Figure 4.36: Rampton Drift Landscaped Edges Sketch View

Figure 4.37: Rampton Drift Landscaped Edges Section C-C'

Figure 4.38: Rampton Drift Landscaped Edges Section D-D'
Water Park

Northstowe Water Park is an expansive open parkland along the eastern site boundary providing a valuable green infrastructure corridor and landscaped transition between the new town and the surrounding lowland farmland. The Water Park is required to provide essential water attenuation and flood alleviation as well as providing ecological, recreation, amenity and circulation functions.

Three large attenuation ponds dominate the park with fluctuating water tables and permanent water expected to be present throughout the year.

Graded pond edges are shaped to create opportunities for access and recreation as well as providing a rich ecological environment of wetland, riparian and aquatic vegetation.
4.3 Sustainable Design Principles

All proposals should maximise opportunities to enable residents of Northstowe to live a healthy lifestyles and minimise their environmental and carbon footprint.

A site wide Energy Strategy has been developed to inform the outline planning application. This is expected to be updated and any proposal must comply with the current Energy Strategy or any subsequent revision.

The following sustainable targets must be met:

**Sustainable buildings & neighbourhoods**
- Building for Life 12 (80% green lights; zero red lights); and
- Adopt Secure by Design standards.

**Adaptable buildings & spaces**
- Ensure buildings that meet 2030 UKCIP weather overheating analysis;
- Integration of landscape places, including trees and water;
- Ensure all building enable access for all (i.e. meet DDA requirements); and
- Achieve Lifetime Homes for all affordable rented units and 15% of all other homes.

**Low Carbon Community**
- Non-residential buildings to achieve BREEAM Excellent;
- Reduce carbon emissions by at least 10% compared to minimum Building Regulation requirements;
- Integrated walking and cycling;
- Integrated public transport network;
- Enable electric vehicle charging; and
- Utilise Green Build specifications.

4.3.1 Energy

All homes for Northstowe Phase 2 must:
- adopt a fabric first approach and achieve Fabric Energy Efficiency Standards (FEES) through good insulation and construction in order to reduced space heating requirements and ensure that they do not require comfort cooling or excessive ventilation;
- ensure high levels of energy efficiency through adoption of appropriate building management systems and low energy appliances and lighting;
- be future proofed so that they can be connected to site wide CHP network in the future;
- be installed with a simple and easy to use display energy monitor;
- be capable of the installation of Solar PV on roofs; and
- deliver at least 10% of predicted energy demand through on-site renewable or low carbon energy generation.

4.3.2 Water

All homes for Northstowe Phase 2 must achieve water efficiency standards at 105 litres per person per day or less, by:
- incorporating low flow and flush fixtures and fittings;
- using low water appliances;
- consider rainwater harvesting and explore grey-water recycling in higher density areas; and
- utilise green-roofs on some residential, community and commercial buildings as well as schools.

Non-domestic buildings will achieve a reduction in potable water use by up to 50% over typical industry baseline figures through the implementation of demand reduction measures such as low flow taps, low flush toilets and low flush / water free urinals as well as rainwater harvesting.

Runoff from parking areas and roads will require some form of pollutant removal due to the presence of to remove hydrocarbons and other similar pollutants associated with motor vehicles. The following treatments may be used:
- filtration within SUDS features as it runs through vegetation and percolates through the surface stratum;
- percolation through layers of filtration material such as sand within permeable paving;
- bypass separators (petrol interceptors) or vortex separators could be used in high risk areas for discharges where space is insufficient for a suitable SUDS feature; and
- catch-pits will be used within any piped networks to capture sediments.
4.4 Designing Positive Edges / Frontages

Streets and spaces must be overlooked by attractive frontages. The degree of ‘activity’ may vary depending on their location and character. All frontages:

- must have entrances onto the street;
- must have windows to primary living areas (kitchen and living rooms) either on first or groundfloor - where there is no primary living area on the groundfloor first floor windows must be large (guidance: floor to ceiling height or of equivalent prominence) and ensure a good degree of passive surveillance;
- must avoid bedroom windows on groundfloor facing streets;
- must not have continuous, uninterrupted blank garden walls of more than approximately 20m.

Active frontages

Active frontages, generally, have non-residential uses on the groundfloor and are located within the town centre.

Commercial units must be interspersed with entrances to residential on upper floors. Entrances to residential must be clearly identifiable and prominent.

Shop windows must not become blank, blacked out or blocked by full signage. They must have a strong sense of transparency and present active edges to the High Street and the Town Park.

Positive frontages

Positive frontage are generally residential. The type of frontage will depend on the character of the area, the location, e.g. on Primary Street or quiet tertiary street or overlooking a Greenway and the housing type.

The adjacent diagrammatic elevations illustrate design requirements for a variety of frontages. A number of variations are possible and these will be defined through the detailed design process.

Residential Street

Design requirements:
- must have frequent entrance doors - the primary entrance for each house faces the street.
- must have windows to habitable rooms on ground and upper floors.

Mews Streets

Design requirements:
- must have integral garages and entrances at groundfloor - access to parking areas may be screened with garage doors or gates, but must not be left open.
- must have large windows on upper floors to ensure overlooking of the street - this could be bay windows, large windows or balconies.
- groundfloor entrances should have a narrow window adjacent to the front door.

Gables and side elevations

Where fully active of positive frontage cannot be achieved due to site constraints, gables and walls must be carefully designed. Design Requirements:
- gable ends and boundary walls must be set at a consistent building line and made of the same material. Walls must be brick.
- gable ends must have meaningful windows to living areas on the first or ground floor in order to ensure overlooking.
- edges with no front door and longer than approximately 30m should be broken up by entrances to vehicle or cycle parking.
- edges must not have more than approximately 20m with no animation at ground or first floor.

Undercroft parking

Figure 4.44 illustrates various ways to deal positively with undercroft parking. Design requirements:
- entrances to residential units on upper floors must be designed to be prominent and stand out within the frontage. They must be designed to be double height and fully glazed.
- first floor windows and balconies must provide surveillance and a sense of overlooking, either through large windows, bay windows or balconies.
- cycle parking areas should be articulated and designed to be visible, e.g glazed screen in order to create additional animation at groundfloor level.
4.5 Designing Good Buildings

Key principles
The design of buildings must learn from the existing context and use a contemporary interpretation of the local towns, buildings and materials. Good architecture must be fit for purpose; durable and well-built; and pleasing to the eye.

All proposals must meet the following design principles.

Fit for purpose
The accommodation provided must be suitable for use by the intended occupants and should function well. This will include:

• external space: gardens, terraces, courtyards and roof gardens, their size, orientation and aspect;
• internal arrangement: size of rooms, layout, orientation and aspect; and
• service elements: refuse bins, recycling, cycle storage and meter boxes.

Air quality issues should be considered during the layout and detailed design of buildings and good practice principles will be applicable to the Reserved Matters.

4.5.1 External amenity space for new housing

Every home must have the benefit of some private and/or communal outside amenity space. With denser development outside amenity space will need to optimise the benefits of good orientation and use design (e.g. location of windows and orientation of homes) to ensure privacy. There will be an emphasis on private balconies, roof terraces and communal gardens rather than private gardens. Careful design is required to ensure that these spaces offer maximum benefit to new residents.

The size of garden or external amenity space should relate to the house type and to the proposed number of occupants.

Balconies/roof terraces must:

• benefit from sunshine and good microclimate (including air quality);
• be placed on the quiet side (not the frontage) of the building where possible;
• have good outlook;
• be well related to internal accommodation;
• be of sufficient size as to permit outside sitting/dining;
• be secure and relatively private; and
• relate well to the architecture of the building on which they are placed.

Communal gardens including roof terraces must:

• be convenient to use;
• feel safe and secure;
• be landscape designed with interesting planting, hard surfacing and places for sitting, playing and socialising;
• not unduly affect the privacy of residents’ internal accommodation;
• not be bisected by vehicular routes to parking areas;
• consider incorporating communal planting areas for food growing;
• be clearly distinguished from the public realm.

Private gardens must:

• feel safe and secure;
• be of a useful size and shape to enable flexibility of use and personalisation over time;
• incorporate a private sitting out area positioned close to internal living accommodation;
• incorporate means of enclosure that do not undermine the quality of adjoining communal spaces;
• be placed away from public areas within the development.

Outdoor access and thresholds must be designed with the elderly in mind. Steps and small up-stands should be avoided where possible, as these can provide trip hazards.

4.5.2 Internal arrangement for new housing
Homes need to provide space in sociable rooms, for family and friends, and private spaces, for quiet relaxation or study. The layout of internal spaces in all new properties should be flexible to accommodate a range of residents and uses over a lifetime. Family houses should generally provide two social spaces, for example a living room and a kitchen/dining room.

It is important that the position of doors, windows and any built-in furniture is designed so that the space within homes is usable and practical, for instance so that furniture can be accommodated. Lighting and outlook contribute to the well being of residents. New housing should be designed to:

- provide a reasonable outlook for each dwelling; and
- be dual aspect where possible, and avoid north facing, single aspect flats.

4.5.3 Durable and well built

Buildings must be constructed in durable materials that will last well and look good over time.

Particular attention must be paid to areas that may get heavier wear, for instance corners of buildings on street frontages, porches and entrances, or boundary treatments onto the public realm.

Building orientation

The position and orientation of the building on its plot must respond well to the local context and to the design approach.

Houses must front onto streets and as a general rule should be set out back to back to create private and public areas.

4.5.4 Pleasing to the mind and eye: A coherent design approach

Good architecture is well ordered. New housing must be designed with care and with a coherent design approach, which influences the whole building, from its form, to the elevations and the detailing.

Buildings should be designed to reflect some of the attractive qualities of the local historic form of housing, for instance in terms of the scale and proportion of elements. The proportions of the form and elevations and quality of detailing will be of particular importance.

Form of buildings

Buildings must be designed as a three-dimensional whole, so that elements such as bay and oriel windows, balconies, winter gardens and porches are integrated from the start. There elements need to be integrated well with the overall architectural approach and shall not be ‘stuck on’. Where building forms relate to the local traditional forms, then new buildings are likely to sit well in the landscape and street scene.

The arrangement of different forms in a group of buildings, the relationships between them and how they are joined or separated is also important.

Genuine chimneys, dormers, upstanding party walls with parapets should be used to break up the roof form. False chimneys are not acceptable.

Composition of elevations

Elevations must be composed with care. The main elements are window and door openings, which should respond to:

- the accommodation and the type of activity proposed;
- the composition of the street elevation; and
- local character.

Entrances in particular are important elements of an elevation and must be easily identifiable.

The relative amount of opening and solid wall is important, so are the proportions of the windows and their location within the overall elevation. As a guide an opening of a minimum of 15% is desirable.

Elevations can be thought of as having a top, a middle and a bottom, all

Figure 4.45: Contemporary and historic examples showing the structure of a façades, top-right: Combination of wide fronted and narrow fronted houses; bottom-right: Vertical rhythm of narrow fronted houses - Example: Huntingdon.
of which need to be designed with care and well integrated into the overall composition.

The shape of elevations and the composition of openings create a pattern, or rhythm, along a street frontage. These should be predominantly vertical to relate to the wider context. Where a different design approach is adopted, e.g. in some areas of the town centre or the school this must be clearly justified in the Design and Access Statements. In some places, symmetrical compositions may be appropriate for buildings or groups of buildings; for instance where a building is of particular importance relative to others in the layout. It is particularly important that symmetrical compositions are well proportioned, in high quality materials and detailing as attention will focus on them.

Corner buildings

Buildings on street corners must actively turn the corner and both elevations are considered a primary elevation and must also be designed as welcoming frontage. Where private rear garden boundary is exposed to a public space or streets this must sit in the alignment of the building line and be build of the same material as the building, i.e. brick wall.

4.5.5 Materials and detailing

Materials and detailing have a significant influence on people’s perceptions of the quality of a place. Generally, quality can more easily be achieved through:

- simple clearly articulated building forms, with limited decoration, but well proportioned elevations and high quality materials and detailing, rather than overly complex forms with decorative features, but lesser quality materials or less careful design and detailing.

The following design principles apply:

- changes in material must relate to the form and articulation of the building, for instance to a set back or projection, or should have some other clearly identifiable role in the design;
- a simple and restrained palette of materials must be employed - each building group must be restricted to one Colour and Material band. Some contrast from a different colour band may be appropriate on individual building;
- brick and masonry should be the predominant façade material. Generally, bricks should be sourced from traditional vernacular range - stock brick is the most appropriate to the area;
- render should be used sparingly and in exceptional circumstances, only on buildings where the long term maintenance can be ensured, such as blocks of flats, mixed use and community buildings;
- in residential areas each house or block of flats should have one predominant material and should not have more than 2 façade materials;
- where materials and details are used to reflect traditional building forms or vernacular architecture, then they must be a genuine reflection of those traditions rather than ‘stick-on’ features. For instance, chimneys should relate to fireplaces, and weatherboarding should be timber;
- the following materials must not be use externally anywhere in Phase 2:
  - Sand cement render;
  - HCFC & CFCs;
  - Untreated / unstained soft timber; and
  - Fibre cement panels.

Figure 4.49 identifies the materials and colours that must be used in Northstowe Phase 2. Further detail of how these relate to specific character areas is set out in Section 3 in each character area.

Windows and Balustrades

- windows and balustrades must be generally in subdued colours - selected use of colour may be acceptable with appropriate justification;
- UPVC windows must not be used on any frontage to primary or secondary street or in areas of important townscape;
- window reveals should generally be at least a full brick deep (unless fully flush with the façade) to bring depth and definition to the façade;
- deeper window reveals should be used, particularly on south facing elevations to provide solar shading and reduce cooling demands;
- windows should have simple and discrete profiles (without stuck on glazing bars) to avoid adding unnecessary complexity to the façade design;
- the finish of windows should be carefully considered to compliment other secondary materials such as railings and balustrades;
- balustrades and railings must be an integral part of the façade design; and
- the finish and colour of architectural metalwork should be selected to compliment the primary façade material and be considered alongside finishes of windows and other elements of the façade.

Roofs

- The majority of roofing material shall be clay (plain or pan) tiles or slate (preference of mid-grey or grey-pink). Gault clay tiles should be considered on one off houses. Alternative roof coverings may be appropriate in particular circumstances on a case by case basis.

Figure 4.48: Selective use of colour can enhance the overall appearance.
The specific materials shown here are for guidance only. Materials of similar colour and texture must be used throughout Phase 2.

The material and colour palette has been developed through an analysis of the local context. It is influenced by local towns, including Ely, St Ives, Peterborough and Huntingdon as well as historic and contemporary developments in and around Cambridge. The palette has been developed with a view of creating a strong identity for Northstowe while also allowing an appropriate degree of variety, in particular in relation to the town centre.

Figure 4.49: Material colours and detailing, Bands A to D - shown here for guidance only
4.6 Cycle Parking: Standards and Design Requirements

To deliver the vision for Northstowe as a cycle friendly town it is important to provide suitable cycle parking infrastructure to allow residents to own and conveniently use cycles for everyday transportation.

Cycle parking must be designed as an essential component of the development and located in key public spaces (such as Town Park, alongside the “High Street”), outside destinations (such as schools, library and health centres), formal sports areas, play areas (such as NEAPs and LEAPs) and within private residences. Visitor spaces must be provided separately. The following design requirements must be met.

Cycle parking in all areas will be considered in relationship to the character and setting of open space and adjacency to buildings. They will be located so that they complement these spaces, and not obstruct key views or landscape features. The use of planting and trees alongside cycle parking can be used to mitigate any impact on adjacent spaces or significant features.

**Design Requirements - Cycle Parking for Residential Buildings**

Provide secure and practical cycle parking that is conveniently located. Cycle parking for all homes will be designed in line with the Cycle Parking Standards of SCDC. The following design requirements apply. All residents cycle parking must be:

• protected from the weather and secure with access for residents only;
• easily accessible and convenient. It will not require cycles to enter dwellings;
• integrate well with the surroundings; and
• where possible, accessed from the front of the building either in a specially constructed enclosure, communal bike storage or easily accessible garage.

The design will also consider the need for ‘alternative’ cycles including trailers and tricycles.

Garages must be wide enough to allow bikes be removed easily without having to move the vehicle. (See Figure 4.64 for recommended cycle storage in a garage).

When cycle storage is provided within the footprint of the house or as free standing store, cycle parking should be accessed by means of a door at least 900mm and the structure will be at least 2m deep. See Figure 4.50.

**Cycle storage for apartments**

Cycle storage in apartment blocks should preferably be located on the ground floor level in a secured area within the building or on each floor. The latter has the advantage that people generally feel their bike is safer, when the cycle storage is shared with fewer units.

The space must be well maintained and fit clearly to provide a safe environment. Where cycle stores are provided on the ground floor these should be visible from the public realm, set behind glazed windows and walls. This not only provides day light, but also surveillance and activity at street level.

**Communal cycle parking**

In some locations it may be beneficial to provide communal cycle parking shared by a small number of houses. These communal cycle parking areas must be:

• protected from the weather and secure with access for a limited number of residents only;
• easily accessible and convenient, located in shared courtyards or at the end of streets;
• integrate well with the surroundings, be attractive and robust.

**Design Requirements - Cycle parking within the public realm**

Visitor parking should be in the form of cycle hoops within the public realm. Cycle parking, located in key public areas, must be conveniently located at points of entry, be secure and easily accessible without blocking circulation routes.

Within the town centre cycle parking must be in groups of around 5 stands and no more than 30m apart. It is preferable to have more smaller groups of stands than a few larger ones. Cycle parking must be as convenient as possible to allow customers easy access to stores and facilities.

**Design Requirements - Parking for commercial uses**

Secure staff parking must be provided away from the public realm in discrete compounds, larger employers shall provide lockers and showers for cyclists.

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<table>
<thead>
<tr>
<th>Land Use</th>
<th>SCDC Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>1 secure space per bedroom</td>
</tr>
<tr>
<td>Town centre</td>
<td>1 secure space per 25sqm gross floor area</td>
</tr>
<tr>
<td>Employment B1</td>
<td>1 secure space per 30 sqm gross floor area</td>
</tr>
<tr>
<td>Primary School</td>
<td>Secure cycle parking at a rate of 30% for pupils over 5 years of age</td>
</tr>
<tr>
<td>Secondary School</td>
<td>Secure cycle parking at a rate of 60% for pupils over 12 years of age</td>
</tr>
</tbody>
</table>

Table 4.1: Required cycle standards

Note: One Sheffield cycle stand or similar equals two bike parking spaces
Figure 4.50: Storage enclosure required for two cycles

Figure 4.51: Parallel cycle parking arrangement for public realm

Figure 4.52: Diagonal cycle parking arrangement

Figure 4.53: Utilising walls for cycle storage

Figure 4.54: Personalised cycle parking

Figure 4.55: Cycle parking for all ages and types

Figure 4.56: Public cycle parking

Figure 4.57: Communal bike parking
4.7 Vehicular Parking: Standards and Design Requirements

Parking within Northstowe includes private dedicated parking for residential homes, public parking spaces for visitors and shared parking for residents, employees and visitors within the town centre.

This section sets out the design requirements for parking areas to ensure these are well integrated, convenient and provide a positive environment. Car parking within residential areas must be clearly defined and practical to avoid unneighbourly and anti-social car parking which can undermine the quality and usability of the public realm. The following design requirements must be met.

The development will provide an average of 1.75 car parking spaces average across the whole of Phase 2.

The following parking restrictions apply to the street hierarchy:

- Primary Streets: There will be no allocated parking, but in key locations a few clearly demarcated visitor parking spaces may be provided, where they do not negatively impact onto traffic flows. There will be very limited access to private parking areas, drives or garages. Cars must not reverse onto the Primary Street;
- Secondary Streets: Due to swales and cycle lanes, opportunities for direct access to private on plot parking areas, drives and garages may be limited. Where used, access drives should ideally serve a number of properties and must not affect the continuity of tree planting and cycle way. There will be on-street parking for visitors as well as on-street unallocated parking for residents and
- Tertiary streets: There will be a mixture of visitor parking, as well as unallocated on-street parking for residents.

On-street parking

On streets parking will be designed in accordance with MfS (Manual for Streets) and the following requirements:
- parallel parking should be min. 2.0m wide x 6.0m long. Where they are adjacent to cycle lanes they should be a min. 2.4m wide to allow doors to be opened safely. There must not be more than 3 spaces in a line without landscape or tree planting to break them up;
- on street parking spaces should be clearly demarcated;
- on Primary Streets chamfer / ogree are required at end of parallel on-street parking bays and bays must be a min. 2.4m wide to allow for visibility splays and space to open doors; and
- on Tertiary street perpendicular as well as parallel parking is allowed. There must not be:
  - more than 5 spaces in a row without landscape or tree planting; to break them up; and
  - only one side of perpendicular parking is permitted. This should be an integral part of the public realm - and must not be in the front curtilage of houses.

Parking squares:

To accommodate parking standards there will be public landscaped parking squares adjacent to streets and in front of houses. These will be part of the wider public realm. Within the residential areas they will provide unallocated resident and visitor parking areas. In the town centre they will cater for short-stay visitors and blue badge parking. The following design requirements apply: Parking square must be:
- publicly accessible and an integral part of the wider public realm;
- clearly signposted as resident, visitor parking areas, short-stay or blue badge parking (as appropriate);
- designed to be pleasant and safe spaces in their own right, include landscape and tree planting and look attractive with or without cars;
- block paved or buff asphalt with bays subtly delineated with paving units - black top and white lines are not appropriate; and
- small and medium sized and not contain more than 12 spaces in residential areas.
Rear courtyards (public or private)

Due to the access restriction from Primary Streets and Secondary Streets rear courtyards may be required. Rear courtyards must be clearly defined as either public or private and must meet the following:

- **private parking areas:**
  - should not serve more than 6 houses or one block of flats;
  - must be clearly identified as private, either through design or gates;
  - must not be immediately adjacent to each as this would be perceived as a larger courtyard and create a negative outlook;

- **public courtyards area:**
  - must be accessible to everyone;
  - must be directly overlooked by houses or flats and contain positive frontages and entrances to properties;
  - must contain landscape, trees, amenity space and areas for opportunities for community interaction and play; and
  - must be designed to be attractive spaces in their own right and avoid ‘sea of cars’ effect.

Black or grey Tarmac must not be used in courtyards and spaces must not be delineated with white highway markings. Parking bay delineation must be carried out with paving units. Surface materials may be block paving or asphalt with exposed aggregate chippings (grey / or buff coloured asphalt);

- access to courtyards from Primary and Secondary Streets must allow cars to turn within and exit front first.

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**Figure 4.61: Diagrammatic plans illustrating parking requirements**

**Figure 4.62: Positive example of integral garages with living space (terrace or room above)**

**Figure 4.63: Positive integration of landscape into parking areas**
On-plot parking
For dedicated on-plot parking, the following design requirements must be followed:

- integral garages are encouraged where possible as they contribute towards a positive streetscene and minimise the visual impact of cars - generally integral garages are more suitable for wide fronted houses;
- tandem parking consisting of 3 cars or more must be avoided;
- perpendicular parking in front of garages is only acceptable where plots are large enough to enable some form of surveillance and adequate soft landscaping;
- entrances to semi-basement or undercroft parking must be legible for users, but minimise impact on public realm; where possible, these entrances should be located away from key pedestrian/cycle routes;
- must consider setting undercroft parking below pavement level and dug into the ground by half a storey where possible and viable. This will reduce the impact on the public realm and avoid ‘dead’ frontages. Residential units above undercroft parking must provide surveillance to the street and must have balconies, bay windows and generally large windows to provide a sense of overlooking. (See figure 4.44);
- the number of drives crossing cycle lanes, footpath and swales must be minimised and where possible shared between a number of plots; and
- access to undercroft or underground parking areas from Primary and Secondary Streets must allow cars to turn within and exit front first.

Town centre parking
Parking within the town centre will be shared between residents, visitors and workers. The majority of parking will be located within multi-storey car parks.

A short term drop-off space must be provided near the entrances to any residential blocks, that are remote from their designated car parking so that residents have the opportunity to safely load/unload their car.

Short term parking must be provided throughout the town centre in various locations. This will support the vitality of the town centre and can be located on the ground-floors of the multi-storey car parks and surface parking spaces. These spaces must include designated spaces designed to allow easy access for the elderly and blue badge holders.

Any parking associated with any medium or large foodstore must be shared as a short stay town centre car park and available to all. Large areas of surface car park associated with a foodstore will not be acceptable.
4.8 Waste, Recycling and Utilities

Service elements, in particular: refuse stores, recycling facilities, meter boxes, pipes, flues and vent must be considered early in the design process and integrated into the overall scheme. The following section sets out mandatory design requirements for waste, recycling and utilities.

Waste and recycling

Refuse and recycling arrangements are frequently subject to change with variation in the numbers and sizes of bins. It is essential to allow sufficient space for refuse storage, as otherwise bins will become dominant elements in the public realm or private spaces, such as garages. The following design requirements apply:

- all refuse stores and recycling facilities must be designed to screen bins from public view, whilst providing occupiers with easy access to them;
- refuse and waste collection must be possible to be conducted from the adoptable public road network - where houses are accessed via unadopted mews streets, collection points must be provided;
- designs must be in line with RECAP Waste and Management Design Guide Toolkit.

Bins for private houses must be incorporated in line with the following design requirements:

- Providing enough space to accommodate the required number of bins: current guidance requires 3 full size bins and space for containers allowing a maximum of 775 litres of capacity;
- Providing external access to garden areas or incorporating attractive bin storage areas at the front / side of dwellings or provide shared bin stores. Unattractive and unsafe rear alleyways between rear garden fences must be avoided;
- Ensuring that bin stores do not negatively impact on the streetscene;
- Ensuring collection crews should not have to carry individual waste containers or move 2-wheeled containers more than 25m;
- Allowing, for example sufficient space adjacent to private parking areas, such as garages or car ports to enable bins to be stored within garages; and
- Creating bin stores that are an integral part of the overall design of the house, using similar materials for the bin enclosure.

Shared bin stores (for private houses) can be a space efficient way to accommodate waste and recycling utilities. Trials in other UK cities have demonstrated that this can work well. The following design requirements must be met:

- provide a bin store that is attractive and an integral part of the overall design;
- located in a discreet, yet practical location;
- shared by no more than approximately 10 homes; and
- secure and weatherproof.

Communal bin stores for apartments must be incorporated in line with the following design requirements:

- providing a communal store for general waste, recycling and bulky waste (space for containers allowing between 240 litres to a maximum 640 litres of capacity per unit) at ground-floor level and as close to the highway edge as possible and no greater than 10m from a point of access for the collection vehicle; and
- providing the store within the footprint of the main apartment block.

Commercial waste collection must be incorporated in line with the following design requirements:

- providing shared bin stores and waste collection points within the internal or rear service and parking areas; and
- ensuring bin stores are screened and not visible from the public realm or residential apartments on upper floors.

Figure 4.65: Early consideration of detailed elements such as bin stores and meter boxes influences the quality of the development. Example of well integrated bin store and storage space in an urban development where it relates well to the character of the local area.
Utilities
Utilities, including water, gas, electrical and ducted data services will be installed in service corridors located within adoptable highways, generally under footways. The foul and surface water sewers will be located in the carriageway of the adopted highway(s). These have been identified in the street typologies in Appendix I.

Utility boxes for houses and flats must be an integral part of the design of the building and must be hidden within entrances or side elevations of individual houses and must not be clearly visible from the street.

Utility boxes must be of a colour that fits with the material strategy for the remainder of the buildings and must be positioned unobtrusively.

Provision for electrical vehicle charging must also be included relative to allocated parking spaces/garages.

Public toilets and drinking fountains
Public toilets and drinking fountains are important to ensure an active and healthy community.

There will be two public facilities within Northstowe Phase 2. These will be in the following locations:

- Town Park, in the park of within the adjacent buildings will be a public toilet. This will be designed to the design requirements of ‘Changing Places’ and include a changing bench, hoist and appropriate space.
- Eastern Sports Hub, the sports pavilion provided as part of the sports provision will include publicly accessible toilets.

Drinking fountains will be provided within the town park, the Northern Town Centre Square; alongside the Fitness Trail (one within each Greenway) and adjacent to the primary play areas (the NEAP and LEAPs).

Other elements
The location of grills, vents, pipe work must be carefully considered to ensure the buildings façades are not cluttered. Locations of letter boxes should be accessible to all including occupants in apartment buildings.

Substations
Substations will be required throughout the development. The following design requirements must be met. Substations must be:

- located in a discreet location within the development;
- located in buildings separate from any residential units;
- enclosed with a structure of brick of similar colour to the surrounding buildings and be constructed on a concrete slab, notionally 4 x 4m, to suit the requirements of the owner of the electrical network; and
- be fitted with a double door that is afforded direct public vehicular access for regular maintenance purposes.

Electric vehicles
Public as well as private electricity charging points must be supplied in order to future proof the development. These should be suitable for electric cars, bicycles and mobility scooters. The following requirements must be met:

- Each private on-plot parking space must be enabled to allow for an electricity socket.
- Public charging points must be provided at 5% of on-street visitor spaces. These may be slow (3KW) or fast (7-22KW) connections, depending on the available electricity supply.
- At least one 50kw rapid electric vehicle charger should be provided within the town centre.
4.9 Play and Youth Facilities

4.9.1 Children’s Play Space Strategy

Play provision must meet the needs of the new development as well as offering opportunities for social interaction with residents from surrounding neighbourhoods.

The following designated play provision must be provided:

- 1 nr Neighbourhood Equipped Area of Play (NEAP);
- 3 nr Local Equipped Area of Play (LEAP); and
- Numerous Local Area of Play (LAP) to ensure access from all residential properties within a 100m radius.

Play provision must go beyond the offer of designated play spaces and must include playful landscapes and routes for people of all ages and abilities.

Play areas must be located where they are easily accessible and where natural surveillance is good.

Reference must be made to the Northstowe Phase 2 Healthy Living and Youth & Play Strategy for information on the full extent of play measures to be integrated.

Key

- Phase 2 Application Boundary
- Existing Play Area (outside application boundary)
- Phase 1 LEAP
- NEAP - 1200m² Activity Zone
- NEAP 30m Buffer Zone
- NEAP 1000m Catchment Zone
- LEAP / SIP 500m² Activity Zone
- LEAP / SIP 20m Buffer Zone
- LEAP / SIP 400m Catchment Zone

NEAP - Neighbourhood Equipped Area of Play (target age 8-14 year olds)
LEAP - Local Equipped Area of Play (target age 2-8 year olds)
SIP - Space for Imaginative Play

Figure 4.67: Plan identifying the mandatory locations and types of Children’s Play Spaces
In addition to the minimum area requirements referred to on the previous page, the following mandatory requirements for each of the designated play spaces must be met.

**NEAP**: Play provision for physically more challenging play to include at least one or two of the following: Adventurous fixed play equipment, Ball Court/informal MUGA or wheeled sport facility/skate park. Provision of a sheltered social space and cycle parking. The final design must be established through consultation with local residents.

**LEAP**: A themed play area that makes creative use of contours and the space between the play equipment.

**SIPs**: These must complement the more formal LEAPs and must be designed specifically for imaginative play without the use of conventional moving equipment.

**LAPs**: These must be integrated and central to housing areas, where people are moving around and where there is natural surveillance. They are not formally equipped but should offer both soft and hard landscaping and robust, physical interventions that vary in design from one to another.

---

Figure 4.68: Indicative examples of play features for each of the designated play spaces
4.10 Hard Landscape

The hard landscape strategy supports the project aspirations for a high quality contemporary exemplar of sustainable living while being responsive to the historic local vernacular of South Cambridgeshire.

In order to achieve consistency across Phase 2, the requirements set out in this section must be met.

Design requirements

Materials must be chosen and applied as follows:

- Materials must be chosen to create streets that are safe and comfortable for all users.
- Materials must be high quality, robust and sustainably sourced and manufactured.
- Paths must have smooth but non-slip surfacing and all paving, including hazard paving must comply with British Standards.
- Material colours must be muted and of natural tones to complement rather than detract from the buildings and landscape setting.
- Materials must comply with those identified in table 4.3. The materials palette has been selected to complement the Northstowe Phase 1 proposals, however further coordination, especially in the transition zones between the two phases shall be undertaken during detailed design in order to achieve a complementary visual appearance.
- Permeable paving must be applied where this has been identified in the Drainage Strategy. It must be coordinated with surrounding paving materials to maintain high standards of visual appearance and continuity.

Three distinct hard landscape material zones have been defined to distinguish between the extended town centre areas, the residential areas and the Greenways/parkland areas. These zones extend across the Character Areas (Section 3) and offer a unifying palette of materials and colours. The hard landscape material zones are punctuated by Important Areas of Townscape that receive special treatment in the form of higher quality material and street furniture applications to support the aesthetic of individual Character Areas and provide distinct visual interest.
4.10.1 Surfacing Materials

Extended Town Centre Area

The extended town centre area covers the core of the development and includes the busway, commercial and retail areas, the town park, and part of the formal Greenway. Paving should be natural stone or asphalt with exposed aggregate stone chippings. Refer to table 4.3. Distinct areas or uses must be defined using materials of the same colour but with different textures, unit sizes and simple paving patterns.

Within the town centre and urban park areas (Busway type C and D), the Busway must be treated as a shared road surface with low upstand kerbs and a paved carriageway surface.

Residential Areas

The paving palette across the residential areas consists of a simple and limited range of materials punctuated by higher quality materials at Important Areas of Townscape. The carriageways and footways should be predominantly paved in asphalt with exposed granite aggregate chippings and high quality natural stone kerb, channel and edging detailing or equivalent robust materials. On-street parking bays are to be block paved.

Greenways, Parkland Areas and Sports Hub

The surfacing materials palette for the Greenways, parkland areas and sport hubs shall reflect the less formal landscape character of these areas while maintaining material references to the palette of the more urban areas. Primary pedestrian and cycle routes should receive a buff resin bound aggregate finish bounded by precast concrete edging. Secondary routes should be surfaced in self-binding aggregate finish with timber edging. The selection and execution of the self-binding aggregate must ensure a firm finish free of ponding.

Important Areas of Townscape

The town park/square is the primary open space and focus for community activity and events within the town development. The area must receive a high quality hard landscape treatment using predominately natural stone materials with careful attention to detailing and workmanship. Secondary Important Areas of Townscape shall receive natural hard landscape and special street furniture treatments to promote distinct local character drivers within each of the Character Areas.

Bridges and Decks

The open swales and drainage systems proposed as part of the sustainable urban drainage systems generate the need for bridges, board walks and decks across Site. These shall be carried out in restrained designs to support local character generation. Materials must be coordinated with adjacent paving materials, street furniture and building materials. These provide opportunities for bespoke designs to enhance the distinct characteristics of the area they are in.

Utilities

Service covers should be covered with galvanised steel trays and paving inlay to match adjoining paving surfaces as far as reasonably possible and in particular in the extended town centre and feature landscaping areas. Drainage in squares and large paved areas shall be executed in slot drains where possible. Carriageway drainage shall be integral to upstand kerbs or dimensionally coordinated with carriageway channels.

Parking Bay Delineation

Parking bay delineation should be carried out with paving units rather than a painted finish.

Refer to table 4.3 for an overview of surfacing materials to be used in different locations and situations.

Figure 4.70: Surfacing Material Palette, see table 4.3 overleaf for applicability
## Table 4.3: Schedule of hard landscaping surface materials to be used in different locations and situations.

### Extended Town Centre Areas

<table>
<thead>
<tr>
<th>Ref</th>
<th>Element</th>
<th>Material and Colour</th>
<th>Buxway</th>
<th>Primary and Secondary Street</th>
<th>Tertiary Street Type A</th>
<th>Tertiary Street Type B/C</th>
<th>Public Spaces/ Areas of Townscape Significance</th>
<th>Raised table crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>Paving to footway (preferred)</td>
<td>Yorkstone flags, various sizes and finishes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M14</td>
<td>Paving to footway (optional alternative)</td>
<td>Asphalt surfacing (Colour optional)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2</td>
<td>Paving to cycleway</td>
<td>Coloured asphalt/bitmac</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>Block paving to parking bays</td>
<td>Concrete block paving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M4</td>
<td>Block paving to carriageway</td>
<td>Concrete block paving</td>
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<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M10</td>
<td>Paving to Public Squares/Area of Townscape Significance</td>
<td>Yorkstone flags and setts, various sizes and finishes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M13</td>
<td>Asphalt surfacing to carriageway except where material M13 applies</td>
<td>Black asphalt surface course with silver-grey granite chippings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M12</td>
<td>Raised Aperture Surfacing for ramps in carriageway of Buxway Type C + D &amp; Primary Road Type B</td>
<td>Block containing exposed ‘golden’ gravel coarse aggregate</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M6</td>
<td>Kerb</td>
<td>Granite, silver-grey, 250mm wide, typical upstand</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M11</td>
<td>Kerb to Buxway Type C + D</td>
<td>Granite, silver-grey, 250mm wide, 25mm upstand</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>M7</td>
<td>Channel, flush with carriageway</td>
<td>Granite, silver-grey, 250mm wide</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M8</td>
<td>Channel, flush with carriageway</td>
<td>Granite, silver-grey setts 100 x 200 x 80mm, 2x soldier course</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M12</td>
<td>Edging to back of footway</td>
<td>Conservation edging</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M9</td>
<td>Hazard Paving to road crossings, steps, cycle routes</td>
<td>Granite, silver grey or contrasting colour as required</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>M50/M51</td>
<td>Cambridge Kerb</td>
<td>Granite, silver grey</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M52/M53</td>
<td>Splay Kerb</td>
<td>Granite, silver grey</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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</tbody>
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### Residential Areas

<table>
<thead>
<tr>
<th>Ref</th>
<th>Element</th>
<th>Material and Colour</th>
<th>Buxway</th>
<th>Primary and Secondary Street</th>
<th>Tertiary Street Type A</th>
<th>Tertiary Street Type B/C</th>
<th>Public Spaces/ Areas of Townscape Significance</th>
<th>Raised table crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>M30</td>
<td>Paving to footway</td>
<td>Black asphalt surface course with silver-grey granite chippings</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M31</td>
<td>Paving to footway</td>
<td>Black asphalt surface course with silver-grey granite chippings (or where adjoining Phase 1, asphalt surfacing to select)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M22</td>
<td>Paving to cycleway</td>
<td>Coloured asphalt/bitmac</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M23</td>
<td>Block Paving to parking bays</td>
<td>Concrete block paving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M24</td>
<td>Block Paving to carriageway</td>
<td>Concrete block paving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M25</td>
<td>Paving to Area of Townscape Significance</td>
<td>Premium textured concrete block and sett paving</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M26</td>
<td>Asphalt surfacing to carriageway</td>
<td>Black asphalt surface course with silver-grey granite chippings</td>
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<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>M27</td>
<td>Kerb</td>
<td>Granite, silver-grey, 250mm wide</td>
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<td>✓</td>
<td>✓</td>
<td></td>
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</tr>
<tr>
<td>M28</td>
<td>Kerb</td>
<td>Granite, silver-grey, 145mm wide</td>
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<td>✓</td>
<td>✓</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>M29</td>
<td>Edging to back of footway</td>
<td>Conservation edging</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M30</td>
<td>Hazard Paving to road crossings, steps, cycle routes</td>
<td>Granite, silver grey or contrasting colour as required</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M51</td>
<td>Cambridge Kerb</td>
<td>Granite, silver grey</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M51/M53</td>
<td>Splay Kerb</td>
<td>Granite, silver grey</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</tbody>
</table>

### Greenways and Parkland

<table>
<thead>
<tr>
<th>Ref</th>
<th>Element</th>
<th>Material and Colour</th>
<th>Bicycle and pedestrian routes</th>
<th>Buxway</th>
<th>Primary and Secondary Street</th>
<th>Tertiary Street Type A</th>
<th>Tertiary Street Type B/C</th>
<th>Public Spaces/ Areas of Townscape Significance</th>
<th>Raised table crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td>M40</td>
<td>Paving to primary footway/cycleway</td>
<td>Coloured asphalt/bitmac, colour buff</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M41</td>
<td>Paving to secondary footway</td>
<td>Self binding aggregate paving, buff</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M42</td>
<td>Edging to primary footway/cycleway</td>
<td>Standard flat top concrete edging</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M43</td>
<td>Edging to secondary footway</td>
<td>Timber edging, silver grey</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 4.3: Schedule of hard landscaping surface materials to be used in different locations and situations.
4.10.2 Street Furniture

The following design requirements must be met:

- Street Furniture must be:
  - robust and of simple and contemporary design made from a restrained palette of materials of predominantly powder coated steel and wood. Colours must be muted and coordinated with building façade materials;
  - of a single family of coordinated street furniture with a limited range of bespoke items must be selected within the primary and secondary areas of important townscape;
  - selected to reflect the informal character of the Informal Greenways and Sports Hub through the selection from a more rustic street furniture palette; and
  - be selected from the ranges illustrated below or similar and approved.

- Dog bins must be located within the Greenways and on the edge of the urban area where residents will access open space to walk their dogs.
- Benches and informal opportunities for seating must be provided at regular intervals of approximately 100m to promote inclusive design for all ages and abilities. The 100m spacing of seating opportunities may be reduced to 50m if external funding (e.g., Healthy New Towns) is forthcoming. Seating shall allow opportunities for integration of wheelchair users and shall include seating that provides arm- and backrests.

Extended Town Centre Areas and Residential Areas

Informal Greenways, Parkland Areas and Sports Hubs

Primary and Secondary Important Areas of Townscape

Bridges and Decks


Figure 4.71: Street Furniture Images
4.10.3 Street Furniture Zone Standards

Street furniture greatly influences the character and aesthetic appeal of the public realm. The following design requirements must be applied across the Site:

- Ensure that street furniture is appropriate for the location and function it is intended for;
- Minimise cluttering footways with unnecessary furniture;
- Maximise unobstructed widths for comfortable pedestrian movement;
- Satisfy public transport operational requirements;
- Merge and combine street furniture components on a single post where practicable;
- Arrange street furniture in defined furniture zones, keeping encroachment on a min. 2m footway to a minimum. This will have the effect of lining up furniture to create visual order;
- A furniture zone shall only be provided where suitable clear footway widths and kerb zone widths are deliverable. The width of the furniture zone should be selected based on the footway constraints, which in turn will impact on the street furniture that can be used; and
- Mount street lighting to building façades where this is practicable and does not detract from the visual appearance of the building. This may be most appropriate in mews locations and within the town centre.

Figure 4.72: Street furniture zone (based on TFL Streetscape Guidance 2016)
### 4.10.4 Boundary Treatment

The treatment of boundaries is vital in the creation of attractive, safe and secure environments.

The design requirements set out within this section are mandatory and **must** be followed. These need to be read together with the specific requirements included in section 3.

The boundaries **must** clearly define private and public realm with thresholds carefully considered to avoid unusable leftover space. Materials selected for the boundaries **must** be consistent along the length of the street and **must** be chosen to complement the architecture. The materials should reflect the local vernacular of South Cambridgeshire. Where hedging is incorporated, fast growing conifers **must** be avoided.

**Front Boundaries**

Front boundaries **must** be a maximum height of 900mm to maintain views, whilst providing privacy and security. Where bin stores are provided within the front garden curtilage, front boundaries **must** be 1200mm high.

Table 4.4 defines the type of vertical front boundary treatments applied across the development. Specific requirements are included in section 3.

**Rear and Side Boundaries Fronting Streets**

Where rear gardens and side boundaries abut the public realm, the boundary treatment **must** be a solid wall integral to the design of the building and of the same material. The total height of the wall shall be 2.1m, of which the top 0.6m may be permeable.

Any masonry wall **must** be capped with coping. On corner plots a consistent boundary treatment on both faces of the corner is required.

**Boundaries to Mews, Courtyards and Parking**

The rear boundaries of properties which abut mews, courtyards and public parking areas **must** enable surveillance of the parking whilst maintaining privacy within the rear garden. Boundary heights must be no taller than 2.1m and walls (or high quality architectural fencing above dwarf walls) should be used. Waney-lap fencing **must not** be used.

For access requirements a gate can be set in the back wall. The gate **must** match the height of the boundary and must be no less than 0.45m wide. It shall be of high quality material and include piers.

The inclusion of hedges and climbers to provide visual amenity and contrast is encouraged. Species should be appropriate to the character area.

The design of the boundary between the gardens, courtyards or parking **must** be designed as an integral part of the built form.

<table>
<thead>
<tr>
<th>Boundary Treatment</th>
<th>Primary function</th>
<th>Design considerations</th>
</tr>
</thead>
</table>
| 1) Minimal - hard edge | • Provide an urban hard edge character  
• Allow access for users or vehicles | • A change of surface material to define the plot boundary i.e. setts |
| 2) Minimal - planted edge | • Retain urban character with some softening by climbers and narrow strip of planting to narrow residential mews | • Provide greenery and visual interest Inclusion of native and ornamental shrubs and climbers well-suited to exposure and direction facing  
• Provide upstand edging to base of planting |
| 3) Shrub planting | • Provide varied width of defensible space with substantial block of planting to residential streets | • Provide visual amenity for public realm and visual screening for ground-floor uses  
• Provide consistent upstand kerb where appropriate  
• Inclusion of native and ornamental shrubs and climbers well-suited to exposure and direction facing |
| 4) Boundary Wall | • Provide sufficient defensible space and privacy for frontage of individual plots and streets | • Provide consistent wall character in context of street and housing materials  
• Inclusion of bike storage or seating Inclusion of lawn, native and ornamental shrubs to be maintained privately |
| 5) Dwarf wall with railing above and solid wall pier | • Provide sufficient defensible space and privacy for frontage of individual plots and streets | • Provide consistent wall character in context of street and housing materials  
• Inclusion of bike storage or seating Inclusion of lawn, native and ornamental shrubs to be maintained privately |
| 6) Boundary Wall with hedging | • Provide sufficient defensible space and privacy for frontage of individual plots and streets | • Provide consistent wall character in context of street and housing materials  
• Inclusion of bike storage or seating Inclusion of lawn, native and ornamental shrubs to be maintained privately |
| 7) Boundary wall with bin store behind | • Provide sufficient defensible space and privacy for frontage of individual plots and streets | • Provide consistent wall character in context of street and housing materials  
• Inclusion of visually attractive bin store |
| 8) Boundary with swale or rill | • Provide sufficient defensible space and privacy for frontage of individual plots and streets | • Provide secure level crossing |

Table 4.4: Overview of front boundary treatment (see also figure 4.73)
Boundaries adjacent to Communal Gardens

Boundaries facing communal gardens must enable intervisibility and passive surveillance. Boundaries must be solid masonry to a maximum height of 1.2m, of which the top 0.3m should be permeable hardwood timber.

Boundaries between Gardens

Where a side boundary occurs between two or more private gardens, it must not be higher than 1.8m to balance the requirement of light and privacy. It is preferred that boundaries are in keeping with the built form. FSC certified timber fencing and a combination of timber fencing and hedging can be used, which must be sympathetic to the architecture.

Movement of Hedgehogs

Free movement of hedgehogs between private gardens and public open space must be facilitated through the provision of openings between them (130mm x 130mm) at ground level. To prevent residents from blocking up the openings inadvertently, discreet signage should be provided above the openings to identify the holes as ‘hedgehog highways’.

Sports Fencing

Sports fencing must be kept to a minimum and where possible this should be created using hedging and tree planting. Fencing must be specific to the intended sport and location. Noise limiting measures should be included.

Boundaries adjacent to green infrastructure

Public open spaces, Greenways and publicly accessible green infrastructure shall be free of boundary treatments. Where boundaries are unavoidable these should be low hedges or railings.
4.11 Soft Landscape

4.11.1 Planting

The planting palette is informed by the local vernacular landscape of South Cambridgeshire, existing retained vegetation, local ground conditions, microclimate, the character of the proposed overarching landscape structures and the urban character of the proposed development.

A coherent and restrained planting palette with native as well as non-native species has been selected.

The use of key species as defined in 4.11.2 and 4.11.3 is mandatory and any additional plants chosen for the development must adhere to the following design requirements.

Design requirements

- Planting must be appropriate to its setting and must vary depending on the location and function of the area (for example the informal greenways and waterpark shall contain mainly native plants whilst the commercial centre, town square and mews streets may feature increased numbers of ornamental and non-native species)
- Measures must be taken to improve the biodiversity value of planting on site in line with BAP priority species for Cambridgeshire.
- Planting design must be mindful of the effects of climate change both in respect of providing shade for people as well as in the selection of drought tolerant planting.
- Planting must include evergreen species and must provide year-round seasonal interest in the form of foliage, bark, colour, flowers, fragrance, fruits and berries.
- Any trees known to be associated with destructive diseases must be avoided.
- Planting beds must be designed to ensure an adequate growing medium for sustained healthy plant growth.
- Tree planting and building footprints must be coordinated to ensure sufficient space for trees to grow into maturity and to minimise long term management and maintenance.
- The specification of plant sizes and densities must ensure an attractive and vigorous visual appearance at the time of planting.

Within each Primary Landscape or Character Area planting shall feature a selection of key species to define a distinct sense of place and identity. These species shall be surrounded by a complementary planting palette that is submitted at Reserved Matters Application for approval by the local planning authority. The following selection of key species is intended to guide planting for each of the areas listed below and overleaf.

4.11.2 Planting within the Overarching Landscape Structures

Green Separation/ Paddocks Parkland

Proposed planting must be in keeping with the existing landscape character of Paddocks Parkland. Existing hedge and boundary vegetation should be gapped-up with native species-rich hedge and tree planting. Subject to requirements for grazing animals, the grassland should incorporate species-rich wildflower species.

Key Species: Quercus robur (English Oak), Populus nigra (Black Poplar), Salix alba (White Willow), Acer campestre (Field Maple), Crataegus monogyna (Hawthorn), Malus sylvestris (Crab Apple)

Greenways: Informal

Native structural planting must complement and strengthen existing tree cover and hedgerows including a mix of native tree planting, hedgerow infill and shrub planting featuring fruits and berries. Species typical of the Fenland landscape should be used to augment planting alongside the swales. Grassland shall include species rich long-sward grassland and wildflowers.

Key species: Quercus robur (English Oak), Populus nigra (Black Poplar), Salix alba (White Willow), Salix caprea (Goat Willow), Salix cinerea (Grey Willow), Salix viminalis (Osier Willow), Crataegus spp. (Hawthorn), Alnus glutinosa (Common Alder)

Greenways: Formal

The formal greenways must contain a mixture of native and non-native structural planting in the form of avenue trees, shrubs and hedges. Ground-cover planting shall consist of a mix of amenity lawns, ornamental shrubs, wild flower meadows and bulb planting. Planting must be more ordered and geometric than in the Informal Greenways.

Key species: Liriodendron tulipifera (Tulip Poplar), Acer platanoides (Norway Maple), Alnus glutinosa ‘Laciniata’ (Cut Leaf Alder), Sorbus aria (Rowan), Betula pubescens (Downy Birch), Cornus sanguinea (Common Dogwood), Populus nigra (Native Black Poplar)

Water Park

The Water Park must feature predominantly native planting. Structural planting shall strengthen the perimeter of the park and swathes of shrub planting shall create ecological buffers to the School Playing Fields and Eastern Sports Hub. A selection of native riparian vegetation shall be incorporated around the sides of the attenuation ponds allowing for fluctuating water levels. Grassland areas shall be planted with occasional groupings of native trees and shrubs that favour moist ground conditions.

Key species: Salix spp. (Willow), Acer campestre (Field Maple), Crataegus spp. (Hawthorn) Quercus spp. (Oak), Betula pendula (Silver Birch), Alnus glutinosa (Common Alder)
4.11.3 Planting within the Character Areas:

This section must be used to guide planting within incidental open spaces, courtyards and green connections contained within each of the character areas. It also guides tree planting within the tertiary streets.

Northstowe Fields Character Area

Smaller trees and flowering fruit trees and fruiting bushes must emphasise the suburban character of Northstowe Fields Character Area. Fruit trees and bushes should characterise the village greens. Native trees and infill hedgerow planting should strengthen the perimeter of the area.

Key species: Acer campestre (Field Maple), Prunus avium (Sweet Cherry), Sorbus aucuparia (Rowan), Malus domestica (Apple Tree), Malus tschonoskii (Pillar Flowering Crab), Carpinus betulus (Hornbeam)

Oakington Barracks Character Area

Evergreen including native planting should be incorporated within Oakington Barracks. The existing vegetation of Rampton Drift Landscaped Edges shall be complemented through additional native and ornamental tree, shrub and bulb planting. In prominent locations, flowering shrubs and herbaceous planting should feature planting within a white and yellow colour palette.

Key species: Corylus avellana (Common Hazel), Acer campestre (Field Maple), Pinus nigra (Black Pine), Acer platanoides ‘Columnare’ (Column Norway Maple)

Paddock Parkland Character Area

The area shall be informed by the landscape character of the adjoining Paddock Park. Planting shall be predominantly native. In prominent locations, flowering shrubs and herbaceous planting should feature planting within a rose and white colour palette.

Key Species: Corylus avellana (Common Hazel), Acer campestre (Field Maple), Rose species

Common species to be used across all Character Areas

Mews Quarter Character Area

The characteristics of the Informal Greenway and Paddock Parkland shall be drawn into the development where possible. Planting within the informal greenway must complement the existing vegetation. Planting within the mews streets should feature evergreen shrubs and climbers to maximise greenery. In prominent locations, flowering shrubs and herbaceous planting should feature planting within a rose, white and purple colour palette.

Key species: Pyrus calleryana ‘Chanticleer’ (Callery Pear), Hebe spp., Cercidiphyllum japonicum (Katsura), Rhus typhina (Staghorn Sumac), Clematis ‘Jackmanii’

Town Centre Character Area

The Town Centre shall feature native as well as ornamental non-native planting to underline the urban character of the area and increase visual interest. Planting shall occur for impact and distinctiveness. In prominent locations, flowering shrubs and herbaceous planting should feature planting within a blue, yellow and white colour palette.

Key species: Linodendron tuptifera (Tuilip Poplar), Cercidiphyllum japonicum (Katsura), Perovskia atriplicifolia Blue Spire (Russian Sage), Lavandula angustifolia ‘Hidcote’ (Lavender), Rosmarinus officinalis (Rosemary)

Water Park Edges Character Area

The planting palette shall draw influence from the plant species within the Water Park and Informal Greenway. In prominent locations, flowering shrubs and herbaceous planting should feature planting within a blue and white colour palette.

Key species: Alnus cordata (Italian Alder), Prunus spp. (Plum, Cherry), Betula pendula (Silver Birch), Salix caprea (Goat Willow), Ceanothus ‘blue mound’ (California Lilac)

Urban Park Character Area

Tall, clear-stemmed tree planting shall define the Urban Park, comprising specimen trees that flourish in urban conditions with structural and ornamental shrub planting below. New native and shrub planting shall complement the Rampton Drift Landscaped Edges planting. In prominent locations, flowering shrubs and herbaceous planting should feature planting within a red, yellow and white colour palette.

Key species: Acer campestre (Field Maple), Crataegus monogyna (Hawthorn), Malus baccata 'Street Parade', (Crab Apple) Pinus sylvestris (Scots Pine), Mahonia x media ‘Winter Sun’ (Oregon Grape), Liriodendron tulipifera (Tulip Poplar), Cercidiphyllum japonicum (Katsura), Rhus typhuina (Staghorn Sumac), Cornus sanguinea (Common Dogwood), Viburnum opulus (Snowball), Rosa canina (Dog-rose), Eyonymus europaeus (Spindle)

Native Hedgerows

Prunus spinosa (Blackthorn), Acer campestre (Field Maple), Cornus sanguinea (Common Dogwood), Corylus avellana (Common Hazel), Crataegus monogyna (Hawthorn), Viburnum opulus (Snowball), Rosa canina (Dog-rose), Eryngium campestre (Spindle)

Single Species Hedgerows

Carpinus betulus (Common Hornbeam), Buxus sempervirens (Box), Ligustrum vulgare (Wild Privet), Fagus sylvatica (Common Beech), Buxus microphylla (Box)

Shrubs and Climbers

Skimmia japonica (Japanese Skimmia), Soliva officinalis (Sage), Prunus laurocerasus ‘Otto Luyken’ (Cherry Laurel), Lonicera ‘Maygreen’, (Honeysuckle) Cornus sanguinea (Common Dogwood), Choisya ‘Aztec Pearl’ (Mexican Orange), Clematis spp., Wisteria sinensis, Rose species

Figure 4.75: Indicative images of appropriate planting
4.11.4 Street Tree Planting

The Street Tree Schedule below is intended to guide the selection of tree planting within the development. The species have been selected for their growth habit, seasonal appeal, visual appearance, suitability to local conditions, ecological value and diversity. Alternative species may be considered but are subject to prior approval.

<table>
<thead>
<tr>
<th>Type</th>
<th>Location</th>
<th>Species</th>
<th>Location</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Busway</td>
<td>A</td>
<td>Shared Busway</td>
<td>Tilia tomentosa ‘Brabant’</td>
<td>Silver Lime</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Platanus acerifolia</td>
<td>London Plane</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Busway</td>
<td>Alnus cordata</td>
<td>Italian Alder</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Platanus acerifolia</td>
<td>London Plane</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gleditsia triacanthos ‘Skyline’</td>
<td>Honey Locust</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Busway in Town Centre</td>
<td>Liquidambar styraciflua</td>
<td>American Sweetgum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gleditsia triacanthos</td>
<td>Honey Locust</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Busway and Urban Park</td>
<td>Tilia cordata</td>
<td>Small Leaved Lime</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tilia cordata ‘Erecta’</td>
<td>Small Leaved Lime</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Platanus acerifolia</td>
<td>London Plane</td>
</tr>
<tr>
<td>Primary Street</td>
<td>A</td>
<td>Avenue</td>
<td>Aesculus hippocastanum ‘Pyramidalis’</td>
<td>Horse Chestnut</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ulmus ‘Lobel’</td>
<td>Elm ‘Lobel’</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Double Tree Line</td>
<td>Aesculus indica</td>
<td>Indian Horse Chestnut</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Quercus robur ‘Fastigiata’</td>
<td>English Oak</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ulmus ‘Lobel’</td>
<td>Elm ‘Lobel’</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Single Tree Line</td>
<td>Quercus robur ‘Fastigiata’</td>
<td>English Oak</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tilia cordata ‘Erecta’</td>
<td>Small Leaved Lime</td>
</tr>
</tbody>
</table>

Table 4.5: Indicative Street Tree Schedule (continued on next page)
<table>
<thead>
<tr>
<th>Type</th>
<th>Location</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary Street</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/B</td>
<td>Secondary Streets Type A and B</td>
<td>Sorbus aucuparia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quercus robur 'Fastigata'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corylus columna</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pyrus calleryana ‘Chanticleer’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alnus cordata</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gleditsia triacanthos ‘Skyline’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Liquidambar styraciflua</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acer rubrum</td>
</tr>
<tr>
<td><strong>Tertiary Street</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/B</td>
<td>Refer to section4.11.3 Planting within Character Areas</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Existing Avenue</td>
<td>Aesculus indica</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tilia tomentosa ‘Brabant’</td>
</tr>
<tr>
<td><strong>Town Park</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pinus sylvestris</td>
<td>Scotsa Pine</td>
</tr>
<tr>
<td></td>
<td>Ginkgo biloba</td>
<td>Maidenhair Tree</td>
</tr>
<tr>
<td></td>
<td>Liriodendron tulipifera</td>
<td>Tulip Tree</td>
</tr>
<tr>
<td></td>
<td>Tilia cordata (pleached)</td>
<td>Tilia cordata (pleached)</td>
</tr>
<tr>
<td></td>
<td>Salix alba</td>
<td>White willow</td>
</tr>
<tr>
<td></td>
<td>Quercus ilex</td>
<td>Evergreen oak</td>
</tr>
<tr>
<td><strong>Localised Accent Tree Planting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carpinus betulus</td>
<td>Hornbeam</td>
</tr>
<tr>
<td></td>
<td>Acer campestre</td>
<td>Maple</td>
</tr>
<tr>
<td></td>
<td>Malus baccata 'Street Parade'</td>
<td>Street Parade Crab Apple</td>
</tr>
<tr>
<td></td>
<td>Paulownia tomentosa</td>
<td>Foxglove Tree</td>
</tr>
<tr>
<td></td>
<td>Acer campestre</td>
<td>Field Maple</td>
</tr>
<tr>
<td></td>
<td>Betula pendula</td>
<td>Birch</td>
</tr>
<tr>
<td></td>
<td>Pyrus calleryana ‘Chanticleer’</td>
<td>Callery pear ‘Chanticleer’</td>
</tr>
<tr>
<td></td>
<td>Davidia involucrate</td>
<td>Dove tree</td>
</tr>
<tr>
<td></td>
<td>Castanea sativa</td>
<td>Sweet chestnut</td>
</tr>
<tr>
<td></td>
<td>Betula pendula 'Dalecarlica'</td>
<td>Swedish birch tree</td>
</tr>
<tr>
<td></td>
<td>Quercus ilex</td>
<td>Evergreen oak</td>
</tr>
<tr>
<td></td>
<td>Acer lobelli</td>
<td>Maple Lobelli</td>
</tr>
</tbody>
</table>

Table 4.5: Indicative Street Tree Schedule (continued from previous page)
4.11.5 Street Tree Pit Details

Trees in urban environments have specialist requirements to ensure they can thrive and deliver their full range of benefits without causing harmful nuisance.

The following requirements must be applied in the detailed design and implementation of tree pits across the site:

- trees must be provided with a suitable rooting medium and rooting area that is large enough to sustain tree growth into maturity;
- tree roots must have access to water and critically to aeration;
- soil compaction and poor drainage must be avoided;
- where possible trees shall be planted in continuous rooting trenches enabling the roots to spread into the space between the trees;
- trees must be guyed underground to ensure stability while they become established;
- street trees and trees in Important Areas of Townscape must be planted as semi-mature specimen trees at 18 - 20cm girth for instant impact, reduce risk of damage through vandalism and ensure a clear stem of min. 2.5m;
- tree rooting areas under hard surfacing shall be load bearing to avoid soil compaction and to ensure the structural integrity of the surface above;
- where planted in planting beds or verges, high strength linear root barriers must be installed on either side of the planting area to project adjoining paved areas;
- a rootball watering system shall be installed for each tree to ensure water reaches the roots;
- high strength linear root barriers shall be installed to the edge of rooting zones where they are adjacent to service zones or highway areas;
- trees in hard surface shall be set within a tree grille which allows paving over the tree pit (Greanleaf Castle or sim. approved); and
- Trees under-planted with shrubs shall be mulched to 75mm.

Figure 4.78: Illustrative street tree detail for locations under hard landscape finishes (Note: Advisory)
4.12 Integrating Public Art

4.12.1 Public Art Strategy

Public art can play an important role in the creation of a thriving and distinct new community by making direct connections with the character areas of the town, the historic uses of the area and the values of the people that live there.

The public art provision shall be informed by SCDC’s Public Art SPD (2009). The SPD refers to public art as permanent works, temporary, ephemeral or time-based contributions by an artist or crafts-person in any publicly accessible location. The ‘art’ can be part of the public realm, open space, and architecture of the development.

To ensure there is a coordinated and coherent approach to the site all art should find inspiration and be influenced by the following supporting themes:

- Aviation
- Iron Age and Roman heritage
- Pioneers
- Landscape

Public art commissions including installations, functional, practical urban furniture and way-finding features may be influenced by the above themes.

Public art will also have an important part to play in being a voice for the people and the place, in promoting a shared sense of community in which everyone has a role and in celebrating a sense of place for all.

As a key requirement, the art must always be developed in consultation with, and to be accessible for, the whole community.

Educational elements that tell residents and visitors about the history and landscape qualities are positive ways of integrating art and education.

Maintenance

Artworks must have low maintenance requirements, be durable and vandal proof. The artist commissioned is responsible for outlining any maintenance requirements at the time of proposal. It should be confirmed that there is available resource to comply with these requirements before any artwork can go into production.

Figure 4.79: Examples of public art
Health and Safety

Artists and any associated contractors must comply with current health and safety legislation. The artist should provide risk assessments and method statements to demonstrate consideration of health and safety issues. The design must take public safety into account.

Location and Implementation

Figure 4.80 identifies the mandatory (Primary public art focal points) and indicative (Secondary public art focal points) locations for public art, as well as other related features.
4.13 Surface Water Drainage and SUDS

The surface water drainage strategy for the site has been designed to meet the flood risk requirements of the Environment Agency and includes proposals for a surface water drainage system based on SUDS principles.

Detailed design **must** be in line with the site wide Surface Water Drainage Strategy submitted at outline planning and shall comply with best practice guidance as described in The SUDS Manual C753, CIRIA.

The proposed development site falls gently from west to east and as such, storage for surface water is most suited to locations in the east of the site bordering the CGB track. Swales, pipes and other drainage features shall be designed to fall with the gradient of the land, minimising the depths of the swales, pipes, storage structures and other relevant drainage features.

The detailed surface drainage proposals **must** be designed to comply with discharge parameters as outlined in the Surface Water Drainage Strategy submitted at outline planning and to satisfy Environment Agency requirements.

**SUDS Design**

The location of swales are set out on the urban design framework plan (figure 2.2). The broad location of these are mandatory and must be complied with in order to achieve the site wide strategy.

Refer to table 4.6 for an overview of the proposed SUDS typologies and their proposed locations.

The detailed SUDS design **must** consider the quality of runoff to be discharged when considering the appropriate SUDS components and water treatment for different locations. Runoff from parking areas and roads will require some form of pollutant removal due to the presence of pollutants associated with motor vehicles whereas the naturally high quality and unpolluted nature of runoff from roofs and paved areas is likely to require minimal treatment.

Where SUDS components perform vital SUDS functions such as water retention but have comparatively low water treatment characteristics, they shall be combined with complimentary features to provide suitable water treatment.

Ground conditions are unsuitable for infiltration drainage and a controlled connection to a watercourse via swales, ponds and piped network are the only viable option for this development.

Figure 4.81: Examples of water drainage and SUDS features
### SUDS Area Properties

<table>
<thead>
<tr>
<th>SUDS Features</th>
<th>Courtyards and Communal Plot Areas</th>
<th>Streets, Hard Landscaped Areas and Parking Areas</th>
<th>Informal and Formal Greenways</th>
<th>Water Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green roofs, water butts, swales, rain gardens</td>
<td>Swales, rain gardens, water features</td>
<td>Swales, rills, canals, rain gardens, bio-retention tree planters</td>
<td>Swales</td>
<td>Wetland, ponds</td>
</tr>
<tr>
<td><strong>Water management objectives</strong></td>
<td>Provide source control measures to slow and reduce runoff leaving the property area and provide first stage of water quality treatment where possible. Surface water runoff from the roofs and paved areas of residential and commercial property shall be discharged via a gravity piped system to localised swales and rain gardens which, in turn, connect to the larger swale network before discharging to the proposed Water Park. Where possible, green roofs and water butts shall be provided.</td>
<td>Provide source control measures to slow and reduce runoff leaving the property area and provide first stage of water quality treatment where possible. Provide local attenuation subject to detailed drainage proposals.</td>
<td>Capture runoff and provide first stage of water quality treatment. Convey water towards Greenway swale features. Water shall be kept on-surface or in shallow pipes where necessary.</td>
<td>Receive and store some of the surface water. Conveyance of water towards the Water Park. Accommodate enough water for a 1 in 200 year storm event allowing 30% for climate change and zero discharge for 48 hours. Include a single pumped outlet to Beck Brook through the CGB embankment. Discharge controlled via a pumping arrangement using a telemetry system. Detailed drainage design to comply with Environment Agency requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Character</th>
<th>Landscape integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>To suit property design and garden layout.</td>
<td>Planted solutions to be provided where possible.</td>
</tr>
<tr>
<td>To suit plot layout and landscape uses.</td>
<td>Integration of attenuation features into the landscaped areas.</td>
</tr>
<tr>
<td>To suit the street typology character and landscape character area.</td>
<td>Alignment and profile to be coordinated with proposed tree planting locations, parking, below ground services and plot access requirements.</td>
</tr>
<tr>
<td>To suit the green, open landscape character of the formal and informal greenways. Ecological potential should also be considered.</td>
<td>The layout shall complement the landscape character of the formal informal greenways to create varied and attractive amenity and recreation areas. The alignment and profile shall be coordinated with existing structural planting and the circulation network. Embankment gradients shall be max. 1:3.</td>
</tr>
<tr>
<td>Open water with fluctuating water table set within landscaped embankments designed to provide amenity value, informal recreation and ecological habitats.</td>
<td>Landscaped Water Park with subtly undulating edges that create a rich ecological environment of wetland, riparian and aquatic vegetation for wildlife. Slope gradient max. 1:3.</td>
</tr>
</tbody>
</table>

Table 4.6: SUDS Typologies
4.14 Lighting Strategy

The lighting strategy supports the project aspirations for a contemporary exemplar of sustainable living, while being responsive to the surrounding environment and the historic local vernacular of South Cambridgeshire.

All lighting must be designed to minimise energy consumption and avoid light pollution using high quality efficient lighting systems. Lighting must avoid adverse effects on existing and future ecological habitat areas. The following design requirements must be met.

Design Requirements

Three distinct lighting zones have been identified across Phase 2 to distinguish between the lighting requirements of the extended town centre areas, the residential areas and the Greenways/parkland areas. These areas are punctuated by primary and secondary open spaces with feature lighting supporting the distinctiveness of each character area.

Figure 4.82: Mandatory Lighting Strategy
In addition to best practice and Secure by Design requirements, the following principles must inform lighting across the site:

**Greenways & Parkland**
- Lighting must avoid disturbance of the Longstanton Conservation Area and ecologically light sensitive areas throughout the site, such as Long lane; and
- Outside sensitive areas clusters of trees may be illuminated to provide night time focal points within landscaped areas in the urban areas.
- Outside sensitive areas cycling and pedestrian routes must be illuminated to provide people with a sense of safety and security during hours of darkness.

**Town Centre Areas**
- Lighting shall be used to create an attractive urban town centre setting that promotes night-time use; and
- Gateway areas, feature façades and Important Areas of Townscape shall be illuminated to promote distinct town centre areas; and
- The town park/square must include attractive amenity lighting to provide a focal point at the heart of the development and include provision for larger events to take place. Distinctive coloured and dynamic lightening is encouraged. Dull orange street lighting is discouraged.

**Residential Areas**
- Lighting within residential areas shall be restrained and of a single, contemporary light fitting family.

**Primary and Secondary Important Areas of Townscape**
- Feature lighting must be integrated into the design of the Primary and Secondary Landscape Typologies (see figure 2.9) to accentuate landscape elements, focal points and increase the experiential characteristics of the parks;
- A mix of column lighting, up-lighting and illumination of trees, public artwork, benches and walls shall be incorporated into the design; and
- Linear recessed strip lighting and lights suspended on wires, within trees and above public spaces are desirable.

**Sports Hub and Education Campus**
- Flood lighting shall facilitate evening and year-round activity without unduly impacting upon adjoining residents.

**Western Sports Area**
- There shall be no flood lighting in the Western Sports Area due to its proximity to Longstanton Conservation Area and ecologically sensitive habitats.

<table>
<thead>
<tr>
<th>Area</th>
<th>Key features</th>
<th>Materials/ Finishes</th>
<th>Light fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenways and Parkland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal Greenways</td>
<td></td>
<td>Restrained</td>
<td>Timber columns</td>
</tr>
<tr>
<td>Paddocks parkland</td>
<td></td>
<td>Contemporary</td>
<td>Column lighting</td>
</tr>
<tr>
<td>Water Park</td>
<td></td>
<td>Suitable for light sensitive areas</td>
<td>Bollard lighting</td>
</tr>
<tr>
<td><strong>Extended Town Centre Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Busway, Town Centre Character Area</td>
<td></td>
<td>Contemporary</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Town Park, Urban Park, Main Formal</td>
<td></td>
<td>Distinctive</td>
<td>Column lighting</td>
</tr>
<tr>
<td>Greenway, NEAP</td>
<td></td>
<td></td>
<td>Ground recessed uplights to trees,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>public art and building façades</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fittings integrated in street furniture</td>
</tr>
<tr>
<td><strong>Residential Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary, Secondary and Tertiary</td>
<td>Functional</td>
<td>Powder coated</td>
<td>Column lighting</td>
</tr>
<tr>
<td>Streets</td>
<td>Height in proportion to the street width</td>
<td>Galvanised steel</td>
<td>Wall mounted street lighting</td>
</tr>
<tr>
<td></td>
<td>Contemporary</td>
<td></td>
<td>Ground recessed uplights to trees,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>public art and building façades</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fittings integrated</td>
</tr>
<tr>
<td><strong>Primary and Secondary Important Areas of Townscape</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary feature lighting area</td>
<td>Contemporary</td>
<td>Stainless steel</td>
<td>Wall mounted feature lighting</td>
</tr>
<tr>
<td>Secondary feature lighting area</td>
<td>Distinctive</td>
<td>Powder coated</td>
<td>Ground recessed uplights to trees,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>public art and building façades</td>
</tr>
<tr>
<td>Sports Hub and Education Campus</td>
<td>Functional</td>
<td></td>
<td>Functional lighting as required</td>
</tr>
<tr>
<td></td>
<td>lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Sports Area</td>
<td>Flood lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Sports Area</td>
<td>No flood lighting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.7: Lighting Typology Schedule
4.15 Biodiversity Strategy

The development has been designed to retain and protect the most valuable ecological features and to promote the creation of new and enhanced habitats.

Key habitats recorded at the site comprise areas of rough, grazed and improved grassland, arable fields, neutral semi-improved grassland, hedgerows and broadleaved scattered trees. The open grassland in particular, provides foraging and nesting habitat for birds and foraging habitat for badgers. The broadleaved trees provide potential roosting habitat for bats and habitat for birds, with the buildings also supporting bat roots. Long Lane, in particular provides important foraging habitat for bats. An area of dense scrub contains a main badger sett, with this clan foraging across much of the site. The site also provides terrestrial habitat for great crested newt that breed in nearby ponds.

The greenways, notably the informal greenways, provide opportunities to improve connectivity across the site and compensate for habitat loss associated with site clearance works. While some species may be disturbed by the proposed development, there is also an opportunity to attract species that are associated with towns, including starling and house sparrow. There are opportunities to enhance the site for notable invertebrates, particularly white-spotted pinion moth and white-letter hairstreak. Where feasible, measures should be taken to improve the biodiversity value of the local area in line with BAP targets.

The detailed design of the development and landscape shall be in keeping with proposal set out in the Ecological Management Plan (EcMP).

- Maximise the ecological value of all the elements of the landscape strategy, incorporating native species of local origin where possible; and
- Maintain and enhance connectivity through the planting of hedgerows and lines of trees, creating links to the surrounding landscape.

Mitigation Measures

Information presented in the following pages illustrates species targeted by the development, with the aim to support these through sensitive design. The following has been taken into consideration during the development of design parameters:

- Proposals for habitat retention and creation and ecological enhancement measures
- Details of measures for the protection and suitable mitigation of all legally protected species and those habitats and species identified as being of importance for biodiversity, such as nesting, roosting and foraging resources.

The final locations and numbers of mitigation measures for each of the wildlife species must be determined at detailed design stage through consultation with the project ecologist.

Area Specific Biodiversity Measures

Area specific biodiversity measures have been integrated into the Design Code, refer to Chapter 4.1 Detailed Landscape Requirements and Chapter 3 Character Areas.

Proposals

In order to avoid or reduce likely adverse effects on sensitive ecological features and ensure adherence to wildlife legislation, the following objectives relating to landscaping and management have been set and should be applied across the development:

- Retain and protect trees and hedgerows where possible and enhance these features through additional planting
- Create, enhance and manage greenways, green separation and the landscape area around Rampton Drift to benefit bats, badger, birds, great crested newt, common lizard, grass snake and invertebrates.
- Create and manage green roofs to benefit birds and invertebrates, incorporating extensive biodiverse wild flower roofs where possible;
- Create and manage the attenuation ponds to benefit mammals, birds, great crested newt and invertebrates;
- Create and manage the greenways, notably the informal greenways, providing opportunities to improve connectivity across the site and compensate for habitat loss associated with site clearance works.

Tree Planting

The site benefits from areas of valuable existing tree and hedge planting that contribute to the amenity value of the site as well as providing valuable ecological habitat. For details on the condition of individual trees and relevant tree constraints, reference should be made to the Arboricultural Survey Report and Plans. Where possible, the retention of trees shall include Category U trees (unless unsafe) as these are of particular ecological value (see Appendix D Northstowe Phase 2 Planning Statement).

The following principles shall be applied as far as reasonably possible:

- Retention of trees within the green separation area (Paddocks parkland Area), Greenways and Open Space irrespective of age, species or condition (unless dangerous), subject to detailed design
- Retention of as many high and medium quality trees (Category A and Category B) as possible. Potential removal of trees to be carefully evaluated during detailed design and reserved matters applications (RMA).
- Replacement tree planting to compensate for the loss of tree and hedge planting (predominantly native species but with the option of non-native species within the town centre area)
- All trees identified for retention shall be appropriately protected during construction and shall receive management and maintenance care to ensure their continued healthy growth.
- Extensive new planting including native broad-leaved woodland, orchards, shrub, hedgerows and inter-planting of existing hedges with native species to increase species diversity.
- Street tree planting shall be carried out in accordance with guidance provided in chapter 4.11 Soft Landscape.
- Where individual trees or groups of trees are proposed for retention, the existing site levels shall be maintained to allow for protection of those trees.

Hedgehogs

Free movement of hedgehogs must be facilitated through the provision of appropriate boundary treatments. See 4.10.4 for further information.

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<table>
<thead>
<tr>
<th>Wildlife Species</th>
<th>Habitat / Nesting Feature Image</th>
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<th>Grouping</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badger</td>
<td></td>
<td>Artificial Badger Sett.</td>
<td>One Artificial Sett to be located within Phase 2. The location of the artificial sett shall be identified as part of the badger licence, prior to the commencement of any works on site that have the potential to disturb badger setts.</td>
<td>At ground level, built as a raised bund.</td>
<td>Within vegetated areas.</td>
<td>Not applicable.</td>
<td>Blackthorn and hawthorn shrubs to be planted around sett in order to limit disturbance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Artificial Badger Tunnel.</td>
<td>One tunnel should be installed in the south-eastern part of the site, beneath the busway near to the Cambridgeshire Guided Busway. The location should consider the layout of Phase 3 of the development to ensure it can be retained. Badgers will be guided to the tunnel with the use of badger-proof fencing.</td>
<td>Below ground.</td>
<td>Within grassed area.</td>
<td>Not applicable.</td>
<td>The siting of the tunnel should consider the Phase 3 proposals to ensure it can be retained in perpetuity. Badgers shall be guided to the tunnel with the use of badge-proof fencing along the busway.</td>
</tr>
<tr>
<td>Barn Owl</td>
<td></td>
<td>Barn Owl Tower.</td>
<td>One barn owl/wildlife tower should be located in the south of the waterpark, on the periphery of the development to avoid disturbance by human activity and lighting.</td>
<td>Approximately 4.5m.</td>
<td>Surrounded by rough grassland for foraging.</td>
<td>Not applicable.</td>
<td>Designed to provide habitat for a wide range of other species including kestrel, bats (for hibernation and breeding) and invertebrates.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrated Barn Owl Box.</td>
<td>At least two integrated boxes should be installed within the proposed buildings, in particular the secondary school.</td>
<td>&gt;3m above ground level.</td>
<td>Close to rough grassland for foraging.</td>
<td>Not applicable.</td>
<td>The boxes shall be integrated with building façades to ensure their longevity considering issues associated with vandalism and maintenance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External Barn Owl Box.</td>
<td>External barn owl boxes should be located on the periphery of the development to avoid disturbance from human activity and lighting, and surrounded by rough grassland for foraging.</td>
<td>&gt;3m above ground level.</td>
<td>Close to rough grassland for foraging.</td>
<td>Not applicable.</td>
<td>The boxes shall be located on trees to be retained, to ensure their longevity considering issues associated with vandalism and maintenance.</td>
</tr>
</tbody>
</table>

Table 4.8: Design Parameters for Target Wildlife Species (continued overleaf)

Note: The final locations and numbers of mitigation measures for each of the wildlife species must be determined at detailed design stage through consultation with the project ecologist.
<table>
<thead>
<tr>
<th>Wildlife Species</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Bats</td>
<td>[Image]</td>
<td>Bat Loft - with access points and roosting features provided such as: 1. Bat bricks (for access). 2. Internal false cavities between gable wall and secondary wall. 3. Internal timber cladding mounted on 20-30mm battens. 4. Internal timber ridge board.</td>
<td>Within roof spaces of new buildings ideally non-residential buildings such as incorporation into the primary school which supports a common pipistrelle bat roost, the secondary school and other community facilities. Minimise lighting spillage into roofs within which the lofts are located. The pillboxes within Phase 2 shall incorporate bat loft techniques to provide improved roosting habitat.</td>
<td>Roof void must be &gt;1.5m height with an apex length of &gt;4m. Access points must be unobstructed by construction timbers. &gt;2m above ground level.</td>
<td>Install within close proximity to vegetation particularly hedgerows and woodland.</td>
<td>Not applicable.</td>
<td>Lofts must be boarded out. Fibres from modern roofing membranes have been found to entangle bats. Should not be located above doors or windows to avoid dropping build-up on ledges. Any chemicals used to treat timbers should be certified as 'bat safe' products.</td>
</tr>
<tr>
<td>Bats</td>
<td>[Image]</td>
<td>Bat Tubes.</td>
<td>Built into cavity of new buildings, ideally cited in new community buildings. There should be minimal lighting spillage into tubes.</td>
<td>&gt;4m above ground level.</td>
<td>Install within close proximity to vegetation particularly hedgerows and woodland.</td>
<td>Not applicable.</td>
<td>Tubes should not be located above doors or windows to avoid dropping build-up on ledges.</td>
</tr>
<tr>
<td>Bats</td>
<td>[Image]</td>
<td>External bat roost boxes (buildings and trees).</td>
<td>On the sides of new buildings adjacent to hedgerows and woodlands, particularly the northern informal greenway near to the existing bat roost. Bat roost boxes should also be installed on mature trees retained within the green separation and informal greenways. On trees, they should be installed in groups, facing a variety of directions between south-east and south-west (for summer roosting), with a small number of boxes installed on northern aspects of trees (for hibernation). A variety of bat box models should be used.</td>
<td>&gt;5m above ground level.</td>
<td>Install within close proximity to vegetation, especially hedgerows, tree lines and within or adjacent to woodland. One per suitable aspect on buildings; on trees, install in groups of 2-3</td>
<td></td>
<td>Boxes should not be located above doors or windows on buildings, to avoid droppings build-up on ledges. Different Schwegler box designs should be adopted, including the IFF Schwegler Bat Box suited to pipistrelles.</td>
</tr>
<tr>
<td>Bats</td>
<td>[Image]</td>
<td>Bat House.</td>
<td>Single purpose-built structure to be located in an undisturbed location within the northern informal greenway, close to the existing roost within B55.</td>
<td>Not applicable.</td>
<td>Locate within close proximity to vegetation, especially hedgerows, tree lines and within or adjacent to woodland edge; create vegetated links between the bat house and surrounding habitat if not present.</td>
<td>Not applicable.</td>
<td>The bat house should include external and internal roost features, including an enclosed roof space, to ensure that there are a range of roosting locations available. It should be located away from existing external artificial light sources with less than 0.5 lux within at least 50m in all directions from the bat house.</td>
</tr>
<tr>
<td>Bats</td>
<td>[Image]</td>
<td>Pillbox enhancement for Bats.</td>
<td>Subject to heritage approvals, three pillboxes (B11, B12 and B13) may be enhanced by blocking up the gaps between the concrete cap and the brick walls, with the exception of narrow 1.5mm to 20mm gaps which would be retained to provide access. Bat boxes and crawl spaces should be installed internally, and the pillboxes should be made inaccessible to the public.</td>
<td>Not applicable.</td>
<td>Install within close proximity to vegetation.</td>
<td>Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.8: Design Parameters for Target Wildlife Species (continued from previous page)

Note: The final locations and numbers of mitigation measures for each of the wildlife species must be determined at detailed design stage through consultation with the project ecologist.
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</tr>
</thead>
<tbody>
<tr>
<td>Great Crested Newt</td>
<td>[Image]</td>
<td>Attenuation ponds.</td>
<td>Small depressions/ponds to be created around the periphery of the larger attenuation ponds, which will not be pumped directly and may occasionally dry out during hot weather. These depressions will be designed to maximise biodiversity and provide suitable breeding habitat for great crested newt.</td>
<td>Not applicable.</td>
<td>Ponds will be planted with bankside and aquatic vegetation, but some open areas will be maintained such that they will not become too shaded, particularly on their southern sides. The pond surrounds will include riparian vegetation, with native sedges and reeds, rough grassland, tall ruderal vegetation, scrub and trees.</td>
<td>Not applicable.</td>
<td>The ponds will be clustered, ensuring connectivity between the ponds via suitable terrestrial habitat.</td>
</tr>
<tr>
<td>Great Crested Newt</td>
<td>[Image]</td>
<td>GCN Amphibian tunnel crossing with associated guide fencing.</td>
<td>Amphibian tunnels should be installed under the access road in the southern part of the barracks beneath the proposed primary road. Suitable fencing should also be installed to direct amphibians to the tunnels and away from the road.</td>
<td>Below ground.</td>
<td>Not applicable; functions only as a crossing.</td>
<td>Not applicable.</td>
<td>To be designed and constructed as part of the relevant section of highway and in conjunction with Project Ecologist.</td>
</tr>
<tr>
<td>Swift</td>
<td>[Image]</td>
<td>Swift Box.</td>
<td>Swift boxes should be installed where appropriate across the site, adjacent to green spaces. They should be situated on the side of the building that gets the least direct sunlight, under eaves, or on walls facing north, north-east or north west.</td>
<td>&gt;5m above ground level.</td>
<td>Away from trees, shrubs and climbing plants.</td>
<td>Essential to have minimum of 6 boxes in one group.</td>
<td>Boxes should also be located in an area with an uncluttered drop space of at least 2m. Boxes should not be located above doors or windows to avoid dropping build-up on ledges.</td>
</tr>
<tr>
<td>Swift</td>
<td>[Image]</td>
<td>Swift Bricks.</td>
<td>Swift bricks should be installed below the eaves on appropriate buildings across the site, adjacent to green spaces. They should be situated on the side of the building that gets the least direct sunlight, ideally or on walls facing north, north-east or north west.</td>
<td>&gt;5m above ground level, with a clear airspace beneath.</td>
<td>Away from trees, shrubs and climbing plants.</td>
<td>Preferable to install them in groups of approximately 2-6.</td>
<td>Designed to provide habitat for a wide range of other bird species such as Starling and House Sparrow.</td>
</tr>
<tr>
<td>Starling</td>
<td>[Image]</td>
<td>Starling Box.</td>
<td>Boxes should be located on the sides of buildings across the site, ideally adjacent to green spaces. Boxes should face between north and east to avoid strong sunlight and wind. Boxes should be tilted slightly forwards, with groups of boxes spaced out on the same side of the building.</td>
<td>2-4m up the wall.</td>
<td>Not applicable.</td>
<td>Groups of 2 or 3.</td>
<td>Note Starlings can be noisy and messy; locate accordingly in order to minimise impact on private homes. Boxes should not be located above doors or windows to avoid dropping build-up on ledges. All boxes should be constructed from high quality materials.</td>
</tr>
<tr>
<td>Birds and Invertebrates</td>
<td>[Image]</td>
<td>Green roofs.</td>
<td>Extensive biodiverse green roofs (wildflower meadow type) to be installed on a number of buildings, including over parking decks within apartment buildings around the town centre, Office buildings within the town centre, the school buildings and the sports hub could also support green roofs.</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
<td>Install a number of green roofs in proximity to each other to create a series of stepping stones of green roof habitat across the development area.</td>
<td>Green roofs will be designed to be in keeping with the surrounding area and contain native plant species of local provenance. They will be managed for the benefit of birds and invertebrates.</td>
</tr>
</tbody>
</table>

Table 4.8: Design Parameters for Target Wildlife Species

Note: The final locations and numbers of mitigation measures for each of the wildlife species must be determined at detailed design stage through consultation with the project ecologist.
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</thead>
<tbody>
<tr>
<td>House Sparrow</td>
<td><img src="image" alt="House Sparrow Box" /></td>
<td>House Sparrow Box or 'Terrace' (multiple chambers in one box).</td>
<td>House sparrow boxes should be spread in groups of two or three on the sides of buildings across the site, ideally adjacent to green spaces. Boxes should face between north and east to avoid strong sunlight and wind. Boxes should be tilted slightly forwards, with groups of boxes spaced out on the same side of the building.</td>
<td>&gt;2.5m above ground level.</td>
<td>In close proximity to vegetation.</td>
<td>Desirable to have group terrace within box.</td>
<td>Boxes should not be located above doors or windows to avoid dropping build-up on ledges. All boxes should be constructed from high quality materials.</td>
</tr>
<tr>
<td>Swallow</td>
<td><img src="image" alt="Swallow Box" /></td>
<td>Swallow Box.</td>
<td>Swallow boxes should be installed where appropriate, under the eaves, inside garages or outhouses adjacent to green spaces across the site. They should be situated on the side of the building that gets the least direct sunlight, under eaves, or on walls facing north, north-east or north west.</td>
<td>&gt;5m above ground level, with a clear air-space beneath.</td>
<td>Away from trees, shrubs and climbing plants.</td>
<td>Should not be located less than 1m apart.</td>
<td>Boxes should not be located above doors or windows to avoid dropping build-up on ledges. All boxes should be constructed from high quality materials.</td>
</tr>
<tr>
<td>House Martin</td>
<td><img src="image" alt="House Martin Box" /></td>
<td>House Martin Box.</td>
<td>House martin boxes should be should be fixed under eaves installed on appropriate buildings across the site, adjacent to green spaces. They should be situated on the side of the building that gets the least direct sunlight, under eaves, or on walls facing north or east.</td>
<td>&gt;2.5m above ground level.</td>
<td>Away from trees, shrubs and climbing plants.</td>
<td>Desirable to fix them in groups.</td>
<td>Boxes should not be located above doors or windows to avoid dropping build-up on ledges. All boxes should be constructed from high quality materials.</td>
</tr>
</tbody>
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Table 4.8: Design Parameters for Target Wildlife Species (continued from previous page)

Note: The final locations and numbers of mitigation measures for each of the wildlife species must be determined at detailed design stage through consultation with the project ecologist.