



## 3.0 Site Wide Built-Form Design Principles

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The built-form principles provide detail on how the volumes secured by parameter plan will resolve into interesting, diverse and attractive buildings that contribute positively to the rhythms and richness of Cambridge.

- 3.1      Massing
- 3.2      Materiality
- 3.3      Base: Ground Floor Activation and Entrances
- 3.4      Middle: Facade Hierarchy
- 3.5      Top: Rooftops
- 3.6      Flue Articulation

## 3.0 Site Wide Built-Form Design Principles

### 3.1 Massing

The following guidance sets out strategies to help break down the massing and perceived bulk of the large format footprints required to support the proposed uses. The application of the codes within this section will create an attractive, varied, and diverse townscape, that integrates successfully with the fabric of Cambridge.

The Design Codes will shape each building beyond the massing envelope defined by the Parameter Plans to articulate, sculpt and refine each building to be highly responsive to its plot, character area, the site and the wider setting.

- 3.1.0 Proposals *must* collectively create a coherent place comprised of buildings that form a responsive and positive contribution to the skyline of Cambridge and respect relevant policy views and key landmarks.
- 3.1.1 The Legibility Framework *must* inform the detailed massing strategies such that the intended urban hierarchy is achieved.
- 3.1.2 Reserved Matters applications *must* evidence that the relationship with all plots has been considered and that the visual relationship between buildings has been tested in both near and long distance viewpoints. Relevant TVIA viewpoints to be agreed at outset of reserved matters applications.
- 3.1.3 Each building *must* respond to adjacent buildings in scale and character and avoid visual coalescence of massing and built forms.
- 3.1.4 The architecture and materiality of a building *must* respond to nature of the character area(s) it sits within. Façades *must* be clearly divided into a top-middle-base order through materiality or articulation or both.
- 3.1.5 Buildings adjacent to each other *must* complement one another through similar proportions, architectural elements and rhythmic composition.

#### Modulated Massing

- 3.1.6 Buildings *must* employ a modulated approach to the massing, breaking down large footprints into smaller, more distinct architectural entities.
- 3.1.7 Subdivided volumes *must* be articulated to be visually distinct, create visual interest and reduce the perceived scale and bulk of the building.
- 3.1.8 Longer façades *should* be subdivided by vertical articulation to reflect the finer grain of Cambridge's fabric.

#### Variation in Height, Form and Silhouette

- 3.1.9 Buildings *must* introduce variation in height and form between each other, and employ diverse roofscape solutions to create a sense of variety to their silhouettes
- 3.1.10 To avoid coalescence, roofscape articulation and massing breaks *must* be legible and appreciable in relevant local TVIA views from outside the site.

#### Setbacks

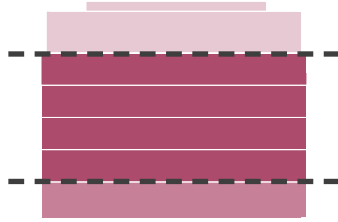
- 3.1.11 Buildings *should* use setbacks, stepped plans and angled façades to reduce the visual impact of mass and break down bulk, and to create opportunities for green roofs and amenity terraces.

#### Materiality and Facade Articulation

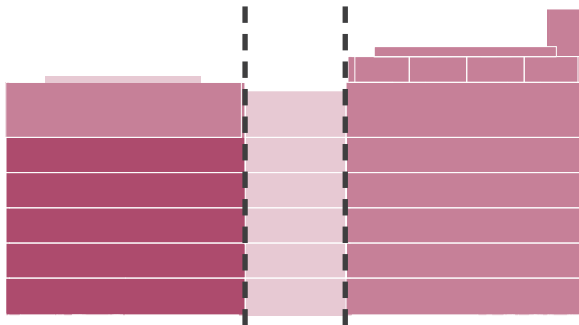
- 3.1.12 Buildings *must* use a diverse palette of high quality materials and façade treatments to enhance visual differentiation between massing volumes.
- 3.1.13 Repetitive grid elevations applied to whole façades without variation *should* be avoided.
- 3.1.14 Façade elements *should* be grouped to emphasise smaller vertical volumes and reinforce smaller segments.

#### Height Parameters

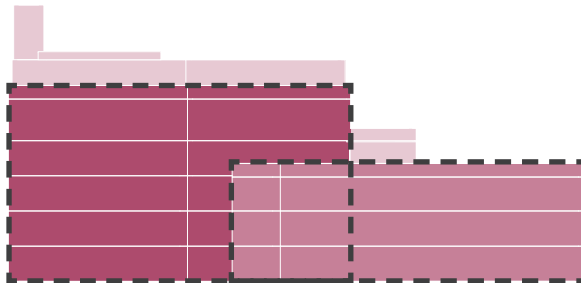
- 3.1.15 Unless otherwise qualified on the parameter plans, the upper AOD level for each building measured at parapet level and *must* include all building elements including roof top plant, lift overrun and PV. Flues are subject to their own maximum heights.



3.1.4 Clearly divided top-middle-base. [Illustrative Diagram].



3.1.6 Using a central set-back as a method of enhancing verticality, where the facade is longer than the height. [Illustrative Diagram].



3.1.7 Using step-ups of varying volumes as a method of enhancing verticality, where the facade is longer than the height. [Illustrative Diagram].



Application of fine grain articulation to break down a larger mass into smaller elements with an articulated silhouette. Keybridge, London, Allies and Morrison



Vertical expression and subdivision combine with materiality to break down volumes into smaller elements. 30 Broadwick, London, Emrys Architects



Vertical and horizontal articulation to create visually distinct volumes. Great George Street, Liverpool, Brock Carmichael



Subdivision of a larger volume into smaller architectural elements. Ruby Lucy Hotel, London, Kyson Studio

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### 3.2 Materiality

**The materiality of the proposed buildings in terms of colour, tone and texture is an important factor in delivering a new area of the city which successfully knits in with its context as experienced in both near and far views.**

- 3.2.0 All Reserved Matters applications *must* illustrate the decision making process that has guided the proposed materiality for the building in question and how the materials complement context.
- 3.2.1 This material selection process *must* be informed by local and city wide context.
- 3.2.2 Reserved Matters applications *must* evidence testing of materiality against the materiality of all plots with extant Reserved Matters such that the influence of tones, lightness and texture of the chosen materials can be fully understood.
- 3.2.3 This testing *must* demonstrate how materiality will break down the cumulative mass of proposals by creating suitable contrast between buildings.
- 3.2.4 The materiality of taller elements of the Proposed Development *must* be contrasting, distinct from, or appropriately harmonious with historic tall elements so as to minimise competition with the historic core and to make legible the evolution of the skyline.
- 3.2.5 The material choices and proposed articulation *must* address texture, depth, identity and playfulness.
- 3.2.6 The material choices *must* reflect the National Design Guide principles, be appropriate for construction, practical, durable, affordable and attractive.
- 3.2.7 An understanding of the embodied carbon of selected materials *should* be demonstrated.
- 3.2.8 The materiality *should* aim to harmonise with the established city material palette and not unnecessarily assert the proposals in the overall skyline whilst still allowing suitable variation of tone and colour to signify markers and points of interest.
- 3.2.9 The tone and lightness of materiality of plots that are aligned in key viewpoints *should* appropriately contrast one another to enable the legibility of individual buildings. This is particularly relevant in the Castle Hill Mound and Red Meadow Hill viewpoints as established in Chapter 10 of the Environmental Statement.
- 3.2.10 Slender and darker marker points *should* be introduced for legibility and variation on the skyline.
- 3.2.11 Material treatment *should* be used to differentiate elements of the facade composition.

*Note:*

*The Level 3 Accurate Visuals Representations (AVR views), opposite, show the illustrative massing of the proposed scheme with applied architecture and materiality. The Illustrative massing shows the expected footprints and maximum height of the proposed buildings. Please see Chapter 10 of the Environmental Statement for further detail regarding AVR views.*



View from Coldham's Common



View from Castle Hill Mound



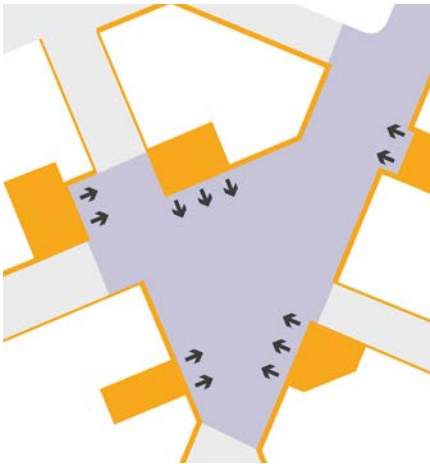
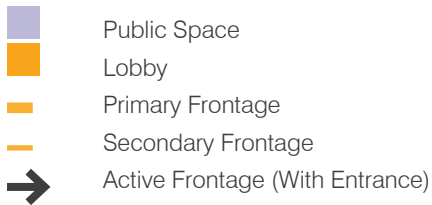
View from Red Meadow Hill

## 3.0 Site Wide Built-Form Design Principles

### 3.3 Base: Ground Floor Activation, Transparency and Entrances

**People friendly places are those that have a scale, which people can relate to. Therefore, the ground floor plane of the development including the spaces and the buildings, is a key element of the proposal to create a place that is inclusive, vibrant, attractive and a coherent relationship between ground floor uses and the public realm.**

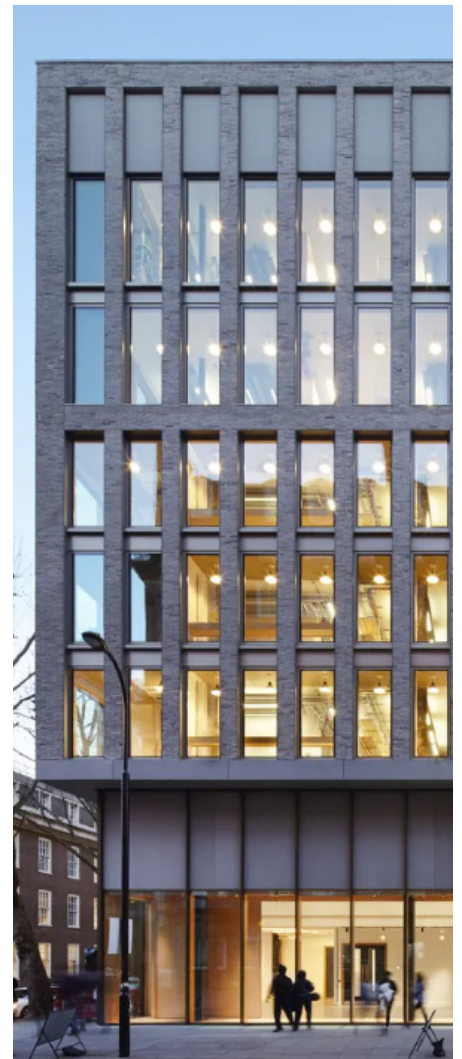
- 3.3.0 Buildings *must* have well-designed ground floor frontages that respond to the hierarchy of public space that they bound.
- 3.3.1 The ground floor of buildings *must* be informed by the Spatial Hierarchy and Public Realm Framework, and Legibility Framework.
- 3.3.2 Buildings *must* be well coordinated with the landscape design in order to create a positive ground floor experience with suitable space for circulation (informed by expected population and peak arrival numbers), building entrances and thresholds, short stay cycle parking and seating areas.
- 3.3.3 The main entrances to ground floor uses *must* be legible, well defined and contained within Primary Façades.
- 3.3.4 Entrances to workplace lobbies *must* be generous, welcoming, transparent and positioned to activate the key spaces of the masterplan.
- 3.3.5 The key public spaces of Maple Square and Hive Park *must* be framed by ground floor active uses.
- 3.3.6 Where markers are identified, ground floor activation *must* be incorporated into the architecture.
- 3.3.7 Active frontages *must* be delivered in line with the broad principles set out within 2.2 although, precise layout is Reserved.
- 3.3.8 The design of shopfronts *must* be in accordance with the principles set out within the Shopfront Design Guide included within the Cambridge Local Plan (2018).
- 3.3.9 Largely opaque, obscure or heavily fritted glass *must* not form the primary glazing material within ground floor façades unless required to mask back of house uses or to mitigate security issues.
- 3.3.10 Entrances and routes for building services (e.g refuse storage and collection) *must* be well coordinated with the proposed ground floor frontages, public realm and highways.
- 3.3.11 Reserved Matters Applications *should* illustrate how the articulation of the facade and any set backs have been designed to positively and appropriately define the sense of scale within the streets that they define.
- 3.3.12 The designated character areas *should* inform the activities within the building and the chosen offering(s) at ground floor level.
- 3.3.13 Where there are public uses on the ground floor, the architecture *should* allow for visibility of internal activity.
- 3.3.14 The ground floor units *should* incorporate visual and physical connections to one another, where possible.
- 3.3.15 Views *should* be provided out of internal spaces onto streets or public spaces where possible.
- 3.3.16 The entry sequence into each building *should* be illustrated in Reserved Matters applications to ensure that conflicts are reduced between building users and those passing through the space on foot and by bike.
- 3.3.17 Secondary streets *should* either support site connectivity or create secondary spaces that support activities within primary streets.
- 3.3.18 Where practicable, secondary façades *should* benefit from additional entrances to buildings in order to enhance the activation of these façades and the spaces that they bound.
- 3.3.19 Where a blank facade element is unavoidable within an overall frontage that is well active and balanced by more active sections, architectural devices and treatments *should* be employed to provide relief and contribute to the sense of a dynamic façade.
- 3.3.20 Where ventilation grilles or service equipment are unavoidable, they *should* be limited in extent and well-integrated to create a cohesive and attractive elevation.



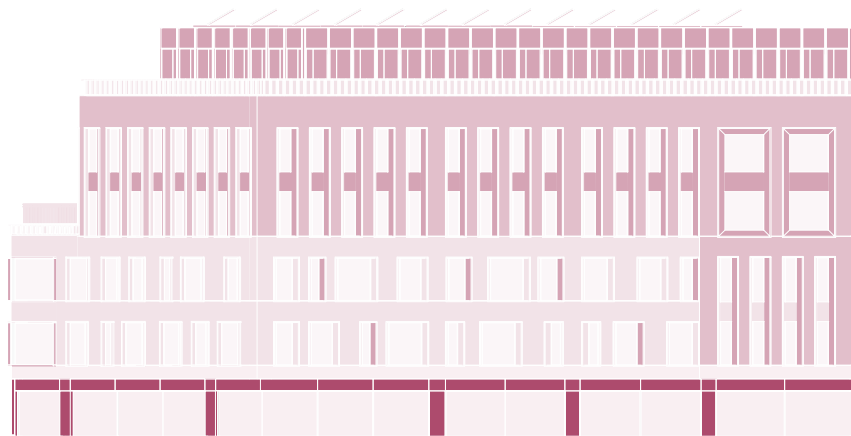
3.3.0 Main entrances and primary facades that address public space. [Illustrative Diagram].



3.3.6 Unique architectural treatment on the corners to represent a marker. [Illustrative Diagram].



Visibility of ground floor activity  
The Bartlett, London, Hawkins Brown



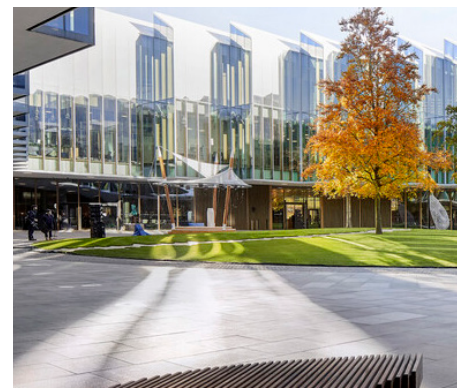
3.3.8 Shopfronts and lobby entrances integrated into the facade strategy. [Illustrative Diagram].



High quality non-active frontage  
Judge Business School, Cambridge,  
Stanton Williams



Example of science on show in a  
laboratory building.  
Zayed Centre, London, Stanton Williams



An active ground floor that positively  
contributes to the public realm.  
430 AstraZeneca, Cambridge, Herzog &  
de Meuron

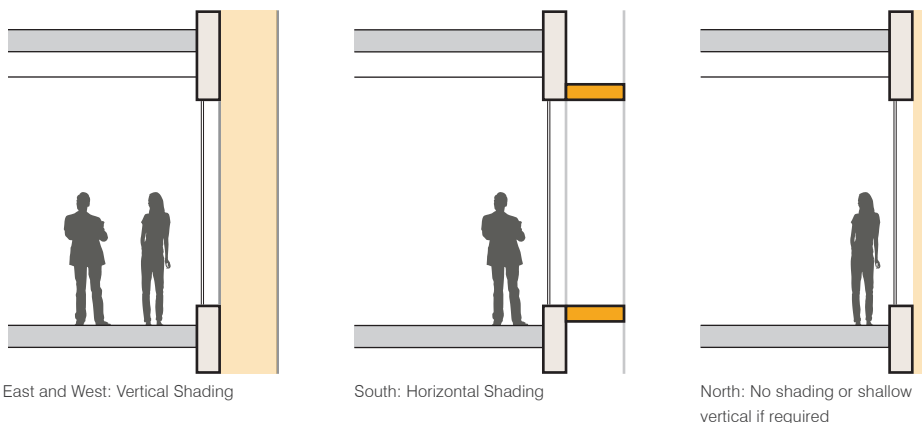
## 3.0 Site Wide Built-Form Design Principles

### 3.4 Middle: Facade Hierarchy

The architecture of the primary facade elements that sit between the ground floor and roof are key to defining the character of the spaces that they contain.

Creating a clear and understandable façade hierarchy to buildings is crucial to creating a cohesive place when viewed in both local and more distinct viewpoints. It is also an important in creating a scale of building and space to which people can relate.

- 3.4.0 All building façades *must* be thoughtfully designed, exhibiting design excellence regardless of hierarchy, and *should* create elevations that provide a 21<sup>st</sup> Century response to the rhythms and richness found in the character of Cambridge.
- 3.4.1 Building façades *must* respond to the site wide spatial and street hierarchy they frame and define.
- 3.4.2 Facade design *must* be carefully designed to create varied architectural silhouettes.
- 3.4.3 Façades *must* respond to plot orientation and integrate solar shading design to prevent overheating.
- 3.4.4 Façade components and elements *should* have predominantly vertical expression to break up larger volumes and long façades unless designs can demonstrate that an alternative approach can still comply with the massing codes under section 3.1.
- 3.4.5 Set-backs *should* differentiate in materiality or articulation or both to create distinction between the facade below.
- 3.4.6 Facade design along Coldham's Lane *should* positively contribute to the street scene.
- 3.4.7 Facade design bordering Hive Park *should* enable the successful transition between the architecture of the Mill Road Conservation Area and the Proposed Development.
- 3.4.8 Façades *should* adhere to a maximum glazing amount of 40% of the total facade area per the LETI Climate Emergency Design Guide. Deviations above this level are only acceptable where it would not be of detriment the holistic sustainable performance of the building.
- 3.4.9 All external services *should* be incorporated into the facade design for a cohesive appearance.



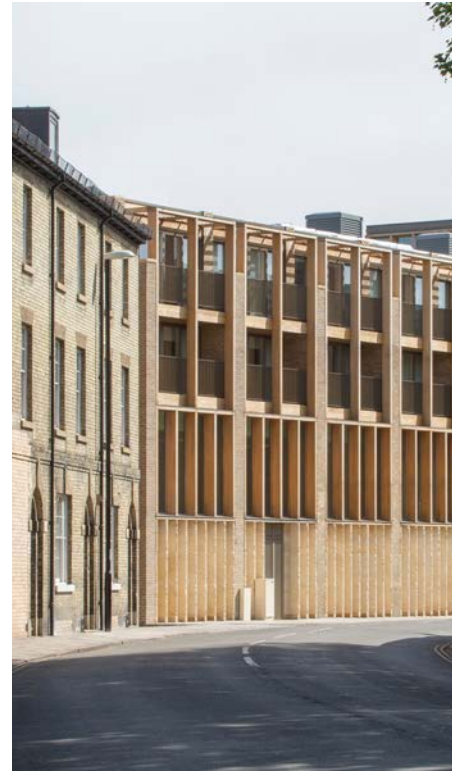
3.4.3 Illustrative shading principles in response to orientation.



High quality articulation and materiality  
Fitzroy Place, London, Sheppard Robson



Vertical expression with horizontal detail.  
Eddington, Cambridge, Stanton Williams



A contemporary response to the rhythms and richness of Cambridge.  
Jesus College, Cambridge, Niall McLaughlin



A contemporary response to the rhythms and richness of Cambridge.  
Anglia Ruskin University, Cambridge, Richard Murphy Architects



Facade step and material change to break up building mass.  
Feartherstone Building, London, Morris + Company



Clear hierarchy of facade, dynamic central plane and appreciable upper floor set-back.  
KPMG HQ, Berlin, KSP Engel

## 3.0 Site Wide Built-Form Design Principles

### 3.5 Top: Rooftops

**Rooftops must be varied and be designed to be read independently to avoid the coalescence of plots and massing, and to support an attractive and rich townscape character that can respond to varied placemaking opportunities and different edge contexts**

**There are a number of strategies defined in the below codes that will enforce the delivery of high quality roofscapes at Reserved Matters Applications.**

- 3.5.0 The rooftops *must* be varied in character across the character areas.
- 3.5.1 The articulation of rooftops *must* mitigate massing impacts in local and townscape views, as identified in the townscape visual assessment chapter of the Environmental Statement.
- 3.5.2 Efforts to create variation of form at rooftop plant level will be encouraged and Reserved Matters applications *must* illustrate how the roofscape has been designed to minimise visual impacts and create an articulated roofscape.
- 3.5.3 Rooftop plant *must* be well considered and integrated into the overall roof character to create a coherent and attractive architectural composition.
- 3.5.4 Buildings *must* have an uncluttered roof profile with all functional elements forming an integral part of the overall building forms
- 3.5.5 Ventilated façades *must* be designed as part of the wider architectural composition.
- 3.5.6 To mitigate the coalescence of buildings in townscape views a variety of materials *must* be used on the top floors to create distinction between buildings.
- 3.5.7 The combined roof profiles of Plots 2, 3, 4 and 5 *must* create a varied roofscape when viewed from Coldham's Common.
- 3.5.8 Rooftops of neighbouring plots *must* be varied in articulation and tone when viewed from Red Meadow Hill and Castle Hill Mound.

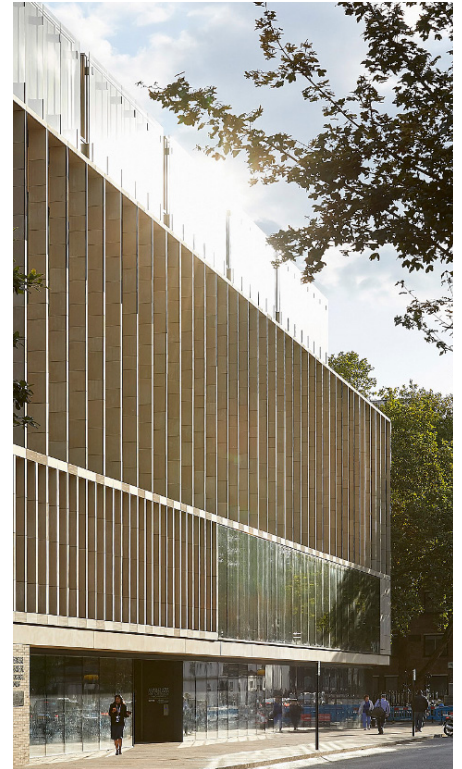
- 3.5.9 The shape and silhouette rooftops *should* work to create prohibit coalescence with adjacent buildings, with varied forms creating complementary mix throughout the character areas
- 3.5.10 Roof design *should* maximise areas and angles for PVs in the most suitable orientations.
- 3.5.11 Green and brown roofs *should* be used where practicable to increase potential for Biodiversity Net Gain and sustainable drainage.



Plant screen integrated into glazing pattern  
Wellington Place, Leeds, Sheppard Robson



Sculptural and detailed plant.  
Victoria Gate, Leeds, ACME



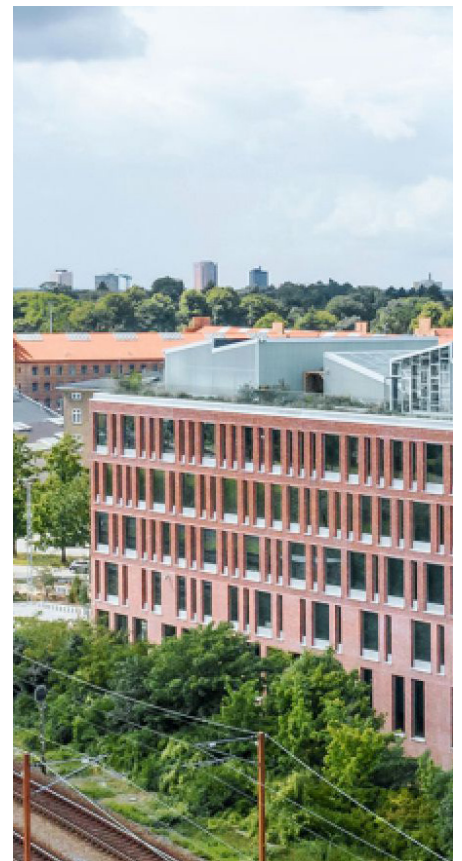
Recessive top architectural element.  
Zayed Centre, London, Stanton Williams



Variety of form and setbacks combining  
to create an articulated roofscape.  
Brooklands, Cambridge, Allies and  
Morrison



Architecturally integrated plant screen.  
R7 Kings Cross, London, Morris +  
Company



Angled plant screening creating variety  
of form.  
KAB HQ, Copenhagen, Henning Larsen

## 3.0 Site Wide Built-Form Design Principles

### 3.6 Top: Rooftop Plant

**The Proposed Development has been designed to be highly sustainable and therefore requires a high allocation of rooftop plant, particularly on those buildings designated for laboratory use. The following page outlines the potential opportunities for differing plant level facade design as illustrative material.**

- 3.6.0 Significant efforts have been made throughout the outline application process to minimise rooftop plant whilst maintaining suitable building performance and allowance for the long-term adaptability of the buildings. It *must* be demonstrated how the footprint required for rooftop plant has been minimised at the outset of any RMA.
- 3.6.1 It is proposed that there are a number of approaches to the design of rooftop plant areas as defined below. Reserved Matters applications *should* follow these where appropriate, with alternative proposals to be allowed which minimise visual impact in TVIA views provided that architectural quality is not compromised.

#### Single Storey Plant

- 3.6.2 Where a single level of plant is to be provided on any building it *should* be designed as a single ventilated facade including, but not limited to, vertical or horizontal louvres or fins.
- 3.6.3 A single level of ventilated facade *should* be a recessive architectural element unless a clear and reasonable architectural rationale for not doing so can be provided.

#### Double Storey Plant

- 3.6.4 Where providing two levels of rooftop plant is unavoidable, they *should* be expressed as two separate storeys, with the lower storey to appear as a version of the primary building facade and the upper level designed to follow the codes for single level screened plant (above).
- 3.6.5 The lower level of plant *should* read as a continuation of the primary facade with glazing replaced for the necessary ventilation louvres.

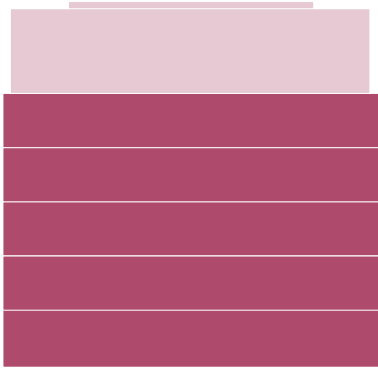
- 3.6.6 Modifications to the primary facade articulation at this level, for example to achieve the necessary free area for ventilation, *should* not compromise the architectural quality of the facade.

#### Two Storey Plant Expressed as a Single Element

- 3.6.7 In certain instances it may be appropriate to express two plant storeys as a single element. This is to be agreed within Reserved Matters applications and if this approach is not agreed to be appropriate then the codes for two storey plant expressed as separate elements *must* be followed (above).
- 3.6.8 Where a two storey plant volume is to be expressed as a single element it *must* be done so to create a unique, high-quality architectural feature.
- 3.6.9 The two storey element *must* be subject to all relevant facade codes regarding townscape impact and relationship with neighbouring buildings.

#### Other Rooftop Elements

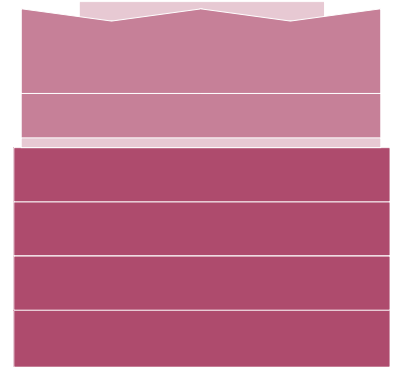
- 3.6.10 Efforts to create variation of form at parapet level (whether roof or terrace) will be encouraged and Reserved Matters applications *must* include exploration of how this may be appropriately incorporated into designs, with the proposed solution supported by evidence.
- 3.6.11 There is an allowance for photovoltaics (PV) at roof level on all buildings, the townscape impact and appearance of this provision *must* be tested in Reserved Matters applications.
- 3.6.12 PV zones will require edge protection for safety during maintenance. The appearance and impact of this edge protection *must* be tested in Reserved Matters applications and *must* be appropriate for the wider architectural strategy of the building.
- 3.6.13 All flat roofs (excluding amenity terraces) *must* be used positively for renewable energies, blue, brown and/or green roofs.



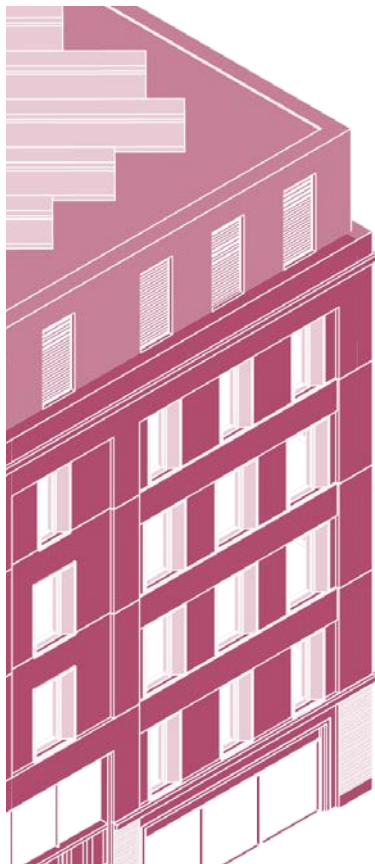
3.6.3 Plant expressed as a single level recessed architectural element



3.6.4 Double plant expressed as two storeys, the first appearing as a version of the primary facade



3.6.7 Double plant expressed as a two storey architectural element



3.6.2 Plant expressed as a single level recessed architectural element and horizontal fins



3.6.5 First level of double plant expressed as part of the primary facade, where glazing appears solid

## 3.0 Site Wide Built-Form Design Principles

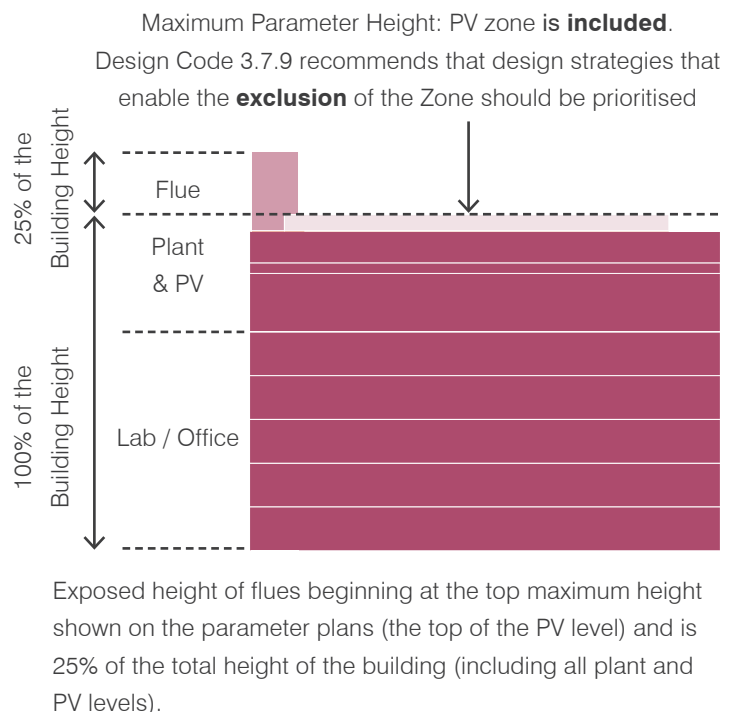
### 3.7 Top: Flues

**The ability to bring forward buildings for wet lab use is included within the proposal for Plots 2, 3, 5 and 6. It is expected that these buildings will require fume cupboard extract flues.**

**It is recognised that these extract flues will be visible in some views both locally and within the wider townscape. The following codes aim to ensure that the opportunity to create high quality architectural features within the skyline is realised within Reserved Matters Applications.**

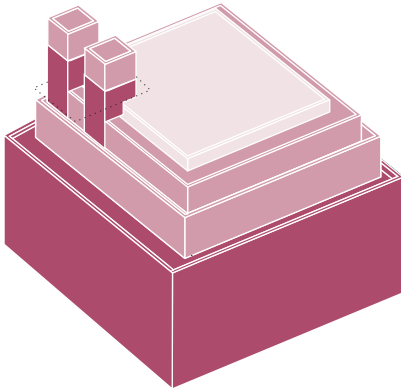
- 3.7.0 It *must* be evidenced at the outset of any Reserved Matters Application that the footprint and height of any flues has been minimised without incurring compromise to building function or future flexibility.
- 3.7.1 Flues *must* be a positive contribution of incidents on the skyline of Cambridge and not compete with the historic landmarks.
- 3.7.2 Reserved Matters applications *must* evidence that the relationship with all plots with extant Reserved Matters approvals has been demonstrated and that the visual relationship between flues has been tested in both near and long distance viewpoints.
- 3.7.3 The appearance of flues *must* undergo visual testing to determine the appropriateness of their placement, materiality and articulation in relation to other flues.
- 3.7.4 The design of any flues *must* be fully integrated with the architectural strategy for the building and create an opportunity for high quality architectural expression at roof level.
- 3.7.5 The flues *should* be articulated as a maximum of two stacks per building.
- 3.7.6 Where multiple stacks are adopted they *should* be grouped together to limit the number of locations where the prevailing roofscape of the proposal is broken.
- 3.7.7 The design of flues *should* reflect the innovative spirit of the laboratory whilst respecting the historic context of Cambridge.

- 3.7.8 Flues *should* not out-compete or overly dominate the historic spires of Cambridge
- 3.7.9 Design strategies that allow the PV zone to be discounted from the calculation of their height *should* be prioritised such that design strategies that result in the inclusion of the PV in this calculation may only be acceptable where any benefit of this strategy outweighs the impact of taller flues.

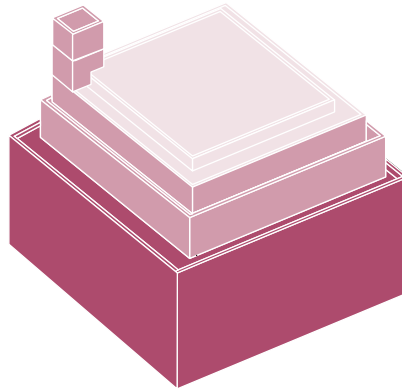


*Note:*

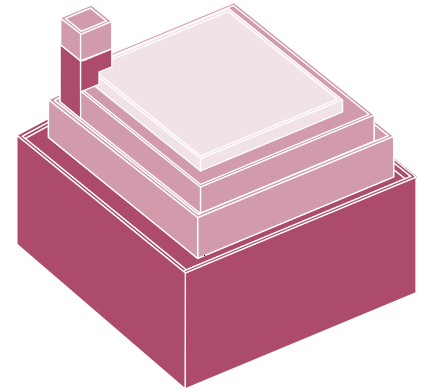
*Flue heights as shown in the illustrative drawings and parameter plans will have an exposed height of 25% of the highest point of the building below it (excluding zones of PV without solid parapets), measured from ground floor level. This height is to be viewed as a maximum and reserved matters applications must demonstrate how the final proposed height of flues relate to the proposed maximums within the parameter plans.*



3.7.5 Flues integrated with the architectural strategy - grouping of two flues



3.7.5 Flues integrated with the architectural strategy - with plant screen materiality.



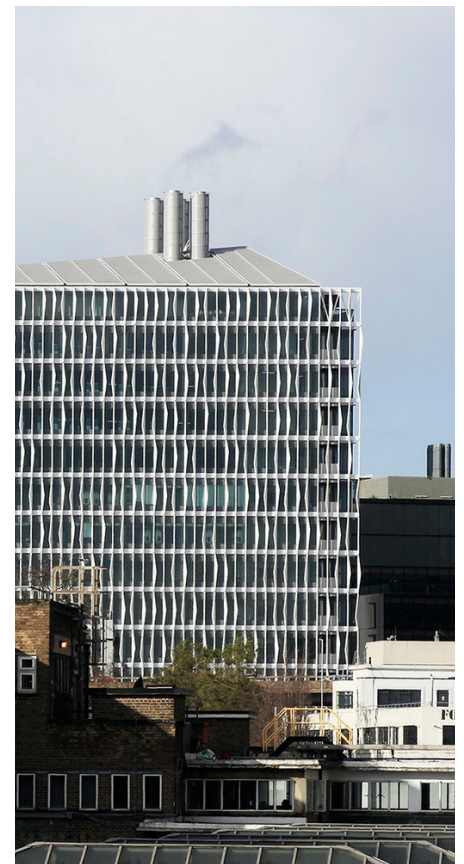
3.7.5 Flues integrated with the architectural strategy - with primary facade material.



Flue design that reflects innovative spirit of laboratory and respects the historic context.  
Anglia Ruskin University, Cambridge,  
Richard Murphy Architects



Flues that are integrated into the architectural strategy with high quality architectural expression.  
Discovery Drive, Cambridge, NBBJ



Grouped flue articulation  
Sir Michael Uren Hub, London, Allies and Morrison