



Mid grey tegula paving, stretcher bond



Mixed grey tegula paving, stretcher bond



Buff tegula paving, stretcher bond



Mixed buff tegula paving, stretcher bond



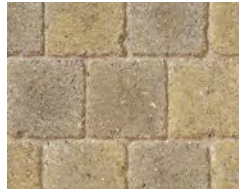
Mid grey tegula setts, stretcher bond



Mixed grey tegula setts, stretcher bond



Buff tegula setts, stretcher bond



Mixed buff tegula setts, stretcher bond



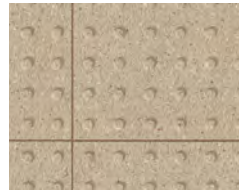
Textured concrete setts



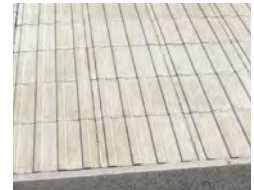
Flexible porous paving system



Metal demarcation studs



Buff concrete tactile paving



Natural concrete tactile paving

**Note:** Not all materials shown will be suitable for use within the public highway.

#### 4.4.2 Public realm furniture palette

Street furniture selection **should** have an emphasis on simple, contemporary design with consistent product types to be used across the development. Products **should** be sourced from established suppliers with a consistent proven supply chain, wherever possible, to ensure a reliable procurement and replacement process. However, the above criteria **should** not preclude the proposals of new, innovative products and suppliers, where appropriate. The types and locations of street furniture will be detailed at the reserved matters stage, during which a coordinated suite of products **must** be specified that **must** be applied throughout the public realm within KP1.

##### Mandatory requirements and guidance

- Selected products **must** be robust in construction and contemporary in style, and constructed with easily replaceable parts
- Street furniture **should** be from sustainable sources such as timber from accredited forests and recycled materials
- Furniture materials **should** typically be hardwood timber and either unfinished metal (galvanised or weathered) or matt powder coated in dark grey (e.g. RAL 7016)
- Furniture **must** be sited to ensure footways are clear and streetscapes are not cluttered
- Furniture **should** be arranged in zones and treated as combined elements to avoid standalone items and clutter
- Seating **must** include elements of varying height, a proportion of which **must** feature backs and arm rests to assist with standing and sitting. Appropriate space for wheelchair users and / or prams **must** be provided
- Along key movement routes within public open spaces seating **must** be provided at intervals of no greater than 100m intervals
- Cycle parking facilities **should** be logically incorporated into the streetscape, ensuring cycle use within the site is easy and convenient
- Use of bollards **should** be limited, as appropriate to a low-speed, pedestrian and cycle focussed scheme
- Wayfinding signage **should** complement the street furniture palette and **should** be integrated where appropriate to reduce street clutter.
- Additionally, public art strategies **should** also consider integrated bespoke features as part of the street furniture palette



Figure 4.114: Example of material continuity of street furniture



Figure 4.115: Example of grouping of street furniture to ensure clear movement routes and an uncluttered streetscape



Figure 4.116: Seating within open space with back rest, arms and appropriate space for wheelchair users

Figure 4.110 opposite provides a palette of street furniture, which illustrates the character and typical standard required with specific products to be agreed at the RM stage. More bespoke feature street furniture for key public spaces **should** also be agreed at more detailed stages.

Figure 4.117: Street furniture matrix

**1. Street furniture**



Timber seating



Timber benches



Integrated timber benches



Communal timber tables



Litter bins



Recycling bins



Timber bollards



Cycle stands



Tree grilles



Tree grille with inlaid paving

**2. Open space boundaries**



Mounding



Swale



Hedgerow



Ornamental planting



Bollards



Metal railings (vertical)



Metal railings (horizontal)



Timber post and rail



Timber knee rail



Morticed knee rail

**3. Wayfinding**



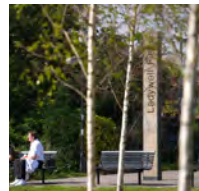
Totem sign



Integrated with built form



Integrated with paving



Feature signage



Distinctive play as wayfinding

**4. Bus Stops**



Bus shelter

### 4.4.3 Lighting

Lighting in KP1 **must** comprise a simple palette of coordinated products that are robust, energy efficient and sustainable. The palette **should** complement the design and materiality of the public realm and built form, whilst lighting levels and colour temperatures **should** respond to context and local variations in character to enhance wayfinding and the legibility of the public realm. Lighting designs **must** aim to create a safe-feeling environment, whilst not disturbing local residents and wildlife with unnecessary brightness.

#### Ecologically sensitive areas

Lighting in and adjacent to Biodiversity Priority Areas and areas of retained woodland **must** be sensitively designed in order to reduce potential impact on species that rely on dark conditions for movement and foraging.

- Lighting **must** be low level, utilising downward directional luminaries and **should** have back light control systems to reduce light spill on to nearby sensitive areas and direct light only where it is required

- Security lighting **should** be set on motion-sensors with short duration timers (1 min)
- Lighting proposals **should** adhere to current best practice with regard to bats and artificial lighting (e.g. Institution of Lighting Professionals, 2018)

#### Adopted Highways

Street lighting **must** be designed in accordance with adoptable standards. Streets **should** be lit using column mounted, low level, downward directional luminaries. Wall/building mounted luminaries **should** be used in places to help reduce street furniture within the pedestrian corridors.

#### Other Streets

Semi-private courtyards, shared surface links and mews areas **should** be lit using the same palette of lighting products used for streets and **should** use wall/building mounted luminaries, where appropriate, to reduce street clutter.

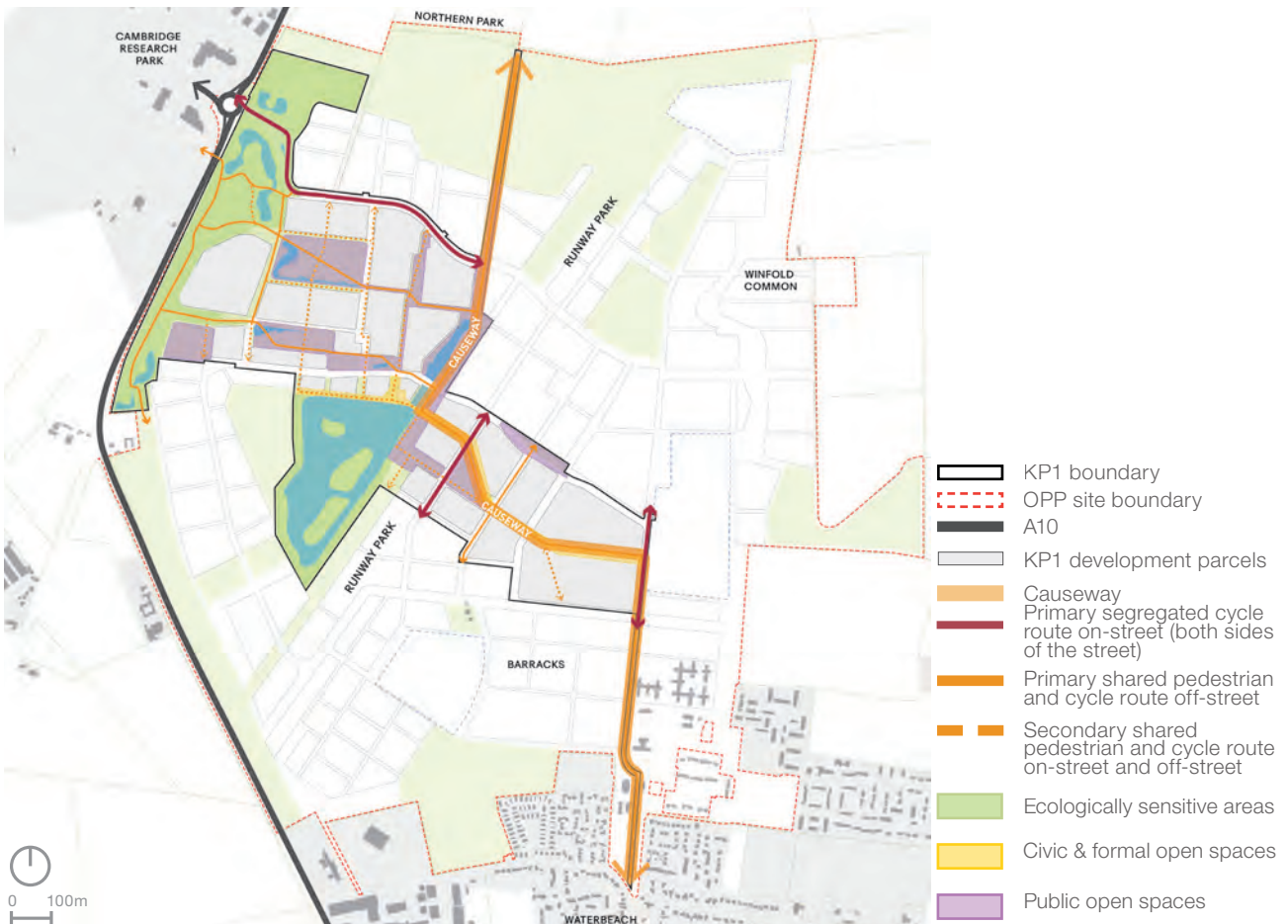


Figure 4.118: Lighting strategy

**Civic and formal open spaces**

Key public open spaces **should** utilise a mix of column lighting to provide safe lighting levels along key routes and feature lighting elements to highlight key features and form points of interest, adding day-round interest and animation. Key community and commercial façades, notably along main streets, **should** use additional wall mounted lighting and / or feature lighting to highlight frontages and minimise street clutter. Along the Lakeside, lighting design **must** be considerate of the ecological sensitivity of the lake and to minimise reflection off the water.

**Public open spaces**

Lighting within parks, Community Links and areas of public open space **should** be limited to paths, nodal points and formal play areas. Low level column or downward directional bollard lights **should** be used along strategic movement routes. Feature lighting elements integrated in street furniture, ground lighting, up lighters to feature trees and wall mounted lights **should** be used at nodal points and formal play areas to form points of interest and limit street clutter.

**Causeway**

The Causeway **should** be lit to respond to the context within which its various sections are located. The section of Causeway within the Northern Park **should** remain unlit due to its location within a Biodiversity Priority Area.

**Mandatory requirements and guidance**

- Lighting **must** be designed to British Standard BS 5489-1:2013, BS EN 13201-1:2015 or CIE 115 (or any updated British Standards) in adoptable areas. Fittings **should** be selected with appropriate IP rating for its situation in accordance with standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989)
- Lighting **must** promote safe and efficient movement around the site during night time conditions
- Lighting designs **must** be energy efficient and **should** use energy efficient luminaires (for example LED), dimmed and timed systems and recyclable products
- Precautionary measures **must** be taken within and adjacent to ecologically sensitive areas, for example by using low heat output lights, minimum spread lamps, downward directional

- and back light control systems
- The lighting scheme **should** create an uncluttered landscape with a sensitive approach to the landscape character of the site whilst utilising best practice for lighting design
- Lighting products **should** be either unfinished metal (galvanised or weathered) or matt powder coated in dark grey (e.g. RAL 7016) to reduce their visibility in the night time environment and to coordinate with the street furniture palette
- Columns and bollards **should** be at minimum heights and maximum spacings to fulfil their function and to reduce clutter and minimise energy consumption within KP1
- In-ground lighting **should** avoid excessive upward light spill, particularly in ecologically sensitive areas
- Wall mounted lighting finishes **should** complement the lighting palette and **should** relate to the architectural finish of buildings
- The angle of lighting **should** be directed down to minimise unnecessary light spill
- Consideration **should** be given to specifying products that can be easily reused or recycled at the end of their servicable life



Alconbury Weald, Cambridgeshire  
Figure 4.119: Sensitive lighting solution



Figure 4.120: Street lighting



Figure 4.121: Ecologically sensitive lighting

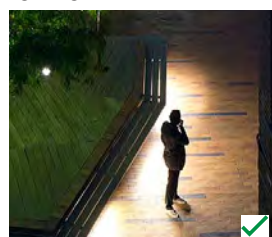


Figure 4.122: Feature lighting

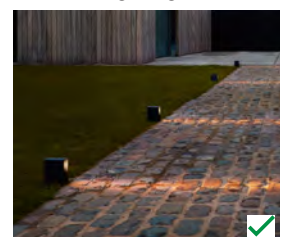


Figure 4.123: Low level lighting

#### 4.4.4 Trees and planting

The layout of the open spaces, Community Links and streets provides the opportunity to create a strong interconnected network of planting, contributing to the creation of a habitat mosaic and biodiversity gains. Appropriate planting helps define the character and function of an area, creating distinctiveness and a sense of place. The tree and planting selection **should** be informed by the Cambridgeshire Landscape Guidelines and the Waterbeach Barracks & Airfield Biodiversity Strategy, as part of the OPP.

##### Existing trees and vegetation

KP1 **should** be developed to retain vegetation wherever possible or appropriate. Where removals are necessary they **should** be mitigated by widespread planting of new trees within both the public realm and semi-private areas.

##### Mandatory requirements and guidance

- Wildlife focused planting **must** be included throughout KP1 to provide finer grain interconnectivity between the larger habitat areas and to support gains in biodiversity
- Planting within the public realm **should** include pollinators as well as fruit, nut and nectar bearing species, favouring UK native and local varieties
- Formal open space planting **should** be characterised by swathes of herbaceous planting featuring a high proportion of ornamental grasses. This **should** be set against a framework of tree and shrub planting. Native shrub planting **should** characterise informal open space
- Productive landscape **should** be distributed throughout KP1 with fruiting orchard trees, edible herbs and plants featuring within public open spaces and Community Links, providing doorstep foraging opportunities for the local community
- SuDS features such as swales, bio-retention basins and larger attenuation areas within public open spaces and along highways, **must** be planted. They **should** include wet meadow grasses, bio-swale vegetation, marginal and aquatic planting to achieve a habitat mosaic. Phragmites **should** only be planted in large controlled spaces where they can be more easily maintained



Figure 4.124: Residential park with a naturalised, wildlife friendly character



Figure 4.125: Example of wildlife friendly planting within a more formal context as part of an urban park

- Species selection **should** be robust and resilient to climate change, pollution, water-logging and drought
- The specification of plant stock **must** have regard to best practice biosecurity measures. A range of species **should** be selected to mitigate against potential impacts caused by diseases and other pathogens
- Tree stock within the public open spaces **should** vary depending on its context and purpose, from mature stock for landmark trees and key groups through to young trees as part of the woodland mixes

##### Public open space tree and shrub planting

Previous Sections 4.2.1 to 4.2.4 provide details on the landscape character and proposed tree species for each of the key public open spaces. Figure 4.126 describes the varying planting characteristics that **should** be used in KP1 to inform the character of open spaces. A list of species that are important to each planting character type are included, however these are by no means exhaustive and represent a guide only. Detailed information on tree and planting **should** be provided at the reserved matters stage.

Figure 4.126: Planting Characteristics and Key Species

PLANTING CHARACTERISTICS	KEY SPECIES
<b>Ornamental fruit and nut bearing trees within orchards &amp; parkland</b>	
Areas within the landscape that provide year round community food sources, accessible by both people and wildlife.	<b>Trees:</b> <i>Cydonia oblonga</i> , <i>Juglans regia</i> , <i>Malus x domestica</i> , <i>Mespilus germanica</i> , <i>Morus nigra</i> , <i>Prunus domestica</i> , <i>Prunus dulcis</i> 'Macrocarpa', <i>Pyrus communis</i>
<b>Planting within wetlands and swales</b>	
The planting palette <b>should</b> draw influence from species aimed at creating and enhancing habitats located within wetlands and swales and <b>should</b> promote the primary functions of these areas. A mixture of water purifying species, ornamental grasses and water tolerant trees <b>should</b> be used to create a wetland character palette of species.	<b>Trees:</b> <i>Alnus glutinosa</i> , <i>Betula pubescens</i> , <i>Salix cinerea</i> , <i>Salix purpurea</i> 'Nana' <b>Shrubs / grasses / herbaceous:</b> <i>Carex acutiformis</i> , <i>Carex riparia</i> , <i>Eupatorium cannabinum</i> , <i>Iris pseudacorus</i> , <i>isolepis setacea</i> , <i>Juncus effusus</i> , <i>Luzula campestris</i> , <i>Phragmites australis</i> (reedbeds only)
<b>Fen Edge</b>	
Fen Edge planting will be predominantly informal wetland focussed with small tree groups, lone trees and pollards. Use of larger deciduous and evergreen trees with broad canopies framing long distance views across the Fenland landscape with limited hedgerows.	<b>Trees:</b> <i>Acer campestre</i> , <i>Alnus glutinosa</i> , <i>Betula pendula</i> , <i>Populus nigra</i> , <i>Quercus robur</i> , <i>Salix alba</i> , <i>Salix cinerea</i> <b>Shrubs / grasses / herbaceous:</b> <i>Cornus sanguinea</i> , <i>Ligustrum vulgare</i> , <i>Viburnum opulus</i> <b>Hedgerow:</b> <i>Crataegus monogyna</i> , <i>Prunus spinosa</i> , <i>Rhamnus cathartica</i> , <i>Ulmus glabra</i>
<b>Western Clayland</b>	
Mixed species woodlands, wooded edges and scrub planting to support the existing woodlands, in accordance with the Western Clayland landscape character type. Strong focus on semi wooded wildlife corridors with foraging planting with lush understorey vegetation and large areas of open species rich tussock grassland.	<b>Trees:</b> <i>Acer campestre</i> , <i>Corylus avellana</i> , <i>Crataegus monogyna</i> , <i>Malus sylvestris</i> , <i>Prunus avium</i> , <i>Quercus robur</i> <b>Shrubs / grasses / herbaceous:</b> <i>Cornus sanguinea</i> , <i>Ilex aquifolium</i> , <i>Prunus spinosa</i> , <i>Rosa canina</i> , <i>Sambucus nigra</i> <b>Hedgerow:</b> <i>Corylus avellana</i> , <i>Prunus spinosa</i> , <i>Rosa canina</i>
<b>Woodland Parkland</b>	
Safeguarding inherited woodland through supporting them with sturdy robust deciduous and evergreen trees around the woodland edge. Understorey <b>should</b> be largely clear of dense vegetation, instead supporting amenity uses and permeability whilst retaining a sense of separation from adjacent built form. Shrub and grass species <b>should</b> be shade tolerant. Improved structural diversity.	<b>Trees:</b> <i>Acer platanoides</i> , <i>Fagus sylvatica</i> , <i>Pinus sylvestris</i> , <i>Platanus x hispanica</i> , <i>Quercus robur</i> , <i>Tilia x europea</i> , <i>Tilia cordata</i> <b>Shrubs / grasses / herbaceous:</b> <i>Digitalis grandiflora</i> , <i>Mahonia x media</i> 'Winter Sun', <i>Pulmonaria</i> 'Diana Clare', <i>Skimmia japonica</i> <b>Hedgerow:</b> <i>Crataegus monogyna</i> , <i>Prunus spinosa</i> , <i>Rhamnus cathartica</i> , <i>Ulmus glabra</i> , <i>Viburnum opulus</i>
<b>Wetland Parkland</b>	
Informal wetland character with a strong ecology focus. Planting <b>should</b> be varied in height, water tolerant and structural, delivering a sense of wetland wildness within the heart of the development. Trees planting <b>should</b> be informal and include pollards. Flowering species <b>should</b> be in the pink, blue and white colour palette.	<b>Trees:</b> <i>Alnus glutinosa</i> , <i>Betula pendula</i> , <i>Salix alba</i> , <i>Salix cinerea</i> , <i>Salix fragilis</i> <b>Shrubs / grasses / herbaceous:</b> <i>Lycopus europaeus</i> , <i>Mentha aquatica</i> , <i>Persicaria bistorta</i> , <i>Silene flos-cuculi</i> <b>Hedgerow:</b> <i>Corylus avellana</i> , <i>Crataegus monogyna</i> , <i>Prunus spinosa</i> , <i>Rhamnus cathartica</i> , <i>Ulmus glabra</i> , <i>Viburnum lantana</i>
<b>Urban Parkland</b>	
Planting <b>should</b> be of a more intimate, human scale to reflect the enclosed nature of these spaces, with clear stem tree planting suitable for an urban setting. Planting <b>should</b> reinforce vistas, desire lines and frame spaces within the parks. Species selection <b>should</b> be flexible as the character will vary between areas to reflect their unique locations within the masterplan. Planting <b>should</b> offer seasonal interest, colour, varied texture and scent.	<b>Trees:</b> <i>Acer platanoides</i> , <i>Fagus sylvatica</i> , <i>Liquidambar styraciflua</i> , <i>Pinus sylvestris</i> , <i>Platanus x hispanica</i> , <i>Quercus robur</i> , <i>Sorbus torminalis</i> <b>Shrubs / grasses / herbaceous:</b> <i>Allium tuberosum</i> , <i>Lavandula angustifolia</i> , <i>Rosmarinus officinalis</i> <b>Hedgerow:</b> <i>Carpinus betulus</i> , <i>Euonymus japonica</i> 'Jean Hugues', <i>Fagus sylvatica</i> , <i>Ilex crenata</i> , <i>Ligustrum vulgare</i> , <i>Osmanthus x burkwoodii</i>
<b>Lake Edge</b>	
Lakeside planting <b>must</b> comprise water tolerant species and marginal planting to act as a soft edge between the urban built form and waters edge. Larger feature trees signify the lake edge as a key destination, supported by aquatic planting and ornamental grasses for biodiversity enhancements and year round aesthetics.	<b>Trees:</b> <i>Alnus glutinosa</i> , <i>Betula pendula</i> , <i>Betula pubescens</i> , <i>Salix alba</i> , <i>Salix cinerea</i> , <i>Salix fragilis</i> <b>Shrubs / grasses / herbaceous:</b> <i>Carex acutiformis</i> , <i>Carex riparia</i> , <i>Eleocharis palustris</i> , <i>Filipendula vulgaris</i> , <i>Lotus pedunculatus</i> , <i>Phragmites australis</i> (reedbeds only), <i>Torilis japonica</i>
<b>Planting within on plot open space</b>	
On plot open space planting should respond to its setting and context, with suitable species that complement the ecological and landscape objectives of its surroundings. Species selection <b>should</b> be appropriate for a residential setting, clear stemmed and appropriately offset from buildings. Hedgerow species suitable for residential / building frontages to be primarily single species.	<b>Trees:</b> <i>Acer campestre</i> 'Elsrijk', <i>Alnus cordata</i> , <i>Amelanchier canadensis</i> , <i>Betula pendula</i> , <i>Sorbus torminalis</i> <b>Shrubs / grasses / herbaceous:</b> <i>Choisya ternata</i> , <i>Cotoneaster lacteus</i> , <i>Nandina domestica</i> 'Fire Power', <i>Saracocca confusa</i> <b>Hedgerow:</b> <i>Carpinus betulus</i> , <i>Euonymus japonica</i> 'Jean Hugues', <i>Fagus sylvatica</i> , <i>Ilex crenata</i> , <i>Ligustrum vulgare</i> , <i>Osmanthus x burkwoodii</i>

Refer to the Biodiversity Strategy for species lists for additional marginal, tall emergent vegetation and wildflower species for marshy/damp and neutral grasslands.

**Street trees**

Street trees influence the character of the streetscape through their form, arrangement, size and species selection. They reinforce the hierarchy of streets, supporting wayfinding and creating attractive and welcoming spaces for people.

Tree planting along streets offers a number of other benefits including providing shade that contributes to urban cooling, helping to minimise storm water run off, acting as a traffic calming measure and contributing to biodiversity enhancements.

Within KP1, tree planting will be focused on the primary and secondary street types to reinforce their function of providing access and circulation throughout the site as a whole, as described in Section 3.5. Provision is also made for tree planting on tertiary streets, which will support their function of providing local movement only.

Figure 4.127 details the mandatory treescape character, arrangement and size that **must** be created for primary, secondary and tertiary streets as well as key raised table areas within the highways network. It also provides guidance on the species that would be suitable for planting in each street type.

Mandatory requirements and guidance for street trees are provided on the following pages, which detail how tree planting will be achieved within the street hierarchy described in Section 3.5.

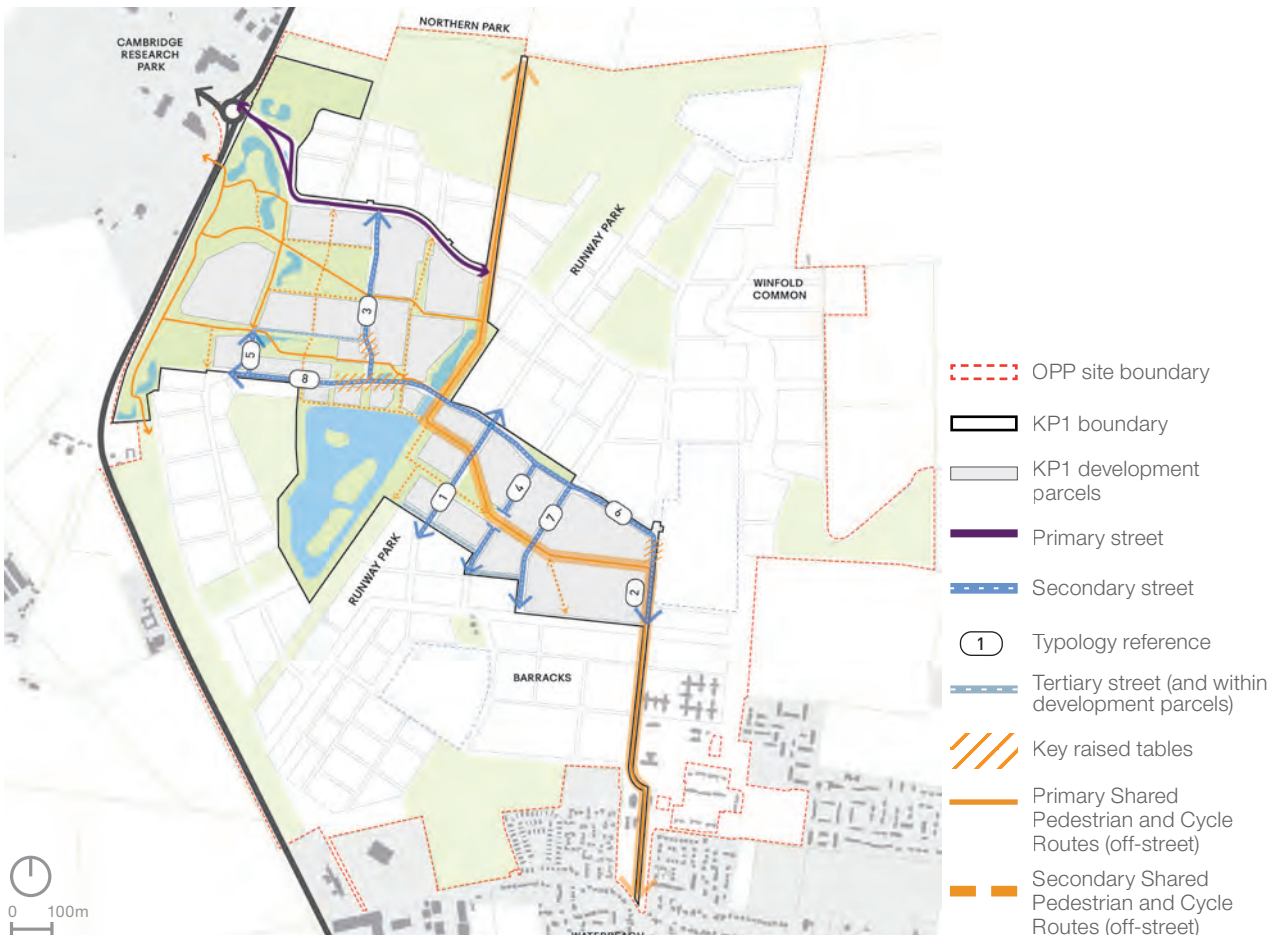


Figure 4.126: Street trees planting



Figure 4.127: Street tree planting palette

MANDATORY			GUIDANCE
FORM & CHARACTER	PLANTING ARRANGEMENT	MINIMUM SIZE/ GIRTH	SUGGESTED SPECIES
<b>Primary Streets - Verges</b>			
Large formal street trees with large canopies. 2m clear stem to accommodate visibility splays.	Linear arrangement with spacing reflecting the rhythm of contextual built form, approximately 13-18m spacing.	Semi mature stock 600-700cm 30-35mm	Acer campestre - Field Maple Alnus cordata - Italian Alder Corylus colurna - Turkish Hazel Quercus robur - Common Oak Tilia cordata - Small Leaved Lime
<b>Primary Streets - Junctions</b>			
Large feature trees with spreading habit. Possibly flowering and offering seasonal interest. 2m clear stem and high canopy to accommodate visibility splays.	Individual trees within widened verge at junctions.	Semi mature stock 600-700cm 35-40mm	Platanus x hispanica - London Plane Quercus rubra - Red Oak Tilia x euchlora - Lime
<b>Secondary Streets - Verges</b>			
<b>TPOLOGY 1 and 2</b> Formal street trees with larger canopies. A more formal character to reflect the civic context of the secondary school and heritage significance of the former runway and associated long distance views. 2m clear stem to accommodate visibility splays.	Linear arrangement with spacing reflecting the rhythm of contextual built form, approximately 12-16m spacing.	Semi mature stock 500-600cm 25-30mm	<b>Trees for min 2.5m wide verges:</b> Acer campestre 'Elsrijk' - Dutch Field Maple Alnus cordata - Italian Alder Ginkgo biloba - Maidenhair Tree Prunus 'Sunset Boulevard' - Ornamental Cherry Tilia cordata 'Rancho' - Small Leaved Lime
<b>TPOLOGY 3,4 and 5</b> Medium formal street trees with more compact canopies. Flowering trees and seasonal interest appropriate for a more residential context.	Linear arrangement with irregular spacing between 8-12m with groups interchanging between 3, 5 or 7 trees.	Semi mature stock 500-600cm 20-25mm	<b>Trees for min 4m wide verges:</b> Corylus colurna - Turkish Hazel Liquidambar styraciflua - Sweet Gum Prunus avium - Wild Cherry Tilia cordata 'Greenspire' - Small Leaved Lime
<b>TPOLOGY 6,7 and 8</b> Feature street trees with tighter fastigate habit and seasonal interest to denote a more urban character and sense of arrival at civic and recreational destinations.	Linear arrangement comprising grouping of 5 to 7 trees with 10-14m spacing.	Semi mature stock 500-600cm 20-25mm	<b>Feature Trees (where space allows):</b> Platanus x hispanica - London Plane Liriodendron tulipifera - Tulip Tree
<b>Tertiary Streets</b>			
Small street trees with tighter canopy habit with more domestic scale and character. 2m clear stems.	Single trees within landscape beds that form traffic calming devices and, on occasion, bookending on-street parking.	Extra heavy standard stock 450-500cm 18-20mm	Acer campestre 'Elsrijk' - Dutch Field Maple Malus trilobata - Flowering Crab Crataegus lavallei 'Carrierei' - Hybrid Cockspur Thorn Amelanchier alnifolia 'Obelisk' - Alder-leaved Serviceberry
<b>Highways SUDS (Primary and Secondary streets)</b>			
Large feature trees with spreading habit. Introduction of water tolerant species start to make reference to a fenland character.	Individual trees within widened bio-swale, where space allows.	Semi mature stock 500-600cm 20-25mm, 30-35mm	Alnus glutinosa - Black Alder Salix alba 'Chermesina' - Scarlet Willow
Mix of single and multi-stem trees, of more natural form and water tolerant species, referencing the fenland character. 2m clear stem, where required, to accommodate visibility splays.	Linear arrangement led by linear roadside swales with irregular spacing and tight groupings of 2 to 4 trees with an informal placement.	Extra heavy standard stock 450-500cm 14-16mm	Alnus cordata - Italian Alder Alnus incana 'Aurea' - Grey Alder Betula nigra - River Birch Prunus padus - Bird Cherry
<b>Key raised tables</b>			
Feature trees with fastigate canopies and/or capacity to be pruned or pollarded, and seasonal colour for visual interest. Also species that are tolerant of urban setting and tree pits in hardstanding.	Arrangement to complement surrounding built form as well as define space and movement zones.	Semi mature stock 600-700cm 30-35mm	Ginkgo biloba - Maidenhair Tree Liquidambar styraciflua - Sweet Gum Platanus x hispanica - London Plane Tilia cordata 'Rancho' - Small Leaved Lime

### Mandatory requirements and guidance

- Tree sizes at implementation **should** range from semi-mature stock on primary streets to smaller standard size trees on tertiary streets
- Tree stock **must** be specified as appropriate to their setting, taking consideration of implementation, establishment and resistance to damage and vandalism
- Trees **should** be considered acceptable within visibility splays as set out in Manual for Streets
- Trees **should** be specified with clearstems to maintain clear lines of visibility
- Trees **should** be set back from carriageway edges to minimise the risk of being struck by high sided vehicles
- Street trees **must** be planted in verges that are a minimum of 2.5m wide, except for tertiary streets which are permitted to be 2m wide
- Species **should** be selected and **must** be maintained to ensure that their ultimate canopy spread does not encroach within 2m of building facades
- Tree planting within primary streets **must** be located a minimum of 7.5m from building facades
- Tree planting within secondary streets **must** be located a minimum of 5m from building facades
- Tree planting within tertiary streets **must** be located a minimum of 4.5m from building facades
- Trees **must** be planted in appropriately sized pits, which work with verges to provide sufficient rooting volumes. Where necessary structural soils or cellular systems (such as Silva Cells) **should** be used to achieve minimum rooting volumes, particularly in areas of hard surfacing
- Tree rooting volumes within primary streets **must** be suitable for species size and situation and **should** be 15m<sup>3</sup> or greater
- Tree rooting volumes within secondary streets **must** be suitable for species size and situation and **should** be 12m<sup>3</sup> or greater
- Tree rooting volumes within tertiary streets **must** be suitable for species size and situation and **should** be 9m<sup>3</sup> or greater
- Root barriers **must** be used to safeguard surface and foul water sewers and building foundations where necessary
- Building foundations **must** be designed to facilitate the planting of street trees within their respective street type
- Means of drainage **must** be provided in pits for all street trees to prevent water logging and to aid establishment
- Newly planted trees **must** be secured in place, either above or below ground
- Stock of girth size 20-25cm and over **must** be secured using below ground guying methods
- Appropriate pit accessories such as aeration / irrigation pipes and drainage inspection pipes **should** be provided for all street trees to support successful establishment and to facilitate monitoring
- Newly planted trees **must** be watered regularly or as required throughout the establishment maintenance period
- Opportunities **should** be explored to integrate formal SuDS features and tree drainage



Figure 4.128: Primary street tree planting larger in scale and broader in form, generously offset from adjacent buildings



Figure 4.129: Trees planted too close to buildings can cause uneven tree growth and damage buildings



Figure 4.130: Secondary street tree planting appropriately offset from buildings within wide verges



Figure 4.131: Poor or limited street tree planting can leave spaces feeling hard and uninviting



Figure 4.132: Tertiary street tree planting located closer to buildings but fastigiate in form so as not to encroach within 2m of building facades



Figure 4.133: Narrow verges and insufficient rooting zone restrict tree growth and reduce their lifespan



Figure 4.134: Tree planting at junctions and crossing points can help frame spaces and soften hard landscapes



Figure 4.135: Junctions and crossing points without tree planting can feel vehicle focused and hostile

#### 4.4.5 Ecology

The ecological mitigation and enhancement associated with KP1 **should** be delivered throughout the majority of public open spaces and predominately within the Biodiversity Priority Areas including the A10 Green Corridor, Northern Gateway, Lakeside and associated woodland areas. The key principles are set out in the EcMP and fully defined in the Biodiversity Strategy.

##### Features within public open space

The following section identifies ecology features required to comply with the Biodiversity Strategy and EcMP and to also ensure that a net gain in biodiversity can be achieved for both habitats and species.

##### Habitats

- The Site is within 13 km of Cambridge International Airport. Habitat creation/ landscape designs therefore **must** consider current guidance on potential bird hazards relevant to safeguarding of aerodromes with reference to Advice Note 3: Potential Birds Hazards from Amenity Landscaping and Building Design. Advice **should** be sought from a suitably qualified ecologist as required
- All habitat creation **must** use native, regional (and local where possible) provenance and wildlife friendly species/cultivars as a priority. Consideration **should** be given to future proofing in relation to climate change with non-native, climate-change resilient species considered on a species-by-species basis. Future proofing **must** include management responses to infectious diseases such as Ash Dieback and Dutch Elm Disease
- Habitat design and management **must** initially aim to enhance existing habitats, rather than creating new habitats and features
- Wildlife friendly planting **should** adhere to the following specifications unless there are strong over-riding reasons:
  - Wild/natural areas: 100% native & local provenance species
  - Informal areas: 100% native/wildlife friendly tree & shrub stock; non-native stock to be used as landscape features and visual focal points but **must** be wildlife friendly; and a minimum of 75% of the grass seeding is to comprise an appropriate wildflower/grass mix

- Amenity planting including grassland **should** follow these broad composition principles (unless there are strong justifications to deviate):
  - A minimum of 35% native (or native-cultivars) trees and shrub
  - A minimum of 35% ornamental species (wildlife friendly)
  - Up to 30% other ornamental species

##### Scrub

- Existing scrub **must** be retained where practicable to do so and brought into appropriate management
- Where scrub is likely to diminish value of notable habitats (e.g. wildflower rich grassland) it **should** be controlled through a regular cutting regime

##### Woodland and Orchards

- New native woodlands **must** be created over a phased approach and use a range of age classes (e.g. whips to semi-mature standards) to ensure a woodland flora establishes in the medium to long term
- Orchards **must** comprise local varieties as a priority. Double flowered cultivars **should** be avoided and the grassland **must** be species-rich amenity with high nectar herbs

##### Native Hedgerows and Scrub

- All new wildlife hedgerows **should** include at least seven native woody species of regional provenance (as listed within the 1997 Hedgerow Regulations) per 30m, evenly spaced, so as to maximise their future ecological value
- Preference **must** be for local provenance where possible. However, blackthorn and elder are to form only a minor component
- Standard trees **should** be planted along new hedgerows and managed to allow these trees to mature
- Scrub can be planted in discrete blocks at relatively low densities as most species will quickly establish. Blackthorn and elder **should** be a minority component of any planting mixes as they will rapidly spread

### Standing water, marginal vegetation and tall emergent vegetation

- The following elements **must** be incorporated, where possible, within the SuDS features –
  - a mix of permanent and temporary open water through the system
  - permanent water features to vary in depth and include native marginal planting
  - damp grassland habitats to be developed in areas subject to temporary inundation
  - swamp and tall emergent (such as reedbed) vegetation to be developed in areas subject to frequent shallow inundation
  - habitats suitable for wading birds, reptiles, amphibians and amphibious invertebrates through appropriate planting
- Native, wetland species such as purple loosestrife, bulrush and common club rush **must not** be planted as these species can spread rapidly. Lesser bulrush generally colonises at a slower rate than bulrush and could be included as a minor component of any planting mix

### Running water and Ditches

- Canalisation and culverting **must** be avoided unless there is another over-riding consideration, e.g. flood management
- Any new channels created **must** have a naturalistic profile with steep profiled banks suitable for burrowing water voles where safe to do so

### Marshy/damp grassland

- For successful creation of marshy / damp grassland it is important to ensure soil / ground conditions are suitable: permanently damp or with impeded drainage. This may require fine level ground level alteration

### Wildflower-rich dry grassland

- Where retained, neutral semi-improved grassland **must** be enhanced in accordance with the following guidelines:
  - Encroaching scrub will be reduced
  - Uniform microtopography (i.e. a flat continuous ground-level) will be avoided to create a variable mosaic of topographical conditions

- Management will aim to reduce dominance of grass species within this habitat and allow establishment of extensive and varied herb species
- A varied, rough sward with structural diversity will be created to enhance the value for invertebrates

### Amphibians and reptiles

- Herpetofauna hibernacula **must** be installed across the site to provide 'stepping stones' to allow any amphibian and reptile populations to spread across the site. The location and quantities of these **must** be determined by a suitably qualified ecologist
- Hibernacula designs **must** follow current best practice and meet the requirements of the target species as set out in the Biodiversity Strategy



Figure 4.136: Wet grassland habitats in areas of temporary inundation



Figure 4.137: Example of diverse and varied wildflower species to enhance the value for invertebrates

### Features within development parcels

In line with SCDC's Biodiversity SPD (July 2009), 50% of all buildings **must** include features such as bird, bat and / or insect boxes, which **should** be integrated with material finishes relating to the host building - see Section 5.12 Building materials for further detail. The percentage split between box types **should** be appropriate to the location and design of each plot, their proximity to Biodiversity Priority Areas and the aspect and height of individual buildings. This **should** be determined on a case-by-case basis and either by, or in consultation with, a suitably qualified ecologist.

#### Gardens

- New residents **should** be encouraged to create wildlife friendly gardens or manage parts of the gardens for wildlife

#### Green and brown roof features

- If green or brown roofs are to be included in designs, they **should** be provided on flat roof buildings, seeded with drought tolerant mixed plants and locally appropriate native plants (including those previously recorded at the Site)
- Brown roofs **should** include a variety of micro-features including bare sand, rough stone and dead wood
- Structurally, the roof **must** be strong enough to support a saturated load of the planting system
- Growing medium **must** be specially formulated green or brown roof substrates with a mix of inorganic and organic materials and varied depth of substrate to promote diversity and varied vegetation
- Consideration **should** also be given to incorporating green walls where these can be maintained in perpetuity

#### Bats boxes

- Bat boxes **must** be located on southern and eastern aspects of buildings, 3-10m from the ground and **should** experience partial shade, avoid prevailing winds and rain, be positioned with free flight paths and away from lampposts and other sources of artificial lighting
- Buildings and trees near to open space and wildlife friendly planting **should** accommodate bat boxes, with 3 boxes per building/tree on different aspects

- Target species **should** include common and soprano pipistrelle, noctule, brown long-eared bat, and Leisler's bat

#### Birds

- Provision of bird boxes **should** be an assortment of minimum 10 boxes per hectare
- Entrances holes and heights **must** be suitable for target species, typically between 1.5m-10m from ground level and hole diameters between 28-50mm
- Target species **should** include grey wagtail, house sparrow, starling, wren, treecreeper, blue tit, coal tit and great tit. Positioning of boxes for these species can be varied; north, east and west if shaded and anywhere across the development with exception for coal tit and treecreeper which **must** be adjacent to open space areas
- Swift boxes **must** be crescent entrances on north facing shady aspects, 5-10m above the ground, located under eaves, gables and overhangs away from windows and vents with a clear flight path to the box
- Swift boxes **should** be clustered together on a group of buildings rather than single boxes scattered across the development parcel
- Kingfisher nest boxes are to be installed on the lake and northern gateway ponds. These **must** be situated in inaccessible areas away from human disturbances. Kingfisher boxes **must** be installed to manufacturer specifications and with advice from a suitably qualified ecologist to ensure success
- Pole mounted or tree mounted boxes/nesting trays for raptors and owls **must** be installed in sheltered areas, away from the road network

#### Invertebrates

- Insect boxes **must** be integrated or securely fixed
- Insect boxes **should** be south or southeast facing, at least 1m off the ground, in full sunlight with clear flight paths and avoid prevailing winds and rain
- Boxes **should** be located on buildings near open space areas and wildlife friendly planting
- Where used, beetle loggery **should** be created out of native wood (or untreated) logs of a range of sizes but at least 150 mm diameter and buried about 0.5m into the ground and raising above the ground level at a range of heights

- General invertebrate habitat piles **should** be created from cut brash and grass cutting arisings. Piles **should** have a hollow centre to help maintain moisture and **should** be no greater than 2-3m at their widest point and 1m high. A range of tightly packed (although not so tight that there are no crevices), varied diameter wood **should** be used to create the piles and partially covered in earth / dead leaves / grass clippings. The wood **should** be secured with wire to prevent removal. These piles **should** be located at habitat interfaces and will provide hibernacula amphibians and reptiles as well as invertebrates
- Invertebrate mounds / banks **must** be situated and orientated to ensure that one side has a southerly aspect. Top and subsoils **must** be mixed to ensure the spoil covering the mound is not excessively fertile. Any sowing on these areas **should** be at half the manufactures recommend specification

**Hedgehog**

- All rear side boundary fences or walls **must** have a 120mmx120mm ground level gap to accommodate hedgehog movement across the development, creating hedgehog highways



Figure 4.138: Example of brown roof insect focused habitat



Figure 4.139: Example of an integrated bird box



Figure 4.140: Example of an integrated bird box



Figure 4.141: Example of integrated insect boxes





## 5 Built Form

## 6 Principal Centre



## 5 Built Form

- 5.1 Character
- 5.2 Block structure
- 5.3 Land use
- 5.4 Residential density
- 5.5 Buildings heights
- 5.6 Frontage character
- 5.7 Plot internal conditions
- 5.8 Plot layout
- 5.9 Dwelling typologies
- 5.10 Boundary typologies
- 5.11 Private amenity space
- 5.12 Building materials
- 5.13 Building details
- 5.14 Architectural principles for residential built form
- 5.15 Architectural principles for mixed use built form
- 5.16 Sustainability
- 5.17 Key groupings
  - 5.17.1 Northern Gateway
  - 5.17.2 Primary School
  - 5.17.3 Rye Gardens
  - 5.17.4 Local Square
  - 5.17.5 Lakeside

## 5.1 Character

This section sets out guidance in relation to the built form including KP1 wide coding and more specific guidance for key groupings, which are groups of buildings and public spaces that form particularly important parts of the KP1 site.

Overall, KP1 will have a unique character that is of its time, reflecting the comprehensive nature and scale of the overall development and the ambition for it to function as a town.

Character and more specifically architectural character will derive and be defined in this document through a number of attributes such as the landscape setting, streetscape, type of activities, density, dwelling typologies and materials, rather than through the use of character areas.

The vision is for a contemporary new town and the guidance in this section is set out to achieve an architectural expression that is reflective of its time and avoids pastiche. The guidance in this code is based on research into the rich variety of building materials and typologies found within fen edge settlements, while considering that Waterbeach will be a place like no other: a new fen edge town, not a village.



## 5.2 Block structure

The KP1 Regulatory Plan is intended to deliver a well connected, permeable and legible structure that encourages cycling and walking and provides access to the development’s public open spaces.

The diagram below shows the block (or parcel) structure as defined in the Regulatory Plan which is **mandatory**.

The continuous line within the parcel boundaries indicates the fixed building front alignment that is **mandatory** and further coded in chapter 5.6 Frontage Character. Where this line is not shown along a parcel edge, the Regulatory Plan indicates there is flexibility on the built form alignment and that should be proposed by housebuilders at Reserved Matters stage.

Development parcel levels **must** be set out to tie in flush with both proposed and retained levels

and any changes in levels **must** be designed sensitively and solutions **should** be in keeping with the character of the adjoining space or movement route.

Block (or parcel) corners **must** be marked by corner buildings; their location and alignment is fixed in the Regulatory Plan and shown on the diagram below.

Buildings on Key Corners **must** respond to the corner condition through an adjusted floor plan and elevation (i.e. not a single orientation dwelling) which engages with the public realm or streetscape on more than one frontage. This is coded in Section 5.8.6.

Key Buildings are buildings that **must** stand out through architectural expression and distinctive design in order to contribute to the place-making and character of a particular area.

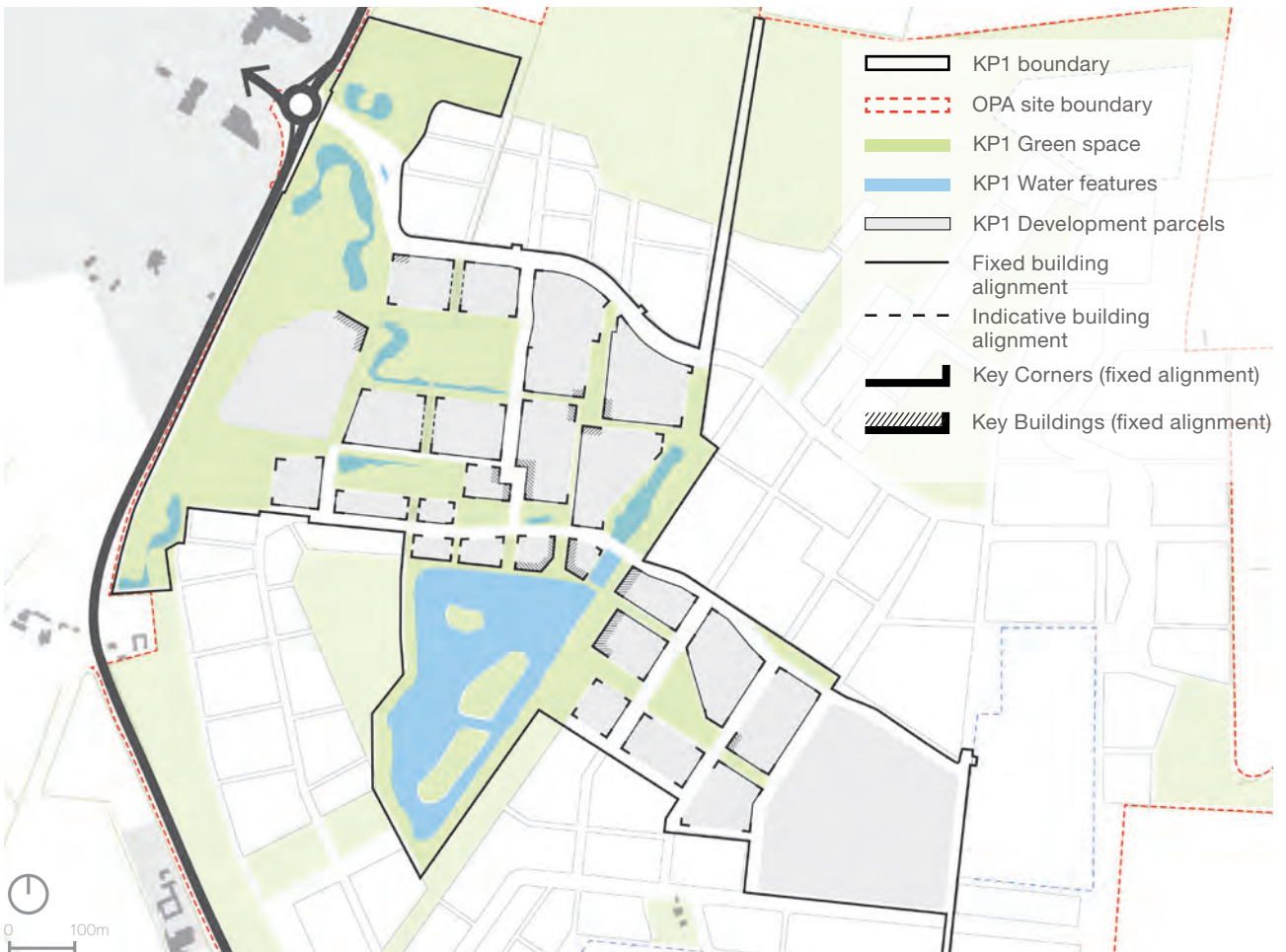


Figure 5.1: Block structure

### 5.3 Land use

The Regulatory Plan is compliant with the OPP and the mix of land uses and capacity within KP1 is established in the Delivery Plan and includes:

**Residential**

- Up to 1,600 dwellings **must** be accommodated in KP1. These will include a mix of unit types and tenures as set out in the Delivery Plan and will be distributed in residential and mixed-use areas
- A minimum of 5% of residential dwellings **must** be designed to meet accessible and adaptable dwellings (M4(2) standard of the Building Regulations 2010
- The principles for affordable housing are set out in the KP1 Delivery Plan and S106. All affordable housing **should** be tenure blind and **must** be distributed through KP1 in appropriately sized clusters in accordance with the S106

**Education**

A primary school will be delivered in KP1 and is located, as indicated by the OPP Parameter Plan, in the western component of KP1.

**Mixed Use**

KP1 includes areas for mixed use development which can include the following use classes. These are expressed as maximum figures and can be distributed flexibly across the mixed-use parcels in KP1, as shown on the Regulatory Plan:

- Retail, services and food & drink uses (A1/A2/A3/A4/A5 use classes) - up to 11,875 sqm
- Workspace/commercial uses (B1 use class) - up to 10,500 sqm
- Community and health uses (D1 use class) - up to 3,500 sqm
- Assembly and Leisure uses (D2 use class) - up to 3,500 sqm
- Hotel (C1 use class) - up to 4,000 sqm

Self-build will be a component of the residential offer. The self-build location in KP1 (or locations) is not yet determined. There are several types of self-build that may come forward ranging from small custom build schemes to individual plots for self-build/homeowners. Custom build schemes should be delivered in accordance with the Design Code and there are some commendable precedents. In other instances, there may be scope for single dwellings to be pursued offering exceptional design, which may be in accordance with the code or justified as an exception.



Figure 5.2: Land use distribution

## 5.4 Residential density

KP1 development is structured to ensure a residential density level that creates an urban character and reflects the location of KP1 at the heart of the wider development and its mix of uses.

The rationale for density across the development **should** follow the density diagram below. Density and building heights are generally higher in the principal centre and around the lakeside, to help support activity and create vibrant centres in locations supported by public transport routes, as per the approved OPP.

In addition to the density diagram below and to further guide housebuilders on the expected number of units across KP1, the schedule opposite (Figure 5.3) set outs a minimum amount of units per parcels which **must** be reflected in the proposals at Reserved Matters stage.

Figure 5.3: Unit numbers per parcel

Parcel number	Min. amount of units
P1	70
P2.1	110
P2.2	85
P2.3	24
P3.1	70
P3.2	90
P4	130
P5.1	40
P5.2 & P5.3	40
P6.1 & P6.2	135
P7.1 & P7.2	130
P8.1	65
P8.2	120
P8.3	18
P9.1	95
P9.2	40
P10.1	115
P10.2	75



Figure 5.4: Density distribution across KP1

## 5.5 Building heights

The maximum building heights are defined in the approved OPP. Heights for KP1 development **must** comply with the Approved Parameter Plan and the diagram set out below. A half storey can be achieved with a pitched roof, as long as the pitch is not too shallow (see Section 5.13). The Frontage Character and Key Groupings sections are subject to a greater degree of coding and are set out in Section 5.6 and 5.17 of this document.

### Definitions:

- Residential ground floor to ceiling height **must** be min 2.7 metres
- Commercial storey heights **should** vary from 4.0 to 6.0 metres depending on the use
- Podium structures **should** be accounted for as one storey and included within the total building height
- Buildings with 2 storeys and a pitched roof (which can be inhabited or not) **should** be accounted for as 2.5 storey buildings - see

Section 5.6 on coding for gable ends orientation

- Where min half of a building elevation is at 3 storeys (and the rest at 2 storeys), the total height of that building **should** be counted as 3 storeys
- Buildings along the primary streets **should** be min. 3 storeys high or more
- Buildings along the Causeway **should** be min. 2.5 storeys high or more as indicated on the diagram below
- Buildings along the secondary streets **should** be min. 2.5 storeys high or more, except where indicated in the diagram below
- Buildings within the block **must not** be taller than those on the perimeter and **must not** appear above the roofline of the perimeter buildings when viewed from the public spaces
- Higher buildings **must** be vertically articulated (have recessed areas, window bays, horizontal banding etc) in order to break down their mass and **should not** have pitched roofs

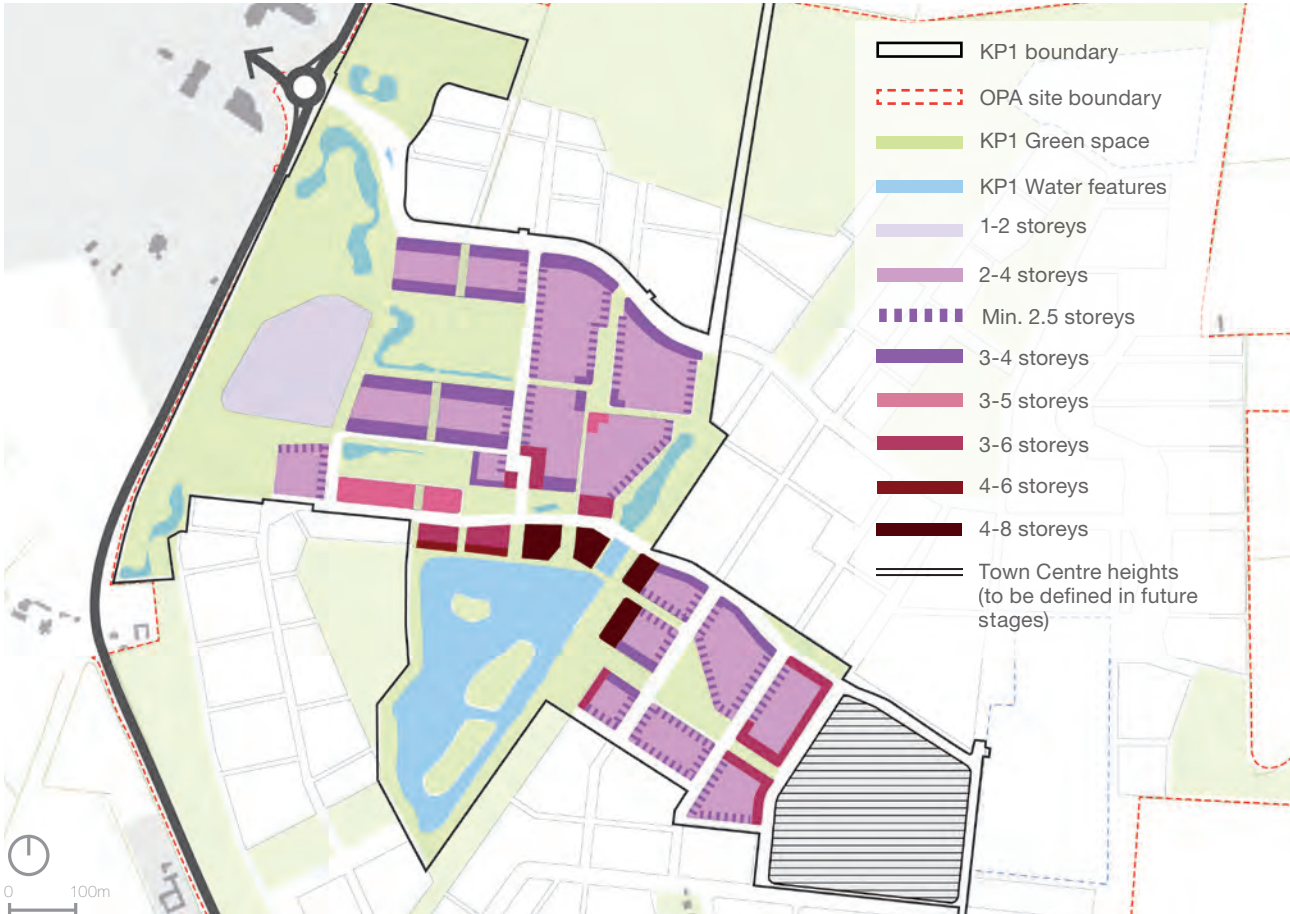


Figure 5.5: Building heights - recommended min. and max. heights per plot/parcel



### 5.5.1 Taller buildings

Within KP1 boundary, there are instances where buildings can go up to the maximum permitted heights in the OPP. This is in the Lakeside and the Principal Centre. More detail on building heights and their location within the Principal Centre will come forward through the Town Centre Development Framework and Town Centre Economic Development Plan, as required by Condition 12 of the OPP.

Building heights within the Lakeside and the location of taller buildings are described in the chapter above. Figure 5.7 below sets out how these specific buildings respond to strong linear views across or along inherited landscape features and contribute to way finding, orientation and overall character of the place.

The area around the north-east corner of the Lake is a critical node within the proposals for Waterbeach, in terms of the opening up of long views, the bridging of Denny Waters, the convergence of key movement routes and activity and function (a mix of uses and formal/informal recreation opportunities are to be clustered there).

The importance of this location must be reflected through the design of the buildings, as highlighted in more detail in Section 5.17. Using taller elements to achieve prominence within the broader townscape will aid legibility and help to establish a varied skyline, consciously linked to legibility and a hierarchy of places. The OPP supports this approach. The Design Code deliberately clusters the taller elements to contain and take advantage of the flat, openness of the lake and views. At 8 storeys, buildings would punctuate above the surrounding built form but still be in scale with the taller, mature woodland planting on site.

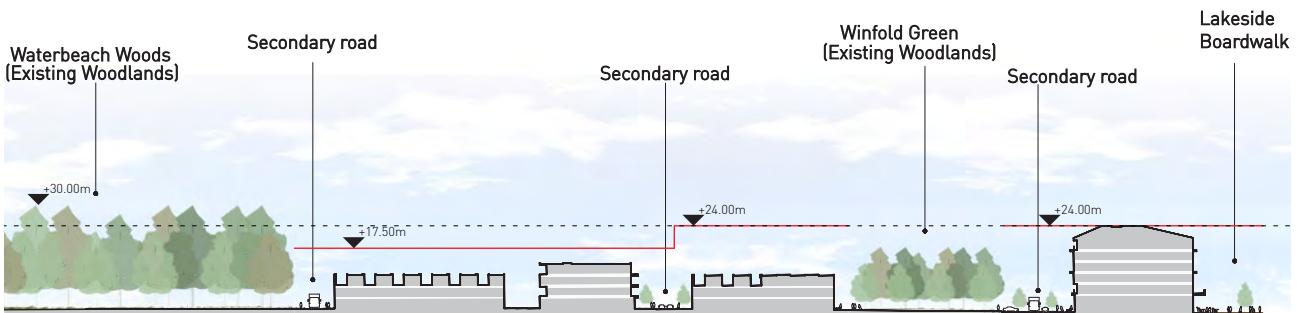


Figure 5.6: Extract from the OPA site-wide sections, illustrating building heights in relation to existing landscape features

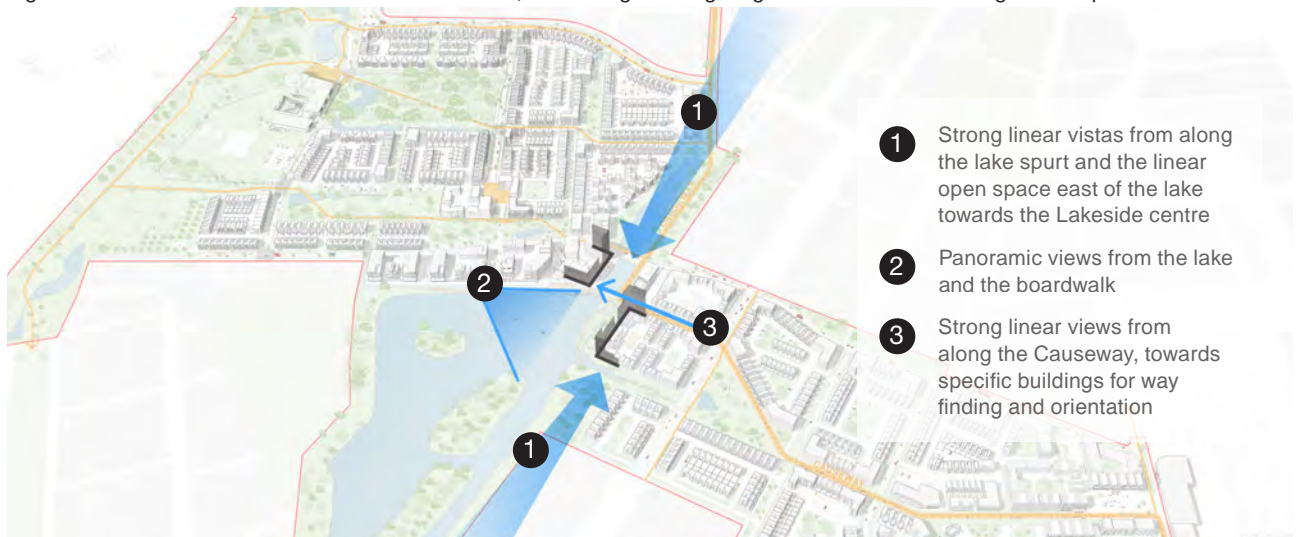


Figure 5.7: Building heights - Lakeside building heights overview

## 5.6 Frontage character

The frontage type is defined on the Regulatory Plan through the use of numbers which are replicated below in the key and shown in the diagram with their corresponding colour and described in the following pages.

All development within KP1 **must** follow the corresponding frontage type design codes as set out below. Additional guidance is also provided and explained under each typology.

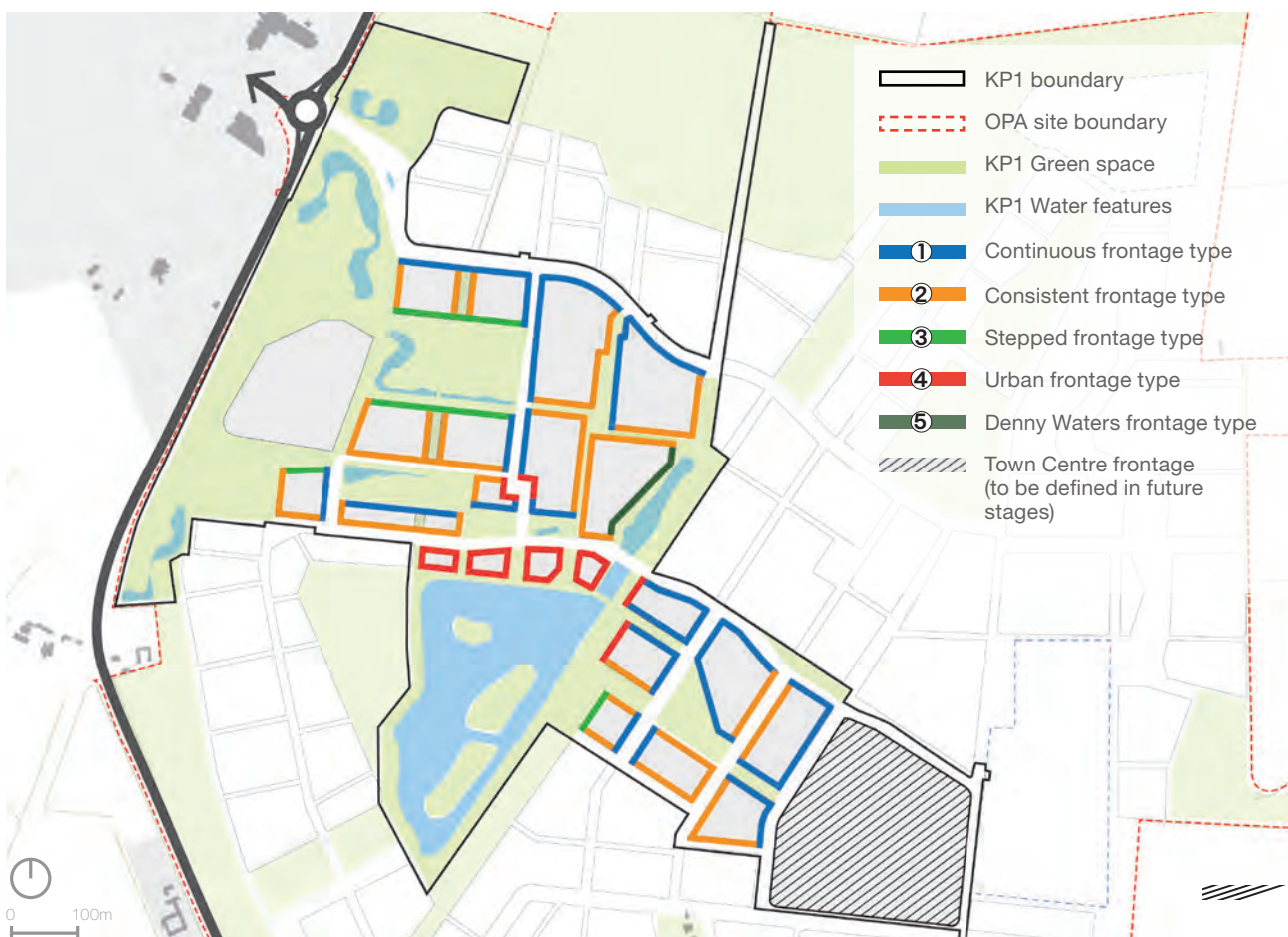
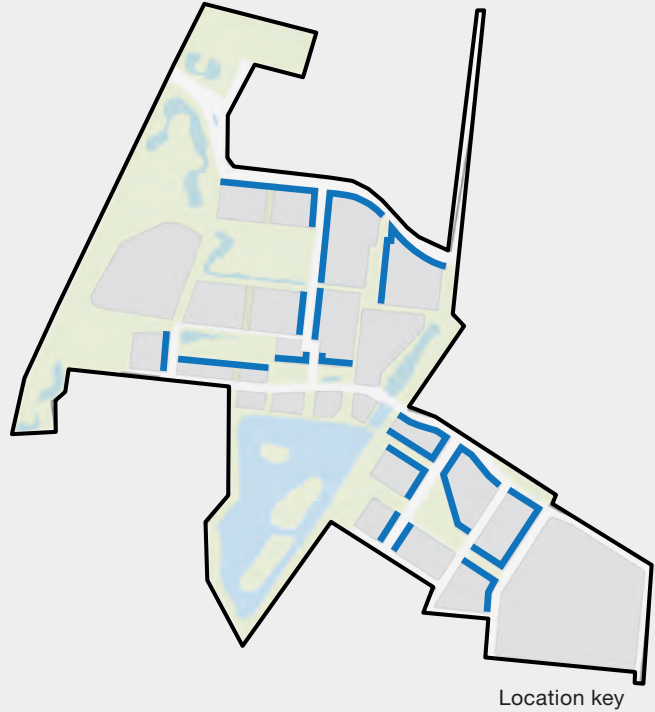


Figure 5.8: Frontage character

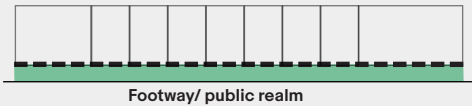
Figure 5.9: Continuous frontage characteristics

1. Continuous frontage 1

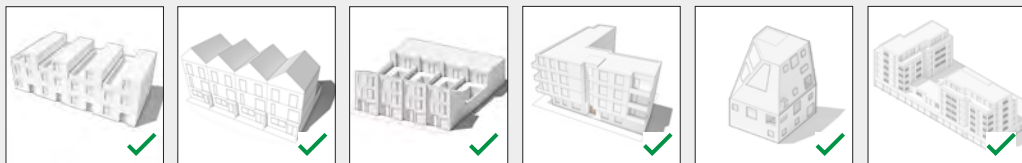
- Frontage type **must** be applied to all locations indicated on the key opposite and marked ① on the Regulatory Plan
- Frontage **must** be continuous and formal in character with minimum breaks to allow for junctions and building separation where absolutely required. Breaks for building separation **should** only occur adjoining Key Corners to accommodate a change in dwelling typology (if necessary)
- **Must** be formed by runs of dwellings with a high level of architectural uniformity between the Key Corners (as defined on Reg Plan)- refer to Section 5.14.2 for further guidance
- **Must** consist of mainly terraces and apartment blocks
- Any edge of parcel as defined in the Regulatory Plan **must not** use more than 3 typologies, including of Key Corners



Diagrammatic plan:

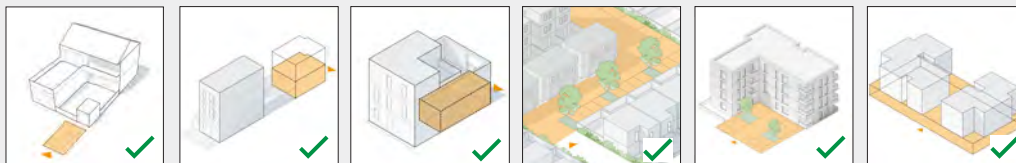


Permitted dwelling typologies (see Section 5.9):



- Terraced - stepped roof-line
- Terraced - narrow frontage
- Courtyard house
- Typical apartment block
- Small apartment block
- Podium apartment block

Permitted parking typologies (see Section 3.8):



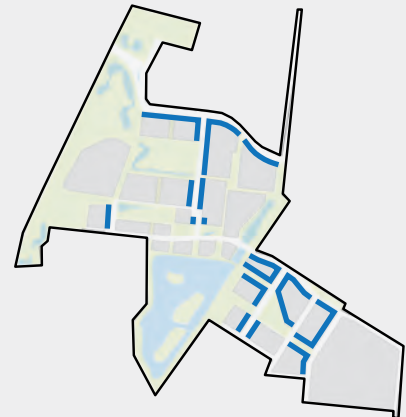
- Visible, uncovered (rear access)
- At rear of house
- Integrated (rear access)
- Mews courts
- Parking court for flats
- Podium parking (for apartment blocks)

Figure 5.9 (cont.): Continuous frontage characteristics

The continuous frontage type is a recurrent one throughout KP1, as shown on the Regulatory Plan and the diagram above. Due to different site conditions, the permitted boundary types that **must** be implemented have been split in two categories.

**i) Permitted boundary typologies on to primary and secondary streets (see Section 5.10):**

- Boundary treatments facing primary and secondary streets **must** be the same type along the entire length of a street. For the purpose of this code, a street is defined as per Figures 3.14 and 3.16. Permitted types are shown below for the locations highlighted in the diagram opposite



Continuous ground plane (for mixed use only)



Low wall



Low wall with ornamental hedge



Railing on a low wall



Railing and ornamental hedge

**ii) Permitted boundary typologies facing public open space (see Section 5.10):**

- Boundary treatment facing public open spaces **must** be the same type along the front of the open space and be consistent or complement boundaries across the space as well. Permitted types are shown below for the locations highlighted in the diagram opposite



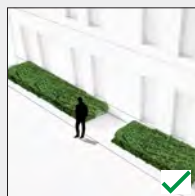
Continuous ground plane



Planted zone with side wall



Ornamental hedge



Planted zone



Low wall

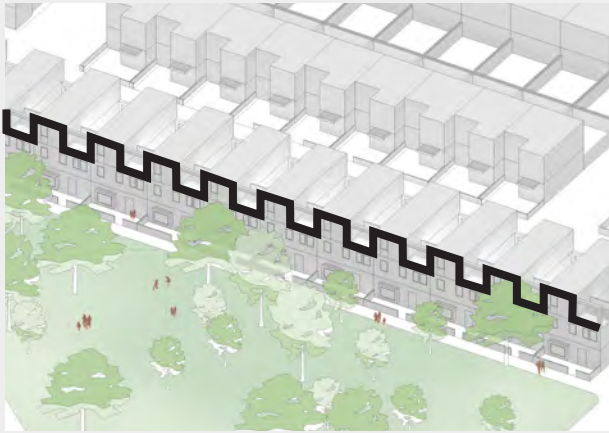


Low wall with ornamental hedge



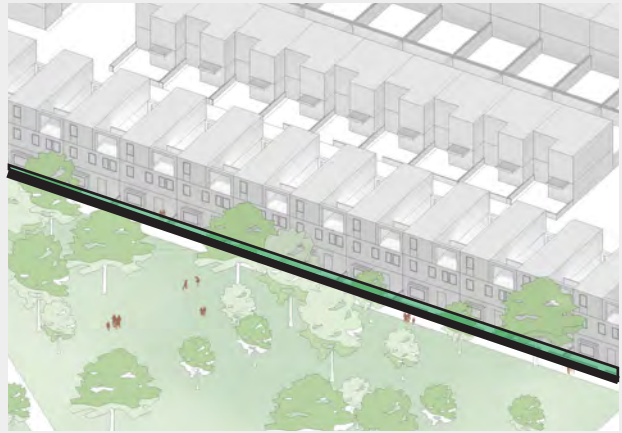
Railing and ornamental hedge





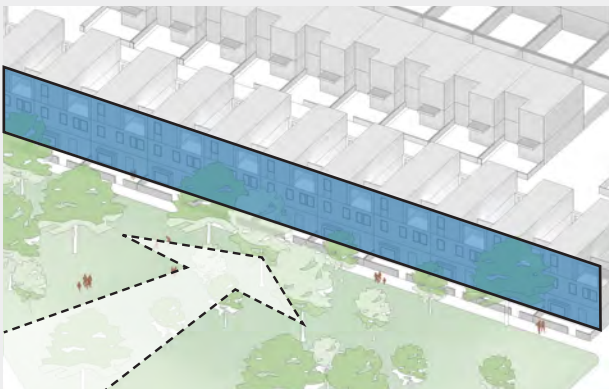
Heights and Massing

- Where gaps between dwellings are absolutely required such as instances where a terrace row meets an apartment block, these **must** be min. 3m and max. 7m wide (at the main dwelling face or massing)
- Where junctions into parcels are needed, the distance between the corner buildings **must** be minimum required for the highways layout
- Roofscapes **must** be consistent along the entire length of the frontage type
- If a pitched roof is adopted, then the gable ends **must** face the higher ranking street/ open space (corner conditions to be reviewed on a case by case basis)



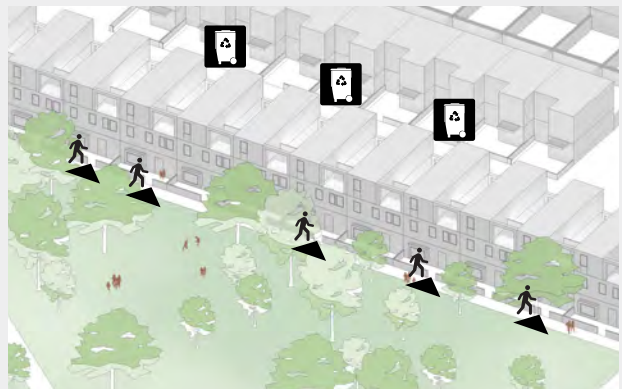
Interface with the public realm or open space

- Boundary treatment must be consistent and continuous along the entire length of the frontage type
- Front garden depth must follow rules set out in the Regulatory Plan i.e. 2.5m depth along primary streets, 2m depth along secondary streets and 1.5m depth along tertiary streets/open spaces



Key vistas and views

- All buildings **must** have the main living spaces windows facing the higher ranking street or open space
- Corner buildings **must** respond to the corner condition - see Section 5.8.6



Access, parking and refuse collection

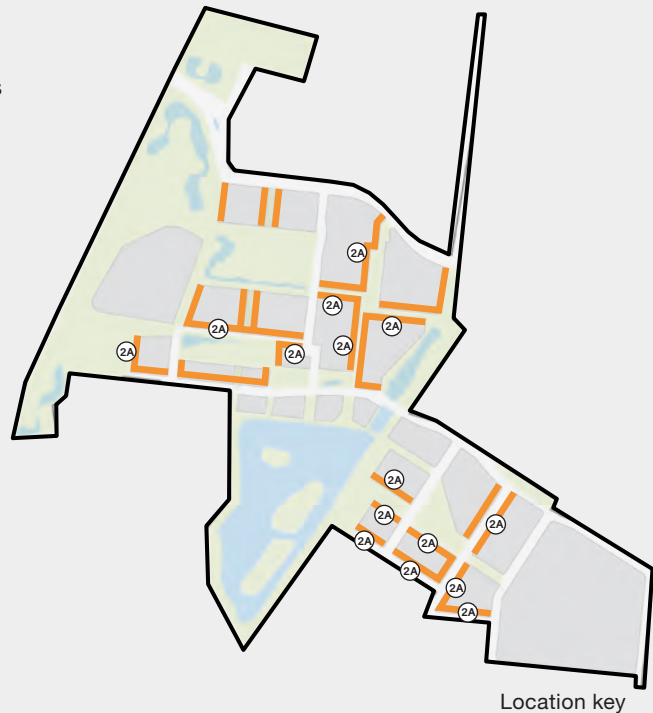
- All buildings in this type of frontage **must** have main front doors towards the higher ranking street or the open space they front
- Refuse storage and collection **must** be accommodated in relation to the parking solution proposed (e.g. for rear garages, at the rear)
- Continuous frontage dwellings marked on the Regulatory Plan **must not** have direct vehicular access at the front (i.e. no front driveways or private maintained access streets)
- Direct vehicular access into podiums is permitted, where indicated on the Regulatory Plan



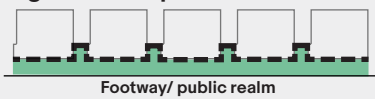
Figure 5.10: Consistent frontage characteristics

2. Consistent frontage 2

- Frontage type **must** be applied to all locations indicated on the key opposite and marked ② or (2A) on the Regulatory Plan
- Frontage **must** provide good enclosure towards the public realm but dwellings can have frequent gaps between them
- Dwellings along this type of frontage **should** provide a consistent elevation rhythm, with a consistent set-back and spacing between them and a high level of architectural uniformity between the defined Key Corners - see Section 5.14.2 for further guidance
- **Should** consist of a range of dwelling types, but mix of dwelling typologies between Key Corners **must** be restricted and follow code on Architectural Uniformity. Terraced typologies are permitted in higher density plots such as areas close/ adjacent to and in the Principal Centre
- Any edge of parcel as defined in the Regulatory Plan **must not** use more than 3 typologies, including of Key Corners buildings - see Section 5.14.2 for further guidance

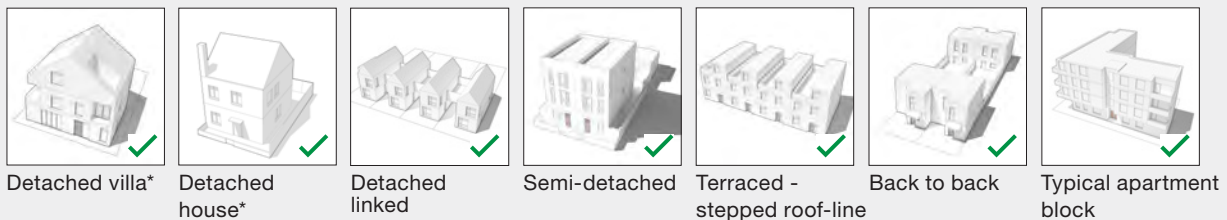


Diagrammatic plan:



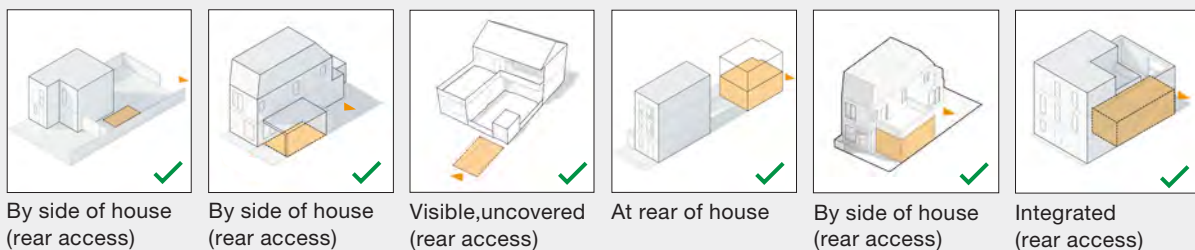
2A Frontage types 2A can have vehicle access from the front, directly off tertiary streets or from privately maintained streets. Privately maintained streets must not be provided parallel and in addition to primary/secondary and tertiary streets

Permitted dwelling typologies (see Section 5.9):

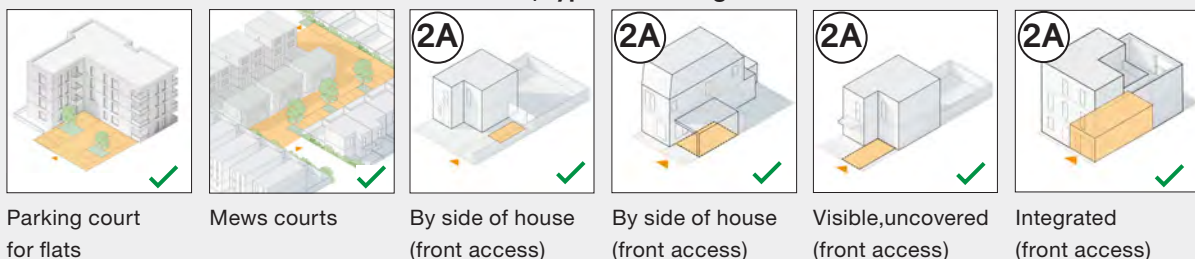


\*Detached villa and detached house typologies must not be used on frontages where higher densities are required, such as the Principal Centre

Permitted parking typologies (see Section 3.8):



In addition, type 2A frontages can also include:



The consistent frontage type is a recurrent one throughout KP1, as shown on the Regulatory Plan and the diagram opposite. Due to different site conditions, the permitted boundary types that **must** be implemented have been split in two categories.

**i) Permitted boundary typologies on to secondary and tertiary streets (see Section 5.10):**

- Boundary treatments facing secondary and tertiary streets **must** be the same type along the entire length of a street. For the purpose of this code, a street is defined as per Figures 3.16 and Section 3.5.3. Permitted types are shown below for the locations highlighted in the diagram opposite



Low wall



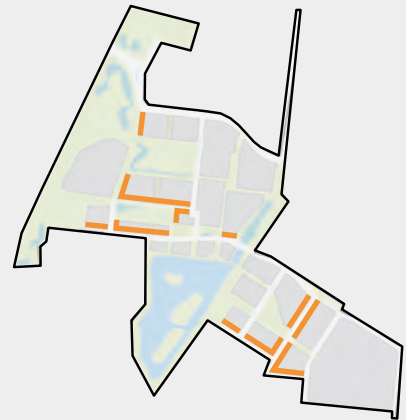
Low wall with ornamental hedge



Railing on a low wall



Railing and ornamental hedge



**ii) Permitted boundary typologies facing public open space (see Section 5.10):**

- Boundary treatment facing public open spaces **must** be the same type along the front of the open space and be consistent or complement boundaries across the space as well. Permitted types are shown below for the locations highlighted in the diagram opposite



Continuous ground plane



Planted zone with side low wall



Ornamental hedge



Planted zone



Low wall



Low wall with ornamental hedge



Railing and ornamental hedge

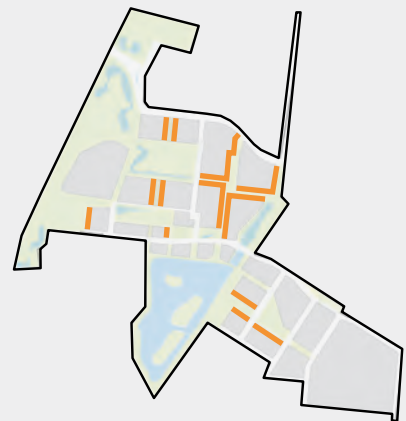


Figure 5.10 (cont.): Consistent frontage characteristics



Heights and Massing

- Distances between dwellings (at the main dwelling face or massing) **must** be min. 3m and max. 7m wide to allow for parking between houses and to avoid a loose enclosure of the frontage
- Where junctions into parcels are needed, the distance between the corner buildings **must** be minimum required for the highways layout
- Roofscape **must** be consistent along the entire length of the frontage type
- If a pitched roof is adopted, then the gable ends **must** face the higher ranking street or open space (corner conditions to be reviewed on a case by case basis)



Interface with the public realm or open space

- Boundary treatment **must** be consistent and continuous along the entire length of the frontage type
- Front garden depth **must** follow rules set out in the Regulatory Plan i.e. 2.5m depth along primary streets, 2m depth along secondary streets and 1.5m depth along tertiary streets/ open spaces



Key vistas and views

- All buildings facades **must** have the main living spaces, larger windows facing the higher ranking street/ open space
- Corner buildings **must** respond to the corner condition - see Section 5.8.6

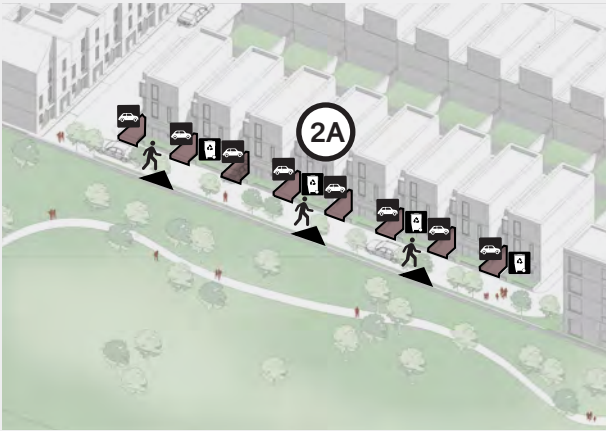


Access, parking and refuse collection

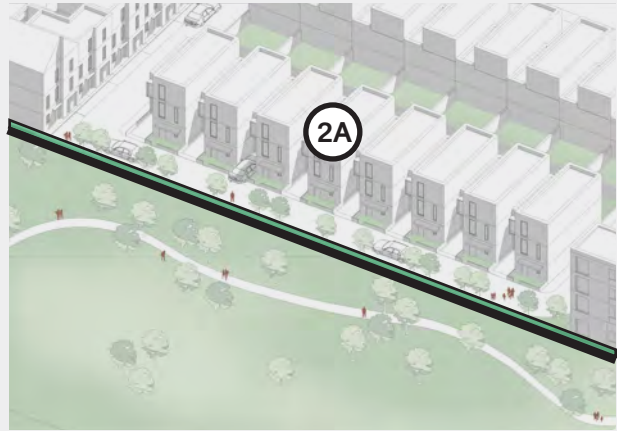
- All buildings in this type of frontage **must** have main front doors towards the higher ranking street or the open space they front
- Refuse storage and collection **must** be accommodated in relation to the parking solution proposed (e.g. for rear garages, at the rear)
- For locations not identified as (2A) on the Regulatory Plan, dwellings **must not** have direct vehicular access at the front







Access, parking and refuse collection (cont.)



Interface with the public realm or open space (cont.)

- Locations marked 2A on the Regulatory Plan can have front driveways and/or direct vehicular access
- All buildings in this type of frontage **must** have main front doors towards the private drive that serves them and/or the open space they front
- Refuse storage **must** be accommodated in relation to the parking solution proposed (e.g. for front driveways, at the front)
- Refuse collection **should** be carefully considered so that it minimises the length/ number of streets the refuse vehicle needs to travel on. If possible, the refuse vehicle **should not** enter privately maintained access streets in order to be able to keep these streets as tight as possible and with a local character

- Where front driveways off privately maintained access streets are permitted, the parcel boundary treatment **must** be consistent with the front garden boundaries of the corner buildings and complement the front garden treatment of the first row of houses set behind the parcel boundary
- For coding of the threshold landscape area, see Section 3.5.4
- Boundary treatment **must** be consistent and continuous along the frontage, but **must** include openings for pedestrian/ cycle movement
- Dwellings **must** have front gardens which **must** be min. 1 m deep
- Front gardens/ defensible space **must** be consistent in depth and type of boundary treatment

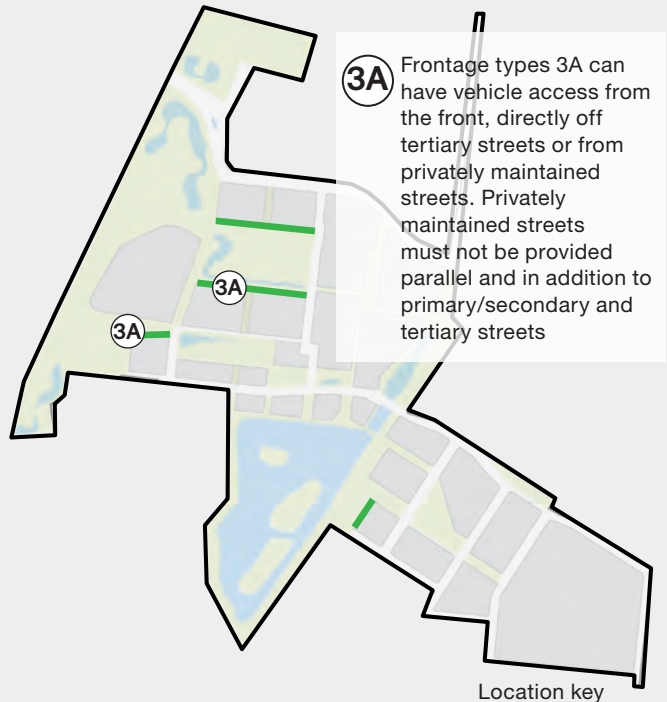


Figure 5.11: Stepped frontage characteristics

3. Stepped frontage



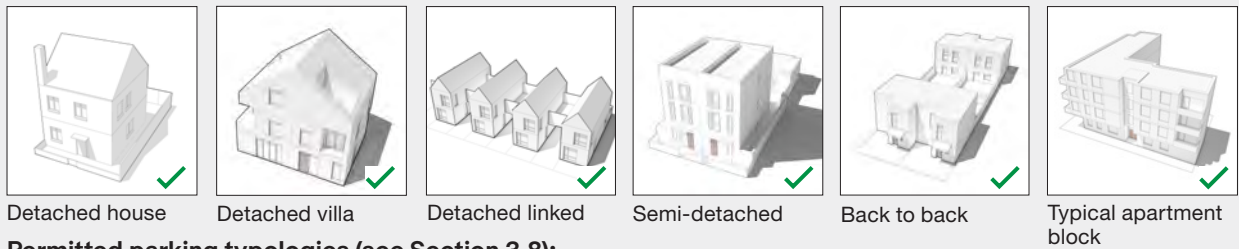
- Frontage type **must** be applied to all locations indicated on the key opposite and marked ③ or ③A on the Regulatory Plan
- Frontage **must** be visually permeable with occasional breaks and **must** have a subtle variation in the set-back of the building line, whilst still providing a good enclosure to the open spaces they front
- Dwellings along this type of frontage **should** provide a consistent elevation rhythm and a high level of architectural uniformity between the defined Key Corners - see Section 5.14.2 for further guidance



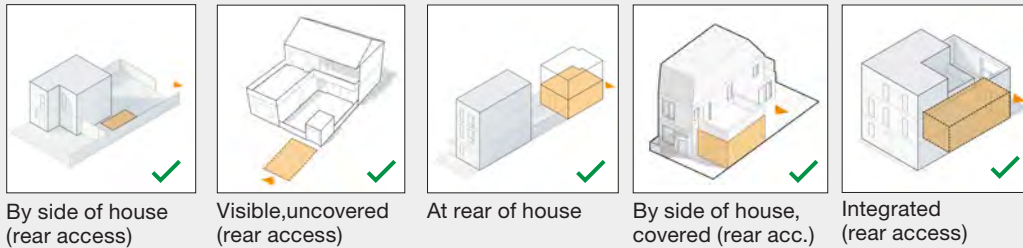
Diagrammatic plan:



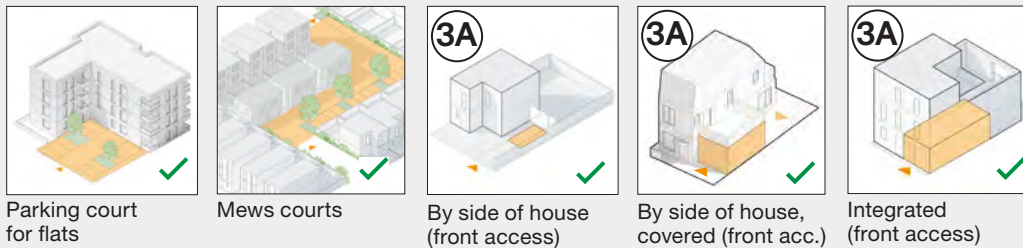
Permitted dwelling typologies (see Section 5.9):



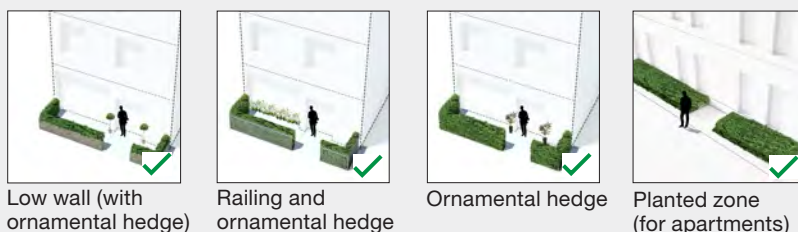
Permitted parking typologies (see Section 3.8):



In addition, type 3A frontages can also include:



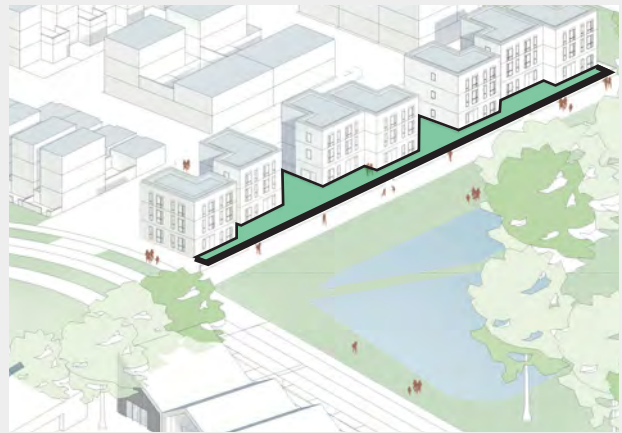
Permitted boundary typologies (see Section 5.10):





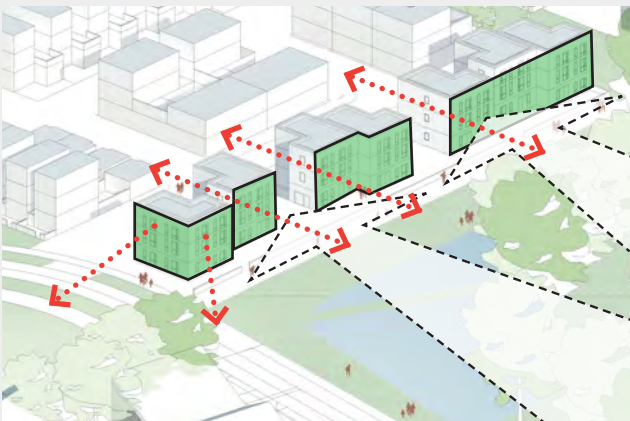
Heights and Massing

- Where junctions into parcels are needed, the distance between the corner buildings **must** be minimum required for the highways layout
- Roofscape **must** be consistent along the entire length of the frontage type
- If a pitched roof is used, then the gable ends **must** face the open space (corner conditions to be reviewed on a case by case basis)



Interface with the public realm or open space

- Boundary treatment **must** be consistent and continuous along the entire length of the frontage type
- Front garden depth **must** be between min 1.5m wide (where the building line has the min set back) and max 4m wide, creating a subtle variation in the set-back of the building line



Key vistas and views

- All buildings facades **must** have the main living spaces, larger windows facing the open space
- Corner buildings **must** respond to the corner condition - see Section 5.8.6
- Spaces between detached buildings **must** be designed so that they allow a visual connection to the open space



Access, parking and refuse collection

- All buildings in this type of frontage **must** have main front doors towards the open space they front
- Refuse storage and collection **must** be accommodated at the rear of the buildings
- For locations marked (3) on the Regulatory Plan dwellings **must not** have direct vehicular access at the front
- Locations (3A) could have direct vehicular access at the front (driveways)
- Parking **must** be set behind the front building line and **must not** be visible from the open space or be in a garage



Figure 5.12: Urban frontage characteristics

4. Urban frontage



- Frontage type **must** be applied to all locations indicated on the key opposite and marked ④ on the Regulatory Plan
- Frontage **must** be continuous, linear and provide a clear enclosure of the public space or open space it fronts
- The ground floor of all elevations **must** be designed as active frontages and respond to opportunities for mixed uses, particularly towards key civic spaces
- Service requirements **should** be addressed within the core of the block



Enlarged location key

Diagrammatic plan:

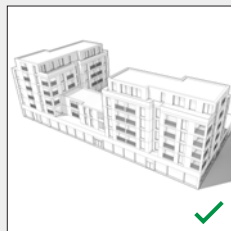


Footway/ public realm

Permitted dwelling typologies (see Section 5.9):



Mixed use apartment block

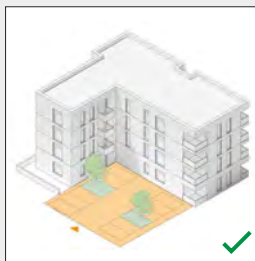


Podium apartment block

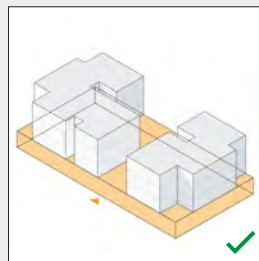


Integrated town houses/ maisonettes

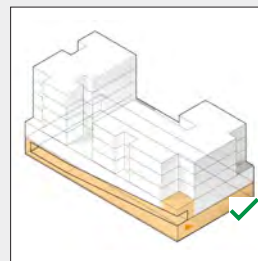
Permitted parking typologies (see Section 3.8):



Parking court for flats



Podium parking



Underground parking

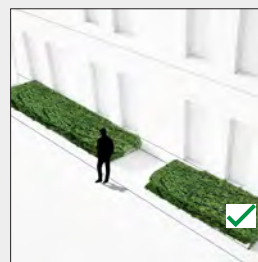
Permitted boundary typologies (see Section 5.10):



Continuous ground plane (for commercial spaces)



Railing and ornamental hedge



Planted zone



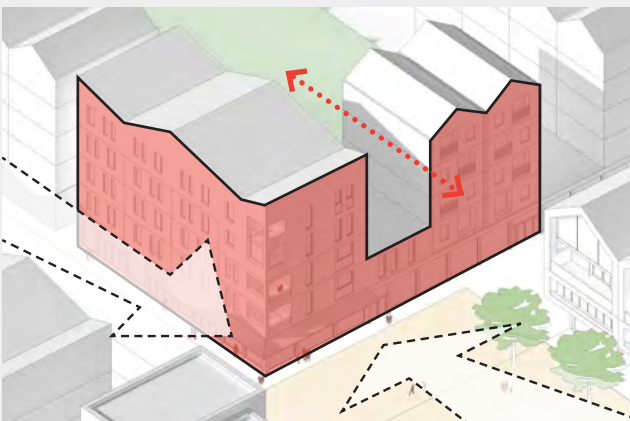
Heights and Massing

- A monolithic massing and appearance **must** be avoided by providing sufficient facade articulation (recessed areas, window bays, horizontal/ vertical banding etc)
- Higher buildings **must** be vertically articulated (recessed areas, window bays, horizontal banding etc) to break up the massing and **should not** have pitched roofs
- If a pitched roof is adopted, then the gable ends **must** face the higher ranking street/ open space (corner conditions to be reviewed case by case)



Interface with the public realm or open space

- If the ground floor of the building has residential uses, a defensible space of min 1.5m width **must** be accommodated inside the development parcel
- If the ground floor of the building has commercial uses, the boundary treatment **must** be the 'continuous ground plane' type (see Section 5.10)
- If a podium solution is adopted, the podium **must** be predominantly wrapped around with public use spaces or residential entrances to avoid 'dead' frontages. Where this is not possible, the facade design must be complementary to the overall facade aesthetic



Key vistas and views

- All buildings facades **must** have the main living spaces, larger windows facing the higher ranking street/ open space
- Private amenity areas (balconies) **should** be inset towards the outside of the block, whereas the inside courtyards could accommodate projecting balconies and terraces
- If a podium solution is adopted, the size of the podium courtyards **must** ensure acceptable levels of sunlight/daylight and overlooking distances



Access, parking and refuse collection

- Residential entrances **must** be accommodated from the public realm, at the front of the buildings
- Refuse storage and collection **must** be accommodated on plot and **must** facilitate an easy and discreet refuse evacuation
- Servicing requirements **must not** detract from the streetscape
- Parking **must** be on plot, in the podium and/or the basement or in parking courts inside the parcel
- Urban Frontage dwellings **must not** have direct vehicular access (driveways)
- Cycle parking **should** be on plot, in close proximity to the residential entrances and accessible from the public realm



Figure 5.13: Denny Waters frontage characteristics

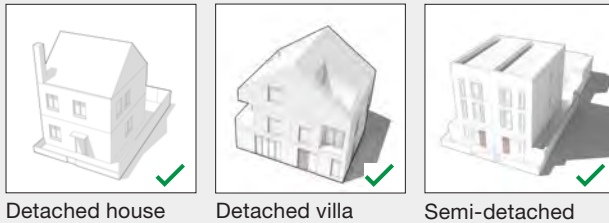
5. Denny Waters frontage 5

- Frontage type **must** be applied to the location indicated on the key opposite and marked **5A** on the Regulatory Plan
- Frontage **must** be visually permeable, with breaks between dwellings and **must** have a variation in the set-back of the building line

Diagrammatic plan:



Permitted dwelling typologies (see Section 5.9):



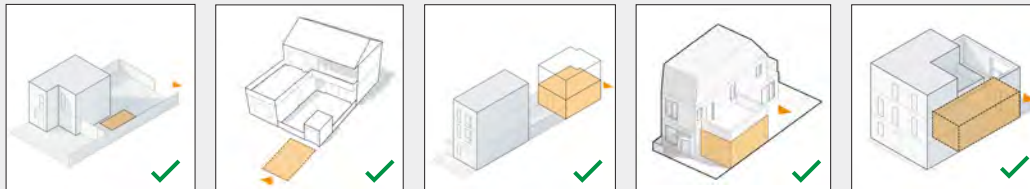
Detached house

Detached villa

Semi-detached

**5A** Frontage type 5A can have vehicle access from the front, directly off a privately maintained street

Permitted parking typologies (see Section 3.8):



By side of house (rear access)

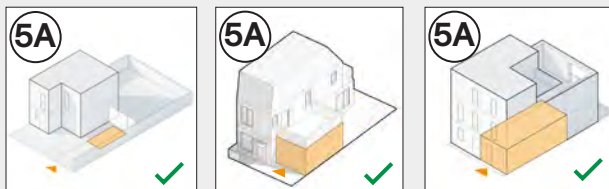
Visible,uncovered (rear access)

At rear of house

By side of house, covered (rear access)

Integrated (rear access)

In addition, type 5A frontages can also include:



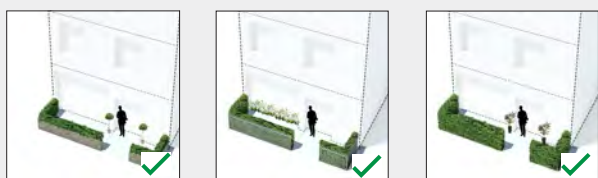
By side of house (front access)\*\*

By side of house, covered (front access)

Integrated (front access)

\*\*When used along this frontage type, this parking typology must not be coupled or mirrored, in order to keep distances between dwellings at a minimum

Permitted boundary typologies (see Section 5.10):



Low wall (with ornamental hedge)

Railing and ornamental hedge

Ornamental hedge



Heights and Massing

- Roofscape **must** be consistent along the entire length of the frontage type
- If a pitched roof is used, then the gable ends **must** face the open space (corner conditions to be reviewed on a case by case basis)



Interface with the public realm

- **Must** have front gardens which **must** be min 1.5m (where the building line has the min set back) and max 4m deep. Front gardens/ defensible space **should** vary in depth along the frontage
- Boundary treatment **must** be the same type along the entire length of the frontage



Key vistas and views

- All buildings facades **must** have the main living spaces with larger windows facing the open space
- Corner buildings **must** respond to the corner condition - see Section 5.8.6
- Spaces between detached buildings **must** be designed so that they allow a visual connection to the open space



Access, parking and refuse collection

- All buildings in this type of frontage **should** have main front doors towards the open space they front
- Refuse storage and collection **must** be accommodated at the rear of the buildings
- For locations marked (5A) on the Regulatory Plan dwellings could have direct vehicular access at the front (driveways). In this specific location the choice of materials for the private drive **must** be informed by the natural setting of the parcel and **must** blend in with the overall environment
- Parking **must** be set behind the front building line and **must not** be visible from the open space or be in a garage



## 5.7 Plot internal conditions

In addition to the frontage character coded in Section 5.6 and defined on the Regulatory Plan, attention to plot internal conditions **must** be given.

Due to the restriction on front driveways from all Primary streets, most Secondary streets and some of the open spaces in KP1, a number of individual homes will have dual frontages. In these instances it is of particular importance that the internal frontages and streets are well designed, car parking resolved in a suitable manner and open spaces enclosed by built form that provides public realm overlooking and activation.

Plot internal layouts **must** adhere to mandatory requirements and **should** follow the guidance described in, but not limited to:

- Tertiary streets (Section 3.5.3)
- Community links (where applicable) (Section 3.5.5)
- Car access to individual homes (Section 3.8)
- Car parking (Section 3.9)
- Cycle parking (Section 3.7)
- Refuse and recycling (Section 3.10)
- On plot open spaces (Section 4.3)
- Public realm materials (Section 4.4)
- Building heights (Section 5.5)
- Dwelling typologies (Section 5.9)
- Boundary typologies (Section 5.10)
- Private amenity space (Section 5.11)

In addition, plot internal layouts:

- **Should** include tertiary streets and informal pedestrian links providing cross-parcel permeability within development parcels and access to homes
- **Should** include consideration for visitors' car parking, where not sufficiently provided on adjacent street network
- **Must not** be dominated by parking courts or in other way by large areas of surface car parking
- **Must not** be dominated by garage entrances or back of garden fences, but **must** include frontages to ensure natural surveillance. This can include accommodation or studio spaces above garages

Figures 5.14, 5.15 and 5.16 overleaf illustrate how the above codes could apply to typical block layouts. These detailed layouts are illustrative only and point to relevant sections of the document that need to be considered.



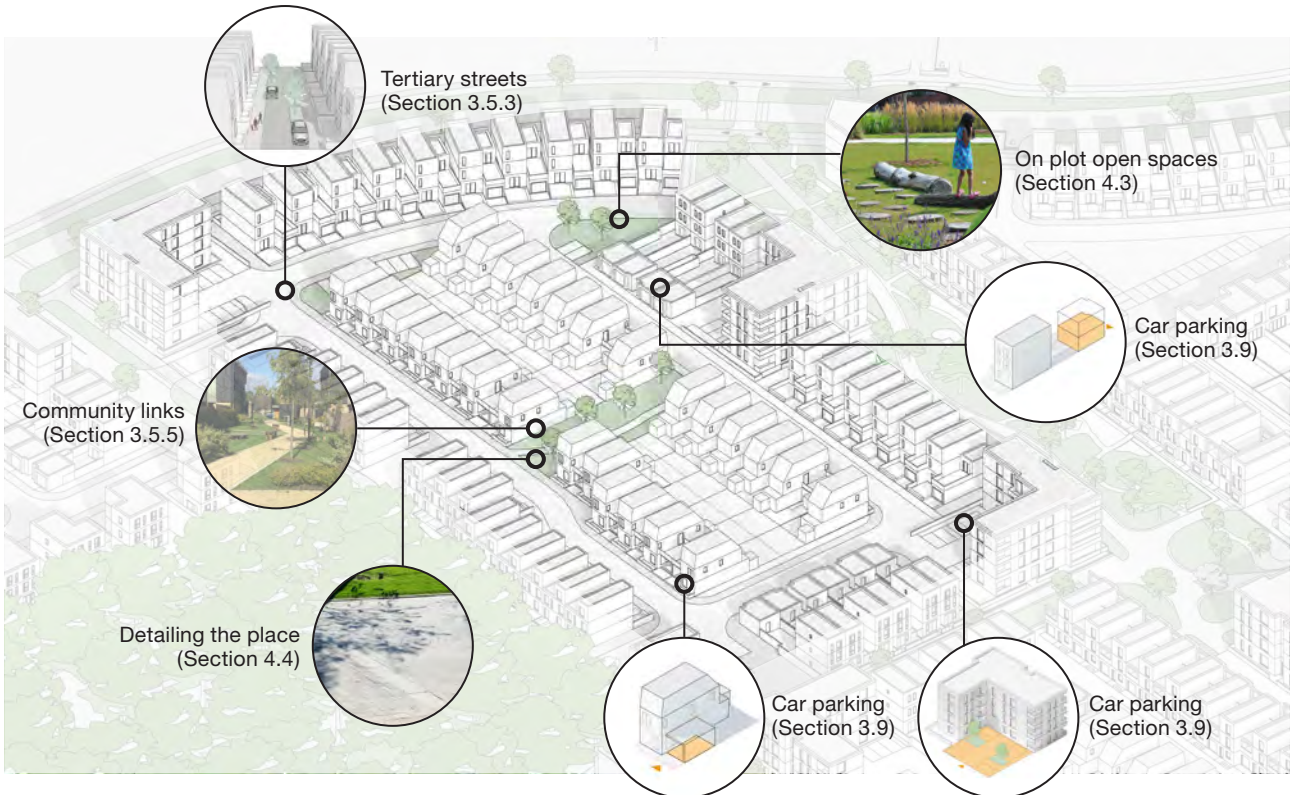
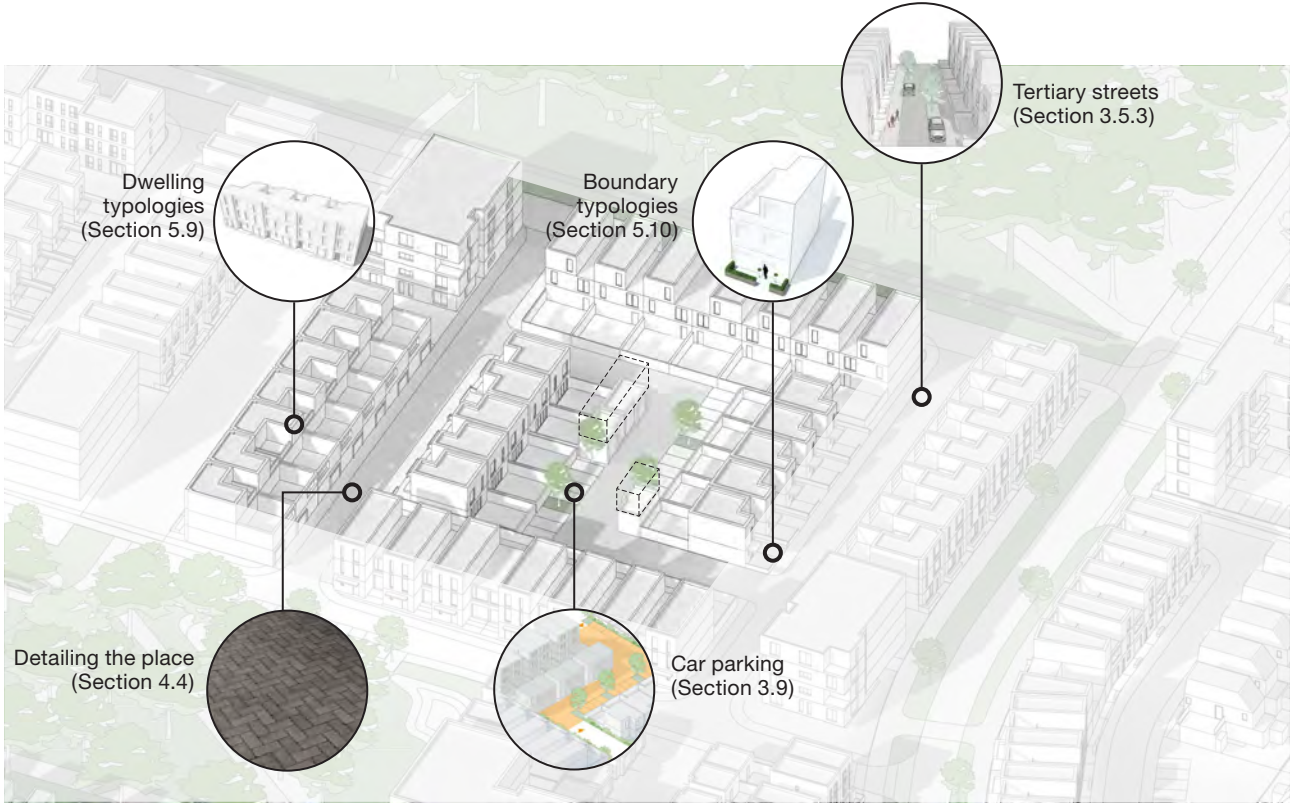


Figure 5.14: Detailed design illustrating mandatory and recommended guidance for the internal condition of typical plots (above and below)

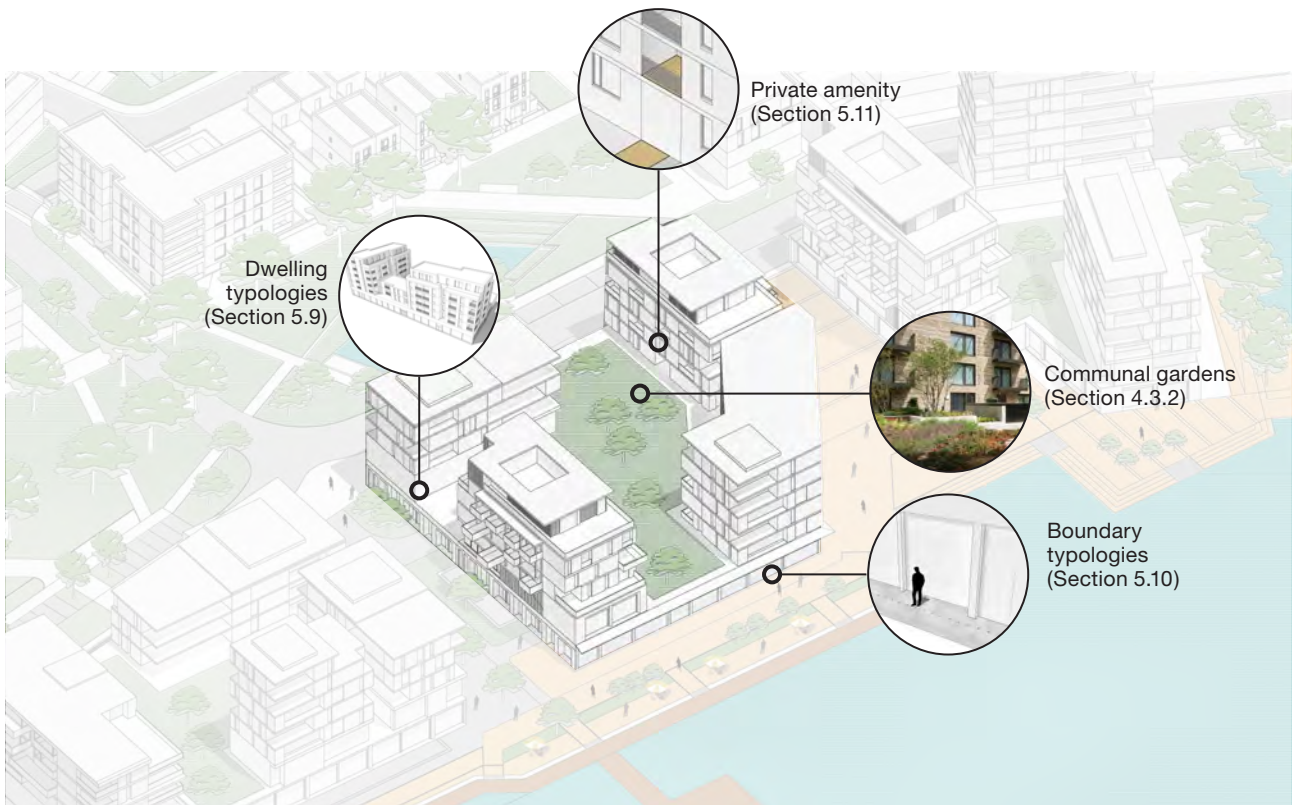


Figure 5.15: Detailed design illustrating mandatory and recommended guidance for the internal condition of a lakeside block

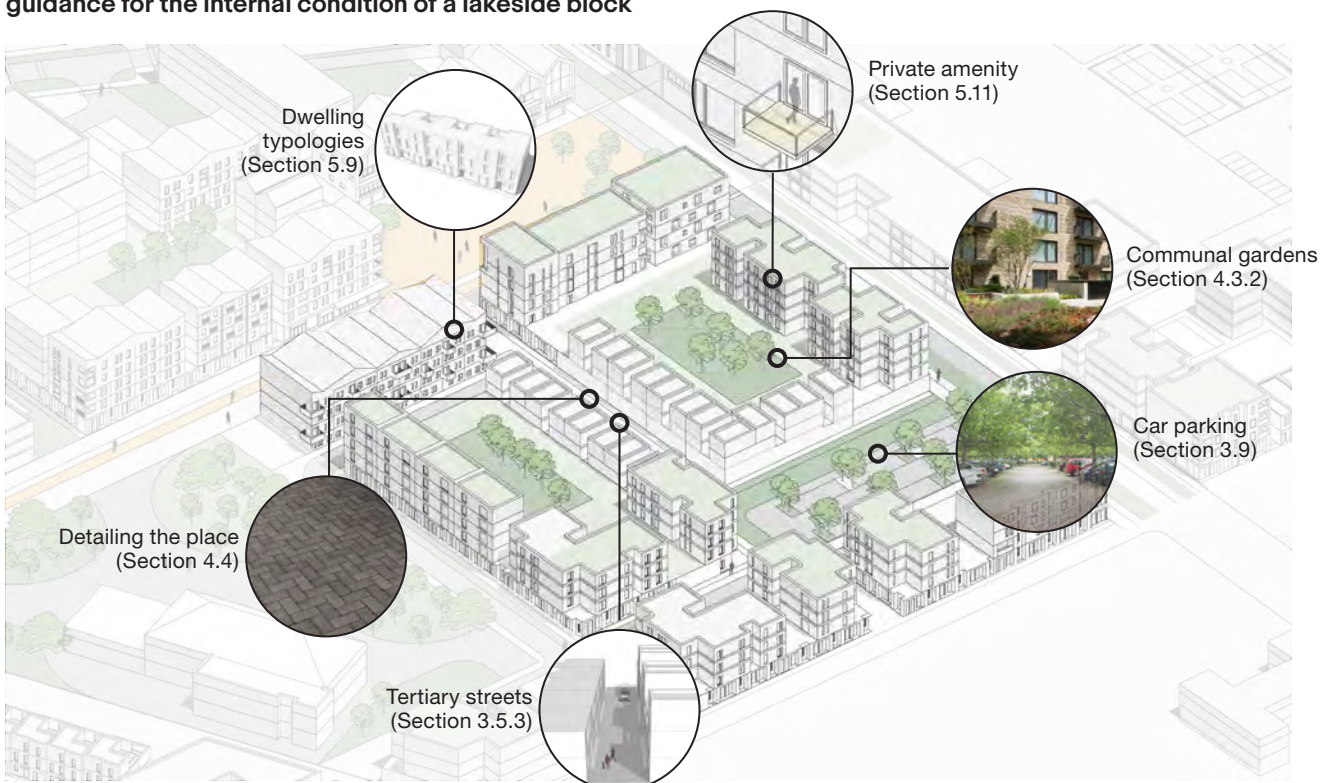


Figure 5.16: Detailed design illustrating mandatory and recommended guidance for the internal condition of a town centre block

## 5.8 Plot layout

### 5.8.1 Building orientation in relation to streets and spaces

- Development **must** be based upon the perimeter block principle where buildings face outwards onto the streets and spaces around it
- Buildings **must** address streets, public and green spaces such that their primary frontage is parallel to that street, public realm or green space
- For informal layouts buildings **must** still align to the immediate edge of the street or public/green space they face
- Primary entrances to buildings **must** be visible from the public realm

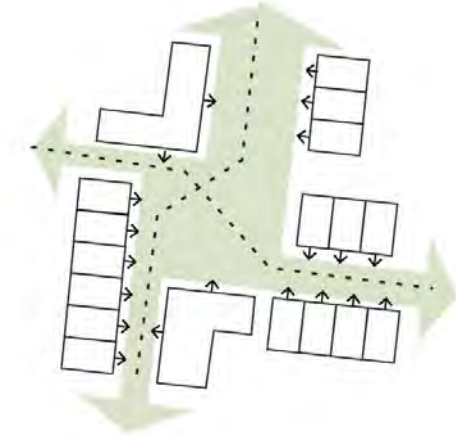


Figure 5.17

### 5.8.2 Building alignment

- Building alignment **must** follow the fixes from the Regulatory Plan
- Building frontages **must** establish a regular, straight building line where they face streets, public and green spaces
- Using garages and outbuildings to establish a common building line **should** be limited - see Section 3.9 Car parking
- Set-backs from an established building line **must** be in accordance with rules set in the Section 5.6 Frontage character and Section 5.17 Key groupings

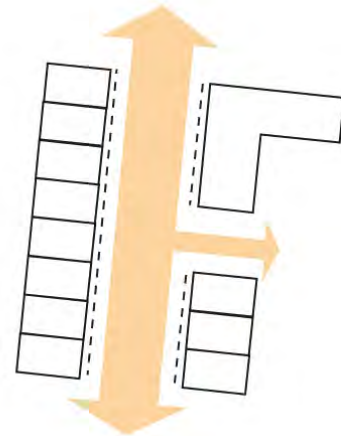


Figure 5.18

### 5.8.3 Continuity and enclosure

- All frontages along streets and public/green spaces **must** be designed to create a legible continuity of frontage, building form and layout
- Where a different dwelling type or a corner building is introduced and a separation between buildings or building groupings is needed (with the exception of junctions), the buildings **should** be clearly separated with a min 3m and max 7m between flank walls
- Where junctions are required to allow access into the parcel, the distances between buildings in the same frontage **must** be kept to the minimum required for accommodating the highways layout

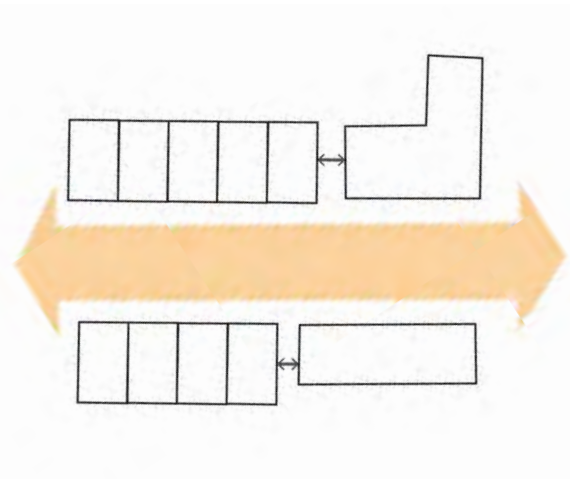


Figure 5.19

**5.8.4 Active frontages**

- Streets, public green spaces and car parking spaces (particularly mews courts) **must** be overlooked by entrances or windows and balconies to habitable rooms, providing natural surveillance
- Blank elevations **must** be avoided where facing public and green spaces, see Section 5.8.6 Corner conditions

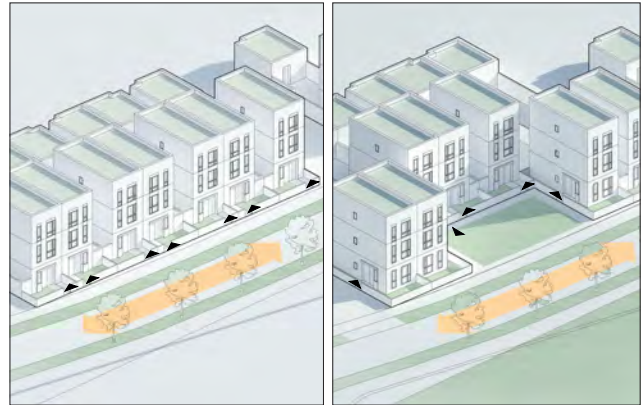


Figure 5.20



**5.8.5 Apartment blocks location**

- Apartment blocks of three or more storeys **should** be positioned to address key frontages, corners and/ or key vistas
- Instances where apartment blocks are set within a row of other dwelling typologies such as terraces or semi-detached houses, breaking the rhythm of the frontage (as illustrated in the negative example in Figure 5.21) **must** be avoided



Figure 5.21

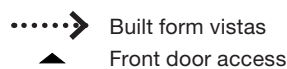


**5.8.6 Corner conditions**

- The alignment and set-back from the street of Key Corner buildings **must** follow the rules set out in the Regulatory Plan - see Section 5.2
- Where buildings are located on corners they **must** be designed to fit the shape or angle of the corner (90 degrees, curved or otherwise) as illustrated in Figure 5.22 opposite

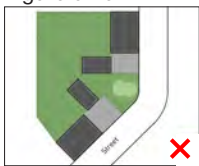


Figure 5.22

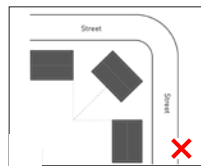


- Where buildings turn a corner, they **must** offer two strong frontages i.e. function as dual aspect buildings. Dual aspect dwellings **must** be afforded windows to both elevations that are required to address the street to maximise natural surveillance opportunities and eliminate buildings that have a blank or weak elevation to the street. Windows **must** serve habitable rooms, such as living rooms, kitchens and bedrooms to afford surveillance opportunities
- Windows **must not** be retroactively included on to buildings that have not been designed to turn corners, without adjusting the floor plan as well, as they do not usually work successfully either internally or externally in terms of their architectural appearance and/or functionality
- Building form **must** respond to defined corners through the largest/tallest element of the building being located in that corner

Figure 5.23



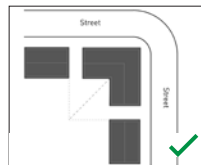
Planting at the corner



Same dwelling typology, not responding to the corner condition



Built form fitting the angle of the corner



Built form fitting the angle of the corner



Figure 5.24 - Good example of a dual aspect house which successfully addresses both streets



Figure 5.25 - Poor example of a retroactively incorporated window on a gable end of a terrace

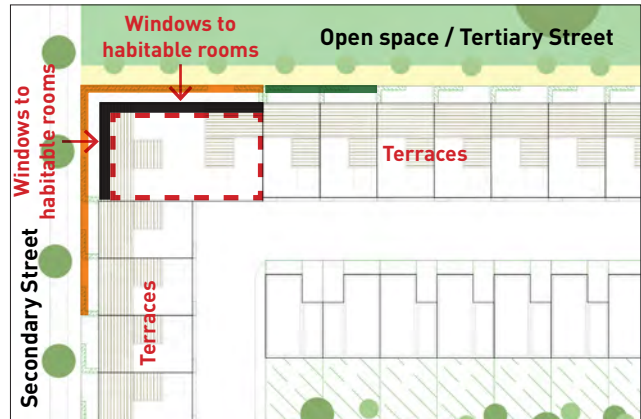


Figure 5.26

- Corner frontage
- - - Corner building
- Boundary typologies

- Where terraces meet at a corner to enclose the perimeter of a block (as illustrated in Figure 5.26 above), the corner dwelling **must** be designed in such a way to complement both sides of the corner
- The corner building **must** have the same set-back (front garden depth) as the dwellings on each side of the corner
- The corner building **must** respond to the specific condition with an adjusted floor plan and **must** have windows to habitable rooms on both sides of the corner (e.g. could be a building split into a few flats rather than one large dwelling)
- The boundary typology used for the corner dwelling **should** continue the typology used alongside the higher ranking street (if different from the one facing the open space/ tertiary street)



Figure 5.27 - Example of corner building (split into flats) that integrates/ complements and continues both frontages in a successful way, even though frontages have different requirements in terms of scale, height, boundary typologies etc

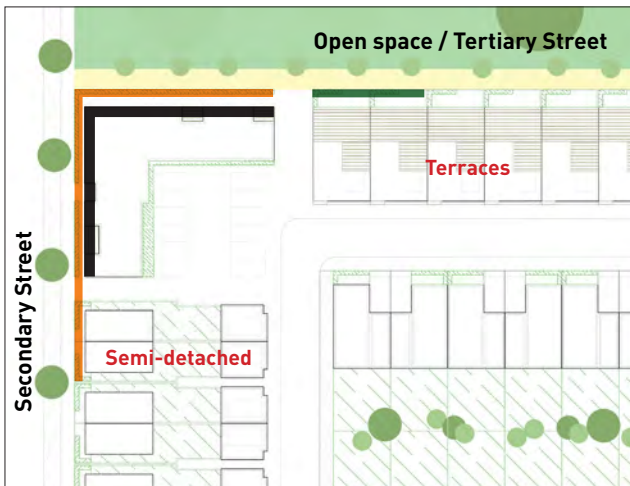


Figure 5.28

- Corner frontage
- Corner building
- Boundary typologies

- Where the two sides of the corner are formed by different dwelling typologies, a small 'L' shaped apartment block could be used to enclose the corner as illustrated in Figure 5.28 above
- Individual locations throughout KP1 will have different requirements in terms of maximum permitted height and the corner apartment building **must** follow these (see Section 5.5)
- The corner building **must** have the same set-back (front garden depth) as the dwellings on each side of the corner
- The boundary typology used for the corner dwelling **should** continue the typology used alongside the higher-ranking street (if different from the one facing the open space/ tertiary street)
- Distances between the corner building the rest of the dwellings along each frontage **must** take into consideration the design rules and rhythm of each frontage type. For example, on the side continuing a semi-detached row, the gap between the last house and the corner building **must** be the same if compliant with building regulations
- If a corner building next to a row of dwellings is separated from the row of dwellings, then the distance between them **should** be min. 3m to max. 7m from the end of terrace. The corner building **must** have complementary architectural features and materials with the rest of the row of dwellings
- Floor levels and facades **should** be coordinated across the different dwelling typologies and the corner building

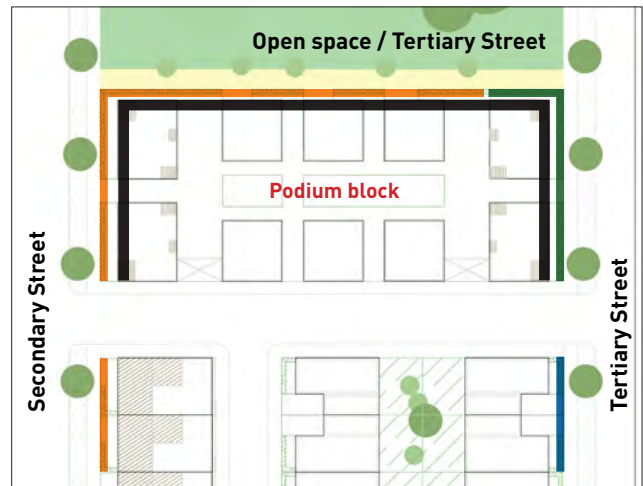


Figure 5.29

- A corner condition can also be resolved through a podium block which **should** integrate both apartments and maisonettes as illustrated in Figure 5.29 above
- The building line of the podium building **must** follow the same alignment as the other houses along the street i.e. have the same set-back from the street and front gardens depths
- The boundary typology used around the podium **should** continue the typology used alongside the higher-ranking street (if different from the one facing the open space/ tertiary street)



Figure 5.30 - Example of a podium building that integrates both flats and maisonettes, with a consistent and complementary architectural approach. Each side has slightly different requirements in terms of boundary typologies at the ground floor, street activation and privacy, but the building creates a consistent rhythm and uses the same materials. The corner is expressed through a slightly increased height

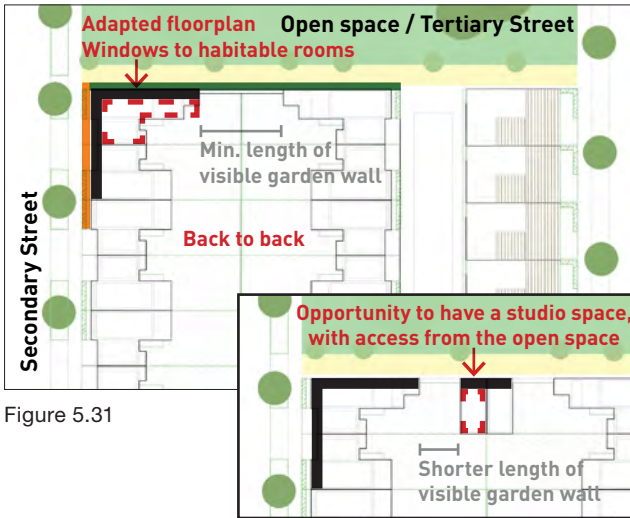


Figure 5.31

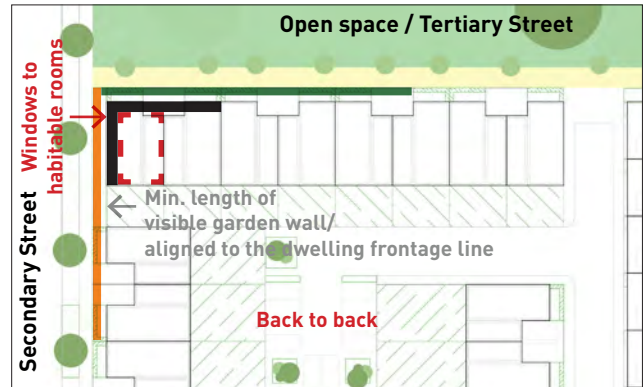


Figure 5.33

- Corner frontage
- Corner building
- Boundary typologies

- When a back to back block is used (as illustrated in Figure 5.31 above), the dwellings at the end of the block become corner buildings and they **must** have an adjusted floorplan so they provide as much frontage as possible on both sides of the corner
- Any visible garden walls **must** be kept to a minimum length, as illustrated in Figure 5.31 above and **must** be a brick, 1.8m high wall, complementing the building facade
- The boundary typology used for the corner dwelling **should** continue the typology used alongside the higher-ranking street or, as a minimum, use a 1.5m planted zone in front of the side frontage and garden wall
- This block typology presents the opportunity to have a larger corner dwelling with a studio/ small office at the back, with a separate entrance from the open space/ tertiary street

- When a back to back block is used and the last row is turned to face the open space/ tertiary street (as illustrated in Figure 5.33 above), the dwelling at the end of the row becomes the corner building and they **must** have an adjusted floorplan so they provide as much frontage as possible on both sides of the corner
- Any visible garden walls **must** be kept to a minimum length, as illustrated in Figure 5.33 above and **must** be a brick, 1.8m high wall
- The boundary typology used for the corner dwelling **should** continue the typology used alongside the higher-ranking street or, as a minimum, use a 1.5m planted zone in front of the side frontage and garden wall

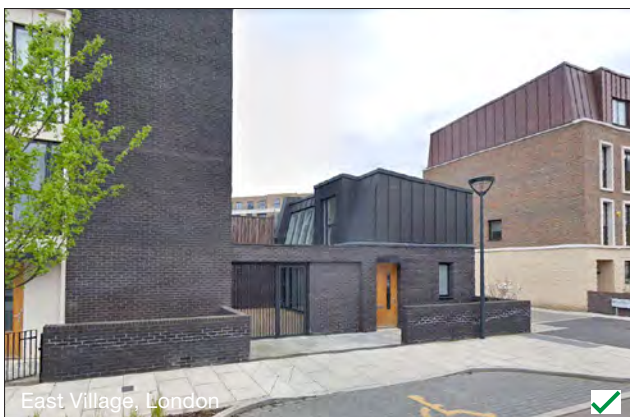


Figure 5.32 - Example of a corner dwelling that has a studio in the back garden with a separate entrance

**5.8.7 Parcel permeability**

- Pedestrian and cycle routes through the parcels **must** be interconnected and not lead to dead-end areas
- Where vehicular routes reach a terminating space, pedestrian and cycle routes **should** continue beyond that space
- Cross-parcel permeability links are indicatively shown on the Regulatory Plan and these **must** be coordinated with neighbouring parcels at Reserved Matters stage to ensure the links are continuous and lead to local destinations across KP1
- The opportunity to locate any required play areas along these links **should** be explored

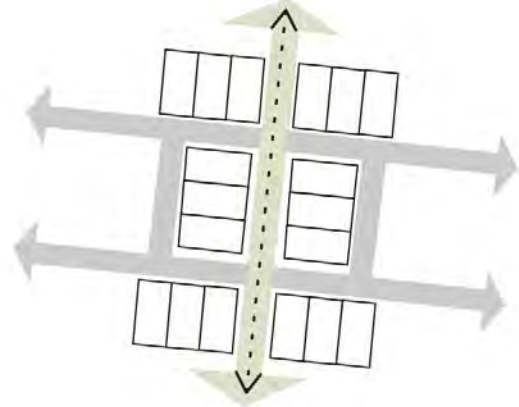


Figure 5.34

**5.8.8 Visual stops**

- Where linear spaces or routes establish a vista, that vista **should** either end in an open space/ landscape feature or be terminated by a ‘visual stop’ such as a key corner or key building
- A ‘visual stop’ **should** be created by a carefully positioned and appropriately designed key building or landscape feature

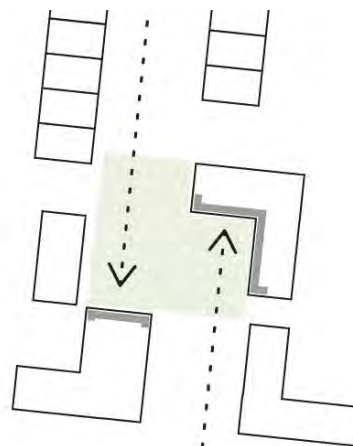


Figure 5.35

**5.8.9 Privacy**

- Distances between habitable rooms **should** be at least 18m. Where the plot is constrained, the distance can be reduced provided that the design demonstrates an appropriate level of privacy through design solutions which can include having habitable rooms windows on side facades, provision of screens, angled windows or careful placing and sizing of windows to reduce overlooking and providing that any gardens and amenity space does not feel overwhelmed by the massing of buildings around them

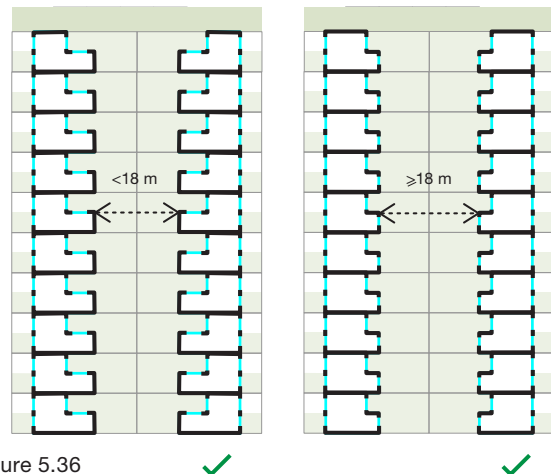


Figure 5.36



**5.8.10 Intersections**

- At crossroad intersections all four corners **must** be defined by built form
- At crossroads, front doors **should** generally be facing the higher ranking street
- Buildings that terminate vistas and at the end of a T junction **should** be carefully designed to address this condition as they become ‘visual stops’ as defined above in Section 5.8.8
- Rules set out above in Section 5.8.6 Corner conditions **must** also be followed
- Intersections **should** be designed as spaces and place-making principles **should** be applied when considering frontages, materials, landscape, lighting, public art etc.

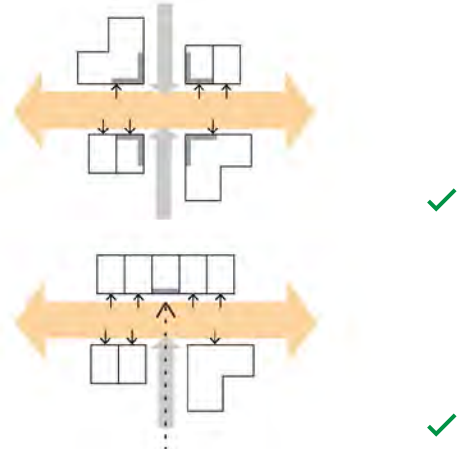


Figure 5.37

**5.8.11 Massing and sunlight**

- The massing of residential buildings **must** allow good light penetration to all units/ habitable rooms and minimise overshadowing
- Building designs **must** promote sunlight in courtyard spaces. Light and views for the individual residential units and communal amenity space **should** be maximised
- All buildings **should** maximise potential for roof pitches to face south, to allow for solar/ PV panels to be integrated in the design

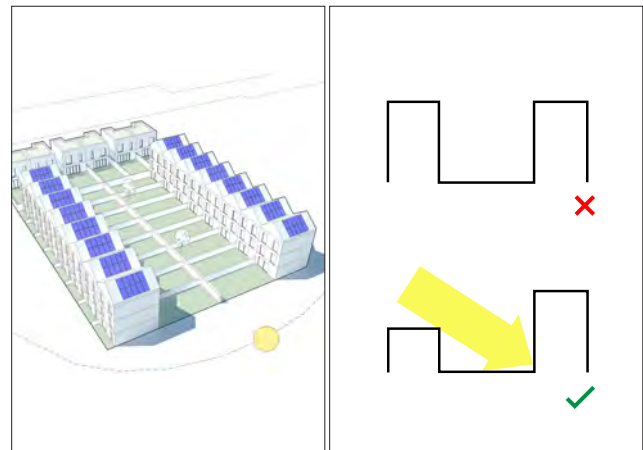


Figure 5.38

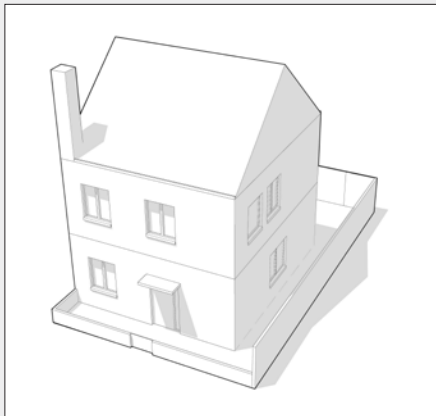
## 5.9 Dwelling typologies

The section below sets out the main dwelling typologies appropriate for the KP1 development at Waterbeach.

The Frontage Character and Key Groupings sections describe all permitted typologies within each frontage and grouping. In addition to these, innovative typologies which comply with the design codes set out in this document can be submitted for approval.

**Figure 5.39: Dwelling typologies**

### Detached



#### Detached house

- Detached dwelling
- The ridge line can be parallel or perpendicular to the principal frontage (if roof is pitched)
- Private amenity space is in the form of a back garden, as well as terraces in some cases

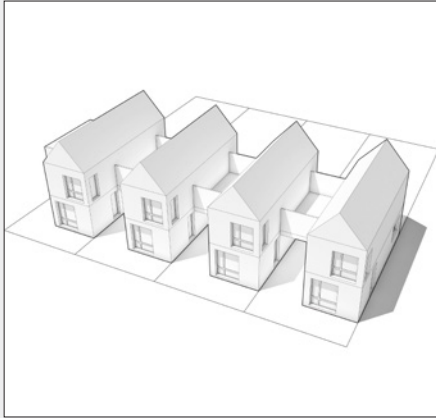


#### Detached villa

- Detached dwelling
- The principal frontage width is greater than the depth of the building
- The principal frontage is no less than 8m wide
- The ridge line is perpendicular to the principle frontage (if roof is pitched)
- Private amenity space is in the form of a garden, as well as terraces in some cases



Figure 5.39 (cont.): Dwelling typologies



**Detached linked**

- The principal frontage widths are less than the depth of the primary building forms
- The principal frontages are generally less than 8m wide
- The buildings are linked with garages or other covered parking areas, which are set back at least 1m from the main building form
- If the building has a pitched roof, the gable end is facing the principal frontage, e.g. the street or the open space
- When on continuous frontage, dwelling type should have a continuous element at ground floor as a minimum
- The flat roofed garages should have green roofs, brown roofs or provide amenity areas

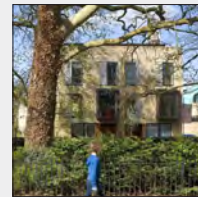


**Semi-detached**



**Semi-detached**

- Semi-detached house designed as a pair
- Narrow frontage where the principal frontage is less than the depth of the primary building form
- Private amenity space is in the form of a garden, as well as terraces in some cases



**Semi-detached - linked**

- Semi-detached house designed as a pair
- The buildings are linked with garages or other covered parking areas, which are set back at least 1m from the main building form
- Pair of buildings may be connected to the next pair with garages with or within terraces above
- The flat roofed garages should have green roofs, brown roofs or provide amenity areas

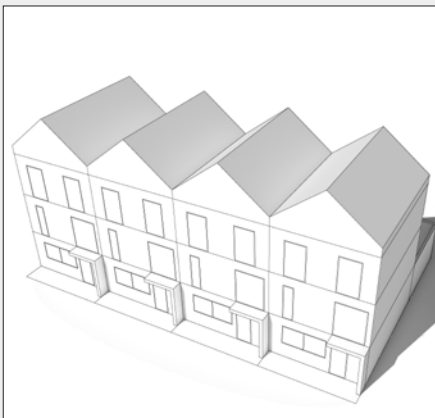


Figure 5.39 (cont.): Dwelling typologies

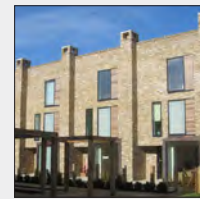
## Terraced

**Terraced - stepped roof line**

- The mass of the secondary building form is less than 50% of the primary building forms
- When the secondary building form includes a garage, the frontage of the dwelling is no less than 6m wide
- Private amenity space is in the form of a garden, as well as terraces in some cases
- Terraced dwellings groupings should be a min of 4 units

**Terraced - narrow frontage**

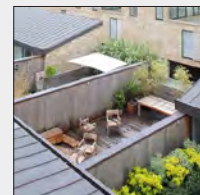
- The principal frontage widths are less than the depth of the primary building forms
- The principal frontages are less than 8m wide
- If the building has a pitched roof, the gable end is facing the principal frontage, e.g. the higher primacy street or the open space
- Private amenity space is in the form of a garden, as well as terraces in some cases
- Terraced dwellings groupings should be a min of 4 units

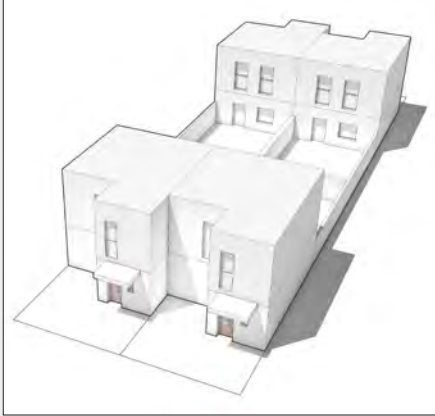


## Urban Typologies

**Courtyard house**

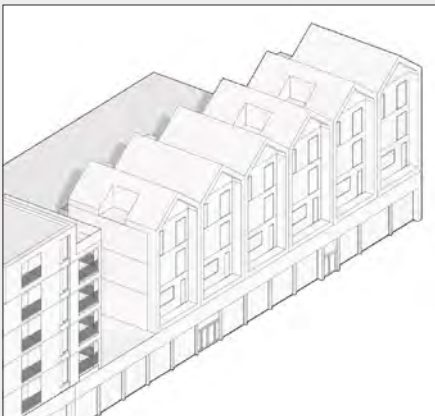
- The principal frontage widths are less than the depth of the primary building forms
- The principal frontages are less than 8m wide
- Secondary building form creates a double fronting house, where access to the dwelling is possible from both sides
- Private amenity space is in the form of a courtyard space





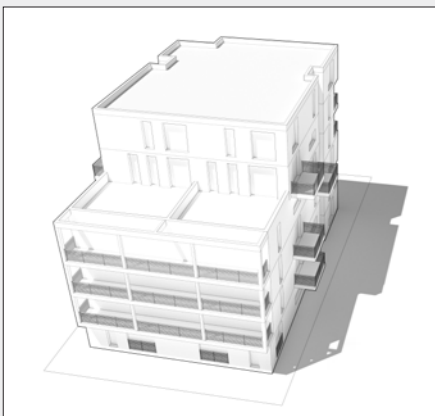
**Back to back**

- Two houses designed as a pair, potentially with a smaller home above garages at the frontage with less primacy
- The building pair is designed to address two frontages
- Private amenity space is in the form of smaller courtyard gardens between the houses



**Integrated town houses/maisonettes**

- Ground floors are part of the podium structure
- The principal frontage widths are less than the depth of the primary building forms
- The principal frontages are less than 8m wide
- If the building has a pitched roof, the gable end is facing the principal frontage, e.g. the higher primacy street or the open space
- Private amenity space is in the form of a garden at the back, above podium level



**Mixed use apartment block**

- The block is at least 3 storeys in height with a depth of no more than 16m
- Mixed uses may be provided at ground level
- Can include recessed top floors

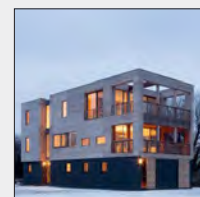
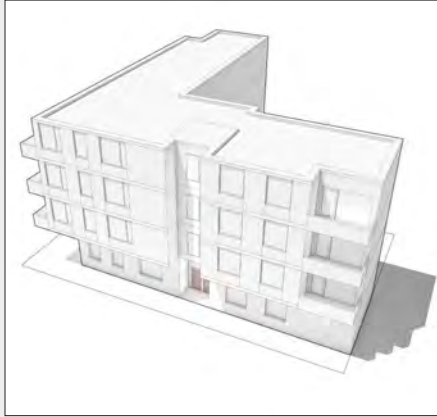
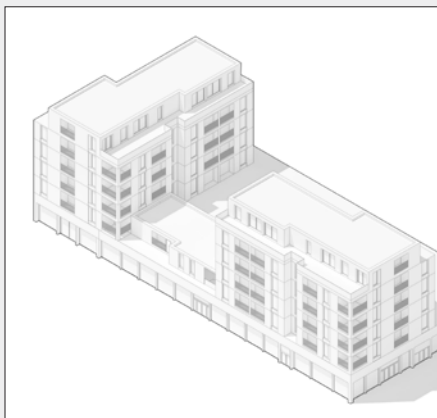


Figure 5.39 (cont.): Dwelling typologies



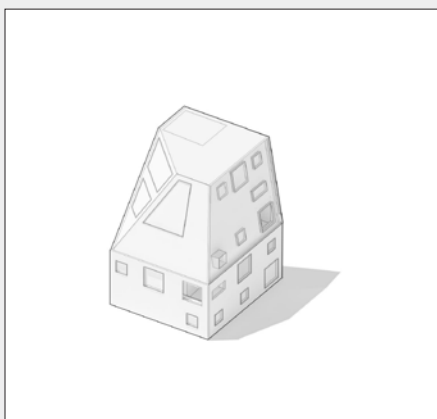
#### Typical apartment block

- The block is at least 3 storeys in height with a depth of no more than 14m
- Can include recessed top floors



#### Podium apartment block

- The block is at least 3 storeys in height (including ground floor) with a residential floor plate depth of no more than 16m, unless a central core block
- Mixed uses may be provided at ground level
- Can include recessed top floors



#### Small apartment block

- The block is at least 3 storeys in height (including ground floor) with a residential floor plate depth of no more than 16m, unless a central core block
- Mixed uses may be provided at ground level
- Should be used for terminating terraced building frontages



## 5.10 Boundary typologies

This section relates to front, side and rear dwelling boundaries as well as mixed-use buildings, where required by the land use distribution in the Regulatory Plan.

Plot boundaries **must** extend to the back of the public realm, as set out in the Regulatory Plan.

Section 3 should be referenced where front gardens need to accommodate privately maintained access streets, refuse bins, cycle and car parking.

Public open spaces boundaries, where needed, are described in Section 4 (Landscape and public realm design) of this document. Section 4 should also be referenced for types of shrubs, hedges and soft-landscaping.

The diagram below illustrates the different types of boundaries that are referred to in this section. These types can be used with any dwelling type as long as they comply to the specific codes set out in this document.

The following pages set out a range of typologies that can be used but **must** comply with the design rules set out in Chapter 5.6 Frontage Character (1a).

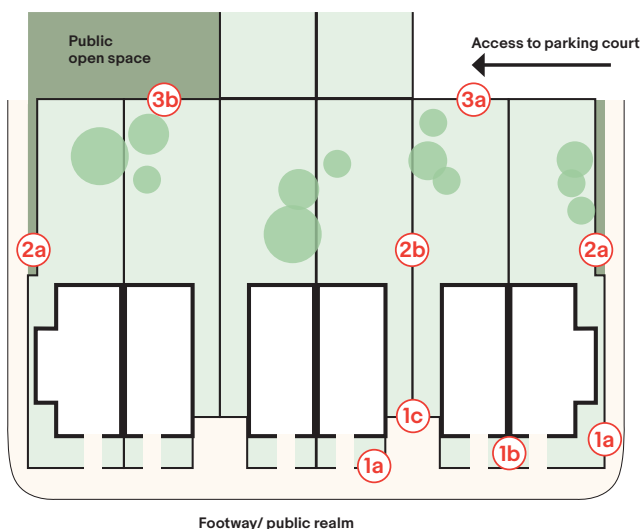


Figure 5.40: Plan diagram showing the different type of boundaries

In addition to the specific codes for each type, the following also apply:

### 1a Front boundary addressing public realm

The front boundaries addressing public realm are key in establishing the character of the frontage and consistency along the street front **must** be achieved.

- Timber, close-board fencing and high solid walls (more than 1.5m) **must not** be used
- Gates for pedestrian or vehicular access **must** be designed in an integrated manner with the suitable adjoining front boundary treatment, where applicable
- All walls and railings **should** be stepped to match slope/ gradient. Stepping **should** take place either at the end of the building group or consistently at the end of every unit in that group. If gradients are modest and localised (less than 1:40) the top of the boundary **should** stay at the same level
- Property boundaries close to junctions **must** be carefully considered so that required visibility splays are kept clear

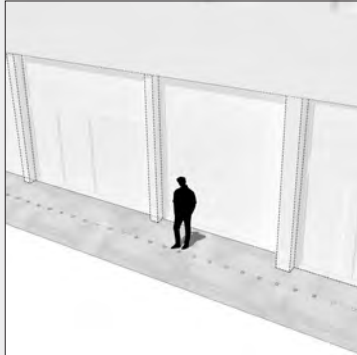
### 1b Front boundary to demarcate property line

- Front boundaries that demarcate property lines **must** be of the same type or complement the front boundaries materials (1a) addressing the public realm within the same plot
- Timber, close-board fencing and high solid walls (more than 1.5m) **must not** be used for front boundaries, including corner conditions

### 1c Front boundary as a linking element between dwellings

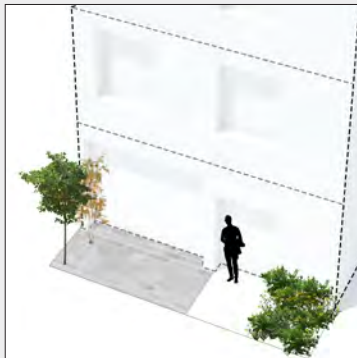
- Front boundaries that link dwellings **must** be of the same type or complement the front boundaries materials (1a) addressing the public realm within the same plot
- In locations where dwellings do not front on to the perimeter of the development parcel (i.e. are not part of any frontage types) close board fencing could be used as a linking element between two dwellings but **must** be set back from the face wall of the dwelling by a min. of 1m
- Gates for pedestrian or vehicular access **must** be designed in an integrated manner with the suitable adjoining front boundary treatment

Figure 5.41: Front boundary addressing public realm typology 1a



**Continuous ground plane (for commercial/retail ground floors)**

- The materials **must** match the public realm materials to achieve visual continuity
- If necessary, property demarcation **must** be done in a discreet way e.g. using non-slip metal studs



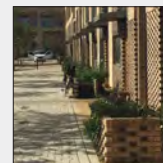
**Continuous ground plane (for residential)**

- **Should** be used where a less formal relationship between the dwelling and its surrounding is appropriate
- Soft landscape **must** be provided, such as low evergreen shrubs



**Planted front garden with side wall**

- Side walls height **must** be max. 60 cm with the exception of where services and bin/ bike storage are integrated
- Soft landscape **must** be provided, such as low evergreen shrubs
- Walls **must** be designed so that no footings or foundations encroach the adoped public highways



**Low wall (with or without an ornamental hedge)**

- The height of the wall **must** be max. 60 cm with the exception of where services and bin/ bike storage are integrated
- Total height **must** be max. 1.2m
- **Must** complement the dwelling, including bonding and mortar details, where applicable
- Walls **must** be designed so that no footings or foundations encroach the adoped public highways
- The hedge **must** be of continuous species
- **Should** contain additional soft-landscaping





Figure 5.41 (cont.): Front boundary addressing public realm typology 1a



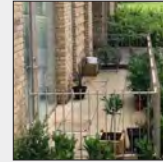
**Railing on a low wall**

- Wall height **must** min. 1/3 of the total height
- Total height **must** max. 1.2m
- The brick **must** match the dwelling, including bonding and mortar details, where applicable
- The railing **must** be painted black/grey metal with gates to match, where applicable
- **Should** contain additional soft-landscaping, such as low evergreen shrubs
- Walls and railings **must** be designed so that no footings or foundations encroach the adopted public highways



**Railing and ornamental hedge**

- Total height **must** be max. 1.2m
- The railing **must** be black/grey painted metal with gates to match, where applicable
- The hedge **must** be clipped and of continuous species
- **Should** contain additional soft-landscaping, such as low evergreen shrubs
- Railings **must** be designed so that no footings or foundations encroach the adopted public highways



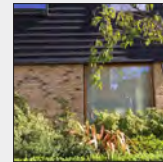
**Ornamental hedge**

- Total height **must** be min. 60 cm
- The hedge **must** be of continuous species and can have a steel mesh fence behind, where required
- **Should** contain additional soft-landscaping, such as low evergreen shrubs
- Hedges **must** not encroach the adopted public highways



**Planted zone**

- **Should** contain medium height ever-green shrub planting
- Hedges **must** not encroach the adopted public highways



**2a Side boundary facing public realm**

- Side boundaries which address a street, public realm or mews **must** be constructed out of brick to provide continuity with the main built form. The wall **must not** be more than 2.1m high and the brick **must** match the dwelling, including bonding and mortar details. Coping stones or tile creasing or a 'brick on edge' is considered appropriate. Walls **must** be of a consistent height. Brick boundary walls **must** be stepped, if on a slope. There **must** also be a min 1m wide green area adjoining the wall to allow for hedge rows for the avoidance of blank walls
- When apartment buildings form a side boundary with an elevation, that side elevation **should** be designed as an elevation rather than be considered a side boundary
- Gates for pedestrian or vehicular access **must** be coordinated with the suitable adjoining side boundary treatment
- Side boundaries **should** contain hedgehog gaps to allow for habitat movement
- Property boundaries close to junctions **must** be carefully considered so that required visibility splays are kept clear

**2b Side boundary between dwellings and rear boundary between gardens**

- Timber fencing or brick walls **should** be used alongside boundaries between gardens. This must not be more than 1.8m high. If made out of timber, this **should** be stained using a sustainable treatment. If made out of brick, it **should** match the dwellings, including bonding and mortar details
- Where rear boundaries separate back gardens, these **must** be treated in a similar way as side boundaries
- Where there is a slope, they **must** be stepped to match the slope profile
- Side and rear boundaries **should** contain hedgehog gaps to allow for habitat movement



Figure 5.42: The consistent use of a low wall and hedge creates a clear, orderly character of street front



Figure 5.43: The plot boundary is poorly defined and invites clutter (lack of clarity in how the space should be used)



Figure 5.44: Side boundaries with a blank wall as not sufficient greenery was planted

### 3a Rear boundary facing courtyards and/or parking courts

- Rear boundaries facing parking courts **must** be made from brick walls which **should** be between 1.8 - 2.1m high. Their brick colour and detailing **must** be consistent towards the parking court
- When a brick wall changes direction, there **must not** be any dog tooth joining
- Where there is a slope, they **must** be stepped to match the slope profile
- There **must** also be a min 1m wide green area adjoining the wall to allow for hedge rows for the avoidance of blank walls
- Where there is rear access to multiple rear gardens this access **must** be gated at the front of the building line and with a self-closing spring and a snap shut lock, that needs a key to release
- Gates for pedestrian or vehicular access **must** be coordinated with the suitable adjoining rear boundary treatment
- Rear boundaries **should** contain hedgehog gaps to allow for habitat movement
- Property boundaries close to junctions **must** be carefully considered so that required visibility splays are kept clear

### 3b Rear boundary facing public open space

- This type of boundaries **should not** be generally used unless in justified exceptional circumstances. In these cases, the boundary treatment **must** benefit from a generous planting area of min 1.5m depth, adjoining the the wall, to allow for hedge rows and/or generous planting and avoid blank walls
- Rear boundaries facing public open spaces **must** be made from brick walls which **should** be between 1.8 - 2.1m high. Their brick colour and detailing **must** be consistent towards the open space/ parking court
- Where rear boundaries face less formal public open spaces or wherever appropriate, they **should** be defined by hedges rows (with a steel mesh fence behind, where required) and timber or steel gates
- Where there is a slope, they **must** be stepped to match the slope profile



Figure 5.45: The use of a planted zone to define the front garden creates a sense of privacy for the individual dwelling



Figure 5.46: The use of a low hedge and a timber gate for rear boundaries of dwellings which face less formal public open space (3c)

- When a brick wall changes direction, there **must not** be any dog tooth joining
- Where there is rear access to multiple rear gardens this access **must** be gated at the front of the building line and with a self-closing spring and a snap shut lock, that needs a key to release
- Property boundaries close to junctions **must** be carefully considered so that required visibility splays are kept clear
- Gates for pedestrian or vehicular access **must** be coordinated with the suitable adjoining rear boundary treatment
- Rear boundaries **should** contain hedgehog gaps to allow for habitat movement

## 5.11 Private amenity space

All dwellings **must** have direct access to private amenity space and **should** consider the South Cambridgeshire District Design Guide. Private amenity spaces can take the form of private gardens, communal gardens, terraces, roof terraces or balconies and their suitability **should** be considered based on 'performance' standards, not set dimensions/ areas.

Homes with 3 or more bedrooms **must** have gardens capable of comfortably accommodating outdoor seating for the family, space for children's play and planting beds. Where areas for covered bin and bike storages are needed they **must** be in addition to the areas mentioned above.

Smaller dwelling typologies of 2 or 3 bedrooms **must** have enough private amenity to accommodate activities of a couple or a small family.

Courtyards and upper level terraces **should** be considered to contribute towards the requirements of private amenity space.

Where apartment blocks are provided with less amenity space which is directly accessible from the dwelling, the communal gardens, private to the block **should** be considered to make up the shortfall.

Private gardens **should**:

- Be of a size and shape to allow effective use for the number of people the property is designed for, for growing plants or vegetables, for general amenity, for play and be orientated to allow sunlight into each garden
- Incorporate a private sitting out area positioned close to internal living accommodation
- Incorporate means of enclosure that do not undermine the quality of adjoining, especially communal, spaces; whilst avoiding excessive wall or fence heights, which could overshadow small gardens and discourage interaction between neighbours
- Feel safe and secure
- Enable flexibility of use and personalisation

Communal gardens including podium/roof terraces **should**:

- Be convenient to use
- Be clearly distinguished from the public realm
- Not be bisected by vehicular routes to parking courts
- Feel safe and secure
- Not unduly affect the privacy of residents' internal accommodation, particularly those at the same level as the communal space, or below in the case of roof terraces
- Be designed with appropriate planting and hard surfacing areas and places for sitting and socialising

Balconies **should**:

- Benefit from sunshine and good microclimate
- Be well relation to internal accommodation
- Be of sufficient size as to permit outside sitting/dining
- Be secure and relatively private
- Be placed on the quiet side of the building where possible
- Relate well to the architecture of the building on which they are places

## 5.12 Building materials

The section below sets out a matrix of site-wide permitted materials covering walls, roofs, windows and balconies. All proposals **must** demonstrate adherence to the material application principles described here, unless otherwise specified.

All buildings **must** be made from well-detailed, high-quality materials that are durable and age well. The materials **should** also be locally sourced and have low embedded energy. Other materials may be appropriate and **should** be considered for approval, especially for non-residential building, or where proposed to make key buildings more distinctive.

### Material application principles

#### General:

- All buildings (except key buildings) **must** demonstrate consistency in material selection and usage, utilising materials from the materials matrix set out on the following pages
- Any proposals that use materials that are not part of the matrix, **must** justify the choice by proving betterment
- Proposals that cover more than one parcel **must** demonstrate a carefully considered transition between different material palettes
- All proposals **must** demonstrate consistency of material selection and use for buildings on both sides of the streets, either where a street passes through the parcel itself, or where the parcel faces another completed and/or consented plot
- Key Groupings and Town Centre buildings **must** demonstrate a uniqueness from other areas outside the Key Groupings & Town Centre by an enhanced material palette and/or accent material components

#### Walls:

- No more than two materials **must** be used across walls of any given dwelling or block and where this includes coloured render, only one colour **must** be used
- Generally only one brick colour **should** be used on any building, except where a contrasting brick is used as a plinth level to demarcate the ground floor use
- Brickwork **should** include features such as brick arches, string courses, decorative bonds, patterns and textures to create variety and interest. These **must** be simple and match the main brick colour
- The colour of the mortar **must** complement the colour of the brick that is used
- Stone or pre-cast features such as sills, copings and thresholds **should** be used

- Rendered walls **should** use muted, subtle colours, from a light colour palette (such as whites and off-whites)

#### Roofs:

- Pitched roofs **must** use high quality coverings
- Flat roofs **should** be 'green' or 'brown' planted with seeded coverings or used as roof terraces
- Roof verges **must** be mortar bedded
- Flashings **must** not be PVC based
- Rainwater goods, coping and trims **must not** detract from the overall composition of the building elevation or street elevation

#### Balconies/ railings and metal panels:

- All **must** be powder coated steel in colours that complement the wall and roof materials
- Steel panels for balconies **should** use perforated patterns or rods and **must** be powder coated
- Balconies **should** be inset, half-inset or cantilevered. Hung or stacked balconies (balconies on pillars) **must** be avoided

#### Windows and doors:

- All **must** be powder coated aluminium, aluminium, timber, composite timber, UPVC (not white or light colours) and their colours **must** be neutral and **must** complement the wall colour
- UPVC doors/windows and rainwater goods **must not** be used in key spaces, including the Town Centre, areas identified as Key Groupings in Reg Plan and key frontages overlooking public open spaces
- When more traditional detailing is implemented, window reveals **must** be at least one brick width deep to create a sense of depth on the facade, but flush detailing is also permitted where a more contemporary design is required
- Window frame sections **should** be as slender as possible, false glazing bars **must** be avoided
- Top hung mock sash windows **must** be avoided
- Front doors for houses **should** be composite timber, hardwood or other fine grained timber in a range of complementing colours and natural finishes
- Garage doors and frames **should** be of a material that ages well which **must** complement the windows and doors as well as the overall aesthetic of the facade
- Front door for residential lobbies in apartment blocks **should** be systematised PPC steel and glass assemblies or similar alternatives, but not made from PVC

Figure 5.47: Predominant Materials Matrix

**1. Wall Materials**



Brick - buff multi



Brick - buff



Brick - red



Brick - red multi



Brick - dark colours



Engineering bricks



Render



Timber weatherboard



Timber shingles



Glazed curtain walls

**2. Roof Materials**



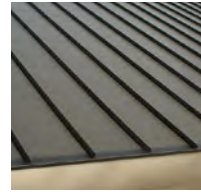
Plain clay tiles



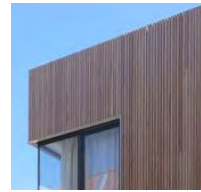
Clay pantiles



Natural or reconstituted slate



Black powder coated aluminium



Flat roofs set behind parapet

**3. Balcony Materials**



Natural timber slats



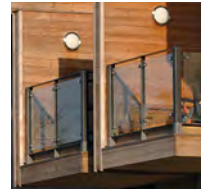
Powder coated/painted steel



Sheet metal panels

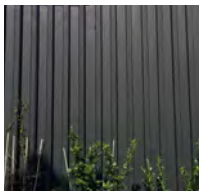


Powder coated aluminium cladding



Dark colour metal with glass panels

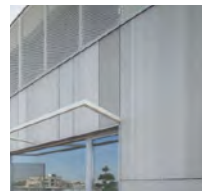
**Accent Materials Matrix**



Black timber cladding



Natural timber cladding



Aluminium cladding



Natural stone cladding



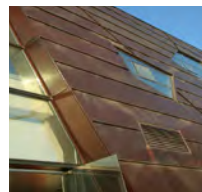
Flint



Clay tiles



Corten steel



Copper cladding



Black powder coated aluminium



Flat or slanted green/ brown roofs

Figure 5.48: Examples of how materials should be used



Principal material take through the entire building and through a group of houses



Complementary colours and materials which create variety



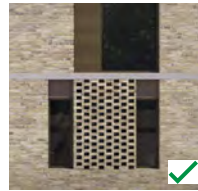
Using the same material for roofs and walls to express the geometry of the building



Full brick window reveals give a sense of depth



Brick detailing adds texture and interest



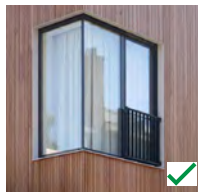
Brick detailing helps define openings



Different materials are used to demarcate different uses/ parts of the building



Windows frames and balcony railings used as accent material



Recessed corner window with a slender frame



Use of material and detailing to create legible entrances

Figure 5.49: Examples of how materials must not be used



Unnecessary use of too many materials



Lack of consistency in use of material and detailing within the same building



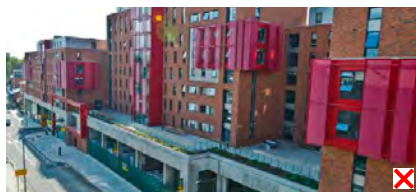
Pastiche elements that contradict the building geometry



Small window reveals create a monotonous, long facade



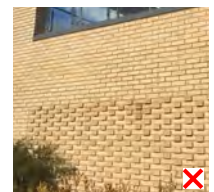
Different materials and types of detailing



Accent material does not complement the main material



Contrasting, thick window frame sections



Too shallow brick projections/ awkward location

## 5.13 Building details

All buildings must be carefully detailed to create clean and uncluttered elevations which respond to the public realm.

### Doors and entrances

- All front doors **should** be recessed to a min. of 75cm from the brick/finished face of the main elevation to provide shelter. If a recessed area is not provided, a simple canopy which complements the facade **must** be integrated in the overall design (see porches below)
- If the doors do not contain any glazed aperture, then this **should** be incorporated elsewhere within the main threshold to the house
- All garage doors **should** be designed as part of the main elevation and sit in line or be recessed from the brick/finished face of the elevation
- Porches **must** have either flat or pitched roofs, but when used **must** also be used consistently along a terrace or pair of semi detached dwellings
- Porches **must** be sufficiently deep to provide shelter, min. depth 1.2m
- Pitched-roof porches **must** match the materials used on the roof of the building
- Porches can be formed by a recessed entrance within the primary elevation
- Porches **must not** dominate the building

### Roofs

- Roofs **must** be designed in consideration of the frontage character there are part of
- Photovoltaic panels **must** be designed into the elevation to read coherently with the building elevation and form
- Green roofs **should** be used
- Flat roofs **must** be concealed behind a parapet, or the depth of fascia and profile of the leading edge carefully detailed
- Pitched roofs **must** be of a consistent angle along the same type of frontage or key groupings of buildings
- Roof pitches **should** be between 37.5 and 52 degrees, except apartment buildings which may show a pitch lower than 37.5 degrees



Figure 5.50: High quality, robust doors and windows must be used



Figure 5.51: No uPVC doors permitted on primary entrances



Figure 5.52: Porch designed as integral to the elevation which provides sufficient shelter



Figure 5.53: Porch materials do not match the materials used on the building



Figure 5.54: Flat roofs should have a sufficiently high parapet to hide the photovoltaic panels



Figure 5.55: Photovoltaic panels must be designed into the elevation



Figure 5.56: Dormer windows and inconsistent roof pitches



Figure 5.57: Ridge and hip tiles must not be disproportionately large



**Facade elements**

- Chimneys and vents **must** match the primary elevation material
- Chimneys **must** be placed symmetrically to the ridge-line
- Chimneys on end elevations **should** reach the ground
- Lead, zinc and metal **should** be used
- GRP canopies **must not** be used
- Eaves **must** be clipped/pared or use a shallow depth black fascia/barge board
- If brick is used, the detailing **must** be simple and in the same brick colour as the building
- When black timber cladding is used, all the other architectural materials **must** be coloured to match
- There **must not** be a mix of both hips and gables on any single building
- UPVC or boxed eaves **must not** be used
- Rainwater goods **must not** detract from the overall composition of the building elevation or street elevation
- Rainwater goods including guttering and rainwater pipes **must** be zinc, black in colour, or a brushed metal finish matching the primary window colours
- Rainwater goods **must not** be white
- Rainwater downpipes **should not** dominate the composition of the elevation

**Windows**

- Colour, thickness of frame, quality and design of windows **must** be consistent on all elevations of a building
- White UPVC window frame **must not** be used
- Dormer and bay windows **must** be integral to the main facade in terms of design and positioning
- Dormer and bay windows **must** maintain overall vertical proportions
- Dormers and bay windows **must** use a consistent pitch and material to that of the main roof
- Flat roof dormers and bay windows **should** use standing seam lead, zinc or copper



Figure 5.58: Chimneys match the primary elevation material



Figure 5.59: Chimneys should be positioned symmetrically to ridge



Figure 5.60: Brick detail is simple and the same colour as the facade



Figure 5.61: Boxed eaves are not permitted

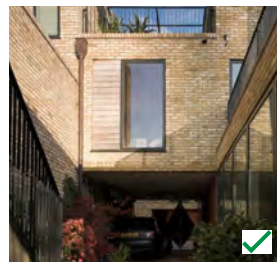


Figure 5.62: Rainwater goods integrated into the overall elevation



Figure 5.63: Rainwater pipes dominating the elevation



Figure 5.64: Consistent window treatment across elevation

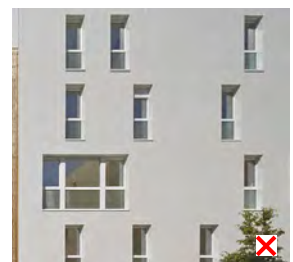


Figure 5.65: Inconsistent frame and design of windows

## 5.14 Architectural principles for residential built form

### 1. Recognisable form and authenticity

- The form and character of all buildings **must** be well integrated in the setting they are located in, in relation to density and height, throughout KP1
- All proposals **must** use appropriate and recognisable forms that relate to their use
- Buildings **must** utilise simple forms and massing both individually and within a larger group
- Buildings **must** be carefully detailed to create clean and uncluttered elevations that positively contribute to place making and create a sense of robustness and permanence
- Architectural expression **must** be reflective of its time; a more contemporary building expression is preferred, but traditional forms may be acceptable in some areas as long as the material treatment and architectural form avoid pastiche



Figure 5.66: Slight variation of the building form provides interest and identity while still consistent with the overall appearance of the buildings as a group



Figure 5.67: Buildings should use simple forms and be recognisable both as a group and individually



Figure 5.68: Example of carefully detailed building that create a clean and uncluttered elevation

### 2. Uniformity

- All proposals **must** demonstrate coherence of massing, roofscape and material use, particularly along the same type of frontage and/or parcel perimeter
- Buildings **must** achieve a repeated and consistent rhythm of elevations within the same type and/or front. This **should** be achieved through roofscapes, gaps between buildings, pop-out or recessed elements such as balconies, opening sizes (while keeping a careful and considered proportion and composition), material palette and colour palette
- Instances where frontages along the parcel perimeter are treated as a 'shop-front' for different house typologies will not be permitted and **must** be avoided



Figure 5.69



Figure 5.70: Different typologies (different heights, roofscape, location of front door, architectural expression) used next to another in the same frontage

### 3. Individuality

- Buildings that form part of a terrace or group of buildings **should** express individuality through facade articulation and/or through the use of different but complementary colours/materials as seen in the examples shown opposite



Figure 5.71



Figure 5.72

### 4. Key buildings

- All buildings responding to long distance views, responding to prominent corners and/or framing key views **must** be treated as key buildings - they are marked on the Regulatory Plan
- Key buildings **should** be identifiable as points of reference, through their height and architectural expression and **should** incorporate expressive roof forms, large window/ balcony openings and/or projected bays



Figure 5.73

### 5. Silhouette

- Dwellings **must** create unified and interesting silhouettes through repetitive roof forms within terraced frontages and/or groupings of dwellings

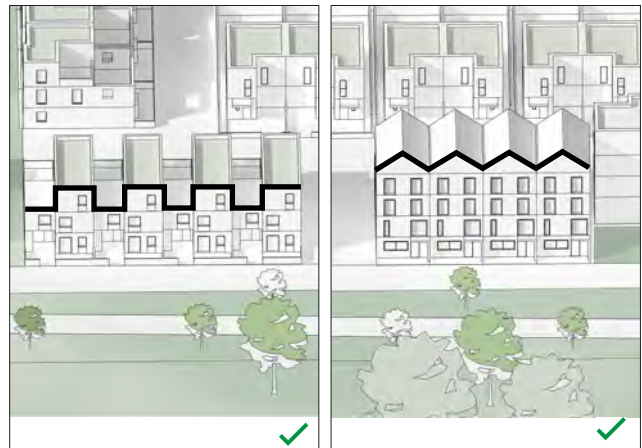


Figure 5.74

## 5.15 Architectural principles for mixed use built form

### Non residential active frontages

- All ground floor non-residential uses **must** have generous building entrances and a high degree of transparency of the facade
- Non-residential uses **must not** have small windows and doors and/or inconspicuous entrances
- If the ground floor is split in multiple different units, the building facade design **must** be consistent

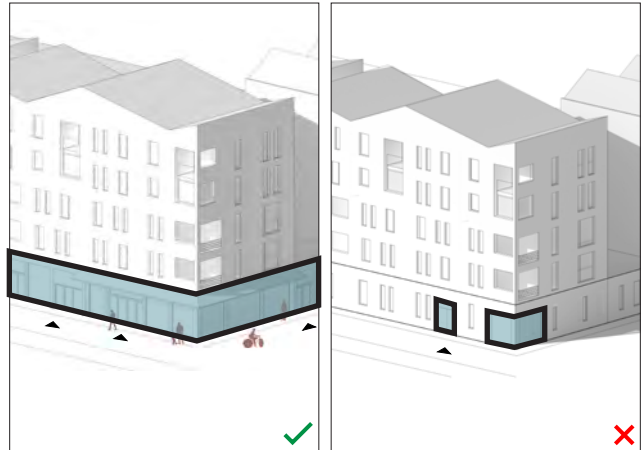


Figure 5.75

### Distinction between uses

- If the ground floor of a building is occupied by non-residential uses, the floor to floor height **must** be at least 4m
- To differentiate between the different uses, a slightly different material colour **should** be used to express the ground floor plinth
- The different uses **must** also be expressed through a clear hierarchy of openings and entrances

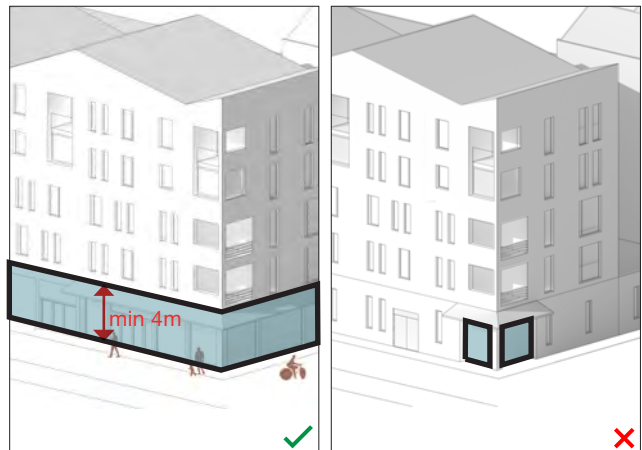


Figure 5.76

### Design coherence between uses

- For mixed use buildings there **must** be design coherence between the uses and how they are expressed through the facade design
- The facades for each use **must** be designed in unison and the building elements and details **must** interrelate over floor levels
- The facades **must not** be designed in isolation and/or introducing a completely different approach or design



Figure 5.77

**Windows and balconies**

- Balconies can be designed as recessed, semi-recessed or projecting, but **must** be fully integrated within the composition of the building and the architectural detail of the facades
- If solar orientation is appropriate, recessed balconies **should** be used towards main/ civic open spaces
- If solar orientation is appropriate, projecting balconies **should** be used towards internal courtyards



Figure 5.78

**Form and materials**

- There **must** be a clear materiality logic on the building facade - material changes **should** be applied to express different uses, different volumes of the buildings or specific built elements

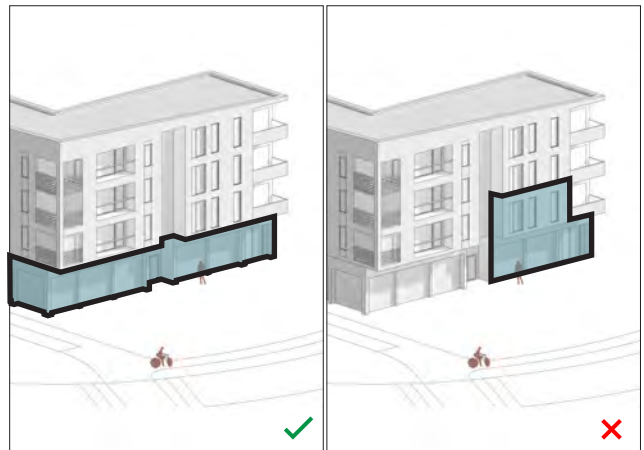


Figure 5.79: Good example - the material change highlights the change in use i.e. residential versus commercial; Poor example - the material change does not take into account the change in use and building mass and is applied on part commercial areas and part residential

**Roof form**

- A varied townscape and roofscape **must** be achieved across KP1
- Roof pitches can vary but **must not** be too shallow
- The roofscape of larger buildings **should** mitigate massing and help create a varied roofscape

## 5.16 Sustainability

### Energy

- Energy performance of buildings **must** be optimised through design principles such as orientation, layout, air tightness, provision of appropriate solar shading, creation of thermal mass, use of proven technologies and encouragement of fabric first design approach
- Low carbon and renewable energy technologies and controls **should** be employed, where appropriate aesthetically, to provide a range of energy conservation and low energy use modes. These **should** include improving the thermal mass of the building as part of the reduction targets for energy use, highly efficient boiler and controls systems, on demand energy provision in the home and the use of low energy use disposable domestic and commercial products such as LED lighting
- Dwelling design **must** deliver greater energy efficiency than min. required by building regulations. These requirements will be described by the performance specification for Fabric Energy Efficiency Standard (FEES) that will be developed by the master-developer and included in the housing briefing packs for each parcel of KP1
- Solar panels/PV **should** be incorporated into the design of buildings. Roofs and pitches **should** maximise the potential for the use of solar panels, where this can be achieved in harmony with the building design by using complementing colours on the roof covering and avoiding retrofitting solar and PV panels
- All non-residential buildings in KP1 **should** target BREEAM 2014 'Excellent'

### Water

- All buildings **should** incorporate water efficiency measures, and opportunities for water re-use and grey water recycling systems **should** be explored
- All commercial plots **must** be delivered with rain water and grey-water recycling technology unless there is a technological reason for being unable to do so
- Each home within the development **must** be delivered with a water meter
- Green and brown roofs **should** be incorporated into the design of buildings, where appropriate



Figure 5.80: Integrated solar shading



Figure 5.81: Thermal mass consideration



Figure 5.82: Solar/PV panels integrated into building design



Figure 5.83: Solar panels detracting from building design



Figure 5.84: Electric car charging points



Figure 5.85: Recycling and refuse space

- Permeable paving **should** be used where appropriate, though it is recognised the existing water table does not lend itself to a high recharge rate

### Waste

- All buildings **must** have adequate space for refuse and recycling facilities within the property boundary, see also Section 5.10
- All homes **must** provide sufficient internal storage to allow for the segregation of recyclable materials and food waste
- Innovative approaches to household waste, storage and collection **should** be explored where appropriate

**Connectivity and transport**

- Reducing people’s reliance on the use of the private car **must** be achieved by providing easy access to daily journeys/ errands via an internal network of attractive, direct, safe and convenient pedestrian and cycle paths
- Virtual mobility **must** be supported as the most sustainable form of travel by delivering high speed internet connections
- Car parking **must** be provided at levels equal to or below SCDC Standards with provision to be design and demand led
- Cycle parking **must** be provided at levels equal to or in excess of SCDC min. cycle standards and includes spaces for cargo bikes, tricycles and tandems
- Electric vehicle charging points **must** be provided to meet the standards set out in the Waterbeach New Town SPD; provision of at least 1EV ‘rapid charge’ point per 10 residential dwellings and/or 1,000sqm of commercial floorspace is required. Where on-site parking is provided for residential dwellings, EV charging points for each parking space **should** be provided

**Green infrastructure**

- Materials **should** be selected to uphold the highest standards of ethical and sustainable procurement, with timber for accredited forests and recycled or reclaimed materials used, where appropriate
- Refer to Section 4.4.5 for ecology features that **must/should** be incorporated within development parcels, including green and brown roofs

**Health and well-being**

- The development **must** provide a mix of types and tenures which helps meet people’s changing needs over a lifetime.
- The development **must** promote healthy active behaviours, encouraged through the adoption of Active Design Principles
- All dwellings design **must** provide at least min. acceptable living space standards
- All dwellings design **must** reduce opportunities for crime by implementing Secured by Design measures
- All dwellings **must** provide good indoor air quality



Figure 5.86: Green Roof



Figure 5.87: Planted Roof



Figure 5.88: Bat roosting provision



Figure 5.89: Integrated bird nesting box



Figure 5.90: Bird nesting box



Figure 5.91: Hedgehog access

- All dwellings **should** reduce overheating, targeting passive design principles by using the analysis set within the Standard Assessment Procedure and CIBSE TM52 methodology to meet Part F and Part L requirements of the building regulations

**Building materials**

- All buildings **must** be made from materials that are durable and age well, see also Section 5.12
- Building materials and construction methods **should** be sustainable, low carbon and locally sourced
- Partial and full modular and off-site fabrication **should** be employed

## 5.17 Key groupings

The Regulatory Plan opposite defines the five key groupings that have been identified as essential for creating a distinctive character in KP1. These are in addition to the spaces within the Principal Centre, which is covered in Section 6.

Key groupings are important clusters of key buildings that stand out through architectural expression and distinctive design in order to contribute to the place-making and character of a particular area for example by framing or terminating long distance vistas.

The key groupings are identified in the Regulatory Plan and **must** be designed according to the codes set out on the following pages. These codes reference relevant KP1 wide coding (from previous chapters) and show how these would apply in the specific conditions of the key groupings. Coding within this Section **must** take priority over KP1 wide coding for the highlighted group of buildings.





**Figure 5.92: KP1 Key groupings**

- 1 Northern Gateway
- 2 Primary School
- 3 Rye Gardens
- 4 Local Square
- 5 Lakeside