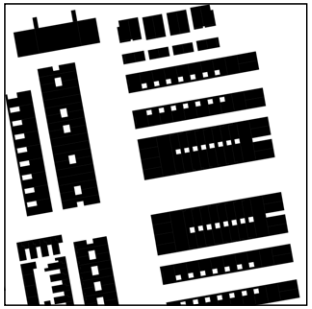

Figure 13: Figure Ground Plan

Site 4

Figure 14: Aerial Site Image

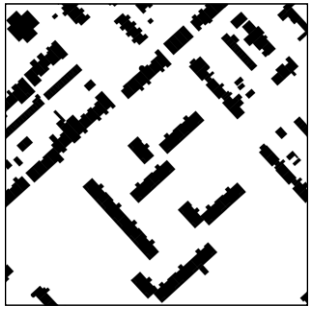

Figure 15: Figure Ground Plan

Site 5

Figure 16: Aerial Site Image

Figure 17: Figure Ground Plan

Site 6

Figure 18: Aerial Site Image

Figure 19: Figure Ground Plan

Site Study no.	Site Location	Bldg ht. avg. (metres)	Height range (metres)	Site Area (ha)	Number of Resi units	u/ha	Plot Coverage	Plot Ratio
1	Teasel Way, Fulbourn, Cambridge	7.0	7.6	4	146	36.50	0.24	0.61
2	Blinco Grove, Cambridge	7.5	13.3	4	178	44.50	0.34	1.00
3	Accordia Housing, Aberdeen Ave, Cambridge	8.1	11.6	4	141	35.25	0.39	1.28
4	Edgecombe, Kings Hedges, Cambridge	5.7	8.7	4	193	48.25	0.21	0.48
5	Glenalmond Ave, Cambridge	13.0	25.2	4	410	102.50	0.35	1.66
6	Station Road, Cambridge	14.7	35.9	4	262	65.5	0.47	2.35

Table 2: Cambridge comparative density study

Tall Building Clusters

9.14 A variation to the increase in the general height of buildings, is the concentration or clustering of taller buildings in a confined area. For example, this could include grouping of tall buildings that contrast with their immediate surrounding, such as the Station Road development at Cambridge Station, or the combination of lower rise blocks with taller elements above or in between them.

9.15 Clustering of tall buildings often generates an intense and strongly enclosed environment. It will amplify the visual, townscape, heritage and landscape impact of a development, and naturally there will only be few places, such as some urban centres with little sensitivity, that can successfully accommodate and assimilate this impact. The clustering of tall buildings should generally only be considered as part of a comprehensive masterplanned approach to placemaking, where the cumulative impacts of height can be understood, planned for and mitigated. Clustering of tall buildings will be an effective means to boost the general density of an area over and above what can be achieved with a modest increase in the general height or a single tall building.

Summary

9.16 Increasing the general height of an area, either as part of a comprehensive development or through cumulative incremental developments, is the most effective means of increasing the density of an area. Where height increases remain below the treeline its impact on the surrounding heritage, townscape and landscape character are easier to mitigate. In contrast, singular tall buildings are less effective in increasing the density of a development whilst their skyline impact is far greater, as they inevitably will rise over the tree and roof line. Clusters of tall building can be more effective in boosting the density of an area, but their skyline impact will be amplified due to their cumulative impact, and there will be few places (if any) where such an impact can successfully be accommodated in Cambridge.

9.17 If the objective is to increase density in a certain area, the principal strategy should be to seek modest increases in the general height, and to provide more compact and efficient development forms. If tall buildings are promoted, the aim should be to enhance distinctiveness and support legibility and placemaking, rather than to use it as a means to increase density per se. In major regeneration areas with a strong focus on intensification and placemaking (for example around a public transport hub), and that have little visual, heritage, townscape and landscape sensitivity, the provision of a cluster of taller buildings could be explored, subject to full understanding and mitigation of their impacts on sensitivities.

10 Social Aspects of Tall Buildings

10.1 A study by Jan Gehl on perception and building scale has shown that beyond a height of six storeys people can no longer recognise facial expression and there is less scope for meaningful communication and engagement with activities at street level, which are essential for social engagement and community life. 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.

10.2 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. (Lessons from Higher Density Development, Report to GLA, 2016, para. 6.16-6.19)

10.3 The research suggested that the greater sense of community within low to mid-rise courtyard style development may be explained by the greater use of communal amenity spaces, the limited number of units per core (supporting familiarity in between the people living within a building), and the concentration of family accommodation, which foster a greater degree of social interaction. Conversely, units in taller buildings often are 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.

10.4 Given these characteristics tall buildings are more likely to be suitable for younger professionals that have a lesser reliance on local networks than families or older residents. Furthermore, tall buildings may be 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 low to midrise courtyard style blocks may provide a better typological solution.

11 Tall Buildings Development Costs and Viability

11.1 Tall buildings that rise above 8-10 storeys are more expensive to build and cost more per square feet than low or medium rise buildings.

11.2 Tall buildings generally have a less efficient net to gross floor space ratio than lower rise buildings. This is due to additional structural requirements on the sub-structure and building frame to respond to its greater weight and higher windloadings. Tall buildings also require larger cores to provide for vertical transportation requirements, servicing and emergency access. They need larger capacities of plant and distribution systems and potentially also 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.

11.3 Tall buildings are usually 25-40% (offices) and 30-40% (residential) more expensive to build than low-rise buildings. (James Barton, Aecom, 2014) 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:

- Iconic architecture and more complex design
- Structural solutions to respond to lateral and vertical loads require additional restraints
- Slenderness ratios which reduces floor plate efficiencies and shape of a floor plate which affects wall to floor space ratio
- Quality and materiality of the façade
- Impact of solar gain from large amounts of glazing and associated mitigation
- Recessed balconies and winter gardens at higher levels to maintain their amenity
- Servicing, especially the need to boost water supplies and pressurisation of heating and cooling solutions
- Sprinkler systems and anticipated building regulation requirement for minimum two stair cores
- Vertical transportation and access requirements, which may increase the size of the core if height increases, public access to the upper floors is permitted, or a mix of uses with separate access requirements is promoted.

11.4 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 a more expensive design could be required.

11.5 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 with top floor penthouses often demanding an

additional premium. Tall buildings therefore require a strong residential market that is able and willing to pay the additional cost in comparison to more conventional properties in the area.

11.6 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) While individually small high-density infill schemes will deliver lesser 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 small high density infill buildings 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.

11.7 More recently institutional investors have been 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.

11.8 The holistic and strategic approach by BTR investors to the long-term management of their 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, especially in taller buildings, and thereby ensure the upkeep of quality and maintenance of the building over its lifetime. In schemes with many 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 a number of privately owned towers with Grenfell type façade systems where leaseholders were faced with significant and unaffordable bills for the replacement of façade systems.

12 Tall Buildings and Regeneration

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

12.2 It is argued that tall buildings can act as catalysts in regeneration projects, as they can provide a widely visible landmark to the area, signal change, raise the profile and generate investor confidence. However, regeneration projects are highly place and context specific, and what works in one area may 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 in a lagging area than the delivery of a tall building. While tall buildings can contribute to regeneration they will need to be complemented by other interventions as

Image 11: Tall buildings form part of the regeneration of former industrial land at Porto Nuova, Milan

Image 12: Tall buildings often form a prominent part of large scale regeneration schemes - Old Gas Works, Sutton (Source: Google Street View)

Image 13: North Road Estate Renewal - successful regeneration project providing street blocks of coherent height that enhance the setting of the historic clock tower (Camden, London)

part of a coherent regeneration strategy. However, there is no inherent need for regeneration projects to have a tall building. In fact, regeneration schemes in Cambridge through the Cambridge Investment Partnership (CIP) have increased unit yields through denser forms that typically did not exceed five storeys. In the Ironworks and Timberworks CIP schemes, the 5 storey blocks were high points (i.e. large buildings) rather than tall buildings.

12.3 Where a tall building is promoted as part of a regeneration scheme it is important that the full life impact is considered for an area. Whilst there is a 'wow' factor to a newly built tall building this tends to wear off over time, and it is important that a tall building 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 and its people over the medium and long term.

12.4 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 the expectation of increased land value returns may stimulate development interest in a regeneration area it also can have detrimental impacts on the viability of other development projects that deliver less floor space.

12.5 Tall building projects can fall foul of natural development cycles. Often, they are being promoted when the market is on the up, but can fail to be delivered as the market contracts, viability margins shrink and funding sources dry up. Failed tall buildings sites can leave painful gaps 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, obtain planning permission, and then sell the site on with the permission for higher density development, 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.

12.6 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 their purchase values, rent or service charges.

12.7 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 of a tall building proposal in an area. Clear planning policies and guidance that defines where (how many and at what height) tall buildings are appropriate in a certain regeneration area can help to avoid land speculation. A clear understanding of the target market

and how this will affect local people in often deprived regeneration areas is also needed to ensure proposals are realistic, address local needs and avoid the pitfalls of gentrification.

12.8 Given the prominence and transformative impact that 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 for the local community, beyond mere token gestures. While regeneration projects do not necessary require tall buildings, where a tall building is being brought forward as part of a regeneration project there will be the general expectation for it to deliver wider public benefits to its locality beyond its form and function.

13 Heritage Impact

13.1 The NPPF (2024) 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 189) '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 199) 'Substantial harm to or loss of 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 200b)

13.2 Tall buildings by their very nature will have a visual impact that needs to be thoroughly considered. Individually

Image 14: Modern tall buildings contrast markedly with the historic fine grain Georgian townscape in Angel, London

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.

13.3 Heritage assets often are sources of distinctiveness, meaning and quality of a place. As a shared cultural resource of historic interest and 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.

13.4 Understanding a place's skyline characteristics and how these form part of the setting of heritage assets will be important in establishing how sensitive the skyline is to tall buildings. Strategic and local views, as well as dynamic views along routes or through open spaces, may need to be assessed to understand the impact of a proposed tall development on the skyline, and that harm it may cause to the significance of heritage assets and their setting.

13.5 Development with its height and scale 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.

13.6 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 Grade I and II* listed buildings in most cases will be highly sensitive to tall buildings.

13.7 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. View studies, that identify significant views and establish their sensitivity and importance, visually, experientially and by cultural and historical association, can provide helpful guidance on how to assess and interpret the impact and harm that a proposed tall building may have on strategic and other views.

13.8 It is often beneficial to use 3d modelling to test and calibrate the height of tall buildings in strategic and other views during the initial design development phase of a proposed tall building. This would ensure a full understanding of the likely impact and harm of a tall building early on in the process, and should inform any necessary mitigation approaches to avoid any aggressive domineering or otherwise harmful effect on heritage assets and their setting. Modelling of tall buildings can 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.

13.9 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 illustrates and evaluates 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 VIA should be discussed and agreed with the Planning Authority.

13.10 First pre-application meetings for a tall building proposals should provide a map with a computer-generated zone of theoretical visibility (ZTV) of the top level(s) of the development. This should indicate from where the proposed building would potentially be visible and help with the identification conservation areas, other heritage assets, viewpoints and other sensitivities that may be sensitive to visual intrusion by a tall buildings and that require closer inspection and testing. At pre-application stage initial massing model impressions from sensitive locations should be provided to provide an initial understanding of the likely impact of a proposed tall building, so as to inform mitigation approaches early on in the design process. In Cambridge developers should make use of the GCSP digital model of the city if their site and relevant views are covered by the model. They should also provide an inset 3d model of the proposed massing (initially) and detailed architectural proposal (later on in the pre-application process) in a compatible geolocated format to enable the authority to assess the proposal by themselves in the 3d virtual environment of the city. Where this is not available wireframe renders of the massing inserted in verified photographs from relevant viewpoints should be provided to enable an initial review of the likely impact.

13.11 When the general principle of a tall building is established in a location or to understand better how a proposal with its design and architecture manages to respond to its context and mitigate its impact, more detailed accurate visual modelling of proposals should be represented in photomontages or dynamic modelling that show the ‘before’ and ‘after’ view. Relevant views should be defined by the Council and may include views from outside the Local Authority area when needed. Chapter 7 of this study identifies key views in Cambridge that should be taken into account by tall building proposals. Detailed photomontages should be part of pre-application discussions and application submissions.

13.12 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.

14 Visual Impact

14.1 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.

14.2 Local Plans and conservation area statements refer 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 borough boundary. As already referred above, Chapter 7 of this study identified relevant key strategic views in Cambridge that alongside other locally important 'near' views will need to be considered and tested.

14.3 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, other skyline features and the role of tree cover (very important in Cambridge), 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. Evaluation of views may need to go beyond aesthetic concerns and also consider the setting of heritage assets, potential harm to significance, and the experiential, cultural and historical realms as discussed in the previous section above.

14.4 As discussed above, 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 need 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