C.10 Design Code

10.1 Overview

This Design Code will provide a set of 'high-level' design instructions that will be used to guide the delivery of the site through outline and reserved matters planning applications. It will be used as a reference document by the Local Authority and individual developers and their design teams to help ensure the coordinated design and delivery of development across the South Epping Masterplan Area.

It will establish a common set of requirements that help promote high quality design without unnecessary prescription or requesting specific details for individual buildings.

The Code has been structured to broadly follow the themes identified in the National Model Design Code (NMDC). However these sections are modified to give emphasis to landscape and built character.

Nature

Expands proposals set in the SMF to provide further detailed instruction on green and blue infrastructure, drainage, ecology and the design of publicly accessible open spaces.

Movement

Expands proposals set in the SMF to provide further detailed instruction on the movement framework, street hierarchy, parking design and servicing.

Public Spaces & Legibility

Expands proposals set in the SMF to provide further detailed instruction on the hierarchy of public spaces multi-functional street design, the design of key junctions and key public realm spaces.

Character & Identity

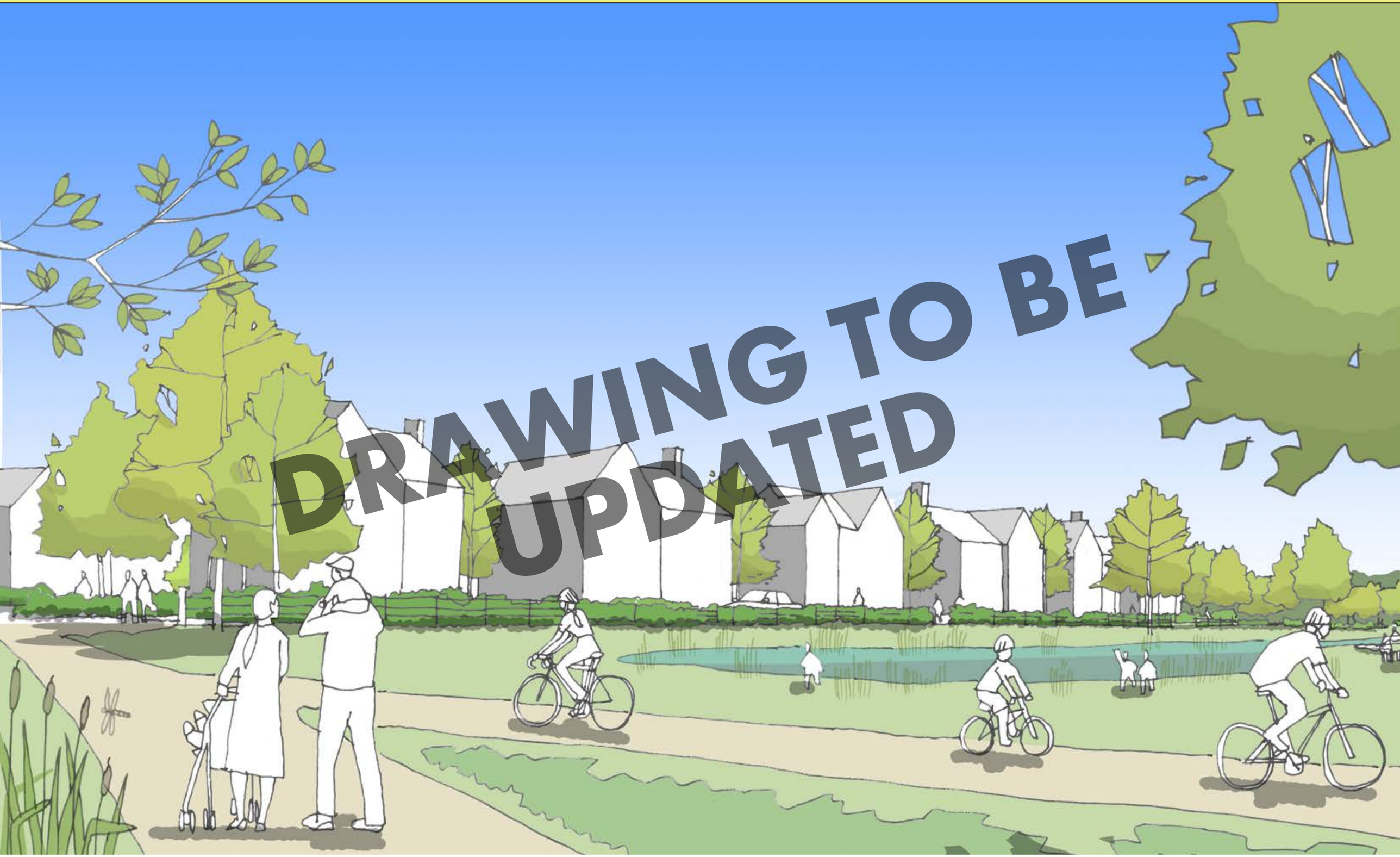
Expands proposals set in the SMF to provide further detailed instruction on built form and building groupings to aid wayfinding, define community spaces and create a locally distinctive identity.

Mandatory and Non-mandatory Requirements

Each section of the code begins with key objectives to be achieved in future development, followed by more detailed strategies and requirements. This includes requirements for physical infrastructure and key considerations for future design, delivery and management stages.

Coding is stated as either mandatory requirements with the word '**must**' or recommendations with the word '**should'**. Mandatory requirements must be complied with; for non-mandatory recommendations, any deviation needs to be justified. This could be due to technical reasons or by demonstrating that an alternative approach would more successfully achieve the design ambitions of the code.

A compliance tracker should be completed by the applicant at the earliest stages of pre-application and updated throughout the planning process.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Key strategies for an integral network of green routes and spaces

- **Nature conservation**: the Green Infrastructure Framework (the 'Framework') **must** protect and enhance existing landscape and ecological features throughout the masterplan area.
- **Site-wide greening**: the Framework **must** deliver a variety of high-quality open spaces, green corridors, and recreational opportunities across the masterplan area, that integrate seamlessly with the wooded ridgeline character of the surrounding context.
- **Sustainable drainage**: the Framework **must** ensure that SuDS features are designed to have a natural, organic form without appearing heavily engineered, whilst also positively contributing to wider green infrastructure provision.
- **Living landscapes**: the Framework **must** help deliver biodiversity and nature conservation supporting wildlife.
- **SANG**: the Framework **must** deliver a substantial area of Suitable Alternative Natural Greenspace (SANG) to prevent an increase in visitor pressure on the Epping Forest SAC.

Purpose of the Green Infrastructure Framework Plan

Nature **must** be incorporated into each aspect of the design, following the approach laid out in the Green Infrastructure Framework. This approach **must** create an integrated network of natural habitats, sustainable drainage, and usable open spaces. When completed, the masterplan **should** deliver an increased quality of life and an improved environment. On this basis, the masterplan proposals **must** be landscape-led.

The Framework provides the key requirements to enable the site-wide masterplan to deliver the necessary variety of multi-functional spaces and green connections; it also identifies the approaches and opportunities that **should** be integrated into existing and proposed green infrastructure.

The masterplan design **must** be sympathetic to the surrounding built environment and its landscape setting. The Framework delivers a range of benefits for landscape, biodiversity, hydrology and drainage, sports and recreation, health and well-being, and climate change. The masterplan **must** preserve and enhance the existing range of natural features found within the Site, whilst also providing a mix of new formal and informal open spaces offering generous and usable green open space, ranging from gardens, green corridors, parkland, and new play areas.

The masterplan **must** be embedded within a network of multi-functional green open spaces that will serve all age groups of the existing and new communities. The existing footpaths within the site **must** be retained, and may be realigned, to form the structure for a network of green corridors that will provide multifunctional open spaces offering walking and cycling links to neighbouring communities. Secure walking and cycling opportunities between the eastern and western parts of the masterplan area **must** be delivered through improvements to the accessibility of the existing footbridge link over the Central Line. Play for all ages **must** be integrated within the proposed public open spaces, with clear walking and cycling routes to link surrounding communities with the masterplan area.

Given the topography of the masterplan area and the environmental imperative to manage water and mitigate flood risk in a sustainable way, there is an opportunity for SuDS to contribute to a high-quality, characterful and distinctive place. SuDS **must** alleviate flood risk and mitigate the impact of development, where 'Green Fingers' passing through the development parcels **should** provide an opportunity to create attractive landscapes that improve accessibility, drainage, and biodiversity.

A key component of the masterplan are the proposed SANG and SANG extension that **must** provide a minimum of 10ha of new Green Infrastructure to serve as a buffer between the proposed development and the M25 motorway.

The existing well-vegetated M25 corridor to the south of the SANG **must** be reinforced by an area dedicated to the provision of new habitats extending along the majority of the masterplan's southern boundary. This area **should** form part of the wider Green Infrastructure provision, deliver visual enhancements to the SANG, provide vital M25 noise mitigation measures, and introduce a robust and defensible new Green Belt boundary. This new area of habitat **must** be separated from the SANG via an acoustic bund and fencing.

Site-Wide Green Infrastructure Requirements

i. Green infrastructure proposals **must** be developed collaboratively by qualified landscape architects, ecologists, SuDS engineers, architects and other expertise that may be required. The proposals **must** be developed iteratively with EFDC and other stakeholders.

ii. The proposals **must** demonstrate how connections with neighbouring communities and wildlife will be considered and **should** include as well as mapping of the ecological network.

iii. The proposals **must** deliver a generous, multi-functional network of public spaces to maximise the green outlook for homes and **must** provide legible green routes with consideration of safety once trees and planting reach maturity. The proposed green connections **must** link with the existing PRoW network.

iv. The proposals **must** enhance placemaking and wayfinding by creating positive and distinctive landscape character that responds to existing site features including topography, hydrology, trees, hedgerows, woodland, ecology and key vistas.

v. To minimise and any harmful effects upon views towards the masterplan area, existing boundary vegetation **must** be reinforced with new planting. Street trees **must** be planted to break-up the perception of massing within the identified development parcels.

vi. The trees and other vegetation associated with the brook corridor **must** be retained, other than removals required to facilitate the two road crossings.

vii. The existing vegetation following the M25 corridor **must** be retained and a new area dedicated to habitat improvement **must** be created.

viii. The eastern boundary of the masterplan area **must** provide a robust and defensible new Green Belt boundary.

ix. Play provision for all ages **must** be integrated within the proposed public open spaces, and clear walking and cycling routes **must** be provided to access these play opportunities.

LEGEND

- *Retained tree belts along boundaries and watercourses*
- *Equipped play provision*
- *Play on the way / Incidental play*
- *Zone of semi-natural open space incorporating SuDS basins*
- *Suitable Alternative Natural Greenspace (SANG)*
- *Circular SANG walk*
- *Blocks of tree planting within the SANG*
- *Approximate location for SANG car park*
- *Formal amenity open space*
- *Potential locations for the re-provision of Brook Road recreation ground (Village Green)*
- *Zone within acoustic mitigation area (no public access)*
- *Tree planting along southern and eastern boundaries to provide a robust and defensible Green Belt boundary*
- *Landscaped gateway area to incorporate planting and built gateway feature*
- *North-south green fingers through development incorporating planted swales and street trees*
- *Key views within the site and from access locations*

KEY VIEWS FROM EXISTING SETTLEMENT INTO THE SITE

- A *Channelled view along Bridge Hill toward higher ground*
- B *Channelled view from Ivy Chimneys Road toward higher ground along*
- C *Channelled view along Bower Hill toward higher ground along*

Figure 84. Green Infrastructure Framework Plan

Key strategies for water management

- Implement a variety of Sustainable Drainage Systems (SuDS) to sustainably manage surface water runoff, by mimicking the natural drainage characteristics of the Site.
- To achieve a sustainable drainage solution that balances water quality, amenity, biodiversity and flood resilience.
- Remove the risk of surface water flooding throughout the new development catchments.

Purpose of the SuDS Framework Plan

The site-wide SuDS strategy shown opposite is designed to control the quantity and quality of surface water runoff. Well-designed SuDS provide opportunities for communities to enjoy the dynamic nature of the water environment and the different habitats that may be sustained by it.

The SuDS strategy must be coordinated with topography, ecology, landscape and placemaking and should be prepared with input from a multidisciplinary team of consultants including landscape architects, architects, drainage engineers and ecologists.

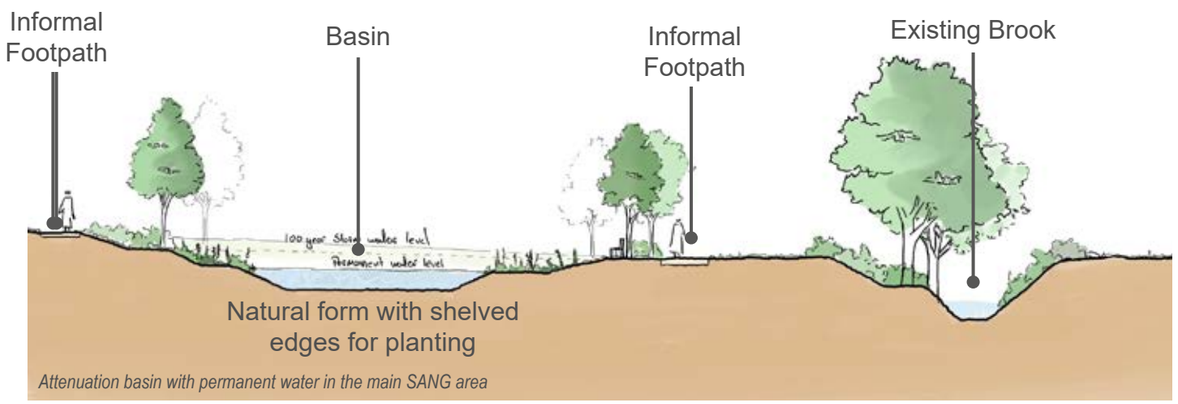
The SuDS strategy must be reviewed in detail as part of a Flood Risk Assessment and Drainage Strategy submitted in support of planning applications.

Key Features of the SuDS Framework Plan

The SuDS strategy comprises a combination of swales and detention basins in order to control surface water run-off into the existing watercourse.

The site currently does not have a system in place that improves the quality of surface water before discharging into the watercourse. The use of SuDS across the site will provide two stages of treatment to surface water before it is discharged into the local drainage network.

Surface water generated from the development footprint will be collected and conveyed via a surface water pipe network under the adopted roads and/or within roadside and conveyance swales.



Attenuation basin with permanent water in the main SANG area

SuDS Infrastructure Requirements

i. SuDS components **must** comprise those elements identified on the site-wide SuDS Framework Plan (opposite) and utilise street verges, green-blue corridors and wetlands.

ii. In accordance with ECC's 'SuDS Design Guide for Essex', the SuDS Manual C753 and national government guidance the SuDS across the site **must** be designed in order to store storm water for the 1 in 100 year + 40% climate change storm event.

iii. The basins **must** be located in the lowest lying areas of each catchment in order for surface water to drain naturally via gravity and into the existing features at the most convenient locations.

iv. SuDS features **should** be incorporated creatively in a way that contributes positively to the quality and appearance of a street or space and the character area it is located in.

v. SuDS features **should** be above ground where possible and visible in the public realm as naturalistic or interesting features to aid placemaking and character, and to raise awareness of the importance of water as a resource.

vi. SuDS features **should** be used on Secondary Streets as indicated on the SuDS plan to collect highways drainage and contribute to the overall attenuation. Opportunities for SuDS features or SuDS tree pits on other streets **should** be maximised.

vii. Permeable paved parking bays **should** be provided on each street to collect surface water and provide treatment.

viii. Swales **must** be designed to improve water quality run-off before it is discharged into the local drainage network and **must** be planted to maximise biodiversity and reduce maintenance requirements.

ix. SuDS basins and swales **must** be designed with shallow slopes no steeper than 1 in 3, and dense planting around the edges of permanent water to avoid the use of fences, railings or other barriers. Gradients and basin size **should** vary to suit the natural character.

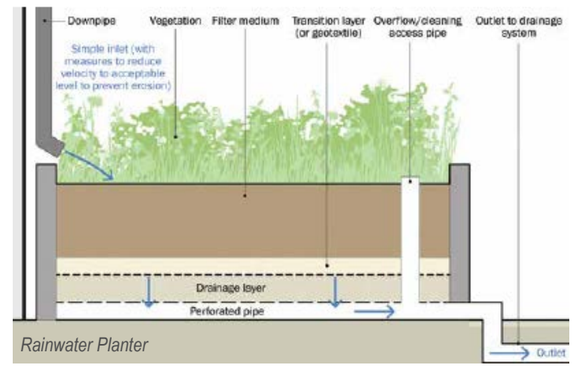
x. On-plot SuDS **should** be provided to help manage individual building water runoff and add to the overall attenuation volume of the development.

xi. Surface water stored within basins **must** be designed to discharge at QBAR (in accordance with the SuDS Manual and national and local government guidance) into the existing drainage network that operates across the site.

xii. All opportunities for integrating SuDS with other activities such as play, recreation, biodiversity, education and improved outlook **should** be explored and incorporated where possible.

xiii. The SuDS strategy **must** include details on the management and maintenance requirements and the plan for adoption or long term stewardship of the various SuDS components.

xiv. A foul water drainage strategy **must** be developed to demonstrate how the foul water from the proposed development will be managed and connected to the existing Thames Water sewer network.



Rainwater Planter

Figure 85. SuDS Framework Plan

Key strategies for ecology

- Enable the retention and enhancement of key ecological features.
- Maximise the gains to biodiversity, in line with local and national planning policy through the creation of new habitat areas and enhancement of existing areas.

Purpose of the Ecology Strategy Plan

The scheme will result in the provision of large new areas of natural green space, as well as enhancement of existing pockets of green space such as ponds, woodland and the existing brook. These measures will enhance the site's overall value for biodiversity.

The provision of this Suitable Alternative Natural Greenspace (SANG) will also help attract visitors away from the nearby internationally and nationally designated sites such as Epping Forest Special Area of Conservation (SAC) and Lee Valley Special Protection Area (SPA).

Biodiversity Net Gain (BNG)

The DEFRA BNG metric will be used to establish the BNG baseline units for the site, and to calculate the post-development units, recognising that the site will need to demonstrate delivery of a minimum 10% net gain in accordance with the Environment Act 2022 requirements.

Protected and Notable Habitats and Species

The site is dominated by arable land which is generally considered to be of low ecological value however other habitats (including woodland, hedgerows and ponds as well as a small stream) are of higher biodiversity value and have the potential to support several protected and notable species. A suite of ecological surveys have been undertaken commencing in 2021 and continuing to date. During these surveys, the following species have been recorded on or adjacent to the site:

- Badgers;
- Roosting, foraging and commuting bats;
- Notable species of bird, including skylark;
- Great crested newts;
- Relatively widespread reptile species (slow-worm);
- Important hedgerows.

The site also has potential to support hedgehog and brown hare.

Ecology Requirements

i. Proposals **must** demonstrate how they connect with the ecological network outside the site boundary.

ii. The development **must** demonstrate a 10% BNG.

iii. The northern site boundaries **should** be enhanced to provide biodiversity gain.

iv. The design and delivery of the SANG **must** take place in consultation with stakeholders such as Natural England.

v. Mitigation measures to protect species and habitats during construction and after completion of the development **must** be implemented to ensure existing site biodiversity is safeguarded.

vi. A 30 year management plan set out within a detailed Landscape and Ecology Management Plan **must** be provided for all BNG habitats areas.

vii. A legally binding agreement to secure the management of the SANG in perpetuity **must** be agreed.

viii. Higher value habitats such as woodland, mature trees, stream and hedgerows **must** be retained, protection and enhanced wherever possible to maintain foraging routes for wildlife.

ix. The development **must** make allowance for areas of semi-natural open space to provide habitats for bats, badgers, great crested newts and reptiles.

x. Tree planting along the southern and eastern boundaries **must** be undertaken.

xi. Areas within the acoustic buffer **should** be used to provide net gains for biodiversity.

xii. Streams and associated tree belt **should** be protected and enhanced.

xiii. Proposals **must** include wildlife friendly habitat creation around attenuation basins and habitat enhancement around existing ponds.

xiv. Development parcels **must** incorporate bat and bird boxes.

xv. Lighting around the perimeter of the development **must** be low level to avoid light nuisance within semi-natural habitat areas.

LEGEND

- *Higher value habitats such as woodland, mature trees, stream and hedgerows must be retained, protected and enhanced*
- *Semi-natural open space to must be created to provide additional resources for bats, badgers, great crested newts and reptiles*
- *Tree belt foraging routes for wildlife must be retained*
- *New foraging routes for wildlife should be created through additional tree planting*
- *New habitats must be created within the acoustic buffer to provide net gains for biodiversity*
- *Streams and associated tree belts must be protected and enhanced*
- *Opportunity for habitat creation/enhancement around existing pond should be realised*
- *Surface water attenuation basins should provide the opportunity for additional habitat creation*
- *Bat and bird boxes must be integrated within the 7development parcels*

Figure 86. Indicative Ecology Strategy

SANG Area

The Consortium delivering the masterplan has benefited from the Discretionary Advice Service provided by Natural England (NE). Written advice was provided on 28th March 2024 to address potential adverse effects on the Epping Forest Special Area of Conservation (SAC).

The proposed SANG comprises a larger area to the east of the London Underground Central Line, which bisects the masterplan area. The SANG area **should** be compliant with Natural England's SANG Guidelines to adhered to the written advice provide by NE. The masterplan area **must** also provide a smaller, linear area to the west of the Central Line that would provide a SANG extension.

The two SANG areas **must** be located to the south of the masterplan area, between the proposed residential development and the M25 corridor.

As such, a noise attenuation bund and fence **should** be introduced to ensure that the noise levels within the SANG areas do not exceed NE's SANG Guidelines of 60dB.

To comply with NE's standard SANG provision rate of 8ha per 1000 new population, the proposed SANG and SANG extension **must** provide 10.56ha to meet the requirement for 550 dwellings (based upon an occupancy rate of 2.4 people per dwelling).

The SANG and SANG extension **must** be linked by the proposed active travel bridge over the Central Line.

The main SANG area **must** contain a circular walking route of 2.3km. The walking route **must** have a minimum separation of 20m with scrub/ tree planting between the paths for screening. Where no screening is provided, a minimum separation of 100m **must** be provided.

The circular path in the SANG and the main linear path in the SANG extension **must** be surfaced appropriately. Resin bound hoggin is the top specification that Natural England accepts for surfacing paths within SANG. Steps may be needed on steeper sections.

The two SANG areas **should** have a wooded character with the path passing through 'glades' of woodland to ensure that intervisibility between users of the footpath is minimised. This approach is considered appropriate given that ridgelines 'crowned' with woodland are prevalent in the local area.

Tree species selected **should** be representative of those found within the Epping Forest SAC, including Oak, Hornbeam, Beech, Silver Birch, Holly and Crab Apple.

Additional fruiting species **should** also be interspersed along the walking route with appropriate interpretation boards. Locally sourced native species **should** be used within the planting scheme.

The higher ground to the south-east of the eastern parcel **must** be designed to provide views looking north towards the Epping ridgeline and the prominent spire of St. John's Church.

The two SANG areas **should** include the provision of benches and picnic areas. The benches **should** be located along the circular path in the main SANG to provide resting points and along the main path in the SANG extension.

Picnic benches **should** be provided near the car parks and at viewing points to invite visitors to increase their dwell time in the SANG.

Litter bins **must** be provided at both car parks and other appropriate locations, (e.g. by picnic benches (see below) and at pedestrian entrances to the SANG from the new housing).

Attractively designed leaflets advertising the SANG **should** be provided to all new residents.

SANG Requirements

i. The proposed SANG **must** provide 10.56ha to meet the requirement of up to 550 dwellings, and **should** be located in the eastern parcel with an additional SANG extension area located in the western parcel.

ii. The main SANG area **must** contain a circular walking route of 2.3km, and the path together with the main linear path in the SANG extension **must** be surfaced appropriately (e.g. self-binding gravel).

iii. The circular walk within the main SANG area **must** start and finish at the car park within the eastern parcel and the additional walking within the western parcel **must** start at the car park within the western parcel.

iv. Information boards and/or signage at access points **must** be provided to illustrate the layout of the two SANG areas and routes available to visitors.

v. Appropriate parking facilities **must** be located at the vehicular access to both SANG areas at a minimum of 1 space per hectare of SANG. The parking areas **must** be easily and safely accessible by car and clearly sign posted.

vi. The two SANG areas **must** be dog friendly and fenced to allow owners to take their dogs from the car park to the SANG or SANG extension safely off the lead.

vii. Access points **should** be provided based on the intended visitors of the SANG, with safe access routes on foot from the nearest car park and/or footpath.

viii. The SANG **must** be semi-natural in character or perceived as such where close to existing development and **should** include naturalistic space with areas of scattered/ dense tree and shrub planting.

ix. The proposed acoustic mitigation **must** ensure that noise levels within both SANG areas will not exceed 60dB.

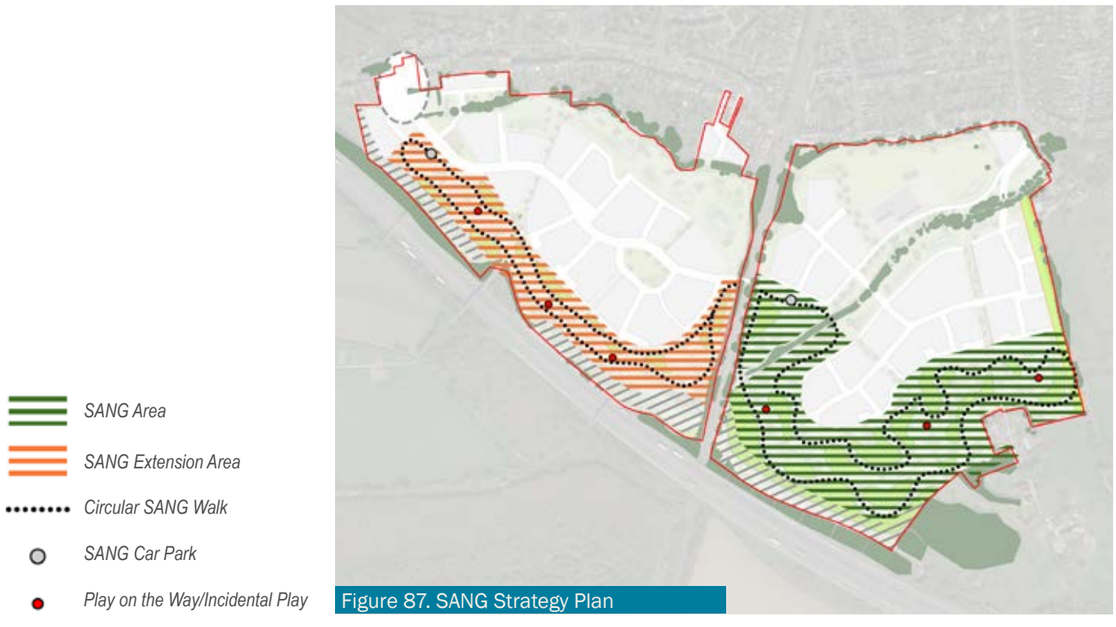
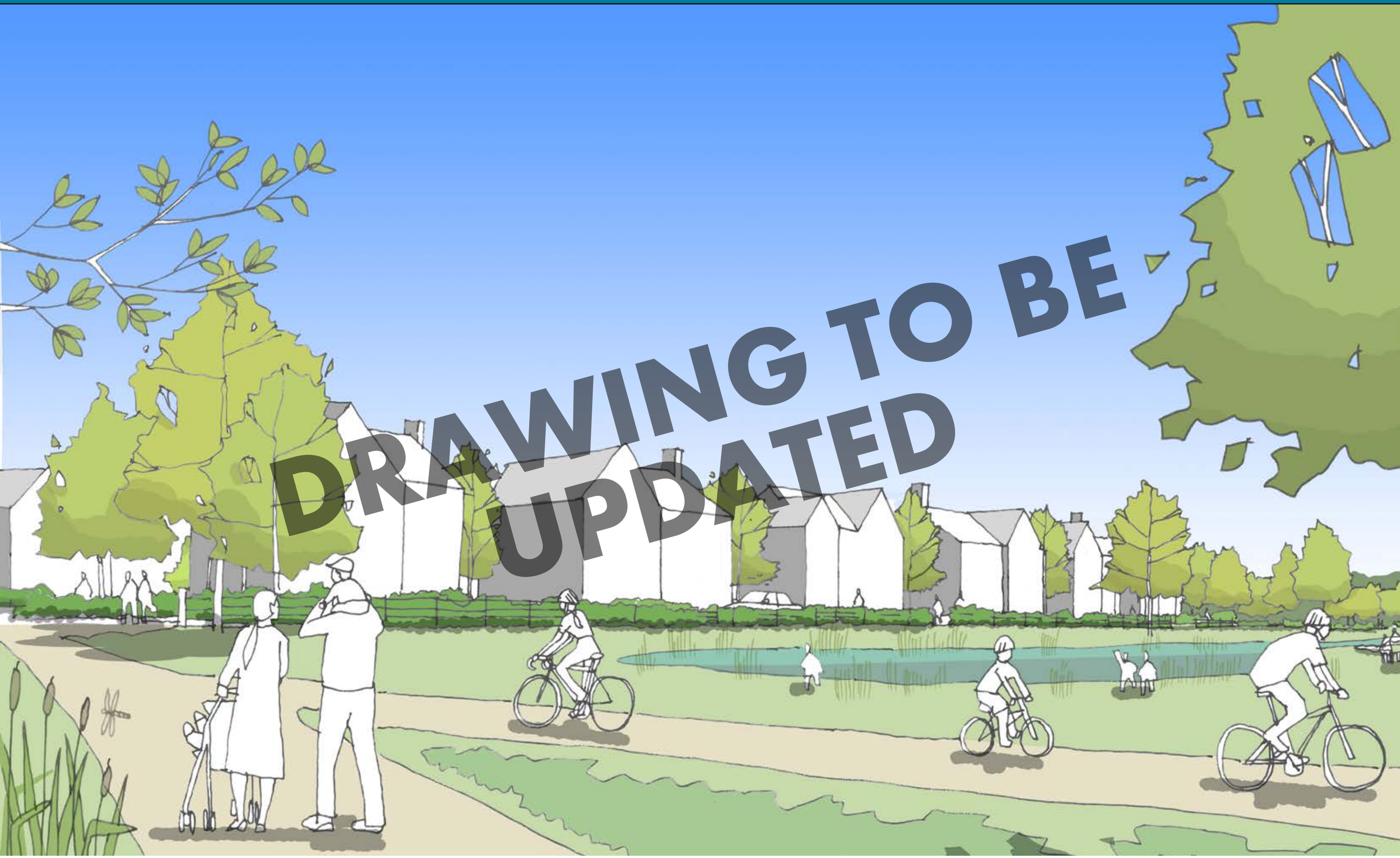


Figure 87. SANG Strategy Plan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Overview

The site will be developed to achieve appropriate external sound levels within areas designated as SANG, and within private internal and external amenity spaces within the residential parts of the development.

Guidance on suitable external sound levels will be taken from NE's SANG guidance, with additional reference to British Standard 8233 for the residential spaces. This will be achieved through the introduction of an acoustic barrier between the southern boundary of both development parcels and the M25.

These internal sound levels will be achieved through appropriate acoustic specification of the building envelopes, including the external wall, glazing, and any ventilation systems.

SANG Noise Attenuation Bund Requirements

i. The bund will be designed so that the southern side slope on the motorway side of the bund **should** be as steep as possible, but not steeper than 1:3 to enable planting to be carried out safely on the embankment.

ii. The northern slope facing towards the proposed development **should** have a much shallower gradient to ensure that the walking route within the SANG area is comfortable and accessible for visitors (as illustrated on the opposite page).

iii. The slopes **should** be graded out and tied into the local landform and trapezoidal shapes **must** be avoided.

iv. The bunds **must** be subject to a detailed planting strategy to minimise the impact of the embankments and ensure that the SANG area vegetation establishes quickly to provide the required naturalistic space with areas of scattered/dense tree and shrub planting.

v. Care **must** be taken during the construction of the acoustic bund to ensure that all available top soil within the masterplan area is stripped and stored in an appropriate manner. Soil scientists **should** provide technical guidance on the stripping and storage of topsoil.

vi. The bund **must** be constructed with appropriate depths of topsoil and subsoil. Topsoil and subsoil **should** vary in depth depending upon the type of planting proposed, with deeper planting areas required for trees and shrubs.

vii. The planting areas **should** be free draining to avoid water-logging.

Ground Level & Noise Mitigation Requirements

i. Proposals **must** provide noise levels within internal and external residential environments in compliance with British Standard 8233 for the residential spaces British Standard 8233 for the residential spaces

ii. Proposals **must** achieve appropriate external sound levels within areas designated as SANG as set out by NE's SANG guidance

iii. Internal sound levels within new residential dwellings **must** be achieved using appropriate acoustic specification of the building envelopes, including the external wall, glazing, and any ventilation systems. The specification of these systems will be subject to further detailed design post planning.

iv. Proposals **must** not adversely affect existing noise sensitive receptors in the vicinity of the site.

v. Noise assessments **must** demonstrate that noise from new sources introduced as part of the masterplan can be controlled to suitable limiting levels, which will be derived relative to the background sound levels measured prior to development.

vi. Areas between the acoustic fencing and the M25 **must** be secured from public access.

vii. The acoustic bunds **must** be subject to a detailed planting strategy.

Precedent of engineered noise mitigation bund with planting

Precedent of noise mitigation bund along the edge of a residential development

Precedent of a planted noise mitigation bund

Precedent of a planted noise mitigation bund

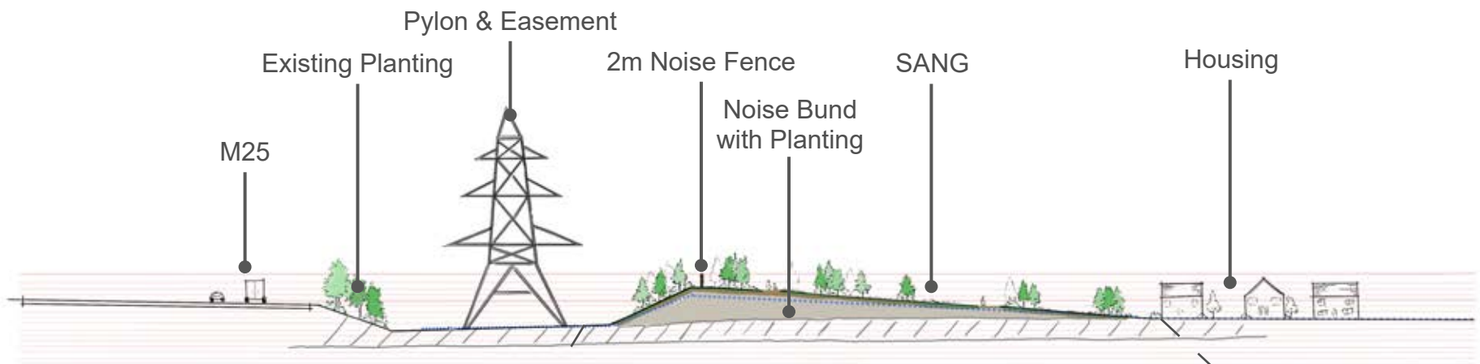


Figure 88. Illustrative Section Through Noise Bund

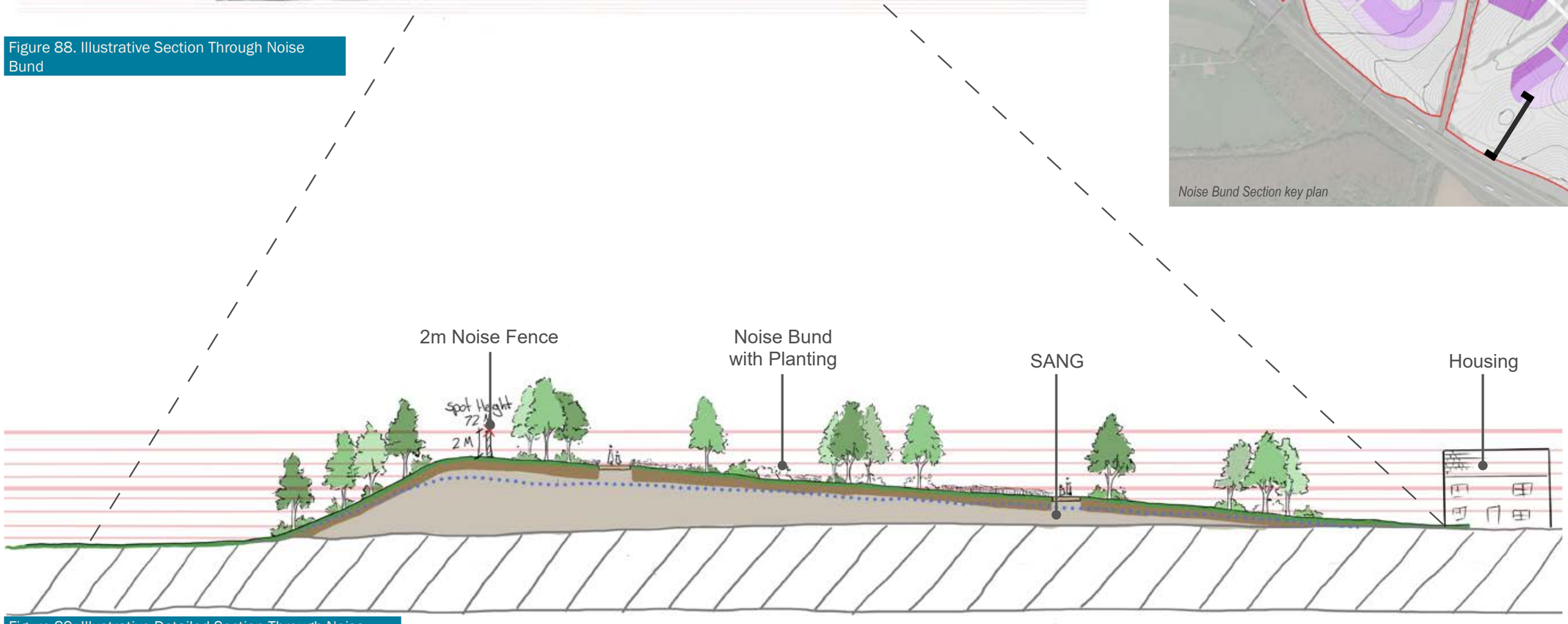


Figure 89. Illustrative Detailed Section Through Noise Bund

Proposed Bund Path

500mm Sub Soil

300mm Top Soil

Mounded Spoil

Current Landform

Landscape Character Areas

The wider landscape strategy for the Site takes into account the local context and existing landscape features to create three distinct landscape character areas:

- Waterside Landscape Area
- Brook Valley Landscape Area
- Hillside Edge Landscape Area

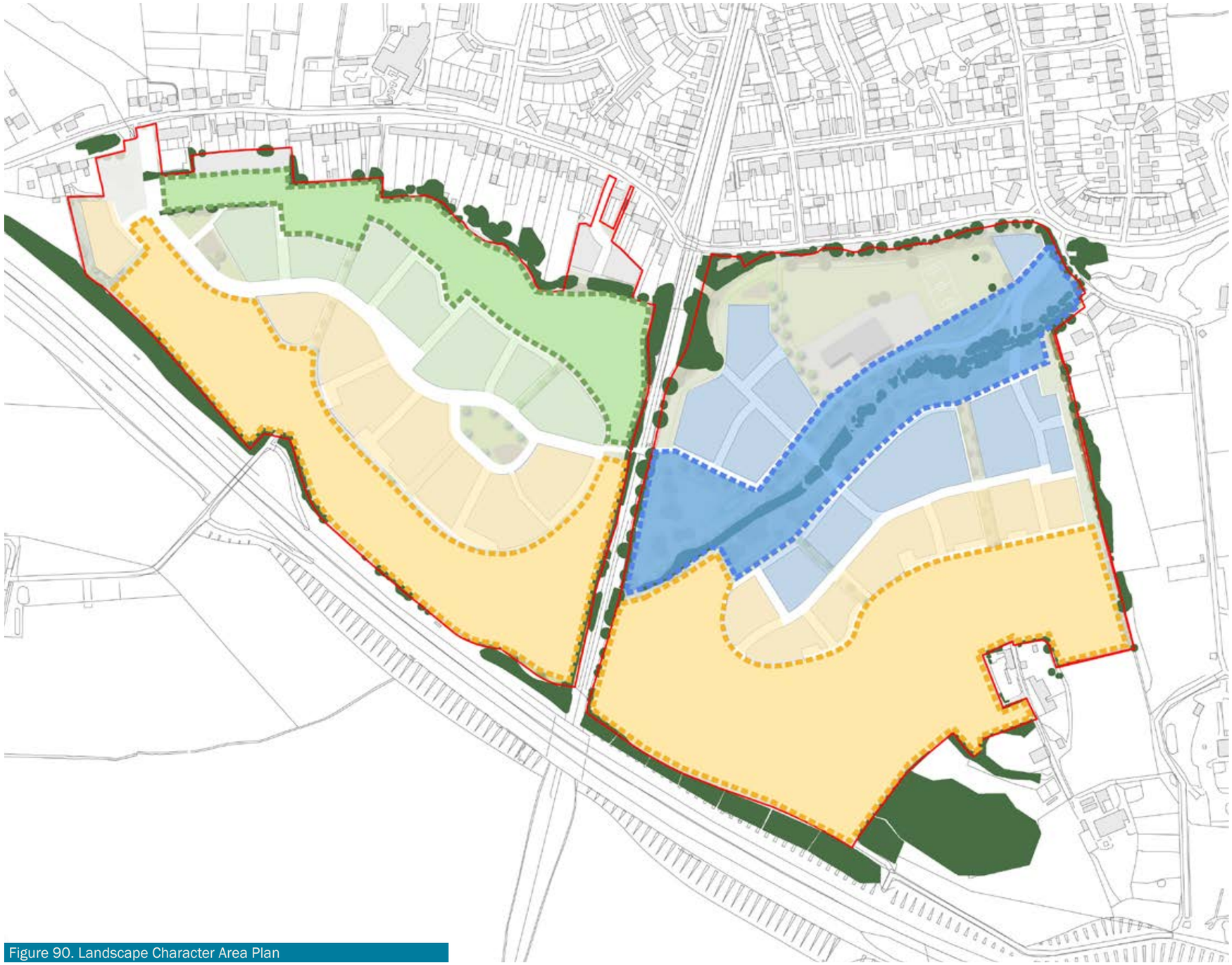


Figure 90. Landscape Character Area Plan

Waterside Landscape Area

The Waterside Landscape Area will be an ecological and water management corridor, building upon the existing watercourse and ecological offerings and **must** act as a landscape and visual buffer between the proposal and existing properties along Ivy Chimneys.

The Waterside Landscape Area **should** provide a network of hierarchical routes for both pedestrians and cyclists and **must** incorporate existing PRoW routes.

Vegetation and planting around attenuation basin (Barton Park, Oxford)

Waterside Requirements

i. The existing vegetation along the northern boundary **must** be retained and strengthened.

ii. A landscape and visual buffer **must** be maintained between properties along Ivy Chimneys and the proposal.

iii. The proposed dwellings **must** be orientated to overlook the Waterside Landscape Area to offer passive surveillance to the space.

iv. The new settlement edge **must** respond appropriately and sensitively to the Waterside Landscape Area.

v. The identified 'Green Corridors' **should** extend into the Waterside Landscape Area allowing surface water runoff to flow into the attenuation basins and increase permeability.

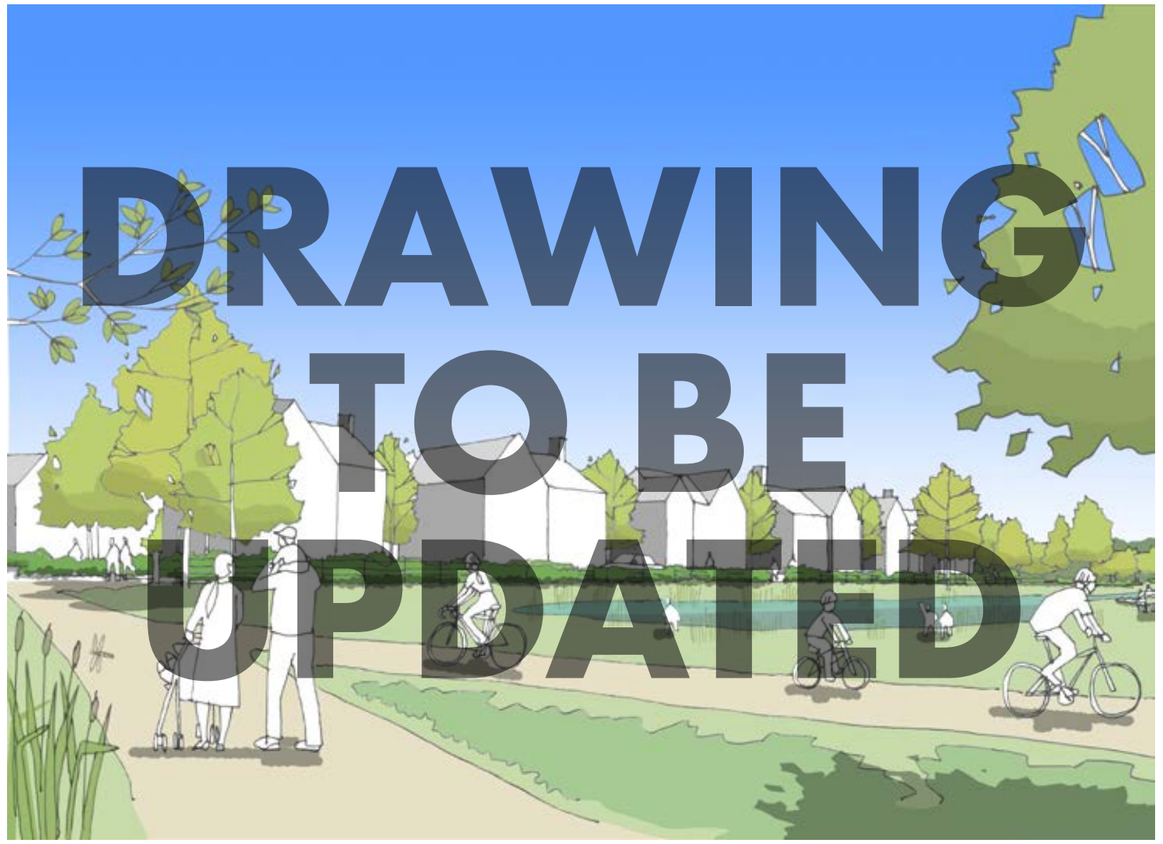
vi. The attenuation basin **must** be of appropriate proportions to allow the space to be used for both water management and amenity value.

vii. The attenuation basins **must** be designed to have an organic form, reflective of their location with aquatic, marginal and water tolerant planting to integrate them.

viii. Attenuation basins **should** be designed to provide permanently wet areas for biodiversity and amenity benefit.

ix. The Waterside Landscape Area **should** include a range of native planting throughout to encourage a range of habitats and associated flora and fauna.

x. The 'Ivy Chimneys Gateway' and 'Gateway' to the SANG extension **should** be located to the north west of the Waterside Landscape Area.



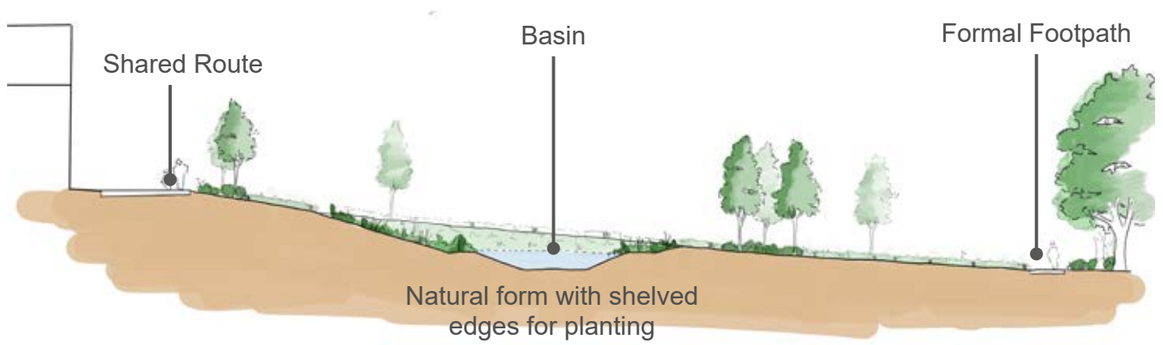


Figure 91. Illustrative Section of the Waterside Landscape Area

Brook Valley Landscape Area

The Brook Valley Landscape Area **must** be defined by the brook itself and the associated woodland belt vegetation, both of which form an important ecological corridor. The corridor **must** be enhanced through habitat enrichment and utilisation as part of the water management system to create interest and maximise biodiversity. The attenuation basins **must** be designed to have a natural, organic form and positively contribute to green infrastructure without appearing heavily engineered. The proposals **must** provide amenity and benefit to all, delivering a variety of high quality spaces for enjoyment of nature.

Native planting along watercourse supports biodiversity

Brook Valley Requirements

i. The existing woodland belt that follows the course of the Brook Valley diagonally through the eastern part of the site **must** be retained to accommodate SuDS attenuation basins and other habitat enhancements to provide biodiversity improvements.

ii. Tree removals **must** be kept to a minimum to preserve the existing character of the brook, and new tree planting will be introduced to reinforce the landscape structure.

iii. The main east-west spine road **must** be directed to the south of the brook, and **must** cross the brook at points of low arboricultural importance, and **should** pass through the interior of development parcels to minimise vehicular movements within the Brook Valley.

iv. The proposed dwellings **must** be oriented to overlook the brook corridor to provide natural surveillance and to help activate the space, and the new settlement edge **must** be sensitively articulated to create interest and variety.

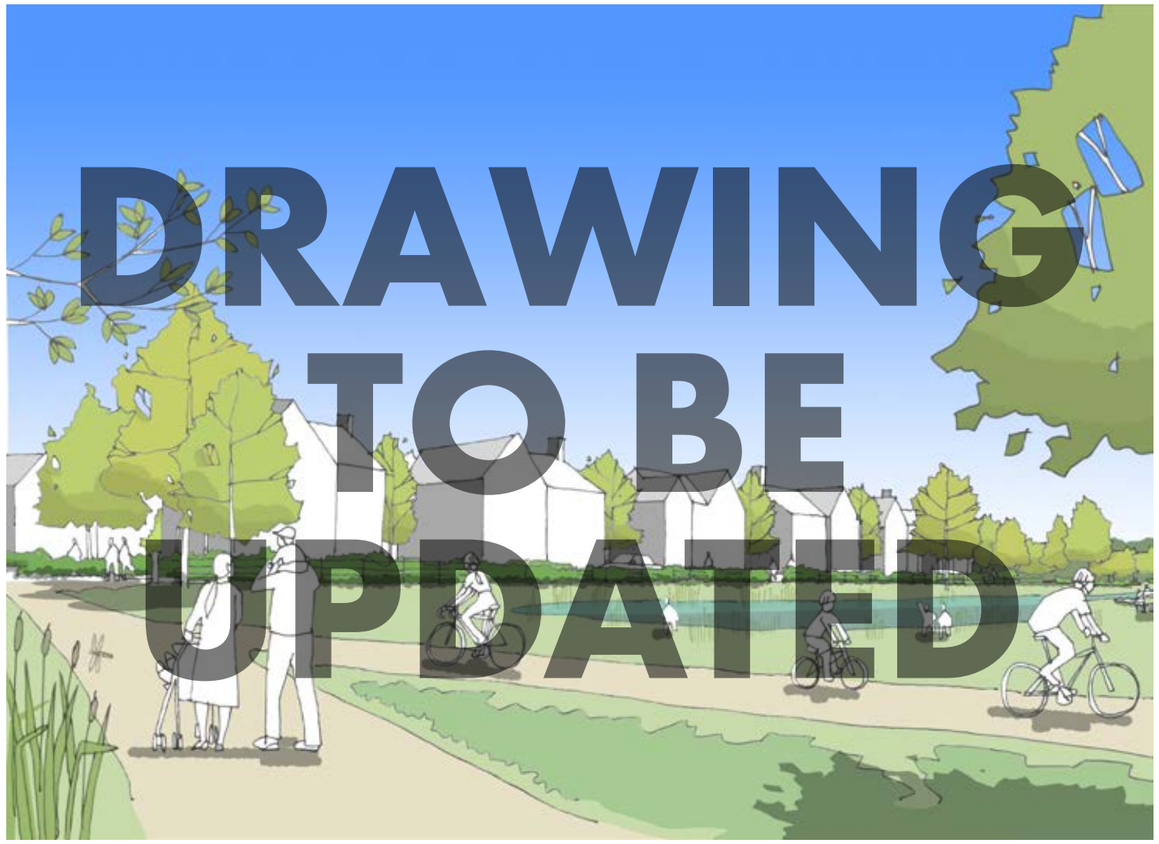
v. The identified 'Green Corridors', including Fluxs Lane, **should** extend towards and into the brook corridor allowing surface water runoff to flow into the attenuation basins.

vi. The attenuation basins **must** be appropriately planted with aquatic, marginal, or other water tolerant planting to ensure a naturalistic appearance.

vii. The basins containing permanent water **should** include platforms and dipping stations to allow residents to interact with the natural world.

viii. The 'gateway' to the main SANG area **should** be located to the north of the Brook Valley, with car parking facilities for visitors. The circular walk will start and finish at this point.

ix. Provision of mobile drinks / food offer at the SANG gateway **should** be provided.



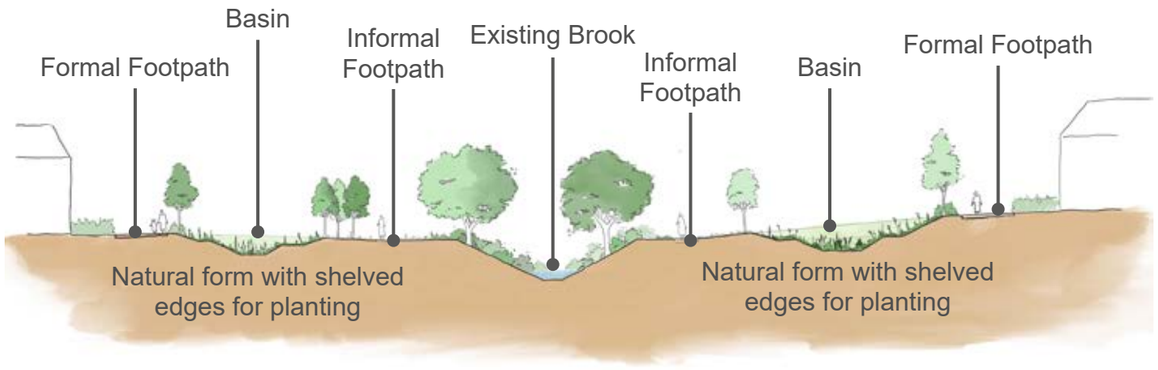


Figure 92. Illustrative Section of the Brook Valley Landscape Area

Hillside Edge Landscape Area

The Hillside Edge Landscape Area **must** provide the transition area from the proposed residential development to the main SANG and SANG Extension within the southern part of the masterplan area. New tree and shrub planting **must** be introduced to soften the new settlement edge and to provide physical and visual separation from the SANG. The SANG areas **should** replicate the feeling of being in a natural landscape of similar character to the Epping Forest SAC. The SANG areas **should** offer the experience of being in a forest or natural landscape, with a 2.3km circular walking route passing through woodland glades that will be created following the maturation of the proposed woodland planting. Additional buffer planting **must** be introduced along the eastern boundary of the masterplan area to create a robust and durable new Green Belt boundary.

Planting softens the appearance of built form and supports biodiversity (Brooklands, Milton Keynes)

Hillside Edge Requirements

i. The new settlement edge, including parking courtyards, **must** include tree, hedgerow, and shrub planting to soften and articulate the appearance of the new built form.

ii. The SANG areas **must** include a variety of habitat types but will predominantly seek to protect and enhance the wooded ridgeline character that is prevailing in the local area.

iii. The SANG areas **must** provide a variety of routes ranging in distance and interest, incorporating existing public footpaths.

iv. To enhance legibility, new wayfinding signage and information boards **must** be provided along the 2.3km circular walking route and other appropriate location.

v. Opportunities for panoramic views **should** be identified and promoted with the SANG areas, looking views looking northwards towards the wooded ridgeline of Epping.

vi. Appropriate acoustic mitigation **must** be introduced to ensure that the SANG areas can be delivered with the required noise levels, providing the peace and tranquillity to create the feeling of being in a natural landscape.

vii. The detailed design of the character area **must** be informed by EFDC's adopted Green Infrastructure Strategy and Natural England's Green Infrastructure Design Guide and **should** be guided by written advice received from Natural England.

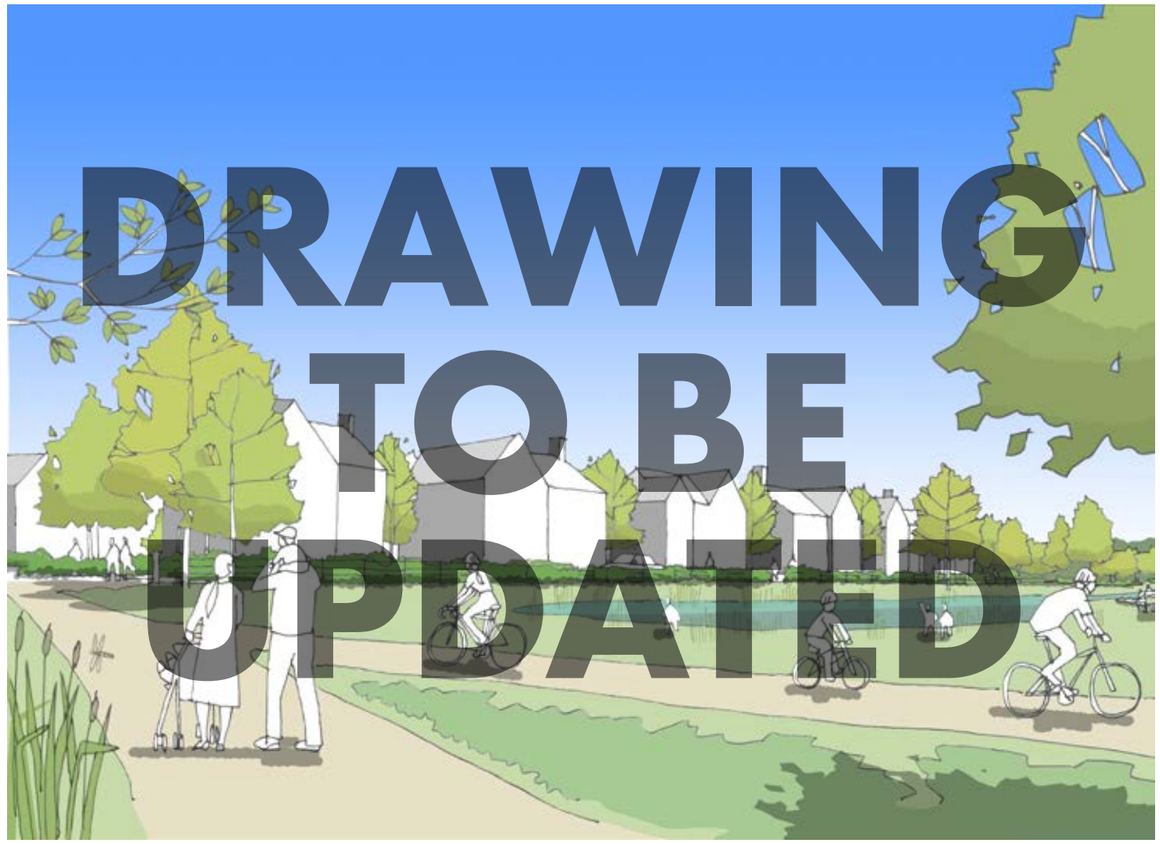


Figure 93. Illustrative Section of Hillside Edge Landscape Area

Key strategies for trees & planting

- Tree planting **must** be based upon a palette of robust species, including native trees that are present locally and within Epping Forest, and non-native trees selected for their ability to adapt to climate change.
- The planting character should be more formal and ornamental within the residential cores, becoming more informal and native towards the residential edges.

Trees & Planting

- Planting **should** be used to differentiate the character of the various character areas, neighbourhoods and streets within the proposed development, and to assist with wayfinding
- Planting **should** be designed for biodiversity and wildlife value and deliver visual and seasonal interest. This should include a consideration of flowering times, scent, autumn colour, winter bark, fruit and berries as well as wildflower habitat and food sources.
- In paved areas or in areas where the rooting zone is restricted, trees **must** be planted using rootcell systems and linear trenches to ensure sufficient long-term rooting volumes and healthy trees which will achieve their optimum height and spread.
- Where on-street parking proposed, street tree species **should** be selected that do not attract aphids or drop fruit.
- All street tree, shrub and herbaceous planting **should** be tolerant of urban conditions - to allow for a variety of species to be used.
- Other small-scale biodiversity interventions **should** be incorporated in residential areas, such as green roofs and walls, window boxes and planters and climbing plants.
- Living roofs (green or brown) **should** be planted/ seeded with drought tolerant wild flowers.
- Street trees **should** be selected and set-out in proportion to the street widths and building heights.
- Trees and shrubs **should** be planted at a spacing and density that allows them to take on their natural form without requiring regular pruning, and taking account of visibility splays, external lighting and signage.
- To mitigate against the effects of possible future pathogens, a range of trees **must** be used rather than relying on one species of street or parkland tree.

Street Tree Planting

- Entrance streets **should** be planted with large trees (20m + height) of the same species per character area, this is to maintain the three distinctive character areas, regularly spaced in a staggered ‘avenue’ at approximately 5 - 20m centres. At junctions different ornamental tree species shall be planted to limit potential impact from disease to single species.
- Secondary streets **should** be planted with medium to large trees (15-20m height) of the same species per street to maintain a unified character, regularly spaced in single rows or staggered pairs. As with Entrance Streets, different tree species shall be planted at junctions to limit the potential impacts from disease to single species.
- Tertiary shared surface streets **should** be informally planted with small ornamental tree species (5-15m height).

Street Tree Requirements

i. As per NPPF guidance, streets **should** be tree lined to positively contribute to character, place-making, green infrastructure and biodiversity.

ii. The tree planting design **should** serve to break-up the massing of built form visible in views towards the development from the surrounding area, such that overtime the appearance will that of partial ridgelines amongst verdant tree canopies.

iii. The selection and placement of street trees **should** soften the visual characteristics of the streetscape and define the hierarchy of roads through tree size, form and species.

iv. Street tree planting **should** be used to define and frame views and vistas throughout the development.

v. Consideration **must** be given to rooting volume and relevant planting guidance such as NHBC to ensure tree-lined streets are achievable. A range of systems are available to allow hard landscaping to be implemented whilst still providing adequate rooting volume for trees. Where hard surfaces are within 2m of any canopy edge at full maturity, a root barrier **should** be installed.

vi. Fruit bearing tree species **should** be avoided within the streetscape to reduce maintenance and potential hazards.

vii. Consideration **must** be given to tree species selection to increase biosecurity, biodiversity, wayfinding and seasonal interest.

viii. The external lighting design **must** be designed to ensure street tree planting can be implemented.

ix. Tree selection **should** be in general accordance with the Illustrative Tree Strategy.

Planting within a service strip on a shared surface street

Street trees and planting within verges

Low level planting between parking

Hedge planting alongside rear garden boundary fronting the public realm

Illustrative Street Tree Palette

Entrance Street trees:
- *Platanus x acerifolia*
- *Tilia platyphyllos 'Rubra'*
- *Tilia tormentosa*

Secondary Street trees:
- *Carpinus betulus*
- *Corylus colurna*
- *Fagus sylvatica 'Dawyck'*
- *Parrotia persica 'Vanessa'*
- *Sorbus aria*

Junction street trees:
- *Acer campestre 'Queen Elizabeth'*
- *Carpinus japonica*
- *Ostraya carpinufolia*
- *Sorbus torminalis*

Green Corridor trees:
- *Acer platanoides*
- *Alnus glutinosa*
- *Betula pendula*
- *Betula nigra*
- *Euonymus europaeus*
- *Fagus sylvatica*
- *Ilex aquifolium*
- *Malus sylvestris*
- *Salix cinerea subsp. oleifolia*
- *Sorbus torminalis*

Shared Surface trees:
- *Acer campestre*
- *Ginkgo biloba 'Mayfield'*
- *Ligustrum lucidum 'Variegata'*
- *Prunus maackii 'Amber Beauty'*
- *Pyrus calleryana 'Chanticleer'*
- *Sorbus asplenifolia*

Courtyard trees:
- *Acer davidii 'George Forrest'*
- *Betula nigra (multistem)*
- *Betula utilis jacquemontii*
- *Prunus 'Amanogawa'*
- *Sorbus aucuparia 'Cardinal Royal'*

Open space trees:
- *Acer platanoides*
- *Alnus glutinosa*
- *Betula pendula*
- *Betula nigra*
- *Euonymus europaeus*
- *Fagus sylvatica*
- *Ilex aquifolium*
- *Malus sylvestris*
- *Salix cinerea subsp. oleifolia*
- *Sorbus torminalis*

SANG trees:
- *Acer campestre*
- *Acer rubrum*
- *Alnus glutinosa*
- *Alnus incana 'Laciniata'*
- *Betula pendula*
- *Betula pubescens*
- *Castanea sativa*
- *Carpinus betulus*
- *Fagus sylvatica*
- *Ilex aquifolium*
- *Malus sylvestris*
- *Prunus avium*
- *Quercus robur*
- *Sorbus aria*
- *Sorbus torminalis*

Native scrub whip planting:
- *Acer campestre*
- *Cornus sanguinea*
- *Corylus avellana*
- *Crataegus monogyna*
- *Ilex aquifolium*
- *Lonicera periclymenum*
- *Malus sylvestris*
- *Prunus spinosa*
- *Rosa canina*
- *Salix caprea*
- *Sambucus nigra*
- *Viburnum opulus*

Figure 94. Illustrative Tree Planting Strategy

Key strategies for play and recreation

- Designated and informal play spaces **must** be created in accordance with the EFDC Open Spaces Strategy and other local authority standards.
- The play areas **must** be integrated into the design of the open spaces, within a safe walking distance of all homes and must include NEAPs, LEAPs and LAPs.
- These design of the designated play areas **should** follow specifications provided by the document 'Guidance for Outdoor Sport and Play: Beyond the Six Acre Standard'.
- The existing Brook Road Recreation Ground **must** be partially re-provided in the masterplan area to the west of the Central Line, in the form of a Village Green.
- Informal and incidental play **should** be provided throughout the masterplan area, and within the SANG and SANG extention areas.
- The number and locations of all LAPs, LEAPs, NEAPs and other recreational spaces **must** be agreed with the LPA as part of subsequent planning applications.

Play & Recreation Principles

- Each play space **should** be designed specifically for its location, to suit different ages and abilities and encourage social interaction.
- Sites for imaginative play **should** include natural landscape features (e.g. boulders, landform and logs) as well as integrated play features (e.g. ditches and tunnels) alongside more conventional play equipment, in order to encourage imaginative play.
- Play potential **should** be considered in all elements of the landscape design as children will often find play opportunities in unexpected places.
- 'Green gyms' **should** be provided to inspire people of all ages to engage in activity.
- The siting of designated play areas **should** preclude opportunities for the overlooking of nearby gardens or dwellings, and potential loss of privacy and creation of nuisance.
- Perimeter fences are generally considered inappropriate although some fencing **should** be considered if the site adjoins one or more road.

Local Area of Play (LAP) Requirements

i. LAPs **must** be located within a 100m walking distance of all dwellings and are best positioned beside a pedestrian route that is well used.

ii. LAPs **should** occupy a well-drained and reasonably flat site surfaced with grass or a hard surface.

iii. The recommended minimum activity zone **should** be 100m^2 and a buffer zone of 5m minimum depth **must** separate the activity zone and the forward-most part of the nearest dwelling that faces the LAP.

iv. Gable end or other exposed walls **should** be protected from use for ball games by, for example, providing a dense strip of planting of 1 metre minimum depth. The buffer zone includes varied planting to provide a mix of scent, colour and texture.

v. LAPs **should** contain demonstrative features that allow young children to identify and claim the space as theirs.

vi. LAPs **should** have a 600mm guard rail, low fence or planting to indicate the perimeter. Similarly, depending on location, there may need to be a barrier limiting the speed of a child entering or leaving the LAP.

vii. There **should** be a sign indicating that the area is for children's play and that dogs are not welcome.

Local Equipped Area of Play (LEAP) Requirements

i. LEAPs **must** be located within 5 minutes walking time of the child's home and are best positioned beside a pedestrian route that is well used.

ii. LEAPs **should** occupy a well-drained, reasonably flat site surfaced with grass or a hard surface, together with impact absorbing surfaces beneath and around play equipment or structures as appropriate.

iii. The recommended minimum activity zone **should** be 400m2 and a buffer zone of 10m minimum depth **must** separate the activity zone and the boundary of the nearest property containing a dwelling. A minimum of 20m buffer zone **must** be provided between the activity zone and the habitable room facade of the nearest dwelling.

iv. Where these minimum distances apply, careful consideration **should** be given to the design of any means of enclosure, planting scheme and/or other physical features on the boundary of the residential property.

v. The LEAP **should** be designed to provide a stimulating and challenging play experience that should include equipment providing opportunities for balancing, rocking, climbing, overhead activity, sliding, swinging, jumping, crawling, rotating, imaginative play, social play, and play with natural materials such as sand and water, or other activities.

vi. The number and nature of equipment and structures **should** be a matter for local consultation and decision although a minimum provision of six play experiences is recommended.

Neighbourhood Equipped Area of Play (NEAP) Requirements

i. The NEAP **must** be located within 15 minutes walking time of the child's home and **should** be positioned beside a pedestrian route that is well used.

ii. The NEAP **should** occupy a well-drained site, with both grass and hard surfaced areas, together with impact absorbing surfaces beneath and around play equipment or structures as appropriate.

iii. The recommended minimum activity zone **should** be 1000 m2 and buffer zone of 30m minimum depth **must** separate the activity zone and the boundary of the nearest property containing a dwelling.

iv. The NEAP **should** be designed to provide a stimulating and challenging play experience that may include equipment and other features providing opportunities for balancing, rocking, climbing, overhead activity, sliding, swinging, jumping, crawling, rotating, imaginative play, social play, play with natural materials such as sand and water, ball games, wheeled areas or other activities.

v. The number and nature of equipment and structures **should** be a matter for local consultation and decision, though provision for a minimum number of nine play experiences is recommended.

Sport Provision Requirement

i. The re-provided Recreation Ground (Village Green) **should** provide a kick around area.

The number and locations of all LAPs, LEAPs, NEAPs and other recreational spaces **must** be agreed with EFDC as part of subsequent planning applications.

LEGEND

NEAP (Neighbourhood Equipped Area for Play) 1,000m Radius

LEAP (Local Equipment Area for Play) 400m Radius

LAP (Local Area of Play) 100m Radius

Play on the Way

Figure 95. Play & Recreation Plan

Key strategies for ecological features

- Bat and bird rooting features **must** be included within the proposals and **should** be integrated within the building fabric where possible.
- Reptile and amphibian habitat and hibernacula **must** be provided within the masterplan area.
- Garden fencing **must** allow access for hedgehogs.

Ecological Feature Requirements

i. Bat roosting features **should** be provided on buildings located close to areas of green space and those buildings within the control of the Affordable Homes Management Company. They **should** comprise "bat tubes" or an equivalent bat roosting feature, incorporated into the external wall of buildings.

ii. The positioning of bat roosting features **must** consider external lighting – to ensure that light spillage onto roosting features and habitat links is minimised; and landscape planting or retained vegetation - to ensure that suitable foraging habitat and habitat links are located near to new roosts.

iii. Bird nesting features **should** be distributed throughout the development site. Features **should** be predominantly provided on buildings close to areas of green space. They **should** comprise integrated nest sites, designed specifically for house sparrows (also suitable for use by other similar sized hole-nesting species) and be constructed from high quality materials.

iv. Green and brown roofs **should** be provided in specific parts of the site. They **should** be designed to be of particular value for birds.

v. The noise attenuation bunds along the M25 corridor **must** be designed to provide suitable habitats for reptiles, with a wildflower meadow that is infrequently mown and new hibernation site.

vi. Rear garden boundaries of properties and fencing around the open spaces **must** allow for access by hedgehogs.

Feature	Installation height on building	Aspect	Grouping	Other comments
Bat tube or roosting feature	>2.5m above ground level	South-facing (or south-east or south-west)	Desirable to group up to 3 tubes together	Avoid locating close to windows
House sparrow 'terrace' (2 nest chambers in one box)	>2.5m above ground level	North-, east-, or west-facing	Desirable to group terraces	Avoid locating above windows or doors

Bat tube integrated within building fabric (ref: Schwegler Natur)

Bat tubes (3no.) integrated within a rendered finish (ref: Schwegler Natur)

Bat tube for slated & tiled pitched roofs (ref: Just Lead)

Sparrow terrace integrated within brick / concrete walls (ref: Schwegler Natur)

Sparrow terrace in insulating concrete block & brick (ref: Wienerberger)

Reptile / amphibian hibernacula (ref: Preston Montford Field Centre)

Key strategies for external lighting

- The external lighting proposals **must** be incorporated into masterplan area in a manner that puts nature first, whilst also complementing the buildings and public realm.
- The proposals **should** utilise a consistent palette of fittings that minimise clutter and provide appropriate lighting levels to ensure safety.
- The proposed lighting **must** be of an adoptable standard, energy efficient, contemporary in style, sustainable, fit for purpose, cost effective and have suitable access for ongoing maintenance where sited in adoptable highway areas. Lighting units must be ecologically sensitive, providing zero upward light pollution.

External Lighting Requirements

i. The external lighting **must** be designed to British Standard BS 5489-1:2013, BS EN 13201-1:2015 or CIE 115 (or any updated British Standards) in adoptable areas.

ii. The lighting provisions **should** correspond to the Essex Design Guide - Lighting Development Specifications, with selections taken from the specified palette.

iii. Th lighting proposals **must** incorporate LED light sources.

iv. DALI CMS Compatible Intelligent lighting systems **should** be installed in the entirety of the development and integrated into Essex County Council's management system for adoption.

v. Lighting units **should** be column mounted where possible at heights no greater than 8m, or fixed on buildings where possible, minimising clutter.

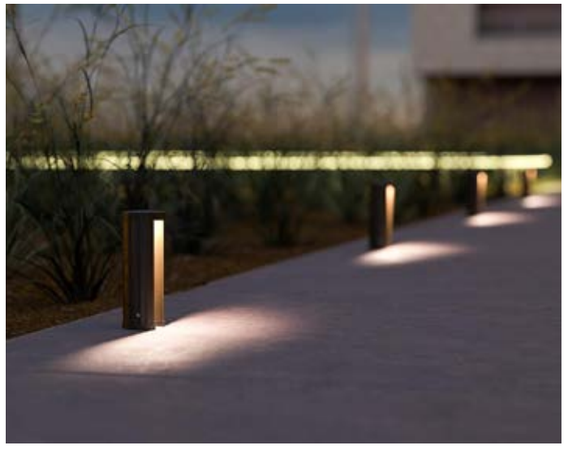
vi. Lighting units **must** be sited away from property windows and access points as far as is reasonably practicable, preferably at property boundaries.

vii. Low level light solutions such as bollards or solar studs **should** be put forward as possible alternatives for full lighting installations, especially in public open spaces and on cycle paths.

viii. The lighting palette **should** be consistent across a street or open space.

Column lighting should include LED luminaires (ref: Schréder)

Column lighting should be include motion detectors where possible to allow variable light levels on footpaths and cycleways (ref: Schréder)



Dimmable bollard lighting with 'Darksky' approval should be used where possible (ref: Forms & Surfaces)

Low level solar studs should be considered where possible (ref: Solareye)

Low level lighting in Brook Corridor and Waterside areas where bats are likely to follow and roost in existing vegetation

Low level lighting in and around sensitive ecological areas

Key strategies for active and sustainable travel

- Provide safe and attractive cycling and walking routes throughout a street network that is easy to navigate.
- Integrate the development into South Epping to ensure that new residents have good access to surrounding facilities and open space
- Design streets and open spaces with a positive character that responds to function and hierarchy.

Purpose of the sustainable movement plan

One of the key principles of the South Epping Masterplan is to achieve a development that seeks to promote social, economic and environmental sustainability and equality at each stage of the design and development. Central to achieving this objective will be the creation of 'walkable neighbourhoods'. The benefits of this are many fold and include healthier communities, cleaner air, stronger local economies, and better resilience against climate change.

The access and movement principles set out over the following pages will guide the planning and design of South Epping. They are intended to create a sustainable approach to local and strategic movement and support a range of modal choices for those living, working and going to school within the local neighbourhood, promoting and encouraging active travel as the most attractive and convenient mode. The development will include measures to encourage a culture of sustainable travel, accessibility and inclusion based on a user hierarchy of walking, cycling and public transport and then private car use. This ethos will be promoted in a Community Travel Plan, which will identify mode share objectives in favour of sustainable and active travel.

The plan (opposite) shows how the strategy for connectivity within the South Epping development site has been considered as part of the wider network of routes and connections across the surrounding area.

Key Features of the sustainable movement plan

The pedestrian and cycle network within the site is also linked to existing walking and cycle routes to the north of the site to provide new residents with access to Epping town centre and underground station and to the south to allow existing and new residents to have access through the site to the SANG and open countryside.

Residents will have access to existing bus services that pass near to the site to provide access to nearby towns such as Harlow and bus operators will benefit from improved revenue as a result of increased patronage. Epping Underground Station is on the Central Line providing new residents with a direct rail connection to Stratford and Central London.

Active Travel Bridge

In accordance with Epping Local Plan policy, an active travel bridge is proposed over the railway line to provide connectivity across the SEMPA site. Land is proposed to be safeguarded within the spatial masterplan to facilitate the delivery of any proposed bridge landing areas. The proposed timing and delivery are currently being negotiated between EFDC, ECC, TfL and the developers.

Mobility Hub

Localised mobility hubs in Epping South are to be investigated. These might include locations for parking and collection of bicycles, e-bikes and e-scooters to allow the surrounding residents the ability to use such modes in accessing local destinations (e.g. the schools, local shops) and package delivery lockers.

Sustainable Movement Requirements

i. Walking and cycling routes **must** be designed to be cohesive, direct, safe, comfortable and attractive, and consistent with LTN1/20 Cycle Infrastructure

ii. A cycle route **must** run from east to west across the SEMPA linking the Ivy Chimneys Road access junction in the west with the Stewards Green/Fluxs Lane access in the east.

iii. The east-west segregated cycle path **must** adjoin to a series of shared ped/cycle routes linking to the northern boundary access locations, in order to maximise accessibility to key destinations within Epping. These routes **must** be lit and clearly signposted

iv. A segregated east-west cycle route **must** connect with the active travel bridge location irrespective of the timing of its construction.

v. The east-west segregated cycle route and footway **must** run from the Steward's Green access to the school entrance square.

vi. All existing Public Rights of Way (PROW) **should** be incorporated into the masterplan and new footpaths and cycle routes connected to them to create a comprehensive network.

vii. Routes within the masterplan **must** connect with the wider network of PRoWs and other pedestrian/ cycle ways outside the site, providing access to the wider Epping urban area and to the Epping countryside to the south.

viii. Movement for pedestrians and cyclists **must** be fully integrated into the masterplan with designated paths alongside the central street and traffic-free routes permeating into the site, promoting active travel.

ix. The street network **must** incorporate segregated pedestrian and cycle routes to key destinations that are car-free.

x. These routes **must** be well lit and natural surveillance **should** be maximised through enclosure from dwelling frontage on both sides.

xi. Routes along green edges **should** contribute to the active travel network.

xii. Homes **must** be designed to maximise overlooking of the street and the perception of safety. All ground floor homes **must** have front doors to the street.

xiii. Continuous and level footways **should** be provided on both sides of access roads except where a shared-surface street design approach is used. See also Section 04: Public Space – street design.

xiv. Street design **must** include measures to prevent ad-hoc parking that impedes or blocks footways and cycleways.

xv. Sustainable transport infrastructure **should** be supported by services such as demand-responsive transport, car-clubs, reliable real-time travel information, parcel delivery lockers, and e-scooters and bikes.

xvi. A package of off-site mitigation to be implemented or contributed to **should,** dependent on outcome of transport assessment, accompany any planning application. This **should** include improvements to pedestrian and cycle infrastructure between the site and Epping tube station and potential enhancements to bus services in conjunction with local operators.

xvii. The proposed SANG **must** contain a circular recreational route for pedestrians and cyclists of at least 2.3km in length and **must** include secure cycle storage.

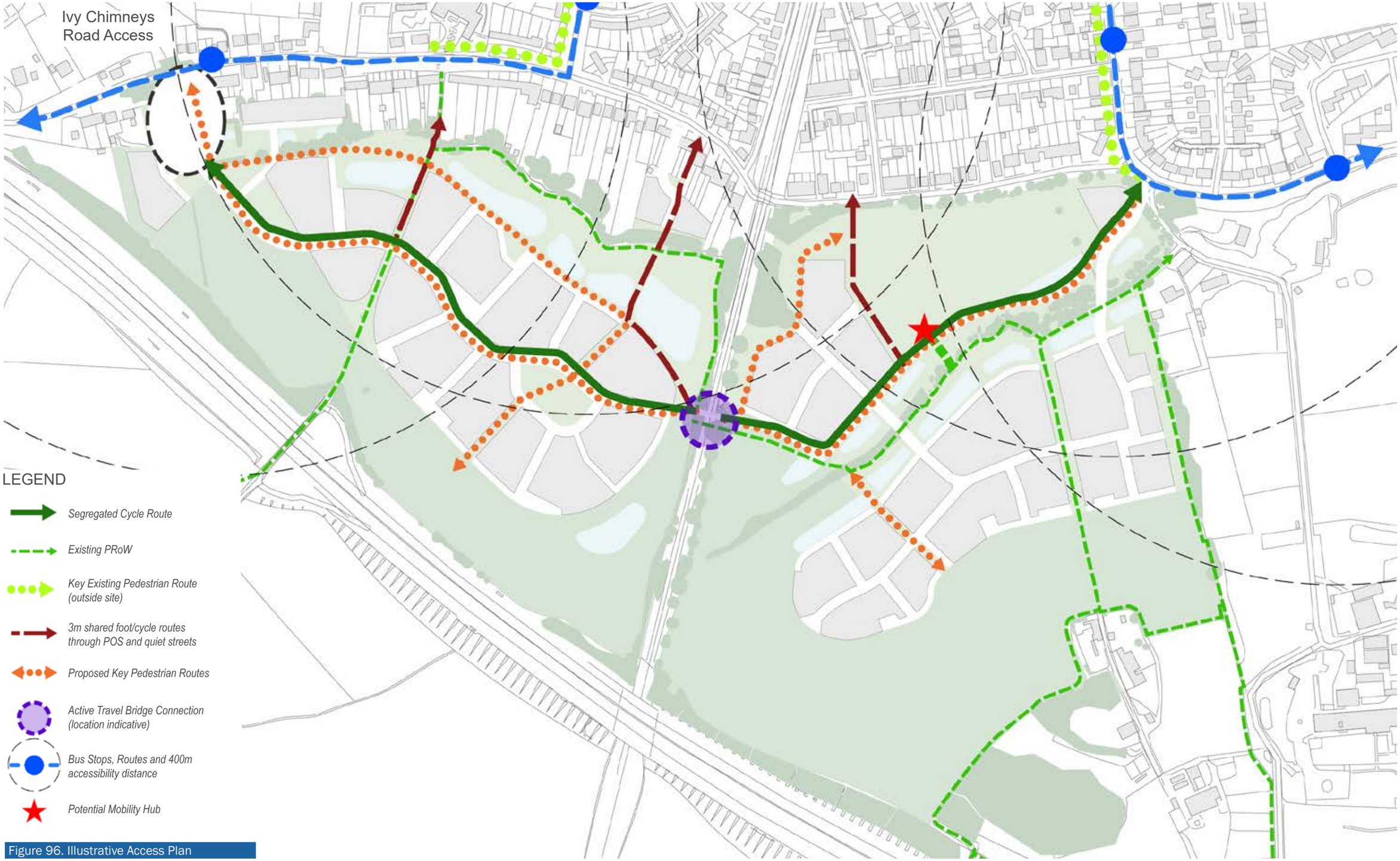


Figure 96. Illustrative Access Plan

Segregated Cycle Route Requirements

i. In line with LTN 1/20 guidance the design team **should** include sustainable transport expertise and preferably someone who cycles regularly and understands the practical aspects.

ii. All active travel routes across the site **must** be reviewed in consideration of the Active Travel England scheme review tools, including the route check tool.

iii. Cycle lanes **should** be continuous and two-way, and **should** align with the detailed guidance within LTN 1/20. Where a route is also used by pedestrians, separate facilities **should** be provided for pedestrian and cycle movements.

iv. Where a cycle lane is provided for two way movements, it **should** be a minimum of 3m in width, and **must** not fall below an absolute minimum width of 2m. A one way cycle track **should** measure a minimum of 2m in width, but **must** not fall below an absolute minimum width of 1.5m. The absolute minimum width **should** only be used for sections where there is a physical constraint on an existing road. The active travel network **must** be clearly signposted, be visually appealing, and easily accessible.

v. Active travel routes **must** benefit from good lighting and the maximum level of natural surveillance.

vi. Residential properties **should** be designed to optimise views of the street and create a sense of safety. Ground floor residences **must** have entrances facing the street.

vii. Active travel routes **should** be planned with regard to the gradients within the site and, where practical, **should** be planned so that gradients are not steeper than 1 in 20.

viii. Street designs **must** prevent any ad-hoc parking which may impact on the pedestrian or cycle infrastructure.

A change in material identifying segregated cycle and pedestrian route

Tactile pavement used at junction of segregated cycle/footpath and road

ix. The housing layout **should** minimise crossings of the segregated cycle route through use of the following: provision of resident parking on side streets, rear parking courts, use of apartments or grouped accesses.

x. A change in surface material will visually distinguish the cycleway from the footway.

Requirements for Pedestrian and Cycle Links through Development Parcels

i. The housing layout **must** be designed to accommodate the desire lines of pedestrians creating a comprehensive and interconnected network of routes.

ii. The development **must** encourage parents and children to opt for sustainable transportation methods by ensuring safe pedestrian and cycling routes to the primary school.

iii. Cycling **should** be on carriageway if traffic modelling shows that the volume of traffic is low enough that this can be achieved safely in line with LTN 1/20 table 4.1. Cycling priority **should** be designed in through choice of materials, traffic calming measures and the design of junctions.

A safe active travel connection between housing

Pedestrian and cycle link through development parcel

Leisure Route through Open Space

i. Routes through open space **should** contribute towards the active travel network and **must** cater for both pedestrians and cyclists.

ii. Where possible, leisure routes **should** embrace and enhance existing public rights of way across the site.

iii. Pedestrian and cycle infrastructure through open space **must** be accompanied by appropriate wayfinding, ensuring the community is integrated with its surrounds.

iv. Leisure routes **must** include places to rest and stop and incorporate cycle parking, where needed. They **should** be appropriately lit, while being cognisant of the environment which surrounds them.

v. Access to homes adjacent to any leisure route **should** be provided and natural surveillance of any route **should** be incorporated into the design.

vi. Vehicular access (save for emergency) **must** be avoided on any leisure route through open space.

vii. Leisure routes across the development **should** reflect LTN 1/20 principles by providing an attractive route for all users, while remaining coherent by contributing and linking to the wider active travel network delivered by the development.

viii. Leisure routes throughout the development **should** consider Active Travel England scheme review toolkits, specifically the path check tool.

Leisure route to accommodate and enable active travel

Typical informal leisure route

Leisure Route along Development Edge

i. Where gradients are steep leisure routes **should** be designed to work with the levels, meandering as necessary to provide suitable gradients for pedestrians and cyclists.

ii. Lighting **must** be sensitively designed to minimise impact on ecology.

iii. Leisure routes **must** be provided with signposts.

iv. Every opportunity **must** be explored to connect the edge of the site to the surrounding community, to maximise permeability of the development and connection to adjacent infrastructure.

v. Places to stop and rest **must** be included within the leisure route, supported by secure cycle parking as required.

vi. Vehicular access to the route **must** be prohibited, except where emergency routing is required.

vii. Leisure routes across the development **should** reflect LTN 1/20 principles by providing an attractive route for all users, while remaining coherent by contributing and linking to the wider active travel network delivered by the development.

viii. Leisure routes throughout the development **should** consider Active Travel England scheme review toolkits, specifically the path check tool.

Precedent informal route in Harlow

Informal footpath/leisure route along development edge

Key strategies for vehicular access and movement

- Balance the need for vehicular access with a high-quality public realm.
- Limit the impact of motorised vehicles on streets and open spaces.

Purpose of the vehicular movement plan

Whilst sustainable movement should be the priority, cars will still be necessary for some journeys, and access needed for delivery vehicles, emergency services, refuse collection. Vehicle movement and parking should be accommodated in the masterplan in a way that encourages more sustainable modes of travel and limits the impact of motorised vehicles on streets and open spaces.

The site-wide strategy for vehicular movement shown opposite illustrates how the need for vehicle access should be balanced with a high-quality public realm.

ECC have said that a dedicated emergency access in not required for a development of this scale which is aligned with national and local transport policies which do not provide specific requirements for emergency access. However, a secondary point of access to the site for emergency vehicles can be achieved from Fluxs Lane via the development access, which has off road shared pedestrian / cycleway facilities of sufficient width to be able to accommodate emergency vehicle access into Fluxs Lane, if needed.

Key features of the vehicular movement plan

The bisection of the Site by the rail line prevents a through route for vehicles across the site.

The geometry of the street alignment and the dimension of development blocks may be further developed at future stages of the planning process. There will be no vehicular connection across the rail line.

The vehicular movement plan shows the indicative alignment for the:

- **Entrance Street (EDG Type E):** linking the access junctions at the site boundaries with the residential parcels.
- **Secondary Streets (EDG Type E)**: providing access for all modes through the residential parcels.
- **Tertiary Streets (EDG Type F, G & H):** providing further access, including through shared surfaced streets, private drives and courtyard squares through to the peripheries of the residential parcels.

Vehicular movement strategy requirements

i. All roads, with the exception of private drives, **must** be designed to an adoptable standard and allow best-practice transport and urban design principles to be brought forward.

ii. The hierarchy of streets **must** be clearly differentiated through scale, enclosure and character. See also Section 04: Public Space and Section 05: Built Form.

iii. The main vehicular accesses **must** be provided from Ivy Chimneys Road and Stewards Green/Fluxs Lane, additional secondary access points **should** be provided from Ivy Chimneys Road or Bridge Hill in order to deliver the masterplan as currently proposed.

iv. Each access junction **must** been subject to capacity testing, with any additional off-site modelling to be agreed with ECC, as Highway Authority in support future planning applications.

v. Vehicular movement **must** not be provided from the Bridge Hill access through to the main development. Access **should** be provided via the pedestrian/cycle network only as outlined in the previous section.

vi. An internal network of streets **must** provide a safe, legible and permeable layout for all modes within the Site.

vii. The north-south green corridors **must** not be fronted by vehicular streets on both sides at any point. Where vehicular access is required this **should** be provided by a private drive on one side only.

viii. Vehicular access **must** not be provided to the front entrance of the school, providing a car-free environment surrounding the school entrance. In emergencies, emergency vehicles can access the front of the school by the active travel corridor.

ix. Staff and service access **must** be provided to the eastern end of the school site.

x. Play spaces **must** have car free aspects on a minimum of two sides.

xi. Design speeds **must** not exceed 20mph throughout.

xii. Lower speeds **should** be encouraged through good street design. See Section 04: Public Space, Street Design.

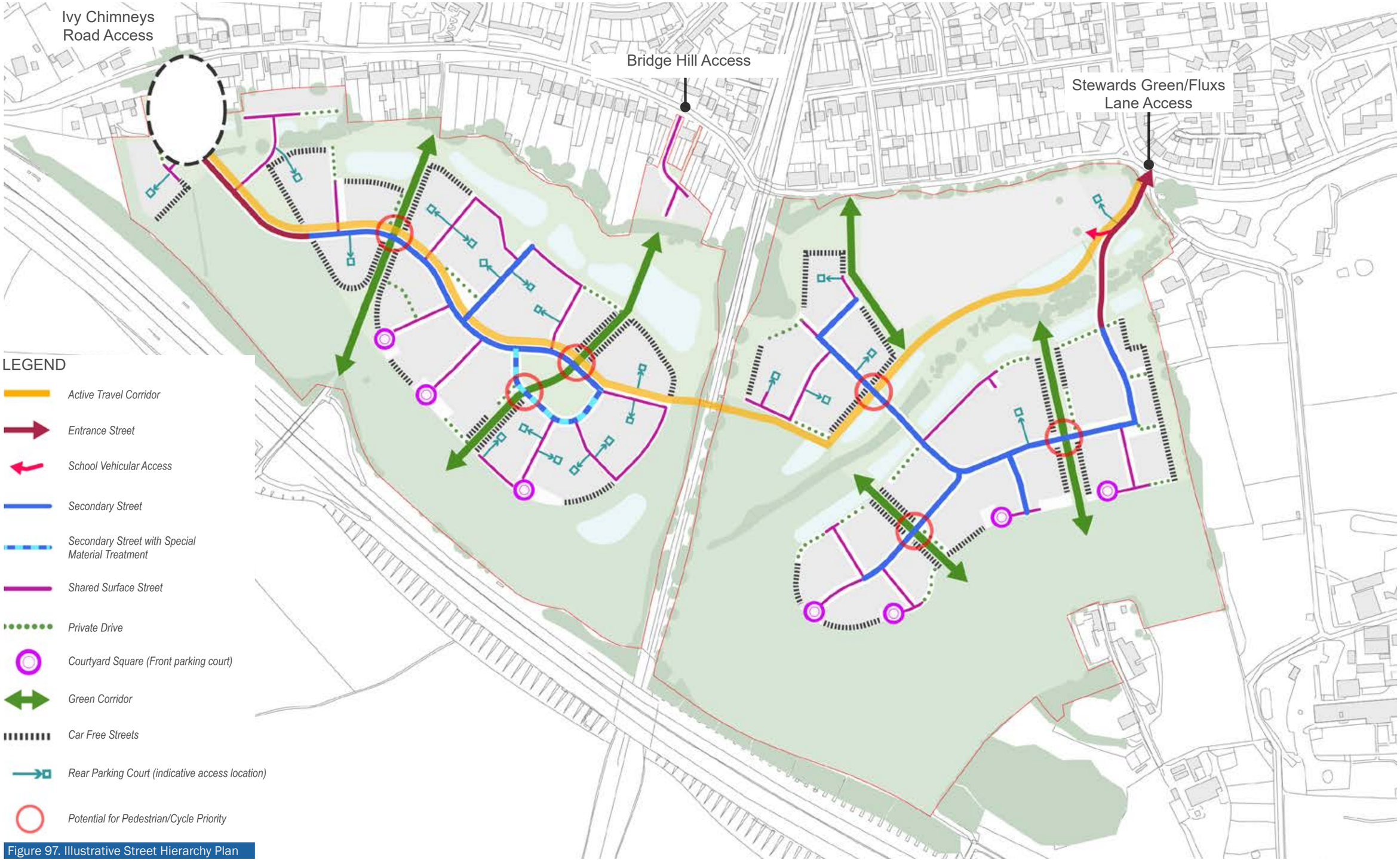


Figure 97. Illustrative Street Hierarchy Plan

Parking Strategy

The provision of inclusive and accessible cycle parking within the site will be a key element of the strategy that will seek to encourage cycling and ensure that it is a clear, preferred choice of travel mode. To make cycling attractive the parking needs to be placed in locations where it is convenient, secure and easy to access and not necessarily shared with other household/ garden possessions.

Parking quantum will need to be assessed at application stage based on the appropriate technical studies, accounting for proposed active and sustainable travel measures and proposed parking controls. The car parking strategy is designed to ensure that streets are not car dominant and that a high quality streetscape character is achieved. It also ensures that adequate provision of on-street visitor parking to prevent unauthorised parking on drainage features.

The site-wide car parking requirements provide a range of parking types and potential for housing typologies across the site, including on-street and on-plot parking. This site-wide parking plan sets out which each parking type is applicable.

Cycle parking requirements

i. Cycle parking **must** be provided in accordance with the minimum standards identified in the Essex Parking Standards/ Essex Design Guide (EDG).

ii. Where garages are provided, these **must** be of a size that facilities the storage of cycles. For houses without garages, suitable facilities within each dwelling, such as garden sheds **must** be provided. Cycle parking for terraced houses **should** be provided in rear gardens or other easily accessible area, or in a secure cycle store to the front of the properties. Where located in rear gardens, rear access **should** be provided.

iii. For flats / apartments, cycle storage areas **must** be provided that are secure (lockable) and covered to provide a high quality facility for residents.

iv. Visitor cycle parking **must** be provided within the public space to the front of the primary school and any other key nodes and spaces as appropriate.

v. A cycle parking strategy **must** be developed at Planning Application application stage.

vi. The development **should** embrace the principles in the Collaborative Mobility's UK (CoMoUK) guidance document 'New developments and shared transport: cutting car dependency'.

Site-wide car parking requirements by road type

vii. Parking **must** take into account the needs of disabled persons.

viii. All dwellings **must** make provision for electric vehicle charging.

ix. No parking **must** be located immediately adjacent to play areas to maximise natural surveillance and enhance safety.

Entrance Street (EDG Type E)

x. Visitor parking **should** only be provided where it is not deemed to detract from the landscape character at the entrance gateways or compromise visibility of the junctions.

Secondary Street (EDG Type E)

Homes on both sides

xi. Resident parking **should** be on-plot.

xii. Visitor parking bays **must** be provided within designated bays within the verge allowing for an adequate avenue of street trees to be maintained.

Homes on one side (surrounding the Village Green)

xiii. Resident parking **should** be on-plot or within rear-parking courts.

xiv. Visitor parking bays **should** be provided around the edge of the open space. This parking **should** be sensitively designed in clusters of no more than four spaces and must not block key views.

Incorporating drainage features

xv. Perpendicular resident parking and unallocated visitor parking **should** only be located on the side of the street opposite a drainage feature.

Shared Surface Street (EDG Type F)

xvi. Resident parking **should** be on-plot or within rear-parking courts.

xvii. Where frontage is car-free, dwellings **should** be served by rear parking courts.

xviii. Visitor parking bays **must** be provided within designated bays distinguished by material colour change.

Courtyard square (EDG Type G)

xix. Most resident and visitor parking **should** be located within the semi-private central courtyard, however occasional dwellings may have on-plot parking.

xx. Visitor parking bays **should** also be provided within designated bays within the courtyard square.

Private Drive (EDG Type H)

xxi. Resident parking **should** be on-plot.

xxii. The width of the private drive **should** be variable to accommodate any additional resident parking requirement and visitor parking bays.

ON PLOT parking requirements

Driveways

i. Driveways in front of a double garage **should** be the width of the garage.

ii. Driveways **should** be a minimum of 5.5m deep or 6m in front of garage doors to avoid vehicles overhanging the footway.

iii. Tandem parking **should** be kept to a minimum and where used **should** be for no more than two cars on the driveway.

iv. Driveways **should** be grouped to maximize continuous length of verge especially those containing drainage features.

v. Both single and shared drives **must** have adequate manoeuvring space to allow vehicles to enter and leave all garages and parking spaces when all other available parking spaces within the street are full.

Garages and Carports

vi. Garages and car ports **should** be provided on plot and not grouped elsewhere

vii. Where parking in front of integral garages is located in front of the building line, adequate planting **must** be provided to avoid over dominance of the cars.

viii. Garages **must** have a minimum size of 7.0m x 3.0m internal dimension. (ECC design standard). This accommodates two cycle parking spaces.

ix. Garages **should** be set back to enable parked cars to sit behind the building line.

Allocated perpendicular parking serving terraces or semi-detached dwellings

x. Perpendicular parking bays **must** be 5.5m long and 2.9m wide.

xi. Spaces **must** be overlooked by windows on front of property.

xii. Spaces **must** have street tree planting and a landscape strip between every 4 spaces to soften visual impact.

OFF PLOT parking requirements

On Street Visitor Parking

xiii. On-street vehicle spaces **must** be in unallocated, designated bays and forming part of the adopted highway network. Where a street does not form part of the adopted highway network, any parking **should** be allocated or privately managed.

xiv. Parallel parking bays **must** be 6m long and 2.9m wide.

xv. Runs of parking bays **must** be broken up by trees and planting.

xvi. Parking bays **should** be located at least 6 metres from minor junctions and **should** not impact pedestrian and cyclist visibility at crossing points.

xvii. All visitor parking **must** be accommodated within the street scene to discourage indiscriminate parking.

Front Parking Courts Requirements

xviii. Front parking courts **should** only be used on the development edge as indicated on the Street Hierarchy Plan

xix. Front parking courts **should** be designed to accommodate turning heads

xx. Landscaping **must** be carefully designed to mitigate the dominance of parked cars within the courtyards and enhance their appearance.

Shared Parking Area (SPA)

xxi. SPA's **must** be overlooked and could be gated for secure and controlled access

xxii. Perpendicular car parking spaces **must** be provided with a minimum dimension of 5.0m x2.9m accessed from 6.0m wide carriageway.

xxiii. Accesses **must** be a minimum of 4.8m wide, including where beneath FOGs.

xxiv. SPA's **should** be adequately lit, and have sufficient space for the inclusion of sustainable landscape areas to include trees, shrubs and grass to soften their appearance.

xxv. The use of enhanced materials to improve the visual appearance of these spaces **must** be provided.

xxvi. Parking **should** be broken up using trees and/or shrubs when continuous in groups of more than 5-6 consecutive car parking spaces.

xxvii. Parking courts **must** be adequately lit, and have sufficient space for the inclusion of sustainable landscape areas to include trees, shrubs and grass to soften their appearance.

Shared Rear Parking Courts

xxviii. Parking courtyards **should** be served by no more than six dwellings.

xxix. Rear parking courts **should** only be used where necessary to facilitate car-free frontages.

xxx. Access to rear parking courts **must** be overlooked and **must** not be located directly opposite another rear parking court access.

Precedent Images

Garage set back to avoid visual impact of parked cars

Parking in front of building line is well screen with planting

Rear parking court well overlooked and landscaped

Visitor parking within verges in between tree planting

Fire and refuse access strategy

Fire and refuse access must be strategically planned across the site from the earliest stage to ensure that all buildings can be serviced without requiring all streets to be of a scale and character to accommodate servicing vehicles. The strategy will impact block dimensions, street design and materials and street adoption strategy.

Provision of convenient bin storage will be most challenging on terraced typologies with shallow front threshold spaces and no access to the rear, however there are high-quality precedents where an enclosure is designed as part of the built form and helps to emphasise the rhythm of the houses along the street.

The relevant bodies must be consulted in development of the strategy and where there are potential conflicts between the technical servicing guidance and placemaking requirements, this should be resolved with the local authority and relevant body.

Current standards and guidance:

Fire tenders:

Approved Document B (AD:B) Vol 1 and 2:

- There should be vehicle access for a pump appliance to within 45m of all points within a dwelling house.

Refuse and recycling vehicles:

EFDC Waste and Recycling provisions for new residential and business developments. Good practice guide for developers.

- Refuse collection will be made only from those dwellings within 25m of an adopted road.
- Storage areas for waste containers should be sited so that the distance householders are required to carry refuse does not usually exceed 25m (excluding vertical distance).

Essex Design Guide: Refuse Collection:

- Refuse collection will be made only from those dwellings within 25m of an adopted road.
- In other cases, it is necessary to provide a shared bin collection point screened by an above eye-level wall. This should be located within 25m of an adopted road.

Refuse and recycling requirements

i. A waste and refuse strategy **must** be provided that provides details of service access and bin storage for individual homes and flats and non-residential premises.

ii. Refuse vehicles **should** be able to proceed mainly in a forward motion. Any turning heads **must** be well integrated into the street design. Fire tenders can be reversed subject to meeting AD:B requirements.

iii. Communal bin stores for flats **must** be integrated into the main building footprint at ground floor with rear access to avoid blank frontages. These **must** be easily accessible by residents under shelter from a communal door but **must** not be accessed directly from inside the block for security purposes.

iv. Individual households **should** have waste storage enclosures that are well-designed as part of the built form and street scene and convenient to use.

v. For detached/ semi-detached homes without rear access for refuse collection, the enclosure **should** be located behind the building line. On smaller terraced, it would be more appropriate to provide a well-designed enclosure for communal bins.

vi. Where a block has a rear parking court, all homes in the block **should** use the parking court for refuse collection regardless of whether they are served by the parking court.

vii. Where refuse access is provided to the rear, a suitable bin enclosure **must** be provided in the rear garden.

viii. Dwellings within private drives **should** have a communal collection point within 10m of an adopted road.

ix. Waste storage enclosures **must** be designed to accommodate all refuse bins provided by the Council. Currently this is two 180-litre wheelie bins and a 55-litre bin. Road-end collection points **must** be designed to accommodate all the bins from each household served by that collection point on any given bin collection day.

*Based on Essex Design Guide.

Figure 98. Illustrative Servicing Plan

10.4 Public Spaces & Legibility
Public Space Strategy

Key strategies for uplifting and safe streets and spaces

- Create high-quality public realm which prioritises pedestrian and cycle movements, and encourages social interactions.
- Create a sequence of distinctive spaces throughout the development to ensure legibility.
- Incorporate overlooking, generous provision for natural play and a range of informal and formal leisure routes throughout the development

Purpose of the Public Space Strategy Plan

Indicative locations of components of the public space network are illustrated on the plan opposite.

Key features of the public space plan

Key components described within this section are:

Streets as Spaces

1. Secondary Streets
2. Shared Surface Streets
3. Courtyard Squares
4. Private Drives
5. Green Corridors

Articulation to corner building - precedent from Upton, Northampton

Key Junctions

1. Secondary Street/Green Corridor
2. Secondary Street/ Tertiary Street
3. Active Travel Route / Secondary Street
4. Secondary Street Junction

Key Public Spaces

1. Ivy Chimneys Entrance Gateway
2. Village Green
3. School Square
4. Fluxs Lane Entrance Gateway

Public Space & Legibility requirements

i. Public realm spaces **should** provide a range of infrastructure, including:

- Public seating;
- Tree(s) to provide shade;
- Cycle parking;
- Play elements;
- Signage;
- Waste & recycling bins; and
- Safe lighting levels.

ii. Public realm spaces **must** have a coherent character of materials to aid wayfinding and consistency.

iii. Key community spaces **must** be framed by groupings of buildings that have a legible and distinctive identity. Grouped buildings do not have to be the same style but **should** have connecting or common features to provide coherence.

iv. Public realm spaces **should** not require fenced enclosures or railings and **should** be well integrated with the street network.

v. The function of open spaces and their boundaries and the public, private or shared nature of them **must** be clearly defined to encourage their use, maintenance and ownership.

vi. Lighting **must** be provided on all streets and key open spaces. The type of lighting **must** be appropriate to the character and function of the space and coordinated with tree planting to avoid shadowing.

vii. Seating **must** be provided in open spaces and along active travel routes. Seating design **should** be high quality, appropriate to the character of the street or space and vary in design to accommodate different users including shading devices.

viii. Litter, recycling and dog waste bins **must** be provided at the School Square, Village Green and both SANG car parks as a minimum.

ix. Play-on the-way **must** be embedded into the public space network.

x. Legibility **must** be reinforced with landmark buildings at key points along active travel routes. There **should** be a consistent approach to building features to identify these markers.

xi. All streets and junctions **must** be designed to prioritise the most vulnerable street user, starting with pedestrians, then cyclists, then public transport, then private vehicles.

xii. Vehicle markings and signs **should** be minimised, whilst meeting parking control requirements.

xiii. Ad-hoc parking **must** be discouraged through design measures such as street layout, the provision of designated parking bays, material choice, verge planting and street furniture.

xiv. There **should** be high-speed digital connectivity, including full fibre and 5G to all parts of the public realm network, with flexibility to upgrade to the latest technology in the future.

xv. Infrastructure **should** be considered at an early stage and designed sensitively as part of the public realm.

Key Views and Focal Buildings & Structures

xvi. Wherever there is an important view from an entrance or along a street, the vista **should** be terminated by a landmark building or feature. There are a number of such locations identified on the plan opposite that **should** be given prominence by virtue of increased storey height, contrasting facade material and/or architectural detailing.

xvii. Buildings on key corners **must** have apertures and detailing on all public facing frontages.

xviii. The block structure **must** avoid creating vistas along streets which align with electricity pylons.

Figure 99. Public Space Strategy Plan

Secondary Streets

This street type links to the Entrance Streets running from the access junctions and extends through the centre of each development parcel.

This street is classed in the Essex Design Guide as type 'E- Access Road'.

Secondary Streets should target driver speeds at a maximum of 20mph which should be enforced with speed-restraint design. The Secondary Street must allow manoeuvring space of 6m to facilitate egress from domestic parking spaces.

The street should not exceed the maximum gradient of 8%, but steeper gradients will be considered where the retention of existing topography is desirable, subject to the use of a special surface finish that affords better adhesion.

Planted verge between asphalt carriageway and footpath

Secondary Street Requirements

i. Secondary Streets **should** not be wider than 15.5m between private thresholds unless hydraulic modelling demonstrates a greater requirement for drainage features within the verge.

ii. Secondary Streets **must** not comprise more than two vehicular lanes at any point with a design speed of 20mph.

iii. Direct access **should** be possible on both sides of the street.

iv. Footpaths **must** be provided on both sides of the road with a segregated cyclepath on one side where indicated on Cycle Connections Plan (see SMF Section 6.6 Access & Movement Strategy).

v. Where the segregated cycle path runs alongside a Secondary Street, it **should** be continuous across junctions, and be located on one side of the carriageway only. Cycle lanes **should** be in line with LTN 1/20.

Suggested material character - specification to be agreed with the ECC highways authority at Planning Application application.

vi. The cycleway **should** be surfaced in a contrasting colour material - to be agreed with ECC Highways.

vii. Corner radii leading to side streets **should** be as tight as possible, **should** not be greater than the depth of the verge between the carriageway and footway/cycleway, and **should** not be greater than 3m.

viii. Speed-restraint measures (20mph zone) **should** be located at maximum intervals of 60m, starting within 50m of the entry junction or zone.

ix. Carriageway surface material to the south of the village green **should** be block paving or similar to encourage slow traffic movements and distinguish this as a pedestrian priority environment (despite the EDG requirement that this street have segregated footways in order to serve the quantum of development present to the south of the village green).

x. Streets **must** be in accordance with the Essex County Council Design Guidance and Street Materials Guide.

Place Requirements

xi. Strong frontage and consistent building line **must** be maintained to create a good sense of enclosure within the building height parameters set out in section 10.4 Character and Built Form.

xii. The housing layout **must** minimise the number of crossings of the segregated cycleway through the use of rear courtyard parking, provision of parking on tertiary streets and/or grouped accesses.

xiii. Built form, character, boundary treatments and typologies **should** reflect the character areas as set out in section 10.4 Character and Built Form.

Parking Requirements

xiv. Refer to Section 10.2 Parking Strategy.

Service requirements

xv. Street drainage to be determined **should** be incorporated within verges. Refer to Section 10.1 Drainage Strategy.

xvi. Lighting **should** be on columns specified to suit the intended character of the street.

xvii. Car chargers and lighting columns **must** be placed to ensure cycleway and footway widths are not restricted.

Landscape requirements

xviii. Soft landscape verges **must** incorporate drought resistant shrub planting and street trees wherever junction visibility permits.

xix. Verge planting **must** include an appropriate selection of shrub and herbaceous plants to bring seasonal interest to the streetscape.

xx. Streets **should** be planted with regularly placed medium to large trees (15-20m height) of the same species per street to maintain a unified character.

xxi. Particular attention **should** be given to the landscape treatment of junctions between Secondary Streets and Green Corridors.

xxii. Planting **should** be aesthetically pleasing and incorporate complementary green infrastructure solutions to support the wider drainage strategy.

xxiii. The planting palette **should** be evergreen, for year-round aesthetic sensibility, and relatively low-growing to maintain traffic and driver visibility.

xxiv. The location of planting **must** be carefully coordinated with other utilities and services to avoid underground conflicts.

xxv. Planted areas **must** be maintained regularly, particularly after any major rainfall or storm events, to weed, prune, and replace dead or dying planting.

Secondary Street key plan

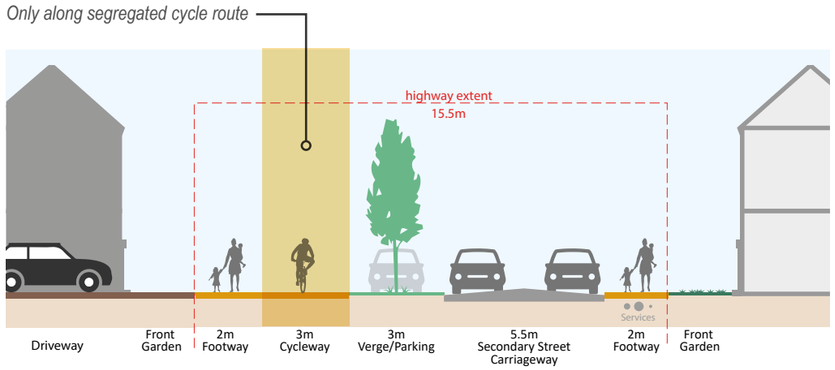


Figure 100. Double Sided Secondary Street

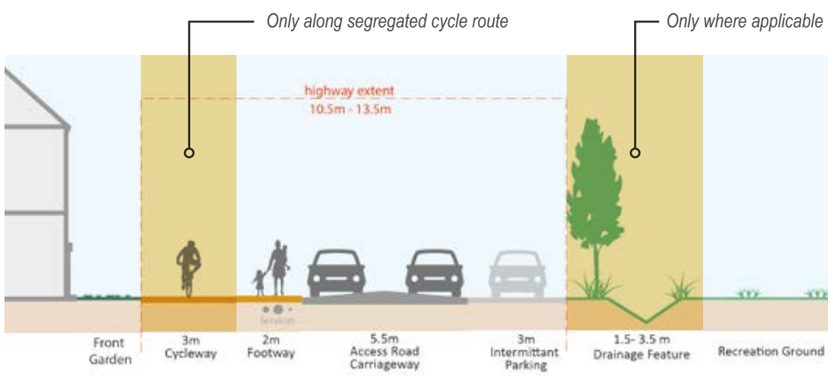


Figure 101. Single Sided Secondary Street (around Village Green)

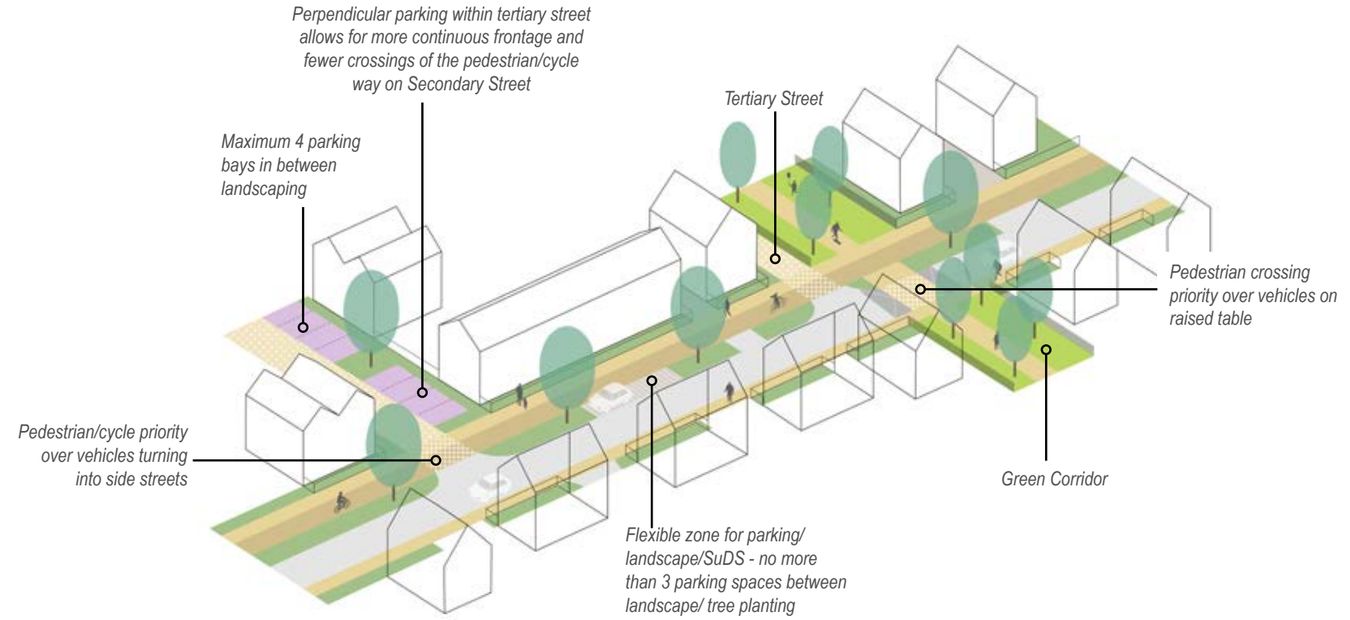


Figure 102. Illustrative Secondary Street Arrangement

LEGEND

- Carriageway
- 3m segregated cycle way
- Footpath
- Ped/Cycle Priority Crossing Point
- Tertiary Street
- Ramp
- Soft Landscaping
- Unallocated Visitor Parking
- Allocated Parking Bays within Shared Surface Street
- Green Corridor

Shared Surface Streets

This street type links to the Secondary Streets and serves the peripheries of the development.

Serving no more than 25 units in a cul-de-sac and being no more than 125m in length, these are classed in the Essex Design Guide as type "F - Minor Access Street".

Shared Surface Streets are designed to accommodate vehicles, pedestrians, and cyclists. The street will prioritise safety and accessibility for all users through distinct character to reduce vehicle speeds and provide minimal physical barriers. The design therefore encourages active travel users and vehicle users to mix safely without preventative means to ensure trips by all modes from residential dwellings can be made successfully.

Shared Surface Streets typically utilise distinct materials to establish a mixed use environment while maintaining vehicular access. Street furniture, greenery, and landscaping can often be utilised to encourage active use of the street. Other design elements include raised crossings and traffic calming. These streets embody a blend of functionality and aesthetics, promoting inclusivity and interaction among users.

Suggested material character - specification to be agreed with the ECC highways authority at Planning Application application.


Tree planting within shared surface streets - precedent Newhall, Harlow

Shared Surface Street Requirements

i. These streets **must** have a combined pedestrian and vehicular surface width of at least of 6m behind a driveway to allow manoeuvring space. This is to facilitate egress from domestic parking spaces.

ii. The maximum gradient **should** typically be around 8%, but steeper gradients will be considered where the retention of existing topography is desirable, subject to the use of a special surface finish that affords better adhesion.

iii. A straight section of carriageway **must** be provided from the junction with the secondary street for a distance of 15 metres.

iv. Shared Surface Streets **should** not be wider than 15m between private thresholds unless hydraulic modelling demonstrates a greater requirement for drainage features within the verge.

v. Direct access **should** be possible on both sides of the street with a design speed of 20mph

vi. Cycling **should** be on carriageway due to low volume of traffic on this street type. Cycling priority **should** be designed in through choice of materials, traffic calming measures such as localised narrowing as shown illustrated opposite.

vii. The housing layout **should** ensure speed-restraint through deflection in street alignment by alternating the location of trees and parking bays and carriageway surface material.

viii. Streets **must** be in accordance with the Essex County Council Design Guidance and Street Materials Guide.

Place Requirements

ix. Built form **must** create a good sense of enclosure within the building height parameters set out in section 10.4 Character and Built Form.

x. Built form, character, boundary treatments and typologies **should** reflect the character areas as set out in section 10.4 Character and Built Form.

Parking Requirements

xi. Refer to Section 10.2 Parking Strategy.

Service requirements

xii. Street drainage to be determined. Refer to Section 10.1 Drainage Strategy.

xiii. Lighting **should** be on columns specified to suit the intended character of the street.

xiv. Car chargers and lighting columns **must** be placed to ensure cycleway and vehicular movement widths are not restricted.

Landscape requirements

xv. These streets **should** be informally planted with small ornamental tree species (5-15m in height).

xvi. Street trees, shrub and herbaceous **should** be strategically located along the street to breakup runs of parking and to prevent anti-social parking.

xvii. Soft landscape areas **must** incorporate drought resistant shrub planting and street trees wherever junction visibility permits.

xviii. There **should** be planting alongside areas of hard-standing wherever possible.

xix. Planting **should** be aesthetically pleasing and incorporate complementary green infrastructure solutions to support the wider drainage strategy.

xx. The planting palette **should** differentiate and emphasise the various character areas within the masterplan area and to bring seasonal interest to the streetscape.

xxi. The location of planting **must** be carefully coordinated with other utilities and services to avoid underground conflicts.

xxii. Planted areas **must** be maintained regularly, particularly after any major rainfall or storm events, to weed, prune, and replace dead or dying planting.

Shared Surface Street key plan

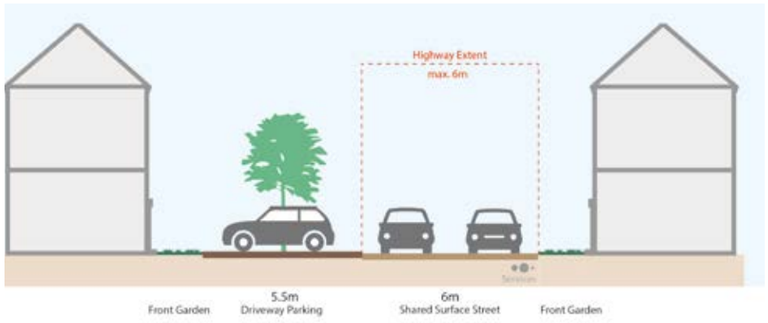


Figure 103. Typical Shared Surface Street

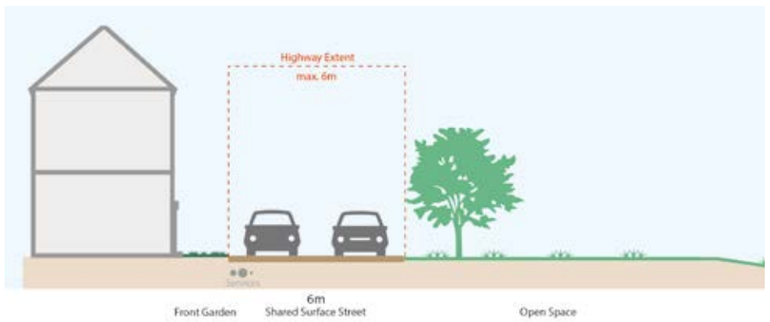


Figure 104. Shared Surface Street Along Development Edge

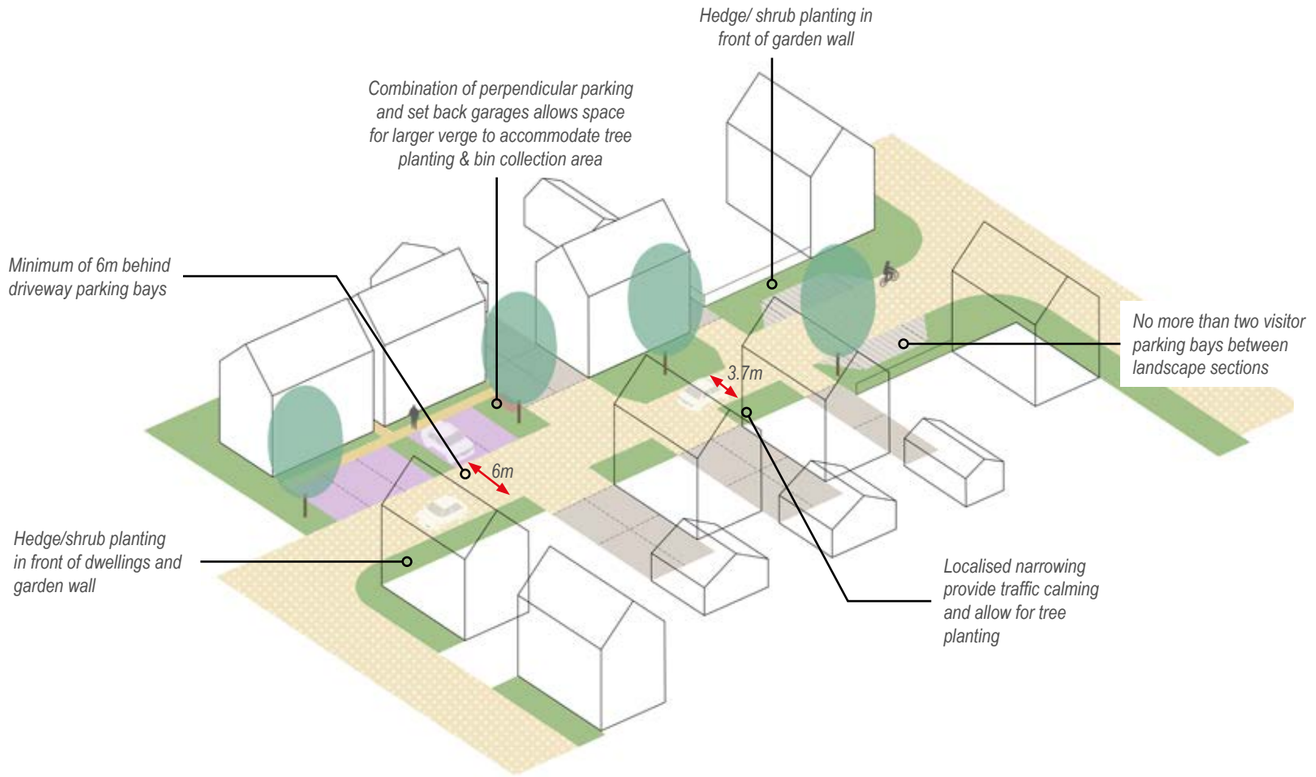


Figure 105. Illustrative Shared Surface Arrangement

LEGEND

- Adopted Shared Surface
- Soft Landscaping
- Visitor Parking
- Bin Collection Area
- Allocated Parking Bays
- Private Driveway Parking

Courtyard Squares

This street type links to the Shared Surface Streets and serve the southern peripheries of the development.

Serving no more than 20 units in a cul-de-sac these are classed in the Essex Design Guide as type “G - Mews Court”.

Well integrated parking within Courtyard Squares will be necessary to enable car parking to blend into the street environment, and create a well-design development that will be more attractive for people to choose to walk or cycle.

Courtyard Square Requirements

i. These streets **must** have a combined pedestrian and vehicular surface width of at least of 6m behind a driveway to allow manoeuvring space. This is to facilitate egress from domestic parking spaces.

ii. Localised narrowings **should** be provided where appropriate for character purposes.

iii. The maximum gradient **should** typically be around 8%, but steeper gradients will be considered where the retention of existing topography is desirable, subject to the use of a special surface finish that affords better adhesion.

iv. Courtyard Square **should** not be wider than 15m between private thresholds unless hydraulic modelling demonstrates a greater requirement for drainage features within the verge.

v. Direct access **should** be possible on both sides of the street.

vi. Cycling **should** be on carriageway due to low volume of traffic on this street type. Cycling priority **should** be designed in through choice of materials, traffic calming measures and the design of junctions.

vii. The housing layout **should** ensure speed-restraint through the placement of trees and parking bays and carriageway surface material.

viii. Special junction detail featuring entrance ramp/table **should** indicate the entrance the courtyard square.

ix. Courtyards **must** be in accordance with the Essex County Council Design Guidance and Street Materials Guide.

Place Requirements

x. Built form **must** create a good sense of enclosure within the building height parameters set out in section 10.4 Character and Built Form.

xi. Built form, character, boundary treatments and typologies **should** reflect the character areas as set out in section 10.4 Character and Built Form.

xii. Windows, doors or other projections **must** not extend over public areas.

Parking Requirements

xiii. Refer to Section 10.2 Parking Strategy.

xiv. Courtyard parking **should** be overlooked, and **should** be permeable for through movement by active travel modes.

xv. Spaces **should** provide some buffering between existing property edges/fences.

xvi. The parking **should** be developed with higher quality materials, including a high quality surface material to contribute to a shared surface environment.

Service requirements

xvii. Street drainage to be determined **should** be incorporated within verges. Refer to Section 10.1 Drainage Strategy.

xviii. Street lighting is not required.

xix. Car chargers within the courtyard **must** be placed to ensure vehicular movement widths are not restricted.

Landscape requirements

xx. There **should** be planting alongside areas of hard-standing wherever possible.

xxi. Street trees and planting **should** be used to provide a buffer between plots and the courtyard area. This soft landscaped privacy strip **must** be a minimum of 0.5m in depth.

xxii. Small ornamental tree species, of 5-15m in height, **should** be informally planted in this space.

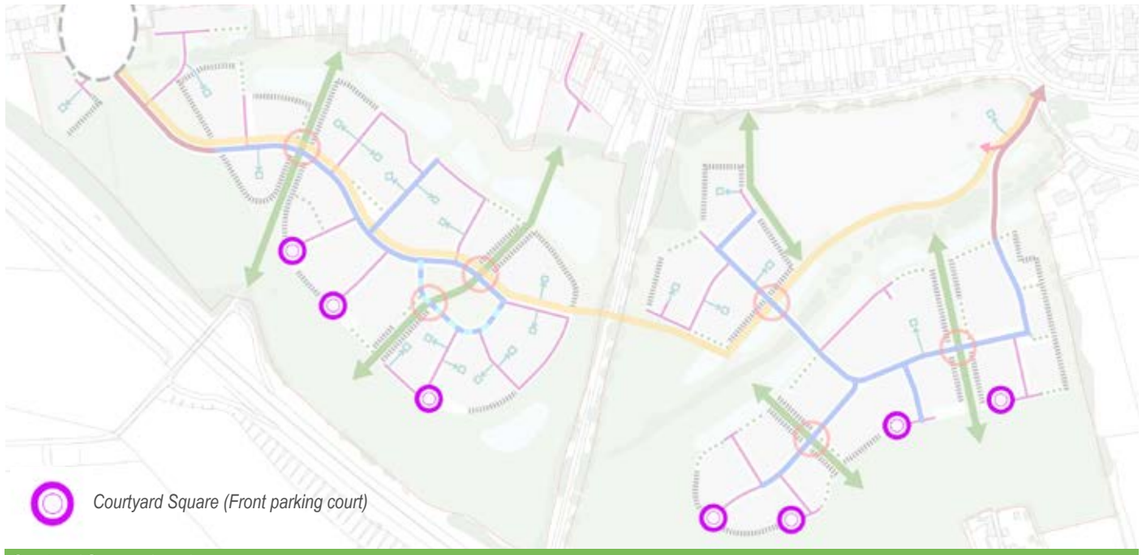
xxiii. A landscaped verge and/or street trees **should** be used to separate a maximum of four parking spaces.

xxiv. The planting palette **should** be evergreen, for year-round aesthetic sensibility, and relatively low-growing to maintain traffic and driver visibility.

xxv. Location of planting **must** be carefully coordinated with other utilities and services to avoid underground conflicts.

Suggested material character - specification to be agreed with the ECC highways authority at Planning Application application.


Courtyard (Polnoon)



Courtyard Squares key plan

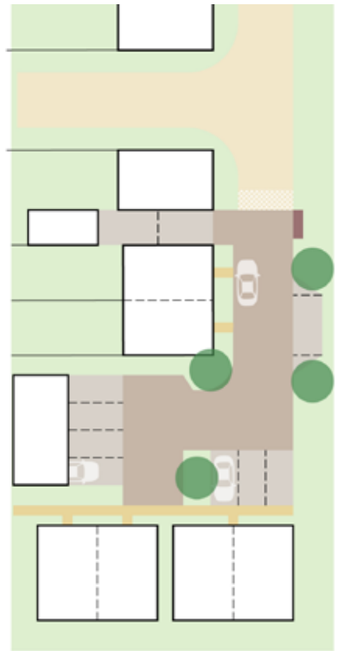


Figure 106. Illustrative Courtyard Arrangement Plan

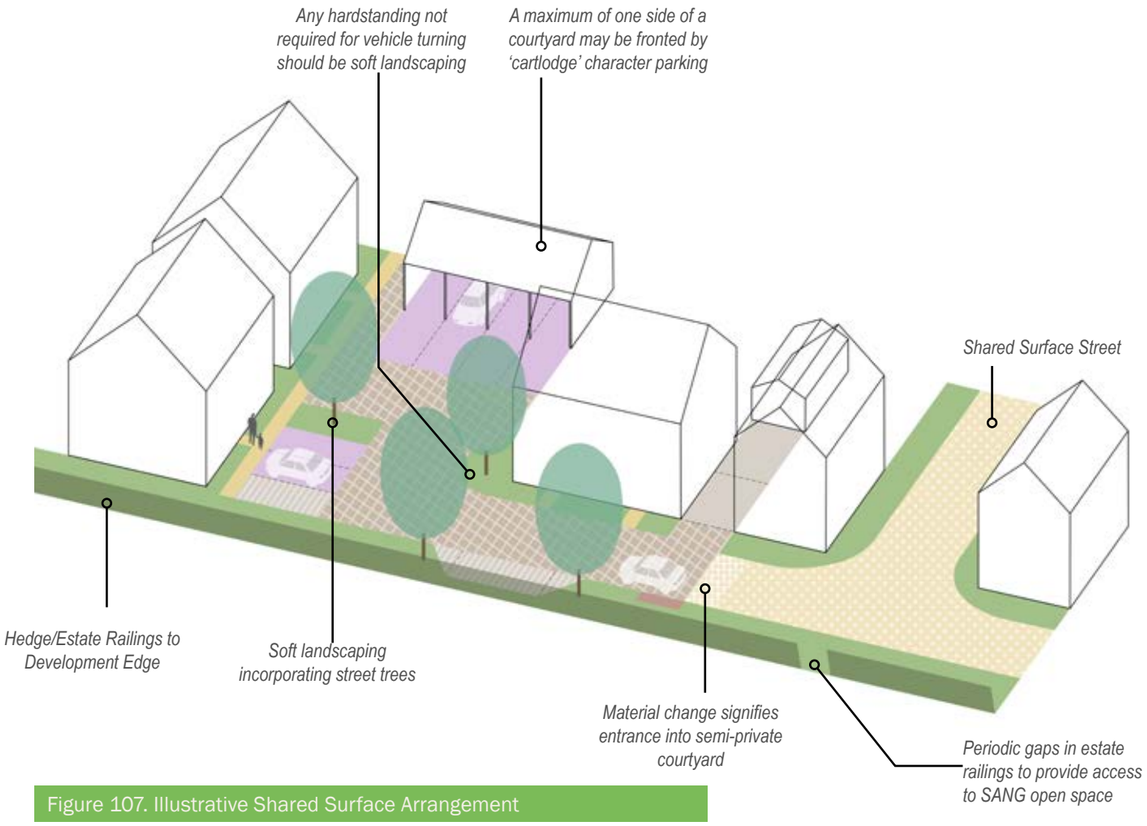


Figure 107. Illustrative Shared Surface Arrangement

LEGEND

- Adopted Shared Surface
- Courtyard Shared Surface
- Soft Landscaping
- Visitor Parking
- Bin Collection Area
- Allocated Parking Bays
- Private Driveway Parking
- Contrasting Paving Strip

Private Drives

This street type links to the Secondary and Shared Surface Streets and serves the peripheries of the development.

Serving no more than 5 units with a desirable maximum length of 18m, these are essentially a "Street Type H" Shared Surface.

Private Drives accommodate access to dwellings for all modes, through design to reduce vehicle speeds and movements to create safe and direct walking and cycling connections between properties and the wider active travel network.

Suggested material character - specification to be agreed with the ECC highways authority at Planning Application application.

Private Drive Requirements

i. These streets **must** have a combined pedestrian and vehicular surface width of at least of 6m behind a driveway to allow manoeuvring space. This is to facilitate egress from domestic parking spaces.

ii. Localised narrowings **should** be provided where appropriate for character purposes.

iii. Typically, refuse collection vehicles will not enter private drives, and any dwellings more than 25m from the highway **must** have a bin-collection point within that distance within 10m of the adopted highway.

iv. Parking facilities for each dwelling **must** be provided clear of the shared drive area, turning space, passing bays etc.

v. Drop kerbs **should** be provided to facilitate wheelie bin collection.

vi. Localised narrowings **should** be provided where appropriate.

vii. This road type **should** be a maximum of around 50m in length.

viii. The maximum gradient **should** typically be around 8%, but steeper gradients will be considered where the retention of existing topography is desirable, subject to the use of a special surface finish that affords better adhesion.

Example of Private Drive

ix. Direct access **should** be possible on both sides of the street.

x. Cycling **should** be on carriageway due to low volume of traffic on this street type. Cycling priority **should** be designed in through choice of materials, traffic calming measures and the design of junctions.

xi. The housing layout **should** ensure speed-restraint through deflection in street alignment by alternating the location of trees and parking bays and carriageway surface material.

xii. Private Drives **must** be in accordance with the Essex County Council Design Guidance and Street Materials Guide.

xiii. Shared surface private drives **must** provide access to a maximum of five dwellings.

xiv. Shared surface **should** be level surface with a change of material for pedestrian footways and shared surface crossing zones to indicate pedestrian priority

xv. A private drive taking access from a county route or street types A-E [Secondary Street] **should** be 5.5m wide for the first 6m from the street, tapering over 6m down to a minimum width of 3m.

xvi. Vehicle and pedestrian sight-splays **should** be in keeping with Manual for Streets guidance.

Place Requirements

xvii. Built form **must** create a good sense of enclosure within the building height parameters set out in section 10.4 Character and Built Form.

xviii. Built form, character, boundary treatments and typologies **should** reflect the character areas as set out in section 10.4 Character and Built Form.

xix. A constricted entrance **should** be created enclosed by buildings or walls for the first 8m back from the approach street (except for the 1.5m by 1.5m pedestrian visibility splays).

Parking Requirements

xx. Refer to Section 10.2 Parking Strategy.

xxi. Parking facilities for each dwelling **must** be provided clear of the shared drive area, turning space, passing bays etc. Adequate manoeuvring space **must** be provided to allow vehicles to enter and leave all garages and parking spaces when all other available parking spaces are full.

Service requirements

xxii. Street drainage to be determined **should** be incorporated within verges. Refer to Section 10.1 Drainage Strategy.

xxiii. Lighting **should** be on bollards specified to suit the intended character of the street.

xxiv. Car chargers provided on private driveways only.

xxv. Refuse collection vehicles **should** not enter private drives, and any dwellings more than 25m from the highway **must** require a bin-collection point within that distance, residents **should** not have to carry a bin more than 30m (excluding vertical distances). Drop kerbs **should** be provided to facilitate wheelie bin collection. Any dwelling more than 45m from the highway will necessitate use of the drive by fire tenders, in which case specifications **should** be as indicated in the 'Access for Fire Tenders' section of this guide, i.e. a minimum width of 3.7m and capable of carrying a 12.5-tonne vehicle.

Landscape requirements

xxvi. There **should** be planting alongside areas of hard-standing wherever possible.

xxvii. Planted areas, such as front gardens, **should** be aesthetically pleasing and incorporate complementary green infrastructure solutions.

xxviii. The planting palettes **should** differentiate and emphasis the various character areas within the masterplan area and to bring seasonal interest to the streetscape.

Private Drive

Private Drives key plan

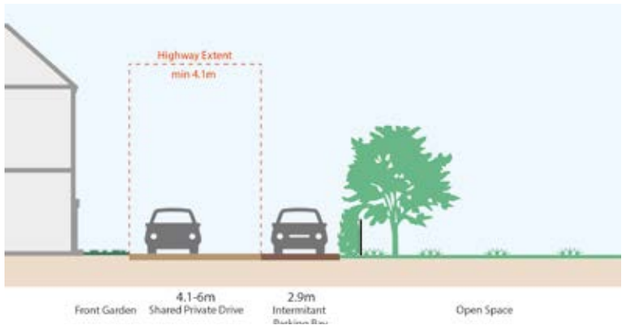


Figure 108. Illustrative Section Through Development Edge

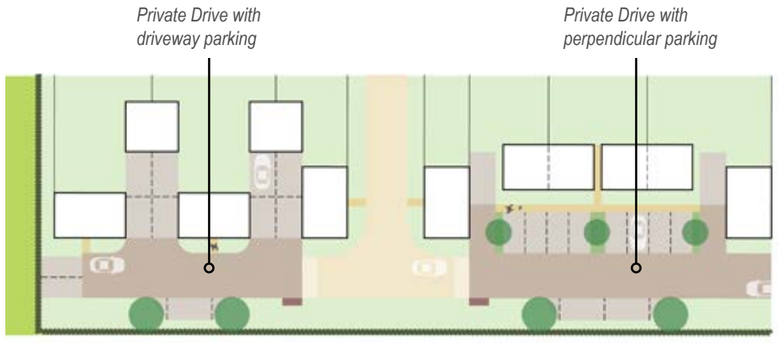


Figure 109. Illustrative Private Arrangement Plan

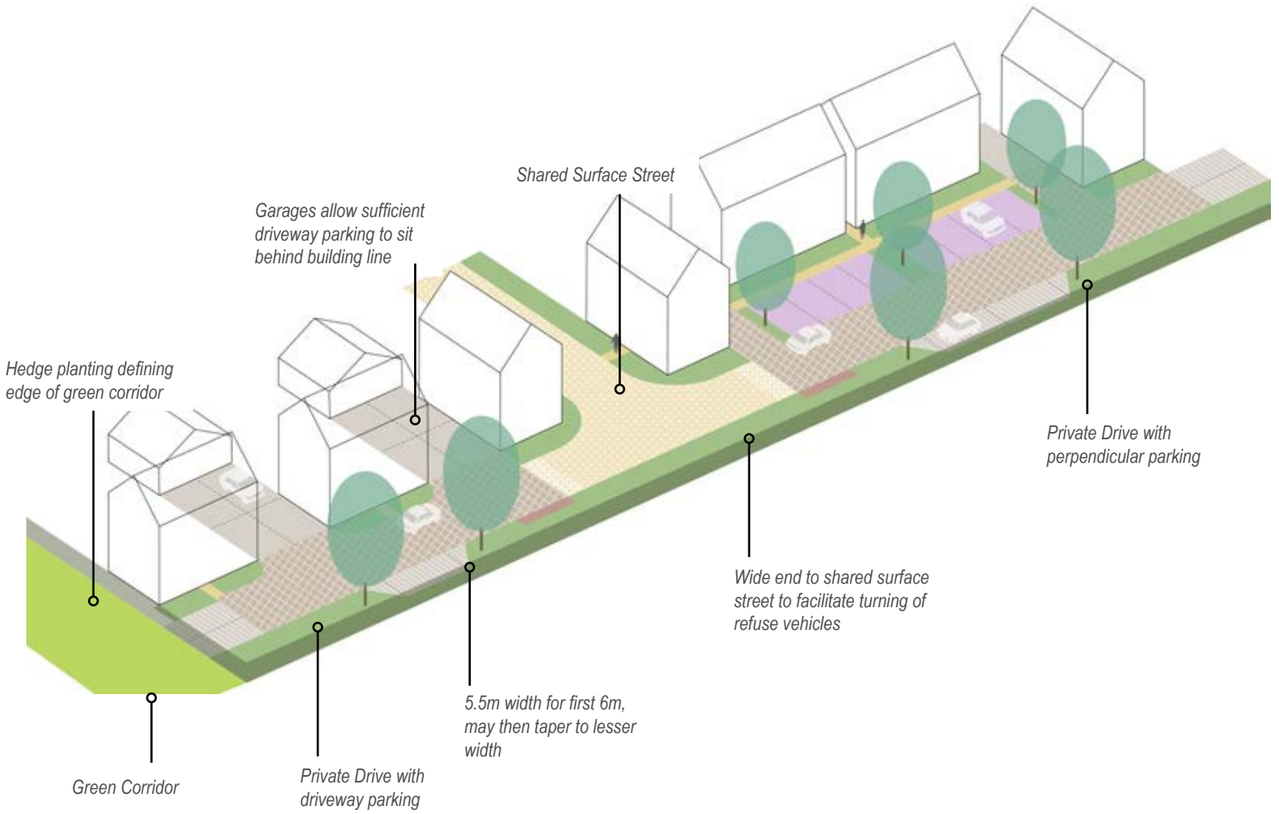


Figure 110. Illustrative Private Drive Arrangement

Green Corridors

Providing essential pedestrian and cycle permeability through the development parcels, these a cycle / pedestrian only routes.

A series of well-designed green corridors connecting the development parcels and the wider Epping area will encourage active travel users throughout the site. The route will be designed to accommodate recreational space for residents, support biodiversity and habitats, and provide series of landscaping characteristics to produce an attractive route for all users.

Paths through the green corridors will form part of leisure and active travel routes throughout the development, and should reflect the principles thereof (see also Section 10.2 - Sustainable Access & Movement).

Suggested material character - specification to be agreed with the ECC highways authority at Planning Application application.

Foot/Cycleway

Green Corridors key plan

Green Corridor Requirements

i. Vehicle access **must** not be provided along the green corridor foot/cycleway.

ii. The foot/cycleway **must** have a minimum width of 3m.

iii. Vehicle streets **must** not be located along one side of the green corridor however a private drive is permissible the opposing side.

iv. The foot/cycleway **should** have priority where crossing a vehicular carriageway, indicated through materials and a level surface.

v. The green corridor **should** have a maximum width of 20m between private thresholds.

vi. The housing layout **must** ensure the foot/cycleway is well overlooked particularly considering the location and eventual height of trees.

vii. Surface material **must** be in accordance with the Essex County Council Street Materials Guide.

Place Requirements

viii. Built form **must** create a good sense of enclosure within the building height parameters set out in section 10.4 Character and Built Form.

ix. Built form, character, boundary treatments and typologies **should** reflect the character areas as set out in section 10.4 Character and Built Form.

x. Convenient walking access **must** be provided from the homes fronting onto the green corridor.

Service requirements

xi. Street drainage to be determined **should** be incorporated within the green corridor. Refer to Section 10.1 Drainage Strategy.

xii. Lighting **should** be on low level bollards specified to suit the intended character of the street.

Landscape requirements

xiii. These routes are key community assets, incorporating landscape, tree planting, SuDS, play, community growing, social and recreation spaces therefore **must** be an integral part of the design.

xiv. Particular attention **should** be given to the landscape treatment of junctions between Secondary Streets and Green Corridors

xv. The character of these areas **should** be natural and planting **should** be aesthetically pleasing and incorporate complementary green infrastructure solutions.

xvi. These corridors **must** be tree-lined with medium to large trees (15-20m in height) on either side of the swale.

xvii. The tree planting **should** be in continuous tree pit corridors to maximise the volume of soil for the roots.

xviii. The swale **must** be planted with appropriate vegetation that can withstand waterlogged and drought conditions, whilst also contributing to the proposed naturalistic character.

xix. Swale banks **should** generally be seeded but can include planting to base and/or banks.

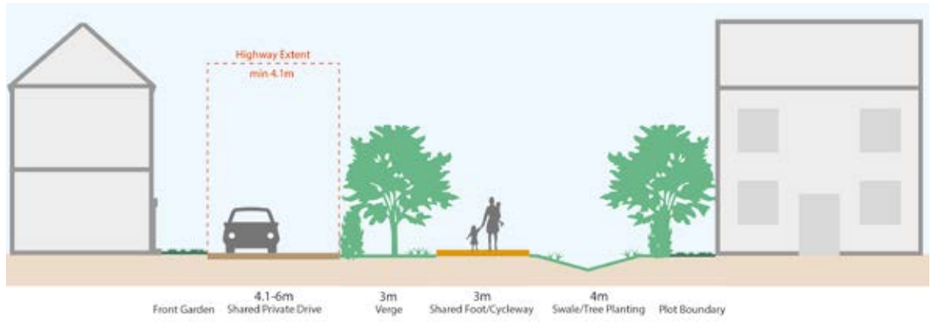
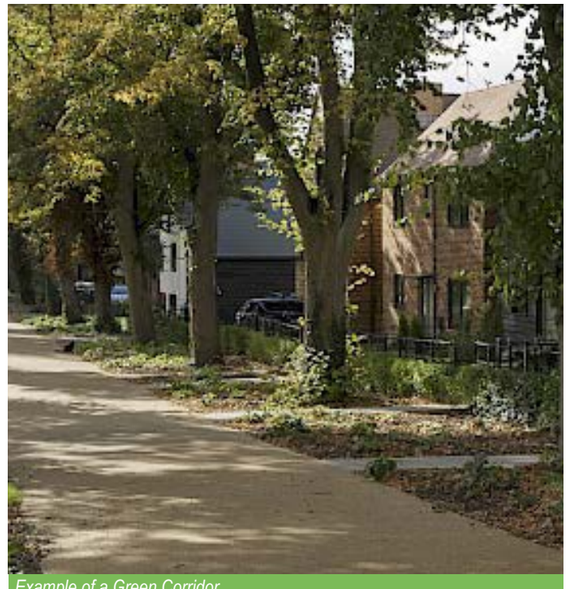


Figure 111. Typical Green Corridor



Example of a Green Corridor


DRAWING TO BE
UPDATED

Key Space 1 - Ivy Chimneys Entrance Space

The Ivy Chimneys Road entrance road runs through a landscaped open space. Landmark buildings are located on the prominent corners on either side of the Entrance Street.

- There is potential for a low brick structure incorporating shrub/hedge planting to create a gateway feature.
- Dwellings at key corners must provide architectural detailing and active frontages onto the open space.
- To enhance views towards focal buildings and the wider development, where possible, tree planting and low-level shrub planting used to define key viewing lines.

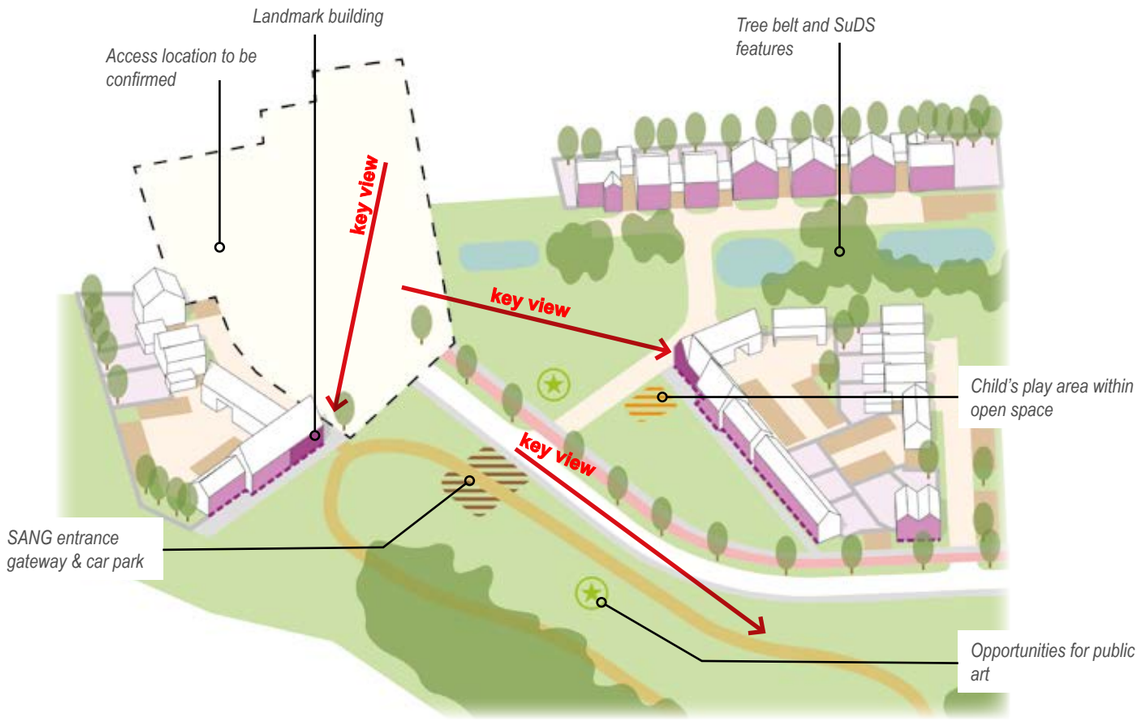


Figure 112. Schematic diagram of the Ivy Chimneys Entrance Space

Ivy Chimneys Entrance Space Requirements

i. The built form upon arrival at the Ivy Chimneys Entrance **must** be of architectural merit, creating key views and focal points.

ii. Building heights **must** be sensitive to the existing built form along Ivy Chimneys.

iii. Where the overhead power line easement allows, tree, hedge and shrub planting **should** be implemented, where trees are not feasible, shrub and hedge planting **should** be implemented.

iv. Planting **must** be used to define the gateway entrance.

v. Within open space to the east of the entrance road, formal amenity open space and play provision in the form of a LEAP **should** be implemented.

vi. Only vegetation required for access **should** be removed.

Precedent Images

An example of a low brick structure with clipped hedge and development name creates an entrance feature

Public Art precedent

Sculpture incorporating biodiversity habitat

Key Space 2 - Fluxs Lane Entrance

Up to three storey development located at the Fluxs Lane entrance will provide a gateway feature and frontage onto the Brook landscape corridor on the northern side. Key features of this space are:

- Apartments or town houses providing frontage onto the Entrance Road with potential for balconies overlooking the brook corridor landscape.
- Parking to the rear allows for the existing boundary trees and watercourse to be retained within an accessible semi-private amenity space.

Fluxs Lane Entrance Requirements

i. Three storey elements **must** be located toward the southern edge of this development parcel to ensure a sensitive relationship with existing two storey dwellings on Brook Road and Stewards Green Road.

ii. The built form **must** create a landmark feature at the entrance through rich architectural detailing of the key corner.

iii. The 10m habitat buffer to the watercourse **must** be preserved as undeveloped semi natural landscape.

iv. The boundary fencing associated with the school playing fields **must** be disguised by hedging and a minimum 2m landscape strip maintained on the development parcel side.

v. A single vehicular crossing of the segregated cycle route **should** be provided to gain access to this parcel.

vi. Rear courtyard parking **should** be utilised to enable a car free frontage and minimise crossing points of the cycle route.

vii. Low level drought resistant shrub planting **must** be provided to the front of apartment buildings to separate the built form from the cycle path.

viii. Only those trees required to facilitate the entrance junction **should** be removed.

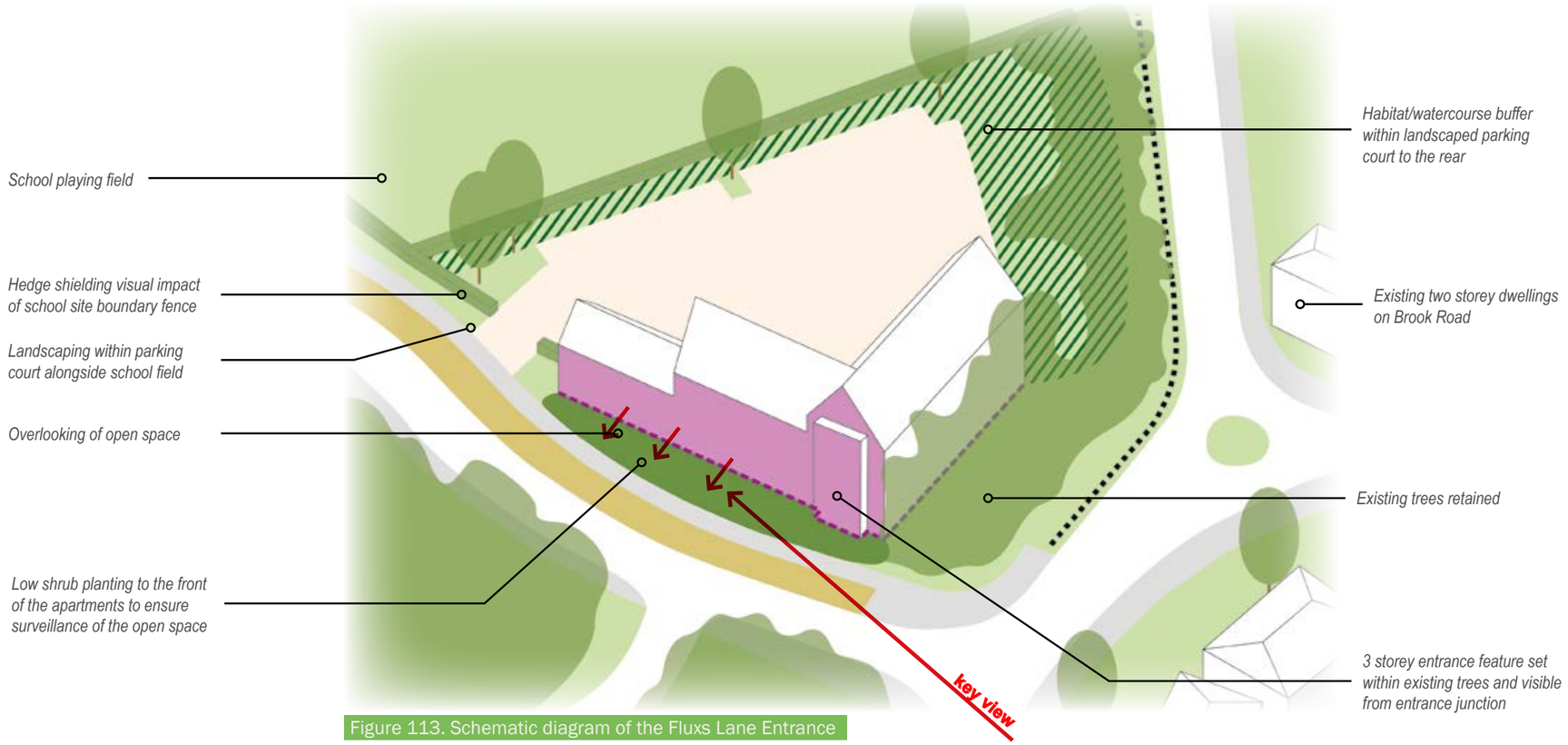


Figure 113. Schematic diagram of the Fluxs Lane Entrance

Precedent Images

Precedent image demonstrating a prominent building fronting open space

Precedent image demonstrating facade detailing at key corner

Frontage incorporating a mix of 2½ and 3 storey dwelling types with rear parking

Key Space 3 - Village Green

The reprovision of the Brook Road recreation ground (Village Green) creates a focal community space within the western parcel. Key features of this space are:

- The footpath within the north/south green corridor runs across the open space.
- The segregated cycle route running east/ west across the SEMPA runs along the northern edge.
- A play area incorporating a feature structure located within the Village Green to be visible at the end of vistas from the west.

Village Green Requirements

i. Built form **must** provide a good sense of enclosure to the space by ensuring continuity of frontage at particularly at key locations.

ii. Roof form **should** highlight the intersections between the Village Green and the routes which radiate from it, with particular emphasis where the green corridors meet the Village Green.

iii. Corner buildings with articulation to both the front and side façades **must** define key intersections.

iv. A level crossing of contrasting material to the carriageway **must** align with the route of the north/south green corridor footpath.

v. The number of crossings of the segregated cycleway **should** be minimised through the use of rear courtyard parking, parking on tertiary side streets and/or grouped accesses.

vi. The play space **must** provide a focal structure visible within views along the main street.

vii. Building heights **should** be maximised within the permitted parameters in order to maximise enclosure of the space.

Figure 114. Schematic diagram of the Village Green

Precedent Images

A precedent of a landscaped open space with a swales running alongside one edge with shrub and tree planting

The play area becomes a focal feature within the space

Precedent showing the intersection between the green corridor and the carriageway around the Village Green

viii. Where terraces with perpendicular parking form part of the frontage they **should** only be used in limited areas such as at the end of the vista from the west and on the southern side where there is no cycle route.

Landscape requirements

ix. Seating **should** be provided for supervision and social interaction.

x. Signage indicating ownership, age range limitations and other management requirements **should** be clearly displayed for the play space.

xi. Litter and dog bins **should** be place where they are clearly visible and located at entrances/exits to ensure they are convenient.

xii. All lighting within the Village Green **must** ensure an inviting, safe and useable space during all hours of the day, whilst being considerate of local wildlife using nearby green corridors.

xiii. Peripheral planting **should** provide a defensible boundary due to the surrounding road network. However, it **should** be maintained at a height that allows the space to be passively surveyed.

xiv. Cycle racks **should** be provided to encourage the use of the nearby active travel route to travel to and from the Village Green.

Key Space 4 - School Square

A school building located at the south western corner of the school site will create enclosure to a hard landscaped community space, doubling as a gathering space for children and parents prior to the opening of the school gates. Key features of this space are:

- Three sides of the space defined by built form and the fourth defined by the existing tree belt following the brook.
- A hard landscaped space sitting outside the secure school site boundary creating the opportunity for dual use as a community hub.

School Square Requirements

i. Rear courtyard parking **must** be utilised serving dwellings within the parcel immediately to the west of the school square, to remove cars from this space.

ii. A residential building of increasing height **must** define the western side of the school square. As a prominent building in views from the Fluxs Lane entrance, this frontage **must** be well articulated especially within its roof from.

iii. The segregated foot/cycleway **must** run alongside the southern edge of the hard landscaped square.

Landscape Requirements

iv. The School Square **should** function as a focal space suited to the provision of formal and informal community-oriented events.

v. The School Square **must** be designed as meeting place and **must** effectively use surface materials and defensible space to welcome all users whilst ensuring safety.

vi. Street trees **must** be provided within the School Square to frame the space and to provide containment, **must** not compromise the flexibility of the space.

vii. Additional below-canopy peripheral planting **should** be incorporated provide a defensible boundary to the square.

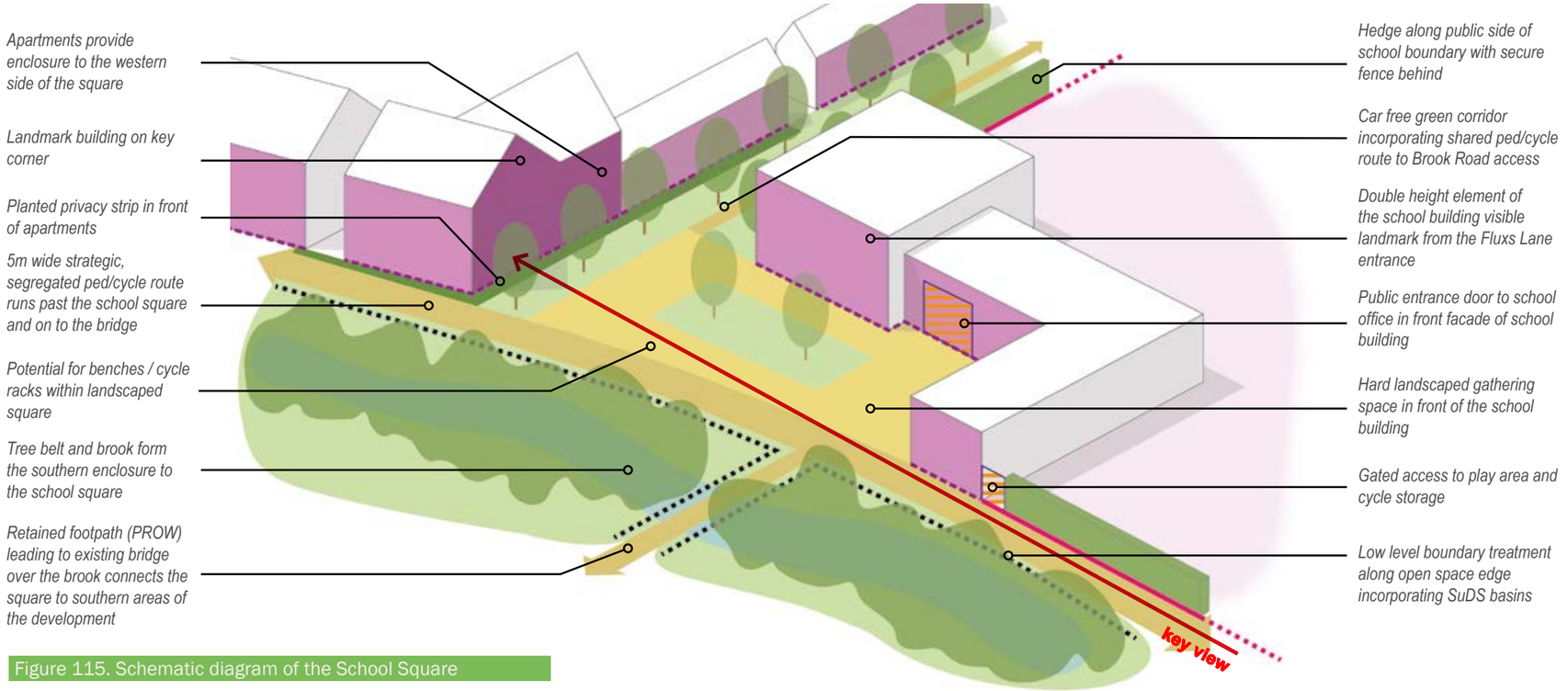


Figure 115. Schematic diagram of the School Square

Precedent Images

A precedent of a education building creating a backdrop for a hard landscaped public gathering space

viii. Seating **should** be provided for supervision and social interaction.

ix. Street art **should** be explored to enliven and enhance the public realm. Street art **must** be of the highest quality, be informed by public participation and involvement, have local relevance and significance, and involve artists in the design process.

x. The School Square **must** be accessible to people with a range of abilities with clearly signed routes and wayfinding.

xi. Routes to the School Square **must** have step-free alternatives.

xii. The School Square **must** use tactile surfaces to delineate space for those with visual impairments.

xiii. Litter and dog bins **should** be placed where they are clearly visible and located at entrances/exits to ensure they are convenient.

xiv. External lighting within School Square **must** ensure an inviting, safe and useable space after nightfall, whilst also being considerate of local wildlife living in the Brook Valley.

Key strategies for a compact, human-scale built form

- Use the landscape setting and topography of the site to inform the built form and block structure.
- Allow dwellings to sit comfortably in their setting through scale, form, sensitive boundary treatments, considering key views between the site and neighbouring heritage assets.
- Ensure dwellings are of an appropriate scale in relation to the surrounding neighbourhood of South Epping, taking design cues wherever possible to create a distinctive local character.
- Maximise the potential benefits of passive solar design through effective site layout.
- Mitigate the visual prominence of electricity pylons.
- Incorporate variety within the streetscape, punctuated by moments of key spaces accentuated through built form and landscape design treatments to facilitate ease of wayfinding.

Purpose of the Character Strategy Plan

In addition to the network of public realm spaces described above, character within the SEMPA will be generated by the dwellings themselves. Overarching requirements of building height and block structure are provided for the whole SEMPA followed by instructions according to the character areas.

The character areas described within the SMF have been further articulated through the identification of frontages. It is important that the frontage character varies according to the street or space type onto which they front. This provides each street with a distinct character and identifies the street within the street hierarchy.

See Also:

EFDC Local Plan Policy SP2, SP3 and DM9

Essex Design Guide

Epping Conservation Area character appraisal

Bell Common Conservation Area character appraisal

Distinctly Local (PTEA and Proctor Matthews Architects)

Essex Design Guide - Alternative Development Models (Jas Bhalla Architects)

Within each character area frontages either face:

- The development edge;
- The internal street network;
- Secondary streets; or
- Key spaces.

The plan opposite identifies the frontages within each character areas and the following pages provide requirements for building line, frontage and typology requirements for each. This should be read in conjunction with the vehicular access, street hierarchy, parking and public space requirements.

Built form requirements

i. Primary frontages **must** address the highest ranking street or open space most strongly.

ii. The higher ranking frontage **should** feature the most overlooking and most continuity of built form at corners (least blank frontage) and the most articulation. Exceptions to this hierarchy may be made where frontages must also respond to key gateways or vistas.

iii. The building line and frontages **should** be consistent with the principles described in the table associated with each character area.

iv. Streets, open spaces, parking courts and access points **must** be well-overlooked. Activity and natural surveillance **must** be maximised through the placement of doors, windows and balconies as well as the density of dwelling frontage.

v. Blank frontages to streets and open spaces **must** be minimised.

vi. All ground-floor dwellings **must** have their principal entrances clearly defined and emphasised through the architecture.

vii. Connecting features which allow semi-detached and detached dwellings to form a continuous frontage **must** be integral to the design of the dwelling.

viii. Development edges **must** be framed by special frontages, as described, that contribute to the quality and character of the space as well as the perception of overlooking and activity.

ix. Reference **should** be made to local vernacular built character study to inform the architectural design of dwellings, the composition of groupings, and frontages. A summary of those elements from the SMF character study that may be drawn upon are provided on the following pages.

Roof forms

x. Roof forms **must** vary to support character and wayfinding. More varied roof heights and forms **should** be used around key nodes and primary junctions whereas smaller streets **should** have more consistent roof lines.

xi. Roof form and orientation **should** consider optimum orientation for photovoltaic panels.

Architectural Design

xii. While each character area has materials palette containing slight variations, there **must** be a coherent and consistent SEMPA wide approach to material selection that responds to street and open space hierarchy in order to aid wayfinding and sense of place.

xiii. There **should** be a SEMPA wide coherent and consistent approach to architectural design which is modified within each of the character areas to provide variety within this overarching design approach.

xiv. Materials and architectural style **should** transition gradually between character areas, avoiding any abrupt or discordant changes in character.

Streetscape

xv. Elements such as boundary treatments, setbacks and parking **must** follow the requirements as set out within each character area.

xvi. All boundary treatments visible from the public realm **must** be designed to contribute positively to the street scene and must be of high quality e.g. brick wall or hedges.

Figure 116. Character Area & Built Form Plan

Block Structure Principles

Developable land should be used efficiently to maximise the land available for high-quality new homes. Compact development will support many of the design ambitions of the code including walkable, legible and human-scale streets, improved overlooking of open spaces and the opportunity to orientate buildings and blocks for maximum energy efficiency. A compact block form will be required to deliver an appropriate density.

Block Structure requirements

i. The overall layout **must** be based on a grid of small perimeter blocks in broad accordance with the Design Code Sustainable Access and Movement and Street Hierarchy Plans (in Section 02: Movement) and the SEMPA SMF Access and Movement Parameter Plan.

ii. The block structure **should** be in broad accordance with the Character and Built Form plan on the previous page, with flexibility in precise dimension and geometry of blocks. Blocks **must** not be combined to create larger blocks. Smaller blocks may be tested.

iii. Block structure **should** respond wherever possible to key strategic views and vistas and maximise opportunities for further views to site features and landmarks.

iv. The site layout **must** be planned to address the topography and therefore the gradients of streets.

v. Blocks **should** be broadly orientated to maximise north/ south frontages to dual-aspect homes.

vi. Block size and typologies **must** vary across the site in line with the density strategy as well as the character of the street or space that the building fronts on to. Types of block are shown opposite. On the lower parts of the site, back to back garden blocks, with or without internal mews/parking courts and apartment blocks all are appropriate. However on the higher more visually exposed land, Edge Courtyard forms **should** be used to reflect the character of the rural Essex vernacular and create a more informal development edge.

vii. All blocks **must** have built form on the corners and the corner building frontages **must** contribute to the public realm through habitable room windows and balconies, facade articulation and threshold/front garden design.

viii. At intersections between key routes, apartments or specific corner house typologies **must** be used to minimise blank frontage whilst providing adequate rear garden amenity and privacy.

ix. Specific corner house typologies **must** also be used where a secondary frontage of a block is not well overlooked.

x. Corner buildings **must** maintain the building line or step forward intentionally to provide focal points or pinch points/ bookends for positive placemaking.

xi. Corner houses and apartments **should** be designed to fit the angle or curve of the street, i.e. where the corner is not a right angle this **must** be reflected in the built form.

xii. The block structure **must** take account of the position of the electricity pylons and avoid streets aligned which create framed views of an electricity pylon.

xiii. Dwellings **should** be set back from the development edge, where they are adjacent to an electricity pylon, by a front parking court and generous edge planting.

Back Garden to Back Garden Block

xiv. Back to back blocks are formed by single family dwellings, with active frontages enclosing and overlooking the street or public realm.

xv. Back to back blocks **must**:

- Clearly identify and distinguish between public and private realm;
- Observe minimum garden sizes as set out in the Essex Design Guide; and
- Observe minimum back to back distances between rear façades as set out within the Essex Design Guide unless otherwise agreed.

Figure 117. Illustrative example of block typology

Perimeter Blocks with Internal Mews or Parking Court

xvi. Perimeter blocks will typically include a combination of single family dwellings and apartment buildings, with amenity space and parking to be primarily provided within an internal court for apartments.

xvii. Perimeter blocks with mews or parking courts **must**:

- Be well overlooked to provide passive natural surveillance;
- Be attractive and well designed, and provide occasion for informal play and social interaction;
- Include planting and a combination of hard and soft landscaping;
- Clearly identify the separation between public and private realm, with a controlled and potentially secured access.

Figure 118. Illustrative example of block typology

Apartment Blocks

xviii. Apartment blocks will generally be used in higher density areas. They have the specific purpose of accommodating apartment buildings with their associated parking courts.

xix. Apartment blocks **must**:

- Avoid single aspect north facing units;
- Provide a combination of communal and private outdoor amenity space to standards set out within the Essex Design Guide
- Have clearly identifiable entrances that address the public realm;
- Clearly mark the separation between public and private realm;
- Provide ground floor units with outdoor defensible space or balconies that are secure from external access;
- Have well lit and secure access to communal bike and refuse storage for residents only;
- Ensure that all apartments have space to dry clothes either within the apartment or within a communal facility.
- Provide communal outdoor spaces that are private and not visible from the street or other public areas but overlooked by the occupants of the dwellings they serve.

Figure 119. Illustrative example of block typology

Edge Courtyard

xx. Located with the Hillside Edge character area this arrangement utilises parking within front courtyards.

xxi. Edge courtyards **must**:

- Be well overlooked to provide passive natural surveillance;
- Be attractive and provide occasion for informal play and social interaction;
- Include planting and a combination of hard and soft landscaping screening parking bays within the courtyard to reduce visual impact of parked cars when viewed from the SANG.

Figure 120. Illustrative example of block typology

Heights strategy

The overall heights strategy is based on the SEMPA SMF Building Heights Parameter Plan. Further heights refinements have been made to suit the additional work undertaken on block structure and placemaking.

Local landmarks

It will be important to include variety in building heights and roof forms within streets to avoid monotonous streetscapes and skylines. The plan opposite indicates where moments of height should be used as landmarks at key nodes or to terminating vistas. These height markers will avoid the development appearing as a solid mass of built form.

Street enclosure

Whilst all streets will need to be residential in scale, the ratio of building height to street width will have a significant impact on the character of the street. Taller buildings and narrower street widths give a greater sense of enclosure.

Building Height requirements

i. The overall heights strategy **should** be generally in line with the plan opposite. However these heights should be regarded as maximums, not targets. Where there are deviations, these **must** be justified in technical or placemaking terms.

ii. Building heights **must** be tested for visual impact on key points in the surrounding areas alongside proposed ground levels.

iii. Apartment buildings **should** be modelled to create a varied roofline.

iv. Streets **should** include variety in building heights and roof forms to avoid monotonous streetscapes and skylines.

v. Taller built elements (indicated by asterisk in plan) **should** be provided at points that terminate vistas or at significant nodes. For example:

- Around green spaces;
- At key site gateways;
- At key intersections such as the junctions detailed in the Public Space and Identity section;
- At corners; and
- Terminating key vistas.

vi. The degree of enclosure within streets **must** correspond to street type. Where this cannot be achieved due to limitations on building heights, a sense of enclosure **should** be incorporated by other means such as tree planting or house typologies with continuous frontage such as terraces.

vii. Building heights **must** consider daylight and sunlight to private amenity, habitable rooms and other internal spaces that require natural light.

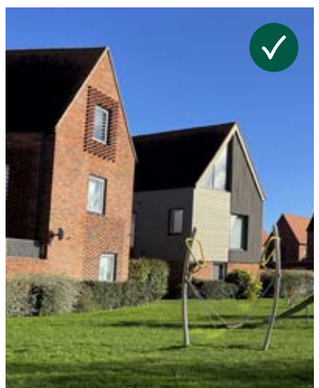
Architectural Form & Character References

Example of tall building at key corner

Example of tall building at key corner coordinating architecturally with neighbouring two storey dwellings

Example of taller building at corner with material change and forward facing gable

An example of two taller buildings at a key junction, with variation in roof type and material



Taller buildings siding onto a green corridor

Figure 121. Public Space Strategy Plan

Mandatory Requirements

An overview of the Waterside Edge Character Area is provided in SMF Section B.5.

Reference should be made to local character reference pages 162-163.

- *Density Parameter - 40-50dph (small portion of 35-40dph)*
- *Building Height Parameter - 3 storey maximum (small portion of 2½ storey)*
- *Refer to Village Green Key Space for frontage requirements in this location*

** For Key Space Frontage see Section 10.3 Public Spaces & Legibility*

Required Features Across the Character Area

Urban form requirements

i. Key prominent corners **should** be defined by three storey apartment buildings with rear courtyard parking thus removing cars from key spaces.

ii. The housing layout **must** enable green corridors to be car free on one side with potential for a private drive to run along the opposing side.

iii. The build line **should** be predominantly consistent however dwellings may be slightly staggering to add visual interest.

Built form requirements

iv. A predominance of dwellings incorporating forward facing gables **should** be used in order to create a rhythm of gables along the development edge and coordinating design motifs used along adjacent internal streets.

Architectural character requirements

v. A contemporary architectural style **should** be adopted with simply detailed window and door openings.

vi. Material colours observed in the local Georgian/ Victorian architecture **should** be reflected.

vii. Dwelling design **should** feature a larger proportion of glazing within the north facing facades.

viii. Dwellings fronting tertiary streets **should** echo the style and form of the principal northern development edge frontage but in a two storey format.

Architectural Form & Character References


Precedent image of 2 storey dwellings with bay window detailing

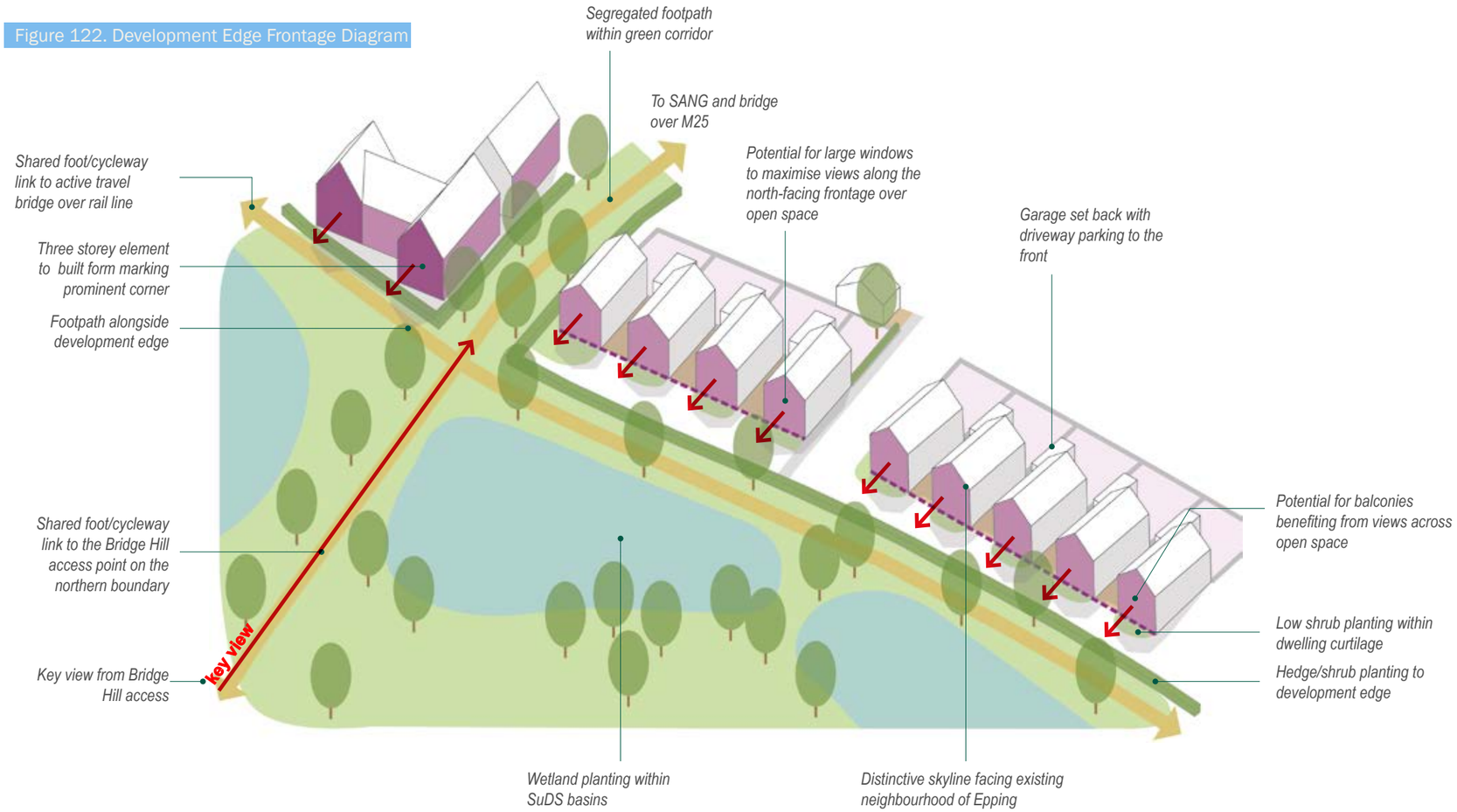

Precedent image of 2.5 storey dwellings with 3 storey corners


Precedent image of 3 storey dwellings with integral garages


Precedent image of 2 storey dwellings coordinating with the development edge frontage


Estate railings in combination with hedge planting development edge boundary

Figure 122. Development Edge Frontage Diagram



Materials Requirements

ix. This character area **should** adopt a limited material pallet to ensure a coherent visual aesthetic is created. The emphasis **must** be buff brick on pale cream and white rendered façades.

x. Roof materials are primarily grey slate with occasionally red clay tiles.

Requirements Dependent on Frontage Location

	Building Line & Built Form	Boundary Treatments & Setback	Typologies
Development Edge Frontage	• A regular rhythm of forward facing gables must be apparent • Formal, consistent building line within groupings • 1st/2nd floor balconies benefiting from views across the wide green corridor should be considered	• Estate railings in combination with hedge planting separating the private drive/shared surface street from the footpath/shared foot/cycleway within the open space • Garden boundaries fronting the development edge should be brick with shrub/hedge planting	• 3 and 4 bed town houses in pairs /terraced or link detached • 1 and 2 bed apartments in key locations
Internal Tertiary Street Frontage	• Less density to building line than along Secondary Streets • Roof form should echo that of the development edge but greater degree of flexibility	• Low shrub planting within dwelling setback, no walls or fencing • Any street tree planting must not be included within private defensible space	• 2, 3 and 4 bed terraced and semi-detached dwellings, occasional detached dwelling • FOGs, especially along green corridors
Secondary Street Frontage	• Maximise density of build line through use of connected dwelling types • Should have a coherent materials palette either side of Street	• Low brick walls and occasional estate railings, and hedge planting within the plot boundary	• 2 storey terraced, semi detached and detached dwellings • 1 and 2 bed apartments in key locations

The Waterside Edge Character Area makes reference to buildings at:

- *Bell Common Conservation Area, Epping;*
- *Brook Road, Epping;*
- *Epping Town Centre Conservation Area; and*
- *Newhall, Harlow.*

This page demonstrates area provides reference for housing layout, materials, public realm treatments and architectural features.

Housing Layout Area Requirements

xi. Dwellings located within the Waterside Edge Character Area **should** reflect the following features:

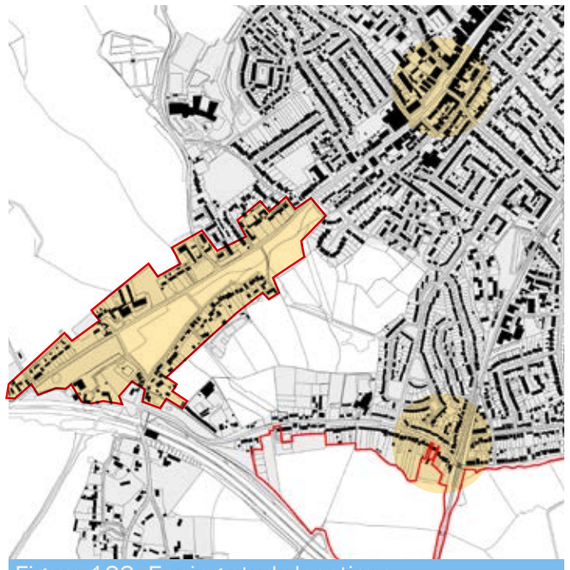


Figure 123. Epping study locations

Window composition & proportions Symmetrical arrangement of vertically proportions windows within the gable facade.

Roof form: Forward facing gables are a key feature of the development edge frontage.

Materials: changes should occur in a logical fashion, e.g. from one storey to another or to articulate a part of the structure such as a cross gable or window bay.

Building Line: Repetition of built form within dwelling groupings.

Roof form: Mix of roof orientation along frontages facing internal streets.

Architectural detailing: Simplified interpretation of Georgian/ Victorian architectural features such as ground floor bay windows, brick banded at first floor level and overhanging eaves.

Verge planting: Low shrub planting at junction between development edge and tertiary streets.

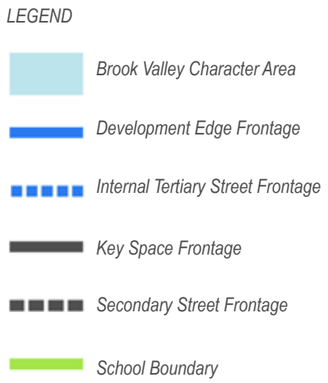
Materials: Predominantly buff brick and white/ cream render with slate (colour) roof.

Mandatory Requirements

An overview of the Brook Valley Character Area is provided in Section B.6.

Reference should be made to local character reference pages 166-167.

- *Density Parameter - 30-35dph.*
- *Building Height Parameter - 2½ and 3 storey maximum.*
- *Refer to School Square Key Space for frontage requirements in this location*



** For Key Space Frontage see Section 10.3 Public Spaces & Legibility*

Required Features Across the Character Area

Urban form requirements

i. Potential for apartment blocks with rear courtyard parking to provide landmarks at key corners. These **should** be well integrated into the street scene.

ii. Frontage density is in general tighter along the landscape edge with more flexibility within the parcels

Built form requirements

iii. Gable roofs **should** be predominantly aligned with the street to maximise south facing potential for solar energy generation.

iv. Perpendicular parking **should** be limited and landscape screening / street tree planting used between blocks of six parking spaces.

Architectural character requirements

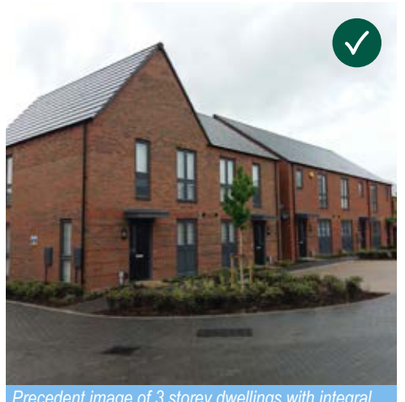
v. The architectural style **should** reflect a simplified interpretation of Georgian/ Victorian architectural features as observed in the local area. (See following pages)

Architectural Form & Character References

Precedent image showing high level of continuity across the frontage

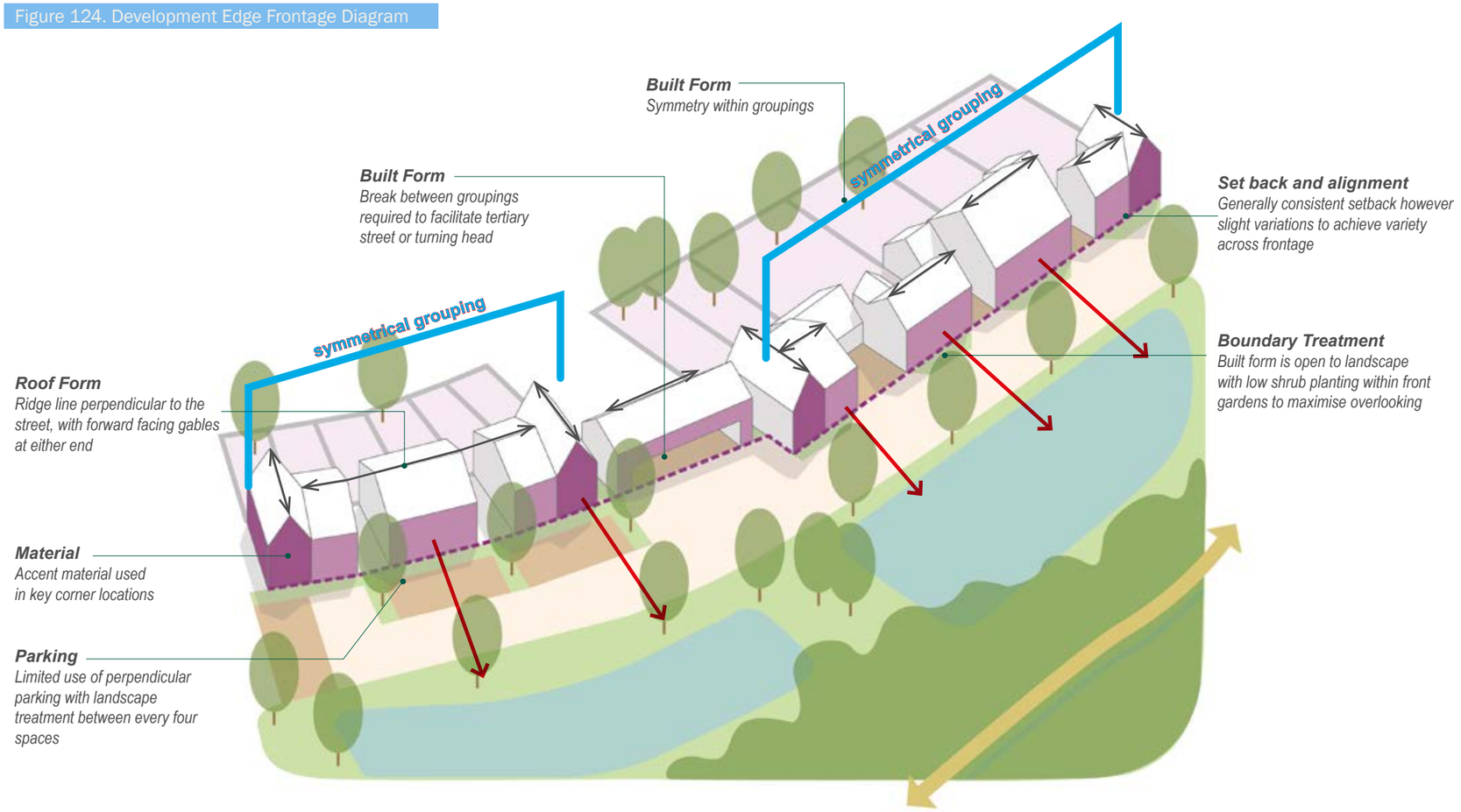
Precedent image of symmetrical arrangements of dwellings along each section of frontage

Precedent image for apartment building overlooking open space with second floor recessed balconies



Precedent image of 3 storey dwellings with integral garages

Figure 124. Development Edge Frontage Diagram



Materials Requirements

vi. Materials which resemble the local vernacular materials **should** be the predominant materials used within this character area.

vii. A red multi brick is the main facade materials with accents created with black weatherboarding and pale shades of render.

viii. Roof materials are primarily grey slate with occasionally red clay tiles.

Requirements Dependent on Frontage Location

	Building Line & Built Form	Boundary Treatments & Setback	Typologies
Development Edge Frontage	• Symmetry in dwelling groupings should be apparent • Groupings **should** use forward facing gables to accentuate corners with forward facing gables • Maximise density of build line through use of connected dwelling types	• Low shrub planting to front boundary, no walls or fences in order to maximise overlooking of open space • Garden boundaries fronting the development edge should be brick with shrub/hedge planting in front	• 2 storey terraced, semi detached and detached dwellings • 1 and 2 bed apartments in key locations
Internal Tertiary Street Frontage	• Less density to building line than along Secondary Streets	• Low shrub planting to front boundary, no walls or fences • Any street tree planting must not be included within private defensible space	• 2, 3 and 4 bed terraced and semi-detached dwellings, occasional detached dwelling • FOGs, especially along green corridors
Secondary Street Frontage	• Maximise density of build line through use of connected dwelling types • Should have a coherent materials palette either side of the street	• Low brick walls and occasional estate railings, and hedge planting within the plot boundary	• 2 storey terraced, semi detached and detached dwellings • 1 and 2 bed apartments in key locations

The Brook Valley Character Area makes reference to buildings at:

- *Bell Common Conservation Area, Epping;*
- *Brook Road, Epping;*
- *Epping Town Centre Conservation Area; and*
- *Newhall, Harlow.*

This page demonstrates area provides reference for housing layout, materials, public realm treatments and architectural features.

Housing Layout Area Requirements

ix. Dwellings located within the Brook Valley Character Area **should** reflect the following features:

Figure 125. Epping study locations

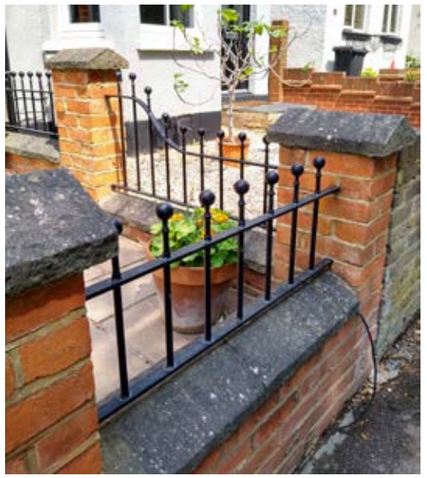
Building Line: Consistent build line, buildings adjoin with minimal gaps

Window composition & proportions : Vertical window proportions often in a symmetrical arrangement within each dwelling

Built form: Close visual connection between the publicly accessible open space and the dwellings fronting the Brook Valley

Roof form: Forward facing gables within a gabled roof aligned with the street

Front Boundaries: Hedges and low brick wall and iron railings



Parking: Perpendicular parking broken up by shrub planting and street tree planting.

Materials: A mix of facade material and storey height within a continuous frontage

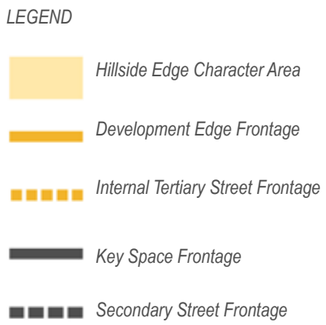
Public realm: Precedent for the school square, hard landscaped space alongside key movement route

Mandatory Requirements

An overview of the Hillside Edge Character Area is provided in SMF Section B.7.

Reference should be made to local character reference pages 171-172.

- *Density Parameter - 30-35dph and 35-40dph*
- *Building Height Parameter - 2 and 2½ storey maximum areas*
- *Refer to Village Green Key Space for frontage requirements in this location*



** For Key Space Frontage see Section 10.3 Public Spaces & Legibility*

Required Features Across the Character Area

Urban form requirements

i. Variable setbacks to achieve an organic grain to the development edge **should** be achieved through the use of courtyard arrangements.

ii. Back to back garden blocks **should** be used throughout the remainder of the character area unless rear parking courts are required to remove cars from green corridors.

iii. Where green corridors run through the character area, due to the narrow width of the development parcel, it **should** be suitable to side dwellings onto the green corridor in order to avoid vehicular movements within this space.

Built form requirements

iv. FOG units where the parking area is open, reminiscent of traditional rural cart lodges.

v. Where used, private garages **must** be set behind the building line.

Architectural character requirements

vi. The architectural style **should** reflect a simplified interpretation of the Essex rural vernacular as observed in the local area. (See following pages)

vii. Roofs **must** be pitched.

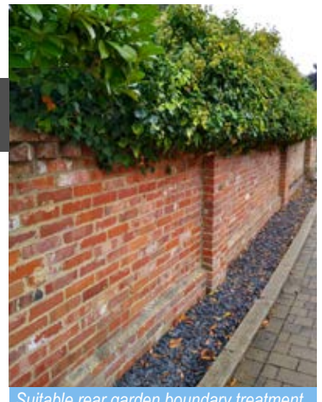
Architectural Form & Character References

Precedent image demonstrating a contemporary interpretation of a farmstead

Precedent image demonstrating use of black weatherboarding the brick to lower storey on a contemporary dwelling

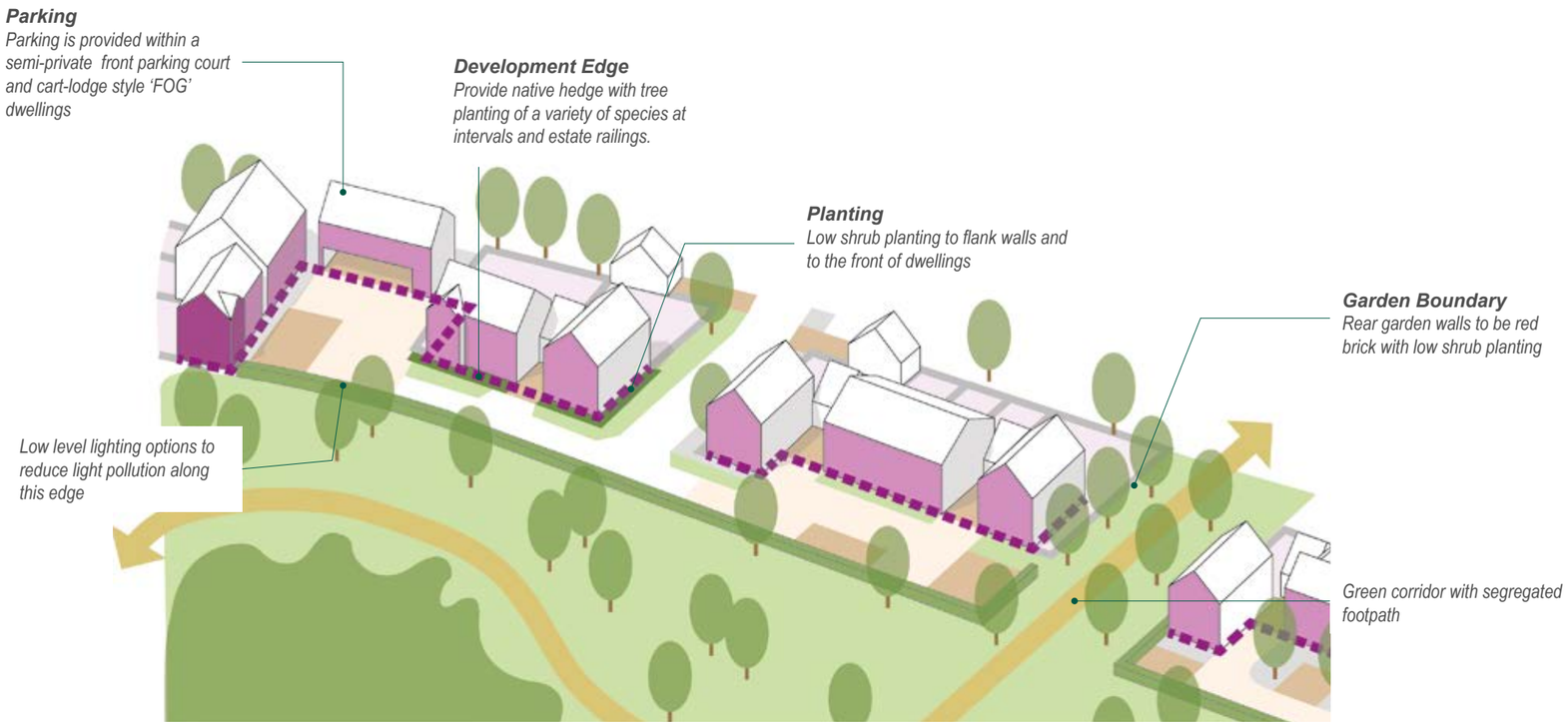
Parking area visually open to the development edge

Suitable boundary treatment



Suitable rear garden boundary treatment

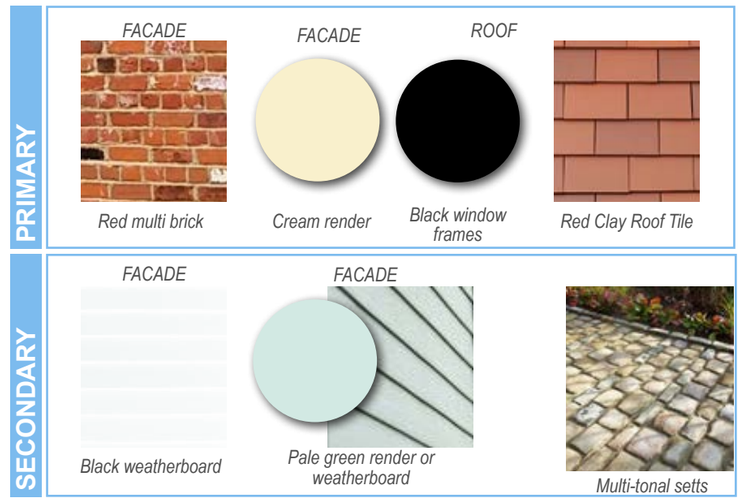
Figure 126. Development Edge Frontage Diagram



Materials Requirements

viii. Materials which resemble the local vernacular materials **must** be the predominant materials used within this character area.

ix. The palette of materials consists of black timber weatherboard, light colour render, multi-tonal red bricks and red plain tiles for roof. With setts or small format paving for front courtyard areas.



Requirements Dependent on Frontage Location

Frontage Type	Building Line & Built Form	Boundary Treatments & Setback	Typologies
Development Edge	• Building line should appear fragmented and arranged around in a series of front courtyards with varying setbacks and interspersed with landscaping	• Low shrub planting to front boundary, no walls or fences within parking courtyards • Garden boundaries fronting the development edge should be brick with shrub/hedge planting in front • Development edge estate railing with hedge planting to allow view from the dwellings across the SANG.	• 3, 4 & 5 bed detached dwellings • 3 bed semi-detached, with occasional 2 bed terraces • FOG units with open parking (cartlodge aesthetic)
Internal Tertiary Streets	• Less density to building line than along Secondary Streets • Maximise surveillance through corner dwelling types which have apertures to both front and side elevations esp. if limitations of block depth does not permit dwellings to front	• Low shrub planting to front boundary, no walls or fences • Any street tree planting must not be included within private defensible space	• 2, 3 and 4 bed terraced and semi-detached dwellings, occasional detached dwelling • FOGs, especially along green corridors
Secondary Street	• Maximise density of build line through use of connected dwelling types • Should have a coherent materials palette either side of Street	• Low brick walls and occasional estate railings, and hedge planting within the plot boundary	• 2 storey terraced, semi detached and detached dwellings • 1 and 2 bed apartments in key locations

Hillside Character Area Local Character Reference

The low density southern edge takes its cue from the Essex Rural Vernacular as exemplified by the buildings at Gardners Farm.

These historic farmsteads provide reference for housing layout, materials, public realm treatments and architectural features.

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Figure 127. Area Location

Housing Layout Area Requirements

x. Dwellings within this character area **should** reflect the majority of the following layout principles:

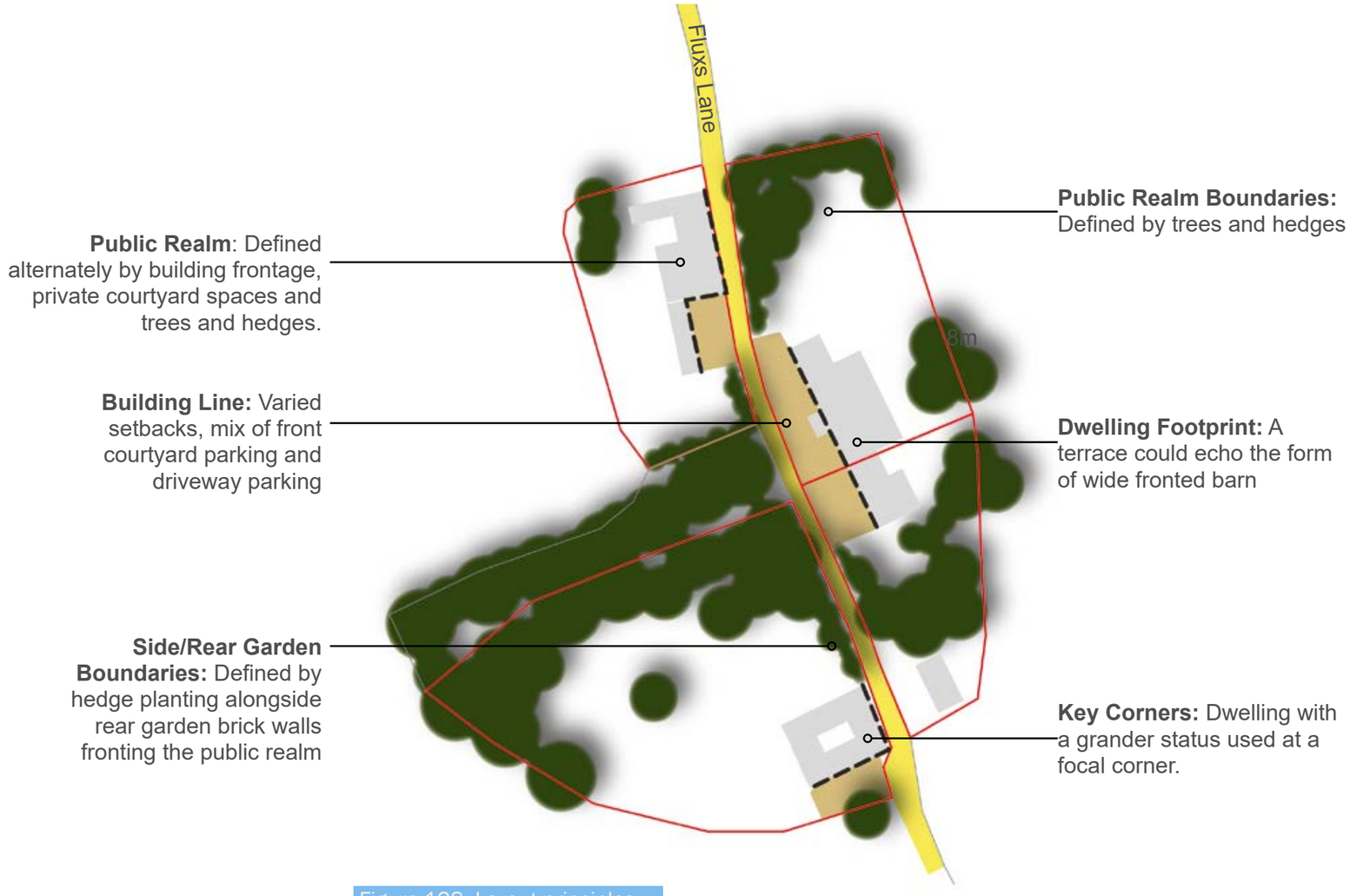


Figure 128. Layout principles

Building Design Requirements

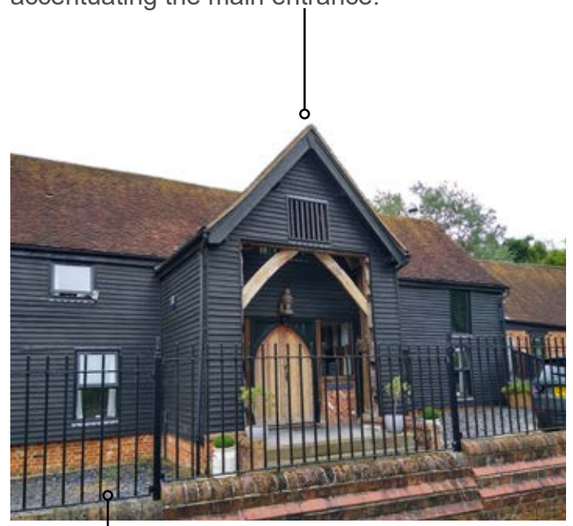
xi. Reference **must** be made to the Essex Design Guide. In particular the following features **should** be reflected:

Storey Heights: Dwellings with adjoining elements of differing storey heights i.e. some1½ and 2 storey elements

Front Boundaries: Low shrub planting

Architectural detailing: pitched red tile roof, a combination of render and red multi brick, black window frames

Roof form: Mix of gable roof forms aligned with the street and forward facing gables particularly accentuating the main entrance.



Front Boundaries: Metal railings with low brick wall potential boundary treatment

Materials: changes should occur in a logical fashion, e.g. from one storey to another or to articulate a part of the structure such as a cross gable or window bay.

Parking: Front parking court with a textured, multi-tonal block

APPENDICES

Green and Blue Parameter Plan

Figure 129. SEMPA SMF Green & Blue Infrastructure Parameter Plan

Density Parameter Plan

Figure 130. SEMPA SMF Density Parameter Plan

Building Heights Parameter Plan

Figure 131. SEMPA SMF Building Heights Parameter Plan

Land Use Parameter Plan

Figure 132. SEMPA SMF Land Use Parameter Plan

Access and Movement Parameter Plan

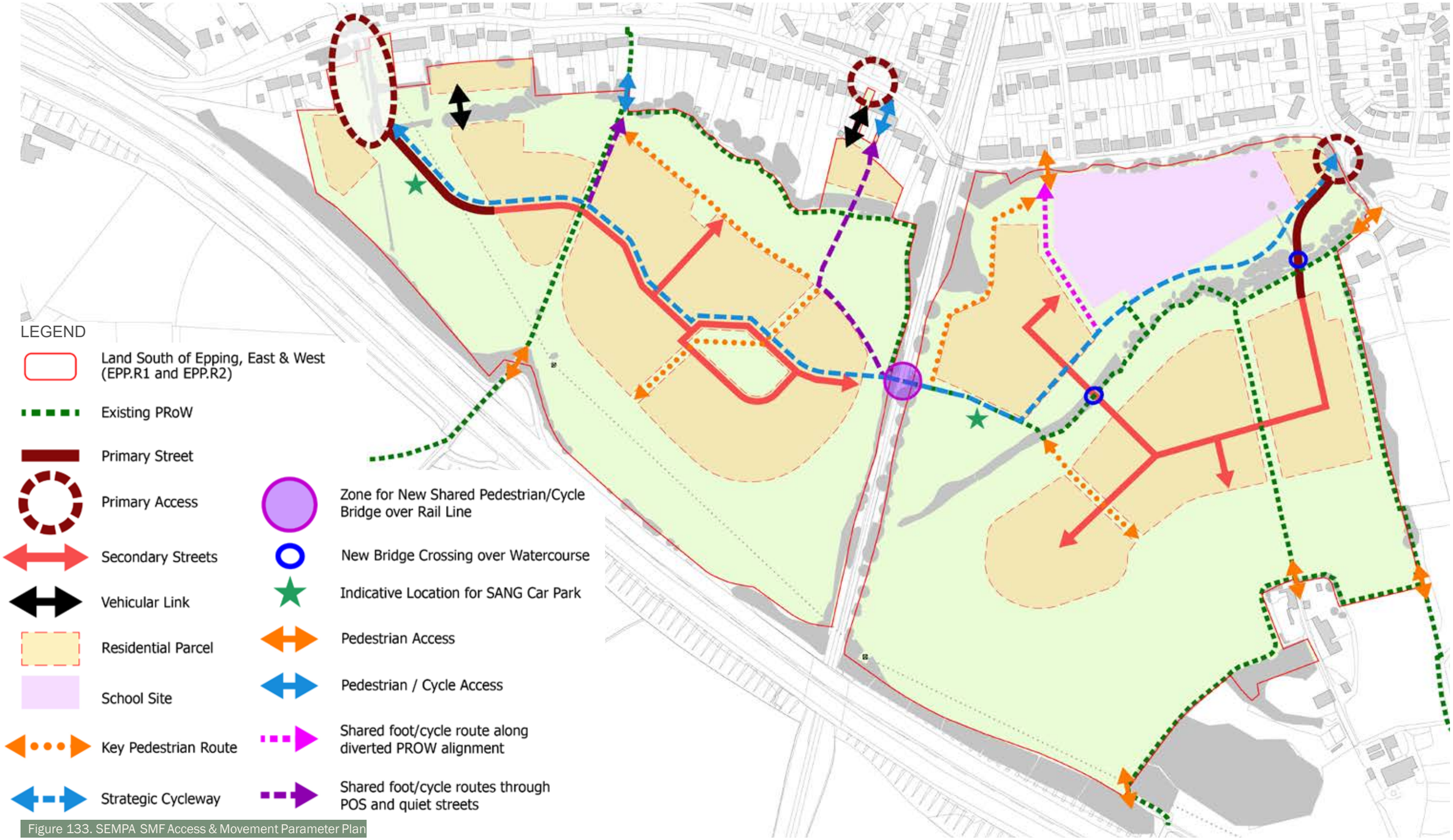


Figure 133. SEMPA SMF Access & Movement Parameter Plan

Local Character Study - Historic Development

OS Map 1885-1900

- Epping developed as a linear market town, along the main trading route between London and East Anglia. An almost continuous ribbon of buildings has formed by this time along the High Street, many of which are today listed.
- A railway station was built at Epping in 1865 part of the Great Eastern Railway branch line. The northern tip of Epping Forest has a similar relationship to the site as exists today.
- The triangular arrangement of Bell Common is in evidence, surrounded by residential dwellings. Dispersed development has developed along Ivy Chimneys/Stewards Green Road and around the rail station but between the site and the High Street is predominantly still open farmland.
- Apart from Gardners Farm and Coopersale Hall situated to the south of the Site, there is very little development within its vicinity as the area is mostly comprised of agricultural fields.

OS Map 1888-1913

- In the late 19th century the High Street was thriving contained many shops and business.
- By the early 20th century, the town had expanded considerably and there were many new houses around the edges of the town around roads that had been laid out in the late 19th century such as St John's Road, Hartland Road and Kendal Avenue
- Further infill of residential dwellings had taken place along Brook Road, towards Bell Common and by 1938 this had continued north from Brook Road to the station.
- At this time development is still predominantly confined to movement routes rather than housing estates typical of the the twentieth century.

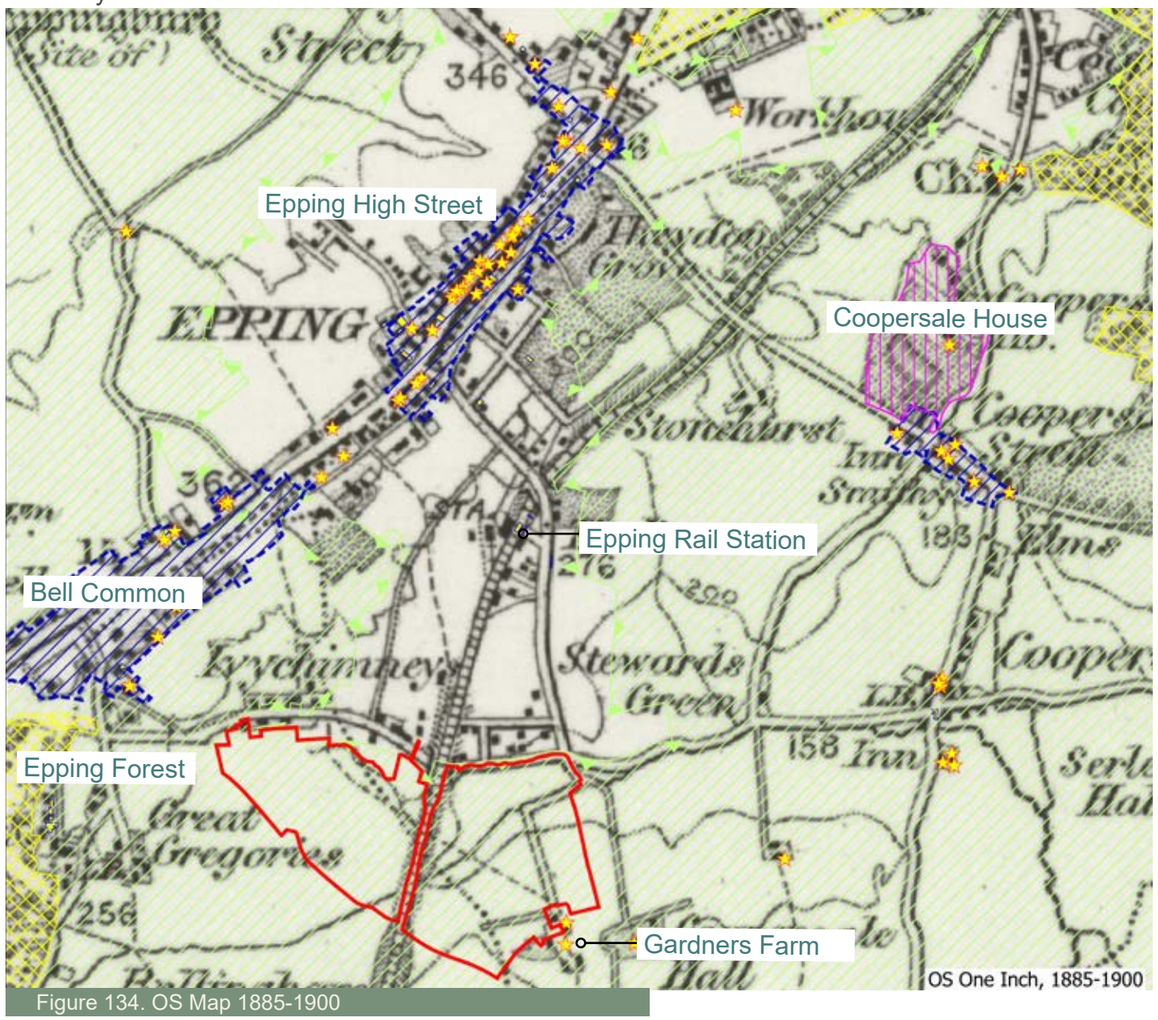


Figure 134. OS Map 1885-1900

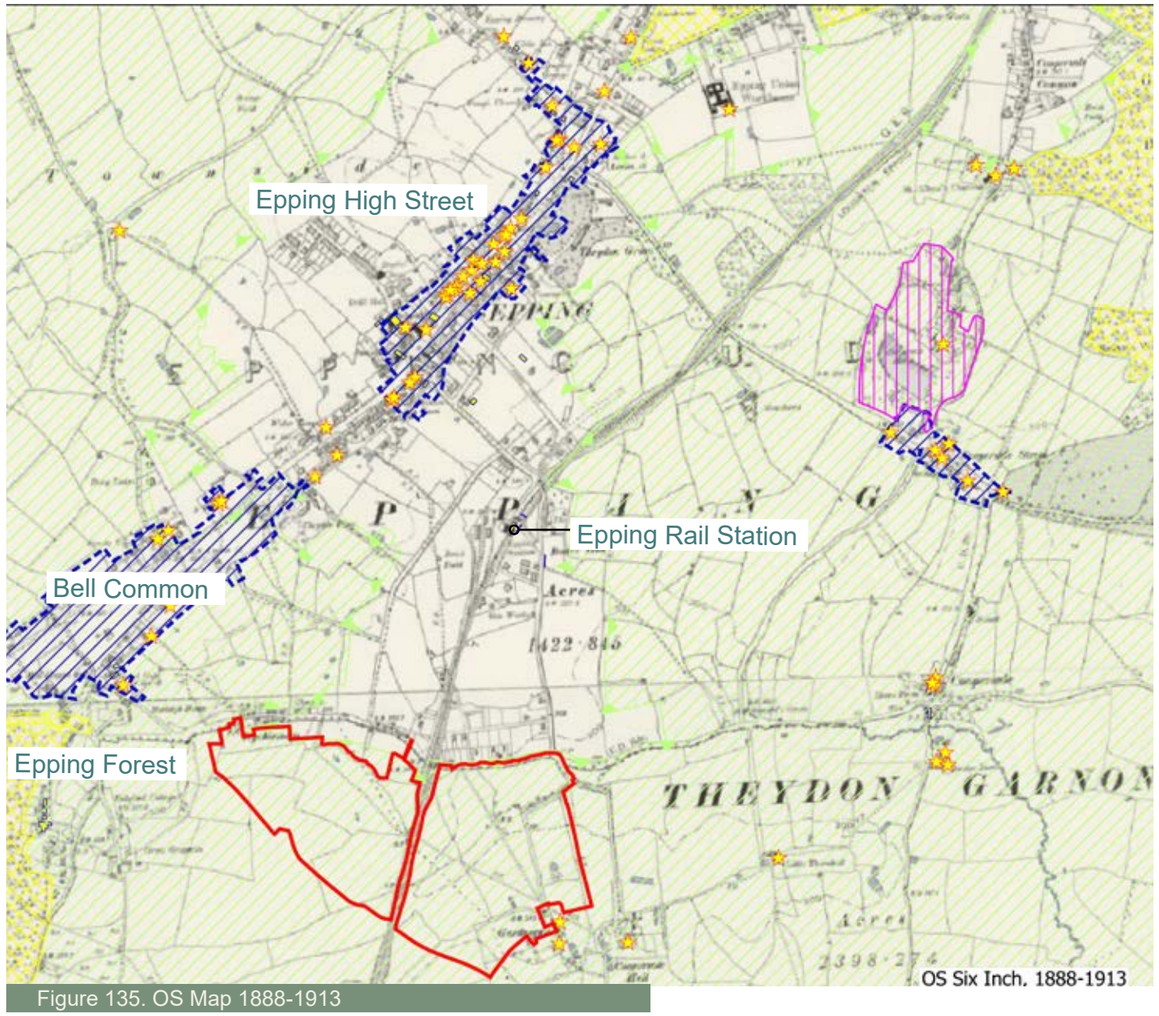


Figure 135. OS Map 1888-1913

OS Map 1949-1971

- By the mid twentieth century, extensive housing development has occurred both flanking the High Street and on the south facing slopes surrounding the rail station.
- These two parts of the town are linked via Station Road.
- The Great Eastern train line became part of the London Underground's Central Line in 1949. Regular train services stopped running onward to Ongar from Epping in 1994.
- Epping has become a thriving town with a variety of shops, services, industries and amenities.
- Epping Forest was designated as a Site of Special Scientific Interest in 1953 and a Special Area of Conservation (SAC) in 2005 in recognition of its national and international conservation importance.
- The London Metropolitan Green Belt was designated in 1953 preventing any significant expansion of the town.

OS Map 2002

- In 1980, the M11 motorway was completed, linking London with Cambridge and Norwich. The motorway passes 1.5km to the east of Epping. In 1986, the M25 was completed which runs along the southern boundary of the site. The M25 runs within a tunnel beneath Bell Common created to avoid impact on the ecologically important Epping Forest and the Bell Common conservation area.
- By the twenty-first century, while the overall extent of Epping has not increased significantly due to the constraint of the greenbelt, in-fill development has intensified the urban form.
- While some of the historic buildings along the High Street have been replaced with later twentieth century buildings, the centre of Epping retains much of its historic character.

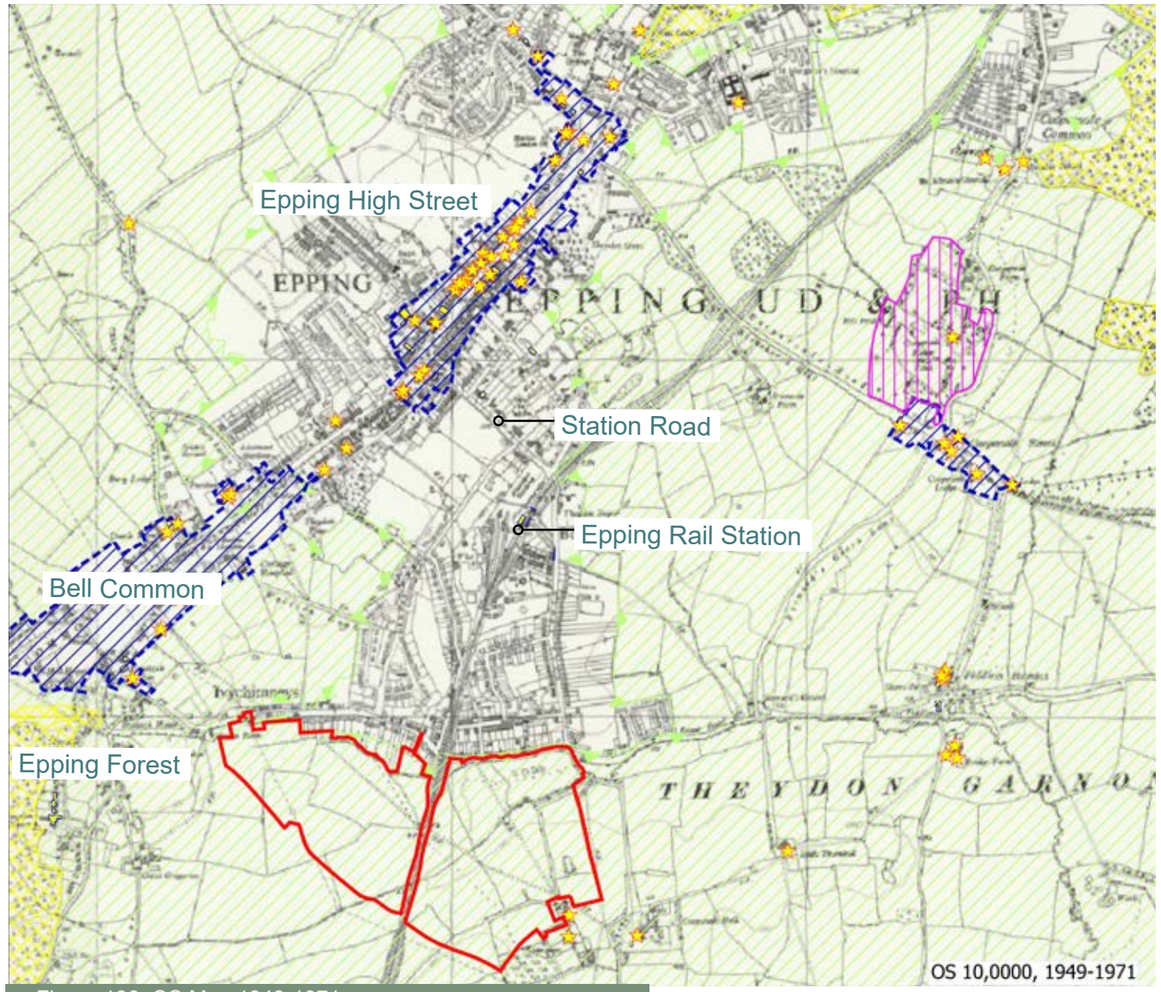


Figure 136. OS Map 1949-1971

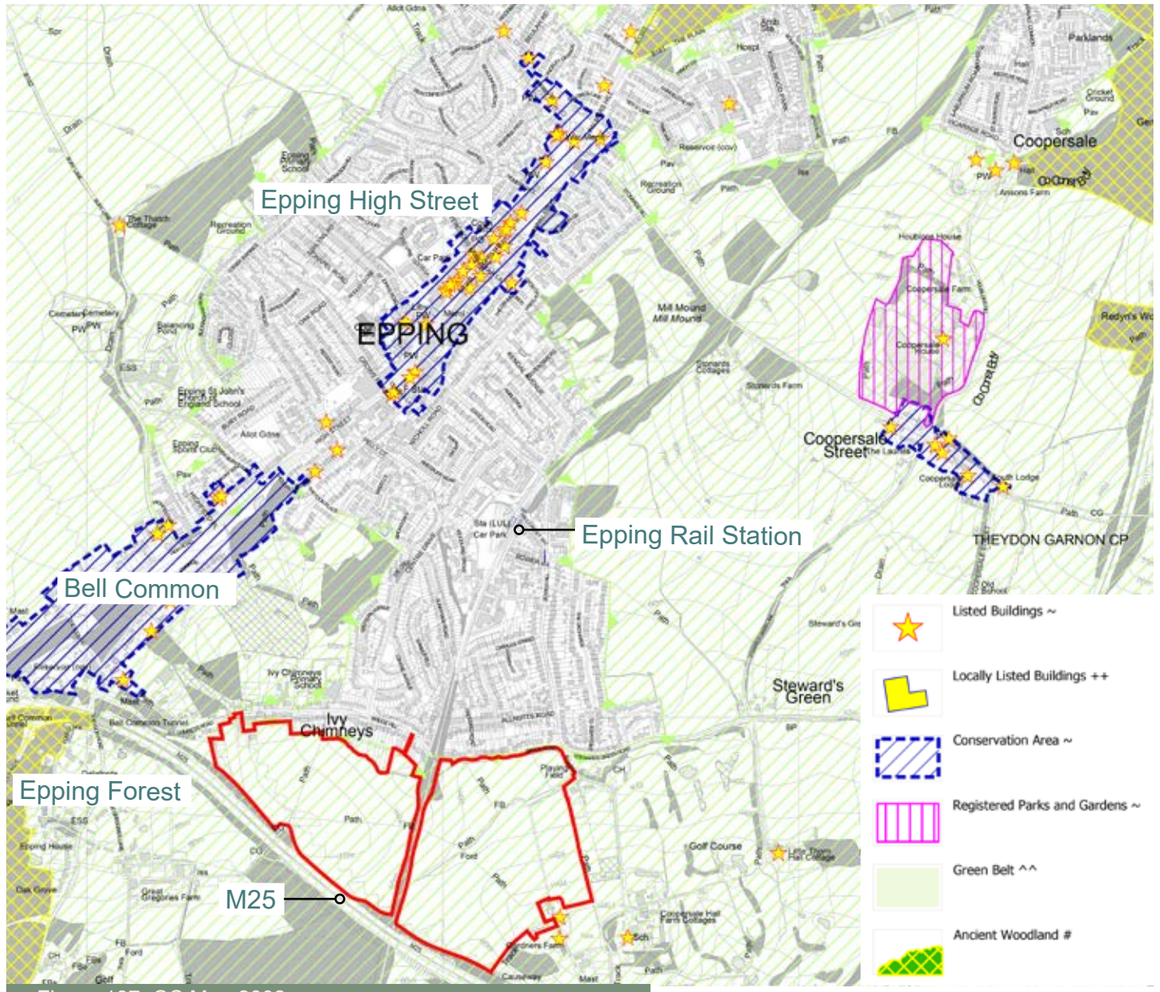


Figure 137. OS Map 2002

Opportunities and Constraints Plan (Technical Version)

Planning policy

- The proposals need to accord with the planning policy framework set out unless material considerations dictate otherwise.
- This includes various infrastructure requirements, levels of open space provision and housing tenure and mix.
- The development proposals need to demonstrate that they align with best practice design guidance.

Local community facilities & services

- Epping is around 1.2km away and easily accessible by bicycle or bus, therefore connections to existing facilities by walking and cycling will be a priority.
- There is a requirement for a new primary school with early years provision within the site.
- There is a requirement to provide a SANG due to the proximity to Epping Forest SAC.

Access & Movement

- The opportunity exists to provide three vehicular access junctions from Ivy Chimneys Road, Bridge Hill and Fluxs Lane/Stewards Green Road.
- The block structure and open space provision should allow the retention of existing Public Rights of Way insitu and be aligned to allow convenient connections to existing pedestrian access points.
- Due to the bisection of the site by the rail line a replacement pedestrian/cycle bridge is required to connect the two halves.
- Provide a circular leisure walking route within the SANG.

Landscape & Visual

- Retain existing trees and hedgerows around the periphery of the site and along the brook, as structuring elements for future development.
- Reinforce planting along the eastern edge to limit intervisibility with the Greenbelt.
- Limit storey heights on the high ground and create a wooded ridgline in long distance views through tree planting within the SANG.

Archaeology and Built Heritage

- Archaeology is not a constraint to masterplan.
- Respect the setting of the listed buildings in the south east corner of the site, ensuring new buildings extend no higher than the 68m contour.
- Retain the alignment of the historic access, Fluxs Lane, and reinstate hedgerow within a green corridor.
- Observe the local architectural character to allow for elements to be reflected within the character of the new development.

Arboriculture & Ecology

- Development proposals should be shaped to retain the high-quality trees and woodland blocks, particularly those with TPO's and those with bat roost potential.
- Opportunity to provide additional trees and vegetation across the site, improving its character and enhance biodiversity.
- Retain a zone of 30m around the badger sett as undeveloped, natural open space.
- Deliver Biodiversity Net Gain by retaining and enhancing existing trees and hedgerows, with additional landscape planting as part of extensive provision of public open space.
- Consider the potential for new buildings to contribute, for example by incorporating bird and bat boxes and other biodiversity enhancements.

Flooding and Drainage

- The development needs to provide an appropriate capacity of surface water drainage attenuation at the lowest level parts of the site, to maintain surface water runoff rates in accordance with national and local policy.
- The existing on-site watercourse offers the opportunity to create multi-functional ecological and amenity open space corridor through the development.
- Streets within the development parcels need to incorporate appropriate drainage features to convey and attenuation surface water.

Utilities and Infrastructure

- The layout should take account of existing maintenance and easements associated with overhead electricity pylons and underground gas mains.
- Block layout should consider the position of the pylons to ensure that they do not align with vista created by the street arrangement.
- Development is well positioned to connect into existing utilities delivering the latest in communications such as high-speed broadband providing residents a reliable fast internet connection.

Air Quality

- The M25 is the largest pollution source to new receptors at EPP.R1 and EPP.R2.
- Suitable mitigation measures should be implemented to avoid significant impacts to future receptors on site.
- Impacts from development traffic on the local road network should be assessed and suitably mitigated as to not cause significant impacts to local air quality as sensitive human and ecological receptors or nearby AQMAs."

Ground Conditions

- Variable ground conditions are likely to necessitate a range of foundation options depending on depth to appropriate founding strata and influence of trees. This does not represent a constraint to the design of the masterplan.

Noise

- Mitigation of noise from the M25 will require the construction of noise bunds combined with acoustic fencing. These features will require landscaping to achieve an attractive environment.
- Noise impact from the rail line upon new residents will be mitigated through simple measures such as glazing.

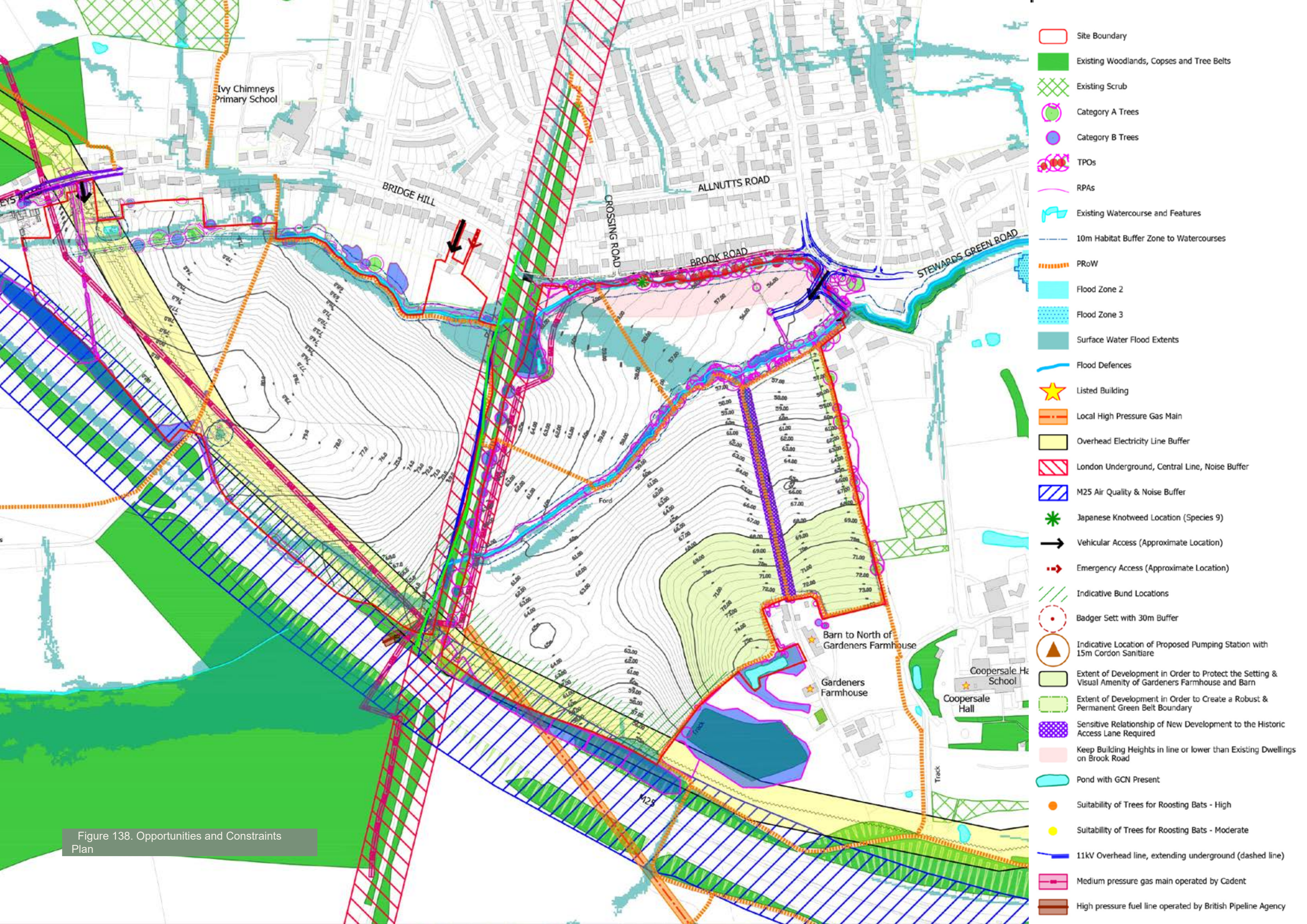


Figure 138. Opportunities and Constraints Plan

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