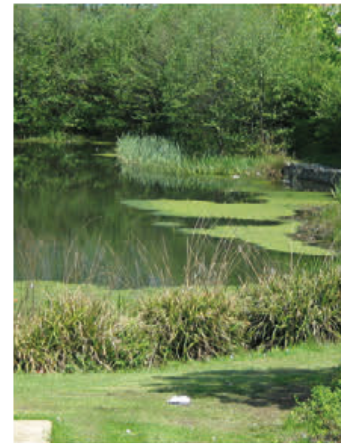


Multi functional green infrastructure strategy



This spread describes what multi functional green infrastructure is and summarises our overarching vision and strategy. The plan opposite illustrates the strategy in relation to the masterplan and the table on the following spread describes the various elements in more detail.

What is Multi Functional Green Infrastructure

Multi Functional Green Infrastructure (MFGI) includes both established and new green spaces that thread through and around communities, linking built areas to the wider rural surroundings. Examples that contribute to MFGI include parks, open land, woodland, private gardens, street trees, as well as “blue” spaces such as wetlands, swales, ponds and temporary flood storage areas.

MFGI assets provide social, environmental or economic benefit to the local community. Connectivity of the assets (can be visual or notional) is fundamental, and these will maximise the benefits generated by the individual assets. Physical links between areas, such as natural river corridors, are the most valuable that enable the migration and movement of species.

Ref: Landscape institute Position Paper: Green Infrastructure: Connected and Multifunctional Landscapes













Our Multi Functional Green Infrastructure Strategy

Landscape is about how people and place belong together, and how each has shaped the other. Leading with the landscape, and starting out with what people want and need, results in places which are above all sociable, with strong character.

The site's attractive natural features provide an invaluable habitat for wildlife and will form a wonderful backdrop to the new community. We will create a mosaic of interconnected multi-functional, semi natural green openspace for the benefit to people and wildlife. This green infrastructure will mitigate recreational impacts on nearby designated sites, protected and notable flora and fauna and deliver Biodiversity Net Gain onsite, to form the mosaic of green that is shown on the plan on the next spread, and described in more detail on this and the following few spreads.

This network will not only encourage healthy whole life living, enhance ecological biodiversity and embed climate resilience, but will also act as an anchor for the new community to get outside and enjoy their surroundings. It offers the opportunity for new forms of play and recreation, pocket parks, accessible view-points, habitat creation, walking and cycling movement for all ages, community food production and sustainable and well-designed water management.

Key

Line of trees	
Other broadleaved woodland	
Other mixed woodland	
Native hedgerow with trees	
Species rich grassland	
Species rich seasonal wet grassland (SuDS)	
Mixed scrub	
Traditional orchard	
Allotments	
Ornamental lake	
Modified grassland	
Artificial vegetated unsealed surface	

MFGI areas



Habitats and Ecology

The existing site comprises predominantly of grassland field compartments. Field boundaries include woodland fragments, dense scrub and hedgerows. Other habitats present include buildings and hardstanding, limited areas of tall ruderal vegetation and bracken, as well as a fishing lake and stream.

The existing habitats on site are dominated by improved grassland of limited ecological value. Habitats of higher value include semi-improved grassland to the east of the site currently used for horse grazing, broadleaved woodland, a lake and hedgerows. Through the application of the mitigation hierarchy much of the habitat loss will be limited to the improved grassland but to facilitate access and connectivity through the site will also include some of the semi-improved grassland along with sections of hedgerow and plantation woodland.

The scheme has been designed to provide complementary habitats to those higher valuable habitats which will be retained and enhanced to create a habitat mosaic which connects to the wider landscape. Additional habitats include species-rich grassland, wet grassland, tussocky grassland and scrub, species rich scrub and a traditional orchard. These habitats will mitigate the loss of habitat resulting from the scheme. A Biodiversity Net Gain Assessment has been undertaken using the DEFRA Metric 3.1 and the results predict an increase of 10% in habitat units and 10% in hedgerow units.

A full suite of ecological surveys has been undertaken including surveys for great crested newt, dormouse, reptiles, bats including roost and activity surveys, badger, invertebrates, breeding and wintering birds, and dormice. These surveys have provided baseline ecological information and informed mitigation and enhancement measures to complement existing green infrastructure with a mosaic of complementary habitats as described above to provide an ecologically diverse and coherent network of habitats.

For fuller details please refer to the Ecology Strategy submitted as part of this planning application.

Type of MFGI Asset	Strategy
Hedgerows	<ul style="list-style-type: none"> Retain existing hedgerows where possible. New hedgerow planting will be native and species rich. Existing hedgerows will be 'gapped up' where required providing ecological connectivity through the site.
Species rich grasslands	<ul style="list-style-type: none"> Species rich grasslands to form a habitat mosaic with retained and created green infrastructure such as woodland and species rich scrub transitioning to grasslands. Wet marshy grassland has been designed into the sustainable drainage features which will comprise of variety of wetland conditions. Tussocky and meadow species grassland will also be created with mown pathways for residents to enjoy informal recreation as well as providing a valuable habitat for wildlife.
Woodlands	<ul style="list-style-type: none"> A landscape led masterplanning process has allowed for minimal woodland removal. Woodlands onsite will be enhanced through active management and creation of complementary habitats creating a mosaic of habitats which connect to the wider landscape. Such connectivity will be achieved through species rich scrub forming strong green corridors from the central woodland to the site's green infrastructure to the east and the woodlands and meadows beyond the sites eastern boundaries.
Orchard	<ul style="list-style-type: none"> A traditional orchard will be created with species of local provenance to Essex. This will be managed in a manner that benefits biodiversity but also creates a destination for residents enjoying the site's informal green habitats.

Multi functional drainage



Marginal reedbeds



Marshland (Watercolour, Redhill)



Water integrated into play (Kew Gardens)



Attractive lakeland setting for new housing (Watercolour, Redhill)

Green infrastructure can be used in a positive way to manage flood risk. By attenuating surface water runoff, it can provide destinations for play, social interaction, ecological enhancement and water quality treatment. Water management is a key element of planning for this new community and the intention is to allow the processes involved to remain a visible part of the proposals. This will include several areas of surface water attenuation, which will store surface water before being discharged into the water network. These elements are listed below.

1. Drainage basins

These will be designed for surface water attenuation for up to the 100 year plus 40% climate change with discharge rates limited to the existing greenfield runoff set to the existing 1 year rate.

2. Multi-functional use basins

The lake is surrounded by an interlinked series of basins and swales, with a multi-functional use, with storage phased for higher return events (where feasible). This means that informal play is possible in these spaces. These will form an active part of community life. It is proposed to incorporate a wet grassland mix within the basin and swale areas to create a species rich marshy meadow habitat. These areas will have wetter areas near the outlet structures within the lower lying parts of the base areas of the basins and swales.

3. Swales / bio-retention areas

These will be provided as on plot solutions such as bio-retention areas and lined porous paving and will be designed for water quality treatment and where possible as conveyance features. Infiltration tests have shown the site is not suitable to the wide use of infiltration for the discharge of surface water runoff. However, there is a localised area of the site where some at source infiltration, such as private driveways, could be facilitated.

4. Retained lake

The existing fishing use will be retained and enhanced with reed beds.



Connectivity

Active travel

The masterplan is designed in a way that puts the pedestrian and cyclist first, ensuring that existing and proposed day to day facilities and services are all within a short distance of people's homes and that the routes available to them are attractive, direct and safe.

As described earlier in this document, the masterplan has been prepared in line with the Healthy Streets 'whole-street' approach, with the aim of promoting active travel among all demographic groups.

Active travel routes

An active travel corridor is proposed along the main street through the site, which is illustrated in yellow on the plan to the immediate right. The corridor is a pedestrian and cycle route alongside the main street, which connects the two site access points. Crucially, a car free, bus only route (with emergency access) is proposed in the centre of the site through the village centre, which will encourage people not to use their cars for short journeys as well as preventing rat-running.

A number of other pedestrian routes are proposed throughout the site, connecting up with existing desire lines surrounding the site. This will provide excellent connectivity and ensure that as many people as possible will be within a short walking distance of all local facilities and services, including those outside of the site.

Wellbeing routes

The plan, right centre, shows the differentiation between some of the proposed footpath routes. The most accessible footpaths will be a dedicated paved route alongside the main and secondary streets, allowing

walkers and cyclists convenient and direct access to their destination. As well as the main street, it is proposed that a paved route will connect up to the retail park and to the existing settlement area, via Asquith Avenue.

The wellbeing route will provide a 2.4km off road, non paved route through the site, providing a pleasant and safe route for all residents, including children and dog walkers. This route will snake past and through several different habitats and facilities, such as woodland, the orchard, allotments, lake and grassland. It will be within 5 minutes walk of all new homes. The wetland route will be a raised boardwalk through an attractive wetland setting, based around the lake.

Bus routes

The new neighbourhood has been designed so that the proposed and existing facilities are accessible to all. This is especially pertinent on a sloping site, which can make walking and cycling more challenging for some. Therefore, a new bus route is proposed through the site, which will allow all residents the chance to use the bus service to access facilities that are perhaps too far for them to walk to. Two bus stops are proposed, either side of the woodland corridor. The recommended 400m catchment for walking encompasses much of the surrounding existing residential area.

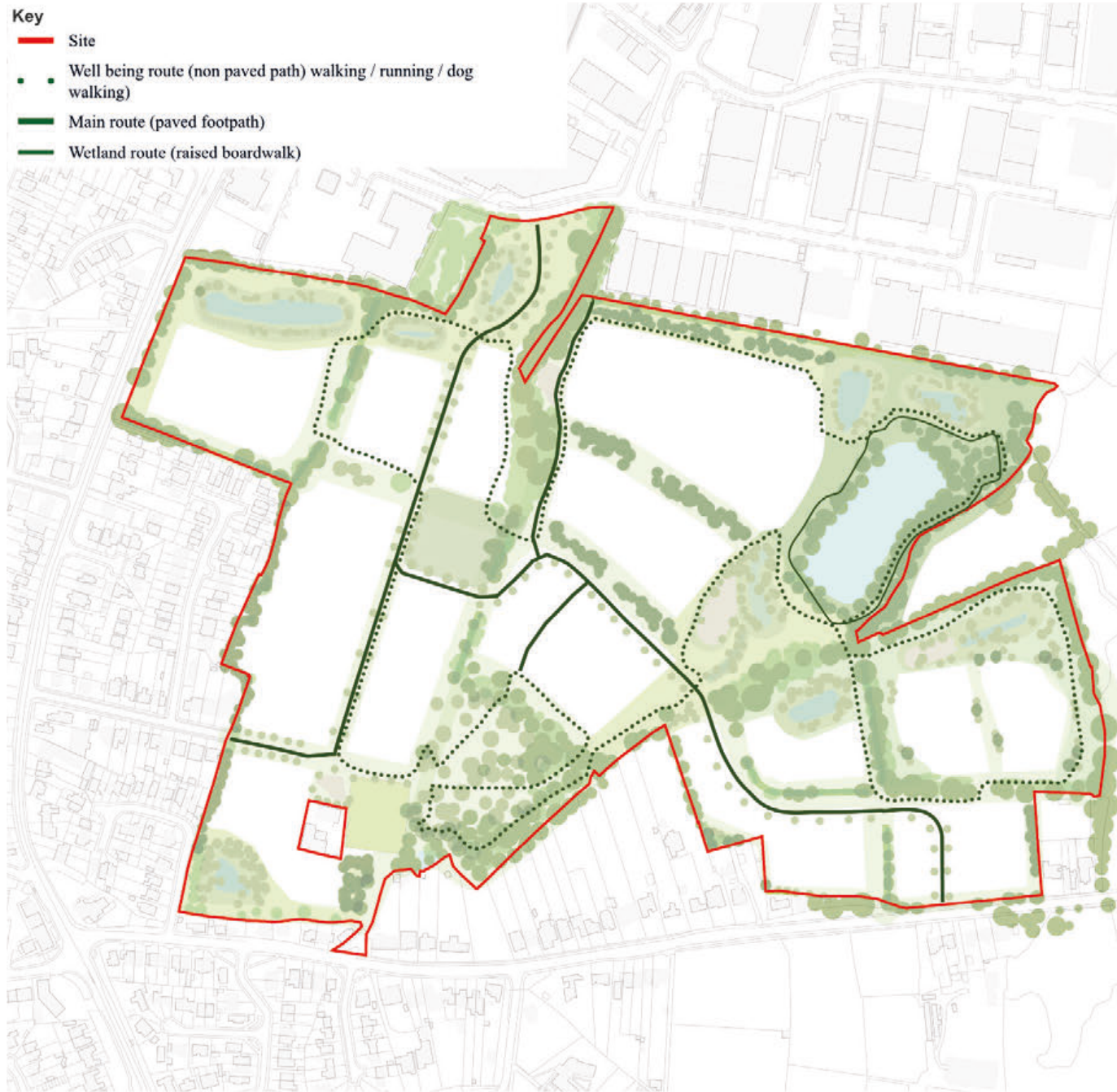


Plan 1

Active travel routes

Key

- Site
- - - Well being route (non paved path) walking / running / dog walking)
- Main route (paved footpath)
- Wetland route (raised boardwalk)



Plan 2

Wellbeing routes

KEY

- - - Existing bus route
- - - Proposed bus route
- * Existing bus stop and 400m catchment
- * Proposed bus stop and 400m catchment



Plan 3

Bus routes

Connectivity

Street typologies

As described on the previous page, the new neighbourhood features a permeable layout, which connects into the existing walking, cycling and bus network within and outside of the development. The legibility of the street network is crucial in achieving this. Therefore, within the new neighbourhood there are four key street types, each providing a different function and

Sociable streets

Green corridors and tree planting within the site will provide a strong organising structure, just as they do within the wider landscape. This also applies to the overall street design in the new neighbourhood.

The streets will be designed to be welcoming and easy for pedestrians and cyclists, but with space for car parking.

Within the residential areas will be small informal pieces of green space, which will have with the feel of intimate green parks. These spaces will allow for communal activity, from children’s play, to eating together.

This diagram to the right shows the hierarchy and distribution of street typologies across the proposed layout. Example street sections for each of the street typologies give a feel for the character of each street type on the following spread.

Street typologies

The typologies have been identified and located based on design guidance including the Essex Design Guide (EDG) and Manual for Streets (MfS). The typologies can be summarised as follows:

Main street (based on EDG ‘Feeder road’)

This street forms the main vehicular route through the site, between the A129 and Daws Heath Road. It has the capacity to serve up to 700 houses, significantly more than the neighbourhood will contain. The target maximum speed is 20mph, which will be enforced with speed restraint design.

Residential street (based on EDG ‘Access road’)

These streets provide direct vehicular access to development areas where these do not directly adjoin the main street. The target maximum speed is 20mph, which will be enforced with speed restraint design.

Shared surface (based on EDG ‘Minor access road’)

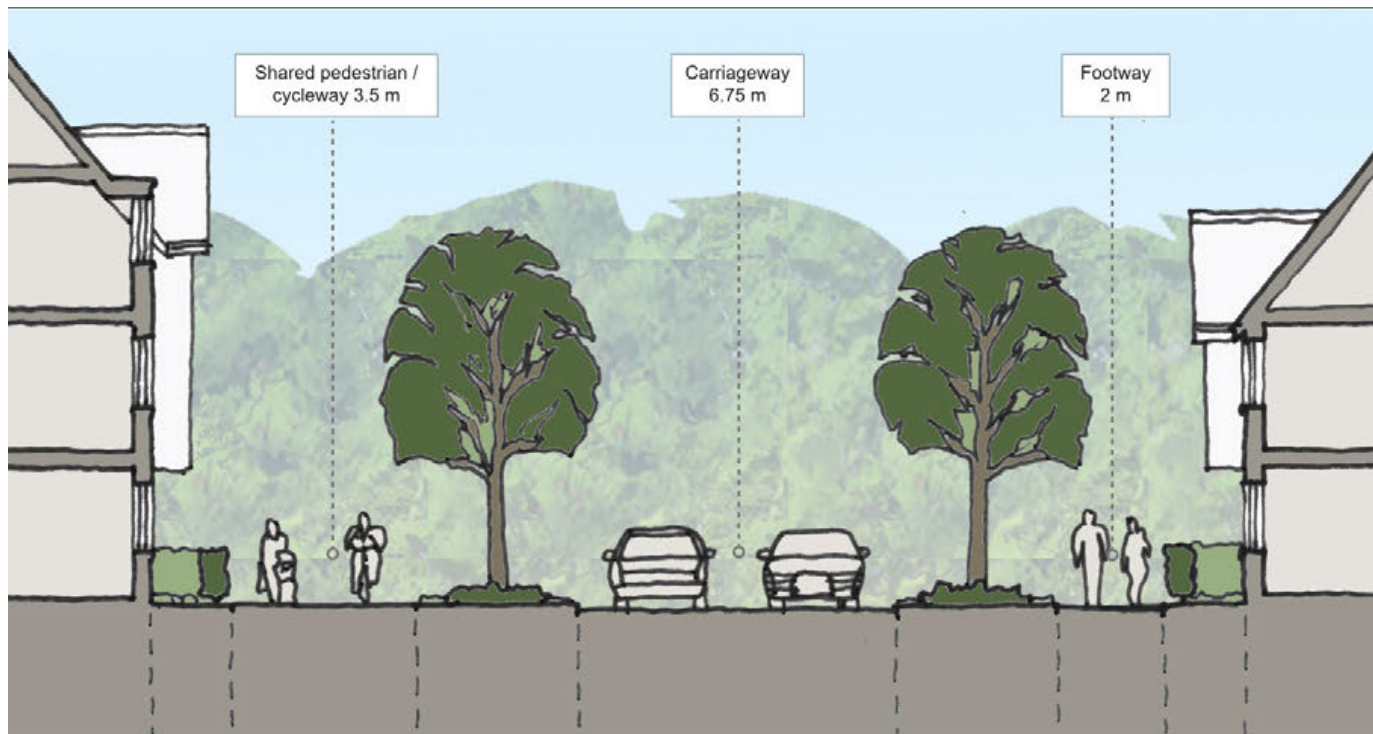
These streets provide direct vehicular access to individual parcels within development areas. These streets are typified by a consistent surface material, to slow down speeds.

Shared private drive (based on EDG ‘Shared private drive’)

Access to a very small number of homes, up to a maximum of 5 dwellings in accordance with the EDG, usually along a landscape facing frontage.

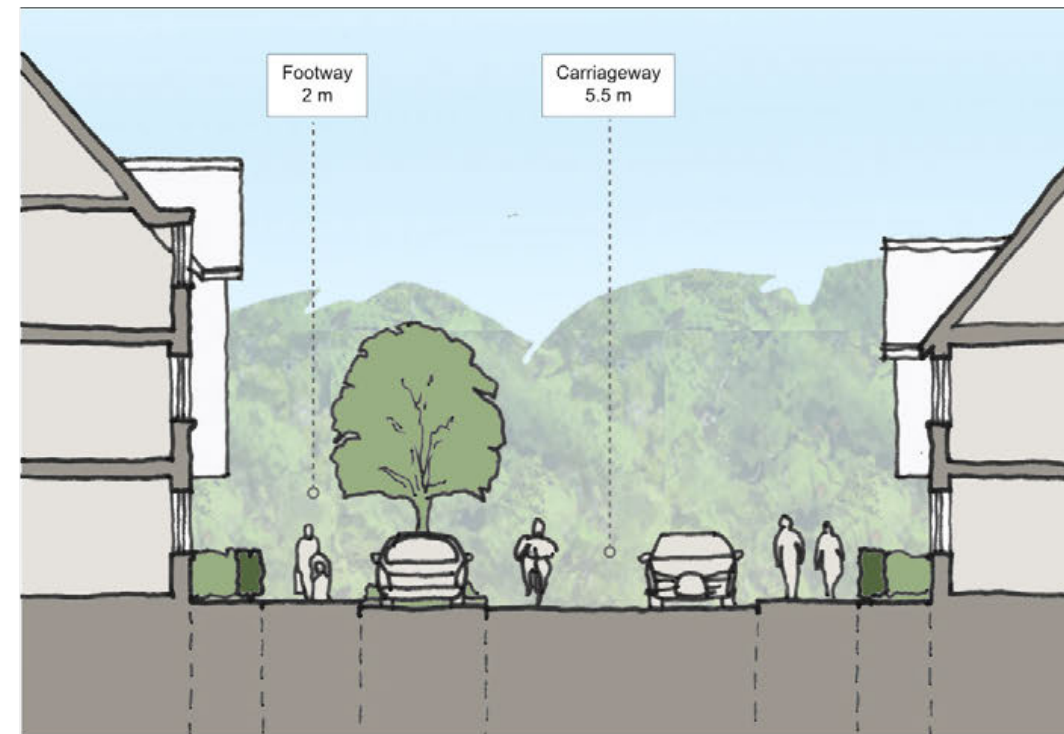


Street typologies



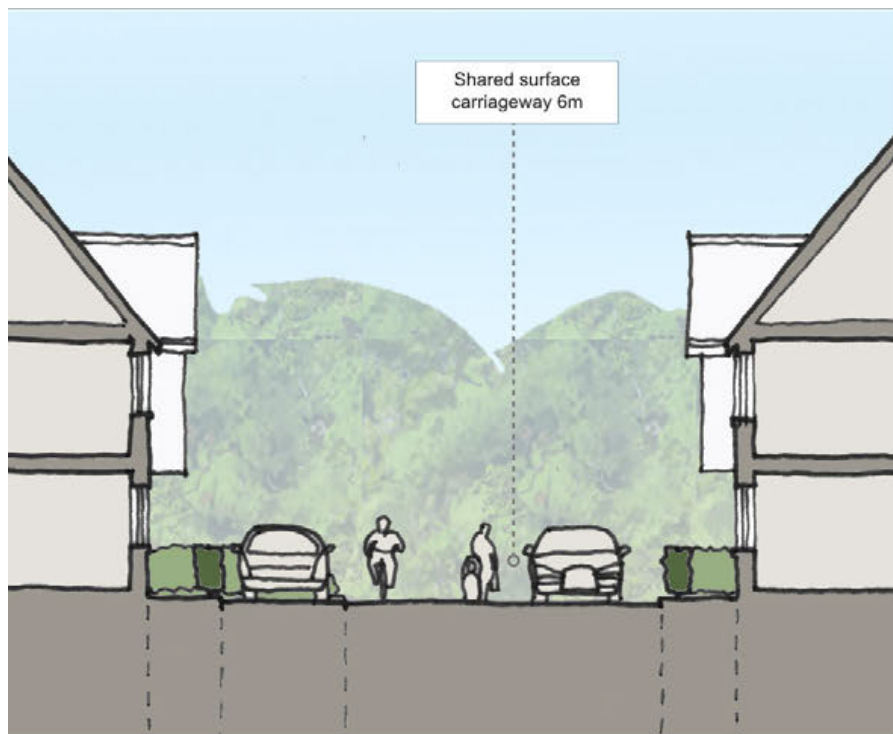
Spine street

- Based on Essex Design Guide Type D 'Feeder Road';
- 6.75m carriageway to allow for bus route
- 3 m verges on each side incorporating tree planting;
- 3.5 m pedestrian / cycleway on one side, 2 m wide footway on the other side;
- No frontage access within 15 m from junctions, access in forward gear only within 15 - 30 m from junctions;
- Off carriageway parking provision;
- Design speed 20 mph;
- Typical frontage to frontage distance between 19 and 22 m.



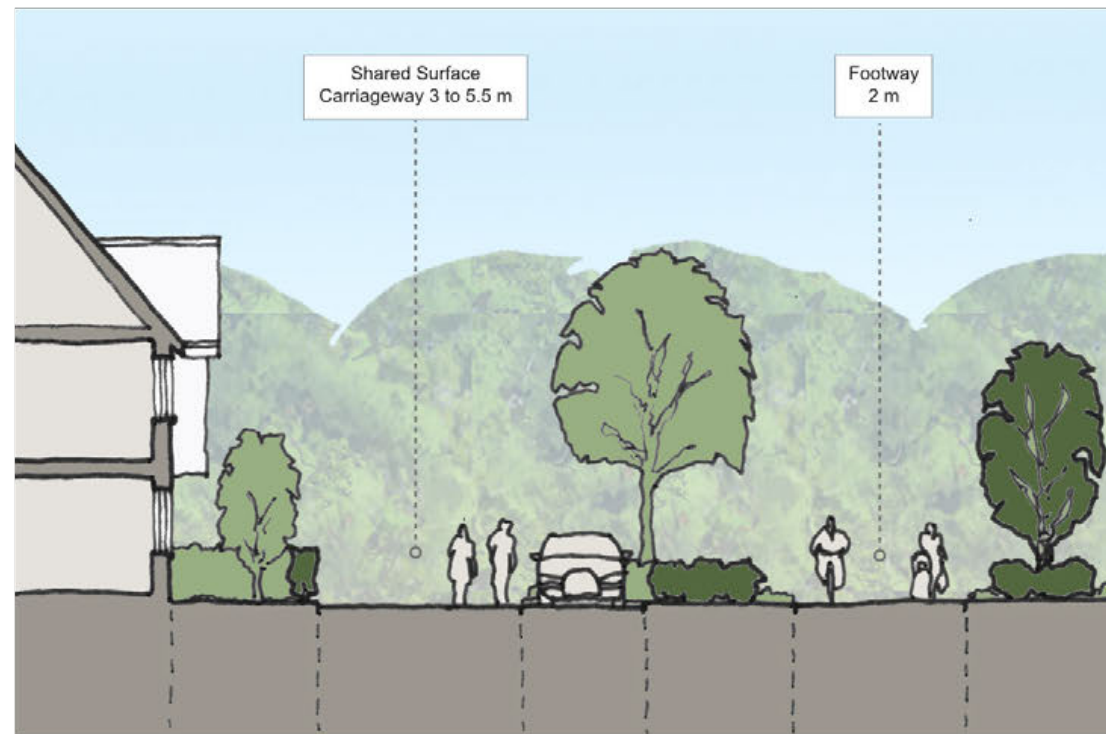
Residential street

- Based on Essex Design Guide Type E 'Access Road';
- 5.5 m carriageway;
- Parallel parking on one or both sides in defined strip with occasional tree planting;
- 2 m wide footway on both sides;
- Design speed 20 mph;
- Typical frontage to frontage distance between 15 and 19 m.



Shared surface lane

- Based on Essex Design Guide Type F 'Minor Access Road';
- 6 m shared surface carriageway;
- Parallel parking on one or both sides in defined strip with occasional tree planting;
- Design speed 20 mph;
- Typical frontage to frontage distance between 10 and 15 m.



Shared private drive

- Based on Essex Design Guide Type H 'Shared Private Drive';
- Minimum 3 m shared surface carriageway, widening at junction;
- Parallel parking on one side in defined strip with occasional tree planting;
- Serves a maximum of 5 homes;
- Generally used at frontages facing landscape. Pedestrian and cycle routes within adjoining landscape to be provided independent of shared private drive.

Character areas

The following spreads show how the development parcels within the layout are divided into four character areas.

The character areas of the site have been influenced by the landscape led structure of the layout and the natural features of the site such as the existing topography, views onto and out of the site, existing trees and hedgerows and new trees, which have driven the design, and result in a scheme that will be strongly related to its natural context.

In particular, the mosaic of existing and new trees and hedgerows compartmentalise the site into character areas and form a strong, natural separating element.

The detailed layouts and design of these areas will be determined through future reserved matters planning applications. A summary of the main design principles for each character area is set out on the following pages.

The character areas are:

1. *The Gateway*
2. *The Ridgeway*
3. *The Slopes*
4. *The Paddocks*

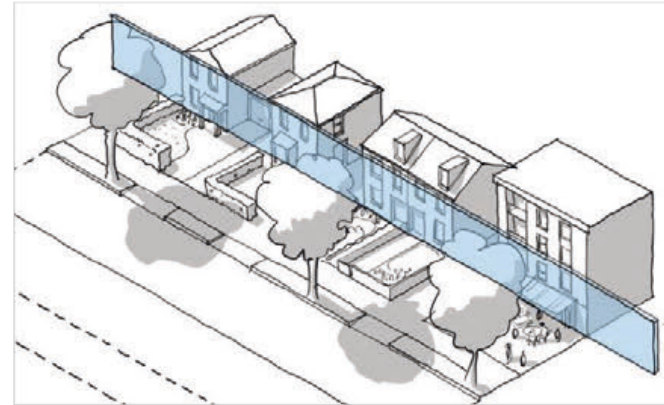


Structure and Legibility

Within the description of the four character areas, key design features and characteristics are identified. These elements together will create a sense of individual identity for each of the development areas, within a rich overall urban design framework across the masterplan as a whole.

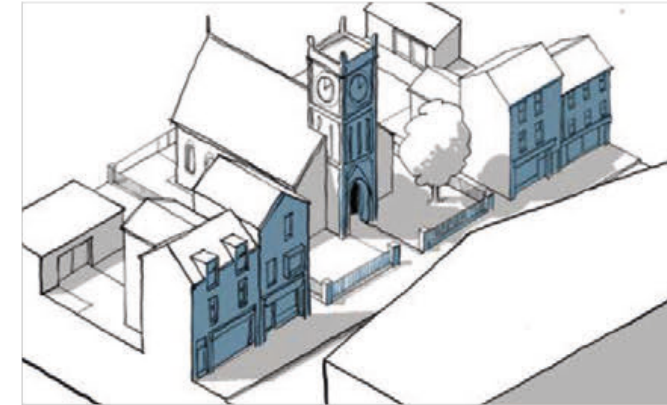
For each development area, a layout diagram shows a number of key elements, which work together to create a structured and legible urban design framework. These are summarised here.

The diagrams on this page are taken from the National Model Design Code.



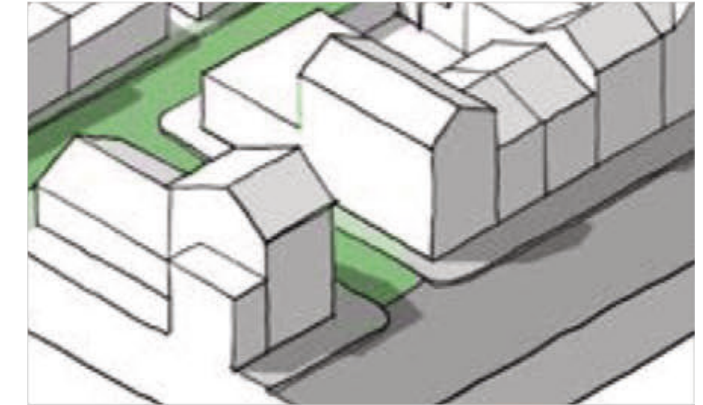
Primary frontages

facing either landscaped areas adjoining the parcel boundary or within the parcel, or key streets within the development areas;



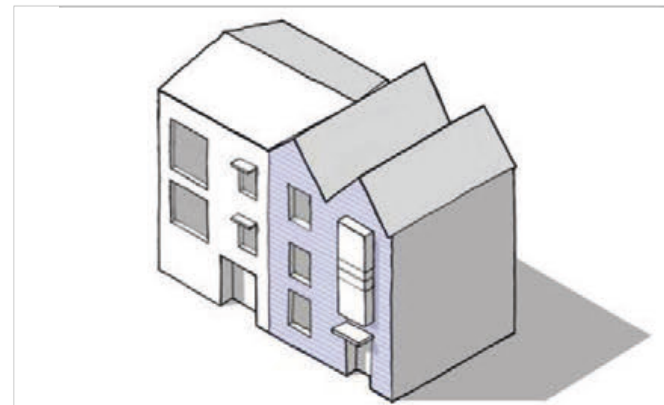
Significant vistas

towards or across significant buildings, spaces or landscape features;



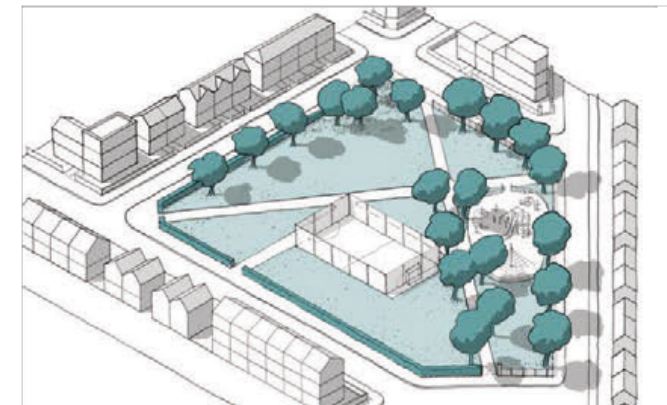
Gateways

created most commonly by pairs of buildings either side of an entry point into a development area;



Feature buildings

located at particularly significant points within the layout, characterised by special treatment (for example use of materials, variation in scale, use of strong built form);



Focal spaces

located within the development areas at key locations, providing punctuation to spine streets through the development areas and / or a local focus within larger development parcels;



Landscaped areas

which create the setting for the development parcels or in some cases provide linear features within them;

The Gateway

Location

The Gateway Character Area is located in the north-western part of the wider site, adjoining Rayleigh Road to the west and Stadium Way to the north. The south-western part of this area adjoins the rear boundaries of existing homes within the northern part of Asquith Avenue.

This area adjoins the Ridgeway character area to the south and the Slopes character area to the east.

Topography

This area slopes down towards its northern boundary. The slope within the western area is fairly gentle. The southern part of the eastern area has a slightly more pronounced gradient.

Setting

The Gateway site comprises two open areas of land, separated by a treed hedgerow which runs roughly north to south. Its eastern and western edges are also defined by strong lines of trees; the western edge adjoining Rayleigh Road has an open understorey allowing views through into the site. The eastern tree belt in contrast is deeper and more densely planted, creating a strong visual barrier.

A further line of trees runs along the southern boundary of the western field, separating the open space from the existing Asquith Avenue homes,

The northern boundary of the site here is more varied in geometry, with groups of trees and hedgerows varying in height separating the site from the neighbouring fire station and commercial premises. An area of scrub with some small trees forms a boundary with Stadium Way in the northernmost part of the area.

Enclosure and sense of place

Both areas are characterised by a strong sense of enclosure. For the western area, this is generated primarily by its treed boundaries on all four sides, reinforced by hedgerows to the north and east. Glimpsed views through the trees towards Rayleigh Road and the Asquith Avenue houses provide a sense of the surrounding context.

The northern end of the eastern area feels especially enclosed, with the strength of its landscaped boundaries reinforced by its topographical situation at the base of a slope. However, the climb southwards through the area reduces the sense of enclosure, as the extent of the open land southwards is gradually revealed. Within the Gateway area, however, the land is not sufficiently elevated to provide any distant views beyond the immediate vicinity of the site.

The existing sense of place of this area is defined most strongly by its landscaped edges and relationships with its immediately neighbouring context.



Land Uses	Other Amenities	Housing Typologies	Residential Density
Residential	Pedestrian and cycle routes	Predominantly terraced houses and apartments, with some semi-detached houses and occasional detached houses	Higher density, average between 40 - 50 dwellings per hectare



Landscape Structure

The landscape structure established by the existing hedgerows and tree belts is reinforced by three new elements.

A landscaped corridor along the northern edge of the area incorporates the necessary sustainable drainage provision but also provides separation from the adjoining commercial uses and an attractive setting for the arrival into the wider site from Stadium Way.

Within the southern part of the area, a landscaped corridor incorporating a central retained tree provides an attractive link between Rayleigh Road and the Village Green.

Within the eastern part of the area, the spine street runs centrally, aligned north to south with the vista towards Rayleigh Church visible from the higher parts of the site.

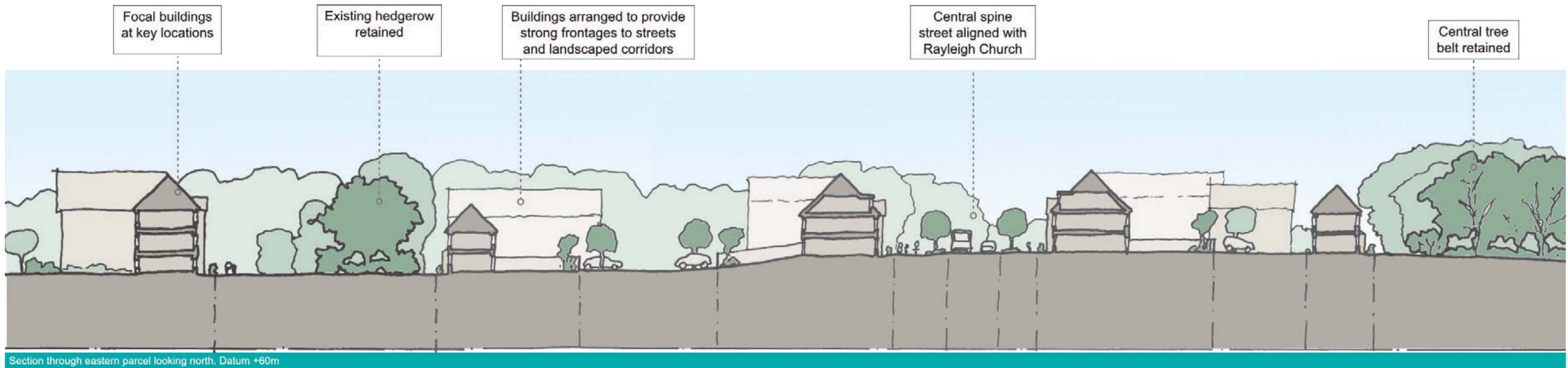
Layout Pattern

The block pattern is based around a strong rectilinear geometry established by the tree belts and the vista to Rayleigh Church. This landscape structure generates three development blocks.

The eastern blocks are laid out to provide strong frontages to both sides of the spine street. The frontage north, marking the arrival into the site from Stadium Way, is also especially important, as is the frontage onto the Village Green to the south. The frontages to the east and west landscape corridors can be more informal, as the landscape itself provides more of the continuity here. Within the blocks, mews streets provide access and servicing.

The western block establishes strong frontages outwards to all four surrounding landscaped corridors. The western frontage facing Rayleigh Road through the retained line of trees is especially important. Within the block, mews streets provide access and servicing.

All three blocks are laid out with a rectilinear geometry to provide strong outward frontages, with mews streets within the blocks providing access and servicing. The continuity of this approach across the Gateway area contributes to the establishment of its particular character and identity within the wider layout.



Building Typologies

The building typologies proposed within The Gateway character area are appropriate for the relatively higher density within this area. Key typologies proposed are terraces of houses, semi-detached houses and flat buildings.

Response to Topography

The topography within this area is generally gently sloping. It is anticipated that buildings will be located at or around existing ground levels, with small steps between terraced houses or slopes within landscaped areas managing changes in ground level.

Structure and Legibility

Strong built frontages with significant continuity front onto the spine street and other key landscaped spaces. In particular a strong and continuous frontage faces the Village Green to the south.

Feature buildings are identified at key locations. These are:

- Facing the main arrival point into the wider site from Stadium Way;
- Fronting the Village Green to the south;
- Prominent corners of the block layout adjoining Rayleigh Road;
- Terminating the vista created by the east to west link between the two areas;
- Other key prominent corners

Formality and Informality

The Gateway area will have a consistent character which will be formal in approach, reflecting the strongly formal geometry of its block layout.



Character Precedent Images

The images on the adjoining page are taken from other recent developments. They have been selected to give an indicative idea of the potential character of certain locations within the Gateway character area.

The captions below each image describe the particular location to which each image is intended to relate.

The images are intended in particular to give a sense of the relationship between landscape and built form, and the potential scale and typologies of built form to be employed. They are not intended to represent particular architectural styles to be used.



Apartments block viewed across landscape provides arrival landmark



Tree lined spine street fronted by houses incorporates planting and segregated footways and cycleways



Varying scales provide characterful frontage to landscaped open space incorporating pedestrian routes around retained



Terraced houses form frontage to landscaped corridor incorporating sustainable drainage features



Line of houses forms strong frontage overlooking Village Green