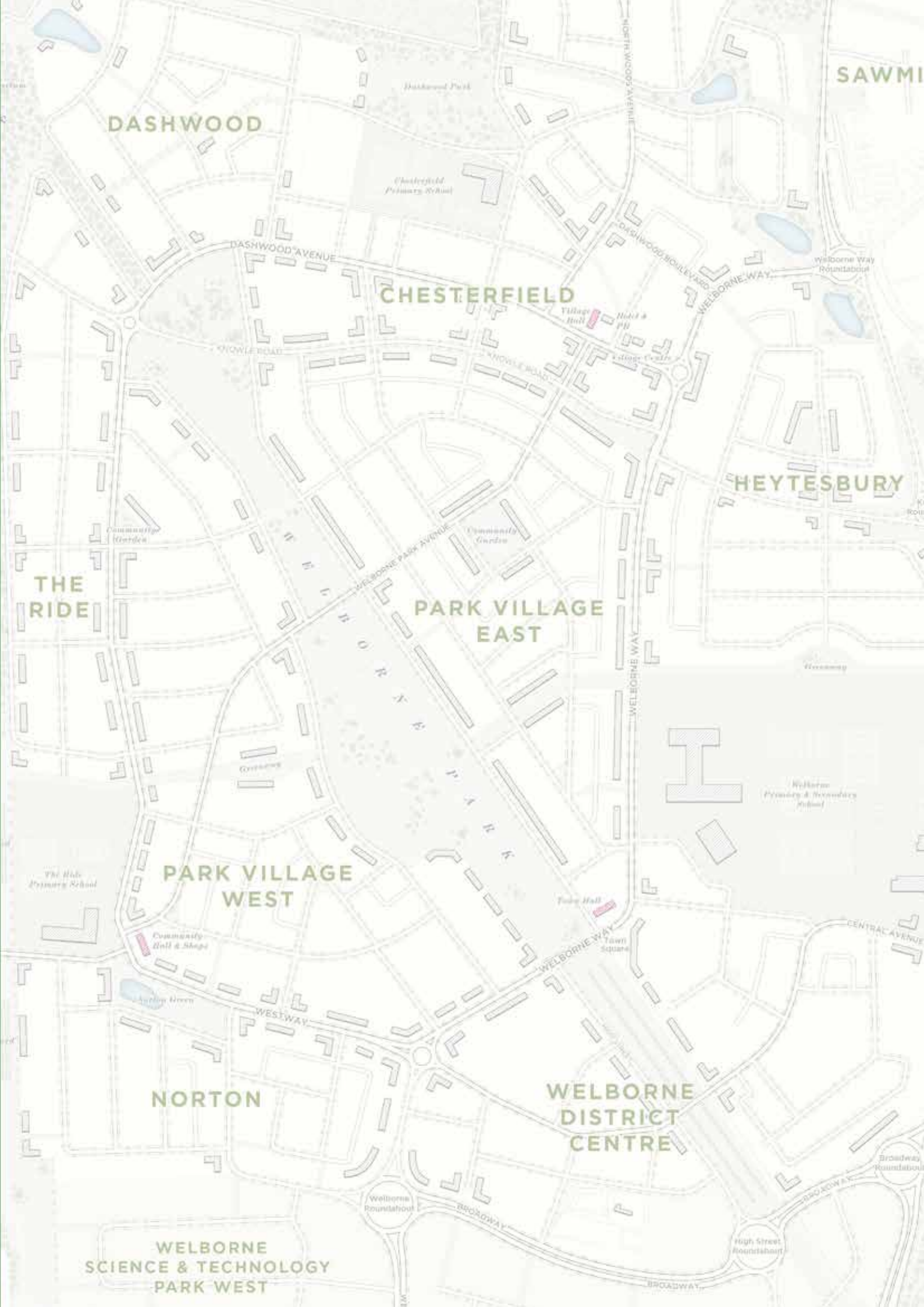
WELBORNE

STREETS MANUAL

EDITION 1


DASHWOOD
SAWMI
CHESTERFIELD
HEYTESBURY
THE RIDE
PARK VILLAGE EAST
PARK VILLAGE WEST
NORTON
WELBORNE DISTRICT CENTRE
WELBORNE SCIENCE & TECHNOLOGY PARK WEST
DASHWOOD AVENUE
KNOWLE ROAD
WELBORNE WAY
WELBORNE PARK AVENUE
WESTWAY
CENTRAL AVENUE
BROADWAY
Welborne Way Roundabout
Welborne Roundabout
Broadway Roundabout
High Street Roundabout
Town Square
Village Hall
Community Garden
Community Hall & Shops
Welborne Primary & Secondary School
The Ride Primary School
Chesterfield Primary School
Dashwood Park
Village Green
Greenway
NORTH WOODS AVENUE
DASHWOOD BOULEVARD

PREFACE

Welborne is envisioned as a Garden Village for the twenty-first century. Grounded upon the principles of the Garden City movement of the early twentieth century, the vision for Welborne is to create a holistically planned, characterful and self-sustaining addition to Britain's rich legacy of new communities. Welborne will be a sustainable new settlement combining housing, shops, schools, local facilities and employment within an attractive, walkable and leafy environment realised to high standards of design and construction. It will be a place where people can work, socialise, experience green spaces and enjoy a good quality of life.

The coding documents will set out the identity, character and central vision to ensure it is maintained during the building process and for future generations.

The suite of coding documents consists of the Strategic Design Code, the Welborne Streets Manual and the Neighbourhood Design Codes, which will be produced to guide the individual neighbourhoods as they are brought forward.

The role of each coding document is as follows:

- **Strategic Design Code**: Sets the principles for the Welborne vision and the site-wide framework that will enable it to be achieved.
- **Welborne Streets Manual**: Outlines the regulations that inform the street network design.
- **Neighbourhood Design Codes**: Provides detailed guidance on street, block, building and landscape design specific to the individual neighbourhoods. The Codes are informed by the Strategic Design Code and Welborne Streets Manual, and will include a compliance checklist as a simple way to verify that the guidance is adhered to.

Overseen and enacted by the Master Developer, Town Architect and Fareham Borough Council the coding documents will provide a framework to ensure that Welborne is well planned, designed to a quality in accordance with the vision and built to last.

STRATEGIC DESIGN CODE

1. **An introduction to Welborne**
   - Vision
   - Illustrative masterplan
   - Neighbourhood structure
2. **Explaining the Strategic Design Code**
   - Its objectives and how to use the Code
3. **Strategic masterplans and town-wide regulations**
4. **Landscape**
5. **Character elements**
   - The design elements that will shape Welborne's character
6. **Neighbourhoods**
   - Characteristics and key components of each neighbourhood
7. **Technical principles**
   - Site-wide principles that apply to all neighbourhoods

WELBORNE STREETS MANUAL

1. **Introduction to the Welborne Streets Manual**
2. **Explaining the Welborne Streets Manual**
3. **Placemaking Principles**
4. **Adoption, Management and Maintenance**
   - Role of Welborne Garden Village Trust
5. **Movement Strategy**
6. **Street Design Principles**
   - How streets will look, feel and function
7. **Street layout**
   - Typical street, junction and driveway types
   - Special places

NEIGHBOURHOOD DESIGN CODES

1. **Explaining the Neighbourhood Design Code**
   - Its objectives and how to use the Code
2. **Neighbourhood context**
3. **Illustrative plan**
   - How the neighbourhood will be brought forward
4. **Neighbourhood layout**
5. **Landscape strategy**
6. **Built form**
   - Design requirements relating to appearance, scale, materials and details of buildings
7. **Points of delight**
8. **Key infrastructure requirements**
   - Schools etc
9. **Applying the design principles**
   - Guidance for code-compliant design
10. **Property owners guidance**
    - For owners wishing to carry out development or alterations
11. **Compliance checklist**

Edition	Date	Notes
1	March 2023	

CONTENTS

2. INTRODUCTION

Streets make up around 80 per cent of the public realm in our villages, towns and cities. They are the lifeblood of these places, bringing vibrancy and movement to a whole range of spaces and places, from town centres to villages greens, avenues, parks and quieter places. They are the 'glue' that hold our settlements together and are the conduits for good movement, for creating real communities and great places.

Far too often, though, the highway engineering of street design and the desire to accommodate motorists can dominate the placemaking elements of a street. In recent decades across the United Kingdom, new streets have been built where vehicles are prioritised over pedestrians and cyclists. Such roads are a less healthy way to build and do not foster walkability and community spirit.

This is not to be the case for Welborne. Its streets will be built at a human scale with walking, cycling and the use of public transport prioritised to build an inclusive, beautiful, twenty-first-century new community. The Welborne Streets Manual has been developed through a series of collaborative workshops with Fareham District Council and Hampshire County Council to set out the regulations and principles that will govern the development of the street network. Its aim is to allow for the delivery and adoption of high-quality, tree- and hedge-lined streets within the new settlement that support a comprehensive and appropriate form of development.

ILLUSTRATIVE MASTER PLAN

KEY

1	District Centre	4	Welborne Way	7	SANGs
2	Village Centre	5	Knowle Road	8	Rail halt (if required)
3	Welborne Park	6	Schools		

2a. WELBORNE STREETS MANUAL: OVERVIEW

The Welborne Streets Manual sets out the regulations that will govern the development of the street network. It will facilitate specific outcomes through clear guidance and clarity of design. It will elucidate the urban and landscape tenets that make up the streetscapes, to make sure that all phases of construction come together cohesively to facilitate the delivery of the tree- lined, human-scaled streets that are integral to the Welborne vision. The Welborne Streets Manual covers the design parameters of all roads, parking, public and private footpaths and cycleways, excluding M27 J10.

The design guidance within the Welborne Streets Manual is specific to Welborne and reflects best practice urban design guidance including the National Planning Policy Framework, Planning Practice Guidance (incorporating the National Design Guide), Manual for Streets 1 and 2, Active Design and Building for a Healthy Life.

The Welborne Streets Manual also considers and responds to policies set out in the Welborne Plan and Welborne Design Guidance, including the Residential Car and Cycle Parking Standards Supplementary Planning Document 2009 and the non-Residential Car and Cycle Parking Standards Supplementary Planning Document 2015.

A typical Welborne tree-lined street

KEY STAKEHOLDERS AND AUTHORITY

Fareham Borough Council

Fareham Borough Council (FBC) will approve the Welborne Streets Manual and all other Welborne coding documentation. The coding documents will be a material consideration for any planning application at Welborne and applications for development at Welborne will be expected to demonstrate code compliance; this will be shown by fulfilling the compliance checklists found within each Neighbourhood Design Code.

Hampshire County Council

Hampshire County Council (HCC) will utilise the Welborne Streets Manual when assessing the design of highways across Welborne to ensure proposals are in accordance with the agreed principles and vision.

Master Developer

Buckland is the Master Developer and will lead the development of Welborne. The Master Developer will work with all development partners throughout the lifetime of the project and alongside the Town Architect will be the custodians of the values, vision and quality of Welborne.

Town Architect

Buckland have appointed Ben Pentreath as the Town Architect. The Town Architect will review proposals for residential, commercial and public realm schemes with reference to the Welborne Streets Manual alongside the Strategic and Neighbourhood Design Codes. The Town Architect will also approve housebuilders' construction drawings and monitor the built output as each phase is completed.

Welborne Garden Village Trust

The Welborne Garden Village Trust (WGVT) is a not-for- profit community organisation that is responsible for the long-term stewardship of the Garden Village. All unadopted areas of the development will be transferred to WGVT which will be responsible for the management and maintenance of these areas in perpetuity.

The WGVT is also responsible for upholding the masterplan, characteristics and quality of the Garden Village as set out in the coding documentation.

Governance

The Master Developer will administer and implement the Welborne Streets Manual. Any development proposal brought forward for Welborne will be approved by the Master Developer and Town Architect prior to any submission of reserved matters applications to FBC. Specific highway approvals will be dealt with by HCC under Section 38 (S38) agreements or other highways approval agreements and be in accordance with the agreed principles and vision of the Welborne Streets Manual.

Codebreakers

Departures from the Welborne Streets Manual will only be acceptable when a clear justification can be provided and if the deviation can be clearly demonstrated as a positive intervention that has place-making benefits, or responds appropriately to changing legislation and guidance, and/ or technological advancement.

Codebreakers must be an enhancement which are to be agreed with the Town Architect and approved by the Master Developer and FBC. HCC shall also be consulted.

Monitoring & Review

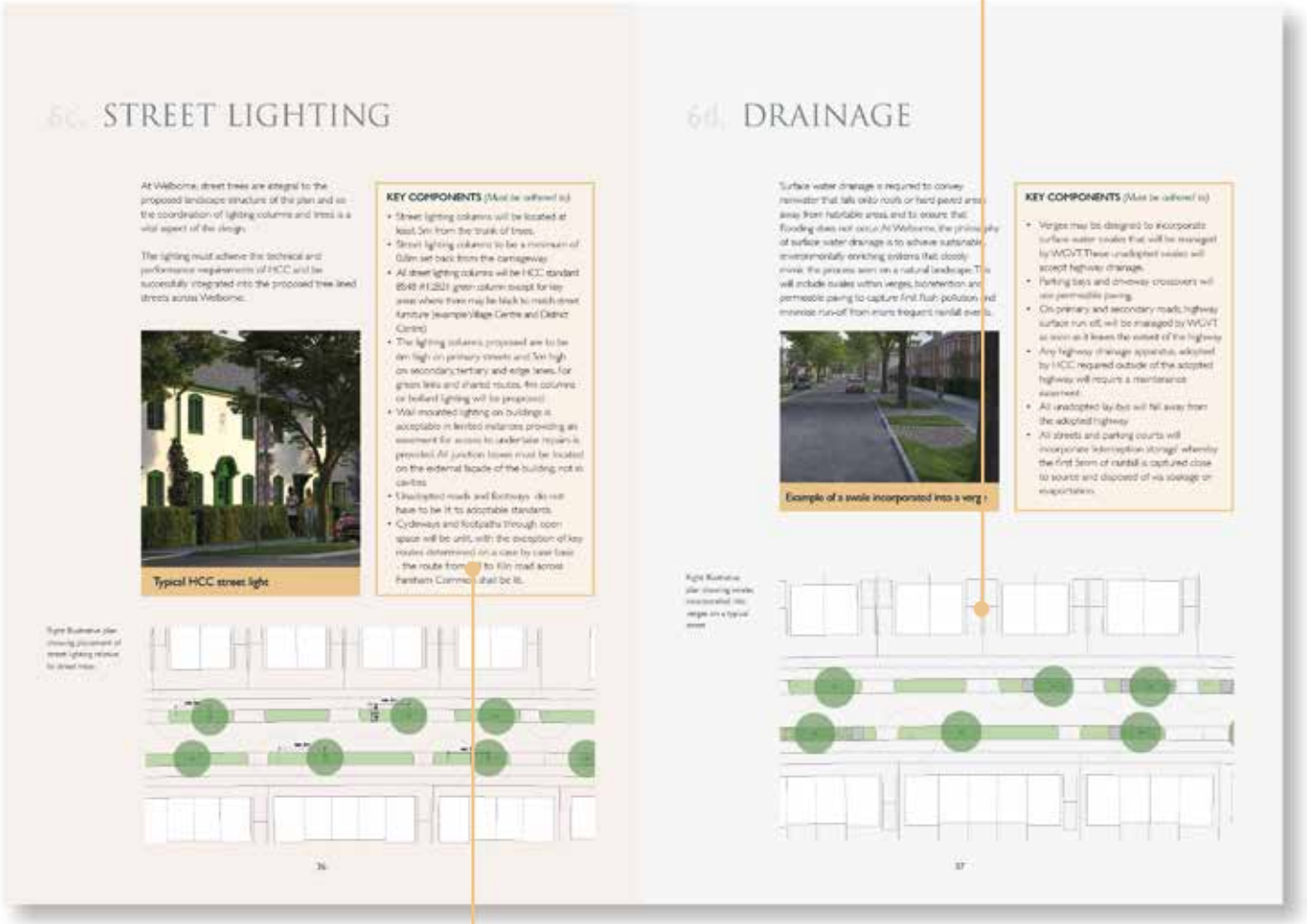
The build out of Welborne will take many years. Over that period, technologies and lifestyles will inevitably change and it is anticipated that aspects of the design codes may need to be adjusted to reflect this. It is important, therefore, that regular monitoring of the design codes takes place to enable lessons learned during preceding phases to inform the design and construction of subsequent phases.

It is anticipated that the design codes will be subject to five- year review and update processes in consultation with Fareham Borough Council and Hampshire County Council. The review process will ensure that Welborne can adapt to changing needs whilst ensuring that the fundamentals of the core vision remain constant.

2b. HOW TO USE THE CODE

The Welborne Streets Manual includes:

Supporting design guidance: content that provides background, explanation and examples to assist with the understanding of the vision that underpins the Welborne.



Key component design fixes: elements that must be adhered to. Key component design fixes are listed on selected pages with highlighted boxes.

3. PLACEMAKING PRINCIPLES

Welborne will be a mixed-use, mixed-tenure settlement that brings the amenities of small-town life into a verdant setting shaped by high standards of urban and landscape design. Schools, shops, employment centres, local services and parks will be connected via a network of green links to a variety of housing types, enabling a healthy, sociable and walkable lifestyle. The layout and design of Welborne's streets, homes, open space and landscapes, and the interfaces between each of these elements, are shaped by a series of placemaking principles. This section sets out the placemaking principles that are relevant to street design.

A legible place with an interconnected and permeable street network

Welborne will have a clear and easily understood urban structure, providing residents and visitors with a choice of direct, convenient and safe walking and cycling routes that connect homes to shops, parks, public transport routes, schools and other key facilities.

Streets that are well designed and appropriately proportioned

Welborne's streets will be appropriately designed to combine a number of key functions, including safe access and movement, parking and servicing and space for infrastructure and green infrastructure to manage surface water. Streetscapes will be an attractive environment that create amenity and identity for the new settlement's constituent neighbourhoods.

Dashwood Avenue

Streets and public spaces that are safe and well overlooked

Streets will provide high levels of natural surveillance. Inactive frontage and blank façades will generally be avoided. Particular care will be taken in the design of streets to ensure public space is well overlooked.

Welborne Park

Integrated green networks

The hedge- and tree-lined streets form part of an extensive green network, also comprising private gardens, open space and green routes. This network works in conjunction to provide cooling and climate change adaptation solutions, manage surface water and increase opportunities for biodiversity.

Multi-functional green networks

Sufficient and convenient provision of residential car parking

The arrangements for residential car parking will be safe and convenient, whilst at the same time not undermining the quality and walkability of Welborne's streets. A combination of on-plot, on-street and courtyard parking will be provided in ways that are appropriate to context and designed to minimise the visual dominance of the car and hard-surfaced areas.

Parking provision will be in accordance with FBC standards.

Example of parking solutions

4. ADOPTION, MANAGEMENT & MAINTENANCE

4a. WELBORNE GARDEN VILLAGE TRUST

It is a priority to ensure that not only is Welborne built to a high standard, but that this quality is safeguarded in perpetuity and is accompanied by a strong village-life ethos. To this end, Welborne Garden Village Trust (WGVT) will be established, a not-for-profit limited company, as a mechanism for ensuring the long-term stewardship of Welborne for the benefit of its residents.

WGVT will be set up prior to first occupation with board membership offered to representatives from Welborne Land, the Master Developer, the council and the county council.

All unadopted areas of the development will be transferred to the WGVT as a freehold or 999 year lease. This includes play areas, public open space, pedestrian and cycle routes as well as visitors parking bays, trees and verges. This estate management company will be responsible for the management and maintenance of these areas in perpetuity.

WGVT will also be responsible for the planned inspections, day to day maintenance, insurances and parking enforcement of all unadopted areas.

WGVT will carry the responsibility for ensuring that non-adopted areas of the streetscape are maintained

4b. ADOPTION

In general, where roads meet the technical standards required by Hampshire County Council (HCC), serving 10 dwellings or more they will be adopted. Agreement is required from HCC for unadopted roads serving between 10-50 dwellings where adoption is not considered to be in the public interest.

The extent of the adopted highway will be agreed on a case-by-case basis through the S38 design audit process and finalised through the applicable S38 agreement. As a minimum, the extent of the adopted highway shall be from back of kerb or channel to the opposite back of kerb or channel. This shall be the default extent of adoption unless there is a specific strategic need, as designated by the Highway Authority, for adoption of additional areas and assets. All verges, parking bays, swales, cycleways and footways shall remain unadopted and be maintained in perpetuity by the WGVT. In the event WGVT fail to perform any of their obligations, HCC are entitled to access land to carry out necessary works and recover the costs incurred from doing so from WGVT.

Plan and section of typical street showing areas for HCC adoptions

4c. HIGHWAY ASSETS IN EASEMENT

STREET LIGHTING

All street lighting (including any illuminated street furniture and feeder pillars if and where applicable), will be adopted under the HCC PFI contract, subject to them meeting technical requirements. All columns and lit features to be set back as per TG 13 (minimum of 0.8m from carriageway). No multi directional LED's will be accepted. HCC will adopt wall mounted lighting on buildings with an easement for access to undertake repairs, if an alternative solution cannot be found. All junction boxes etc must be located on the external façade of the building, not in cavities.

All street lighting columns will be HCC standard BS48 #12B21 green column except for key areas where there may be black to match street furniture (example Village Centre), which will incur a Commuted Sum.

Street lighting columns to be in HCC standard colour

SIGNS

Any road signage required for the adoption of the road, will be managed, and maintained by HCC. All street name signage will be maintained by WGVT and outside of dedicated highway.

DRAINAGE

Any highway drainage apparatus, (drainage only taking highways surface run off, which HCC are to maintain in perpetuity), required outside of the adopted highway, will require a maintenance easement including a 3m offset for maintenance purposes, if not within the wider default easement area outlined above.

Verges may be designed to incorporate surface water swales that will be managed by WGVT. These unadopted swales will accept highway drainage.

On primary and secondary roads, highway surface run off, will be managed by WGVT as soon as it leaves the extent of the highway.

NOTE: All sewers under the adopted highway are to be adopted by a water authority or NAV company. All other pipework (for example connecting swales to the sewers) shall be adopted and maintained by the WGVT.

Verges may be designed to incorporate water swales

4d. HIGHWAY EASEMENTS & RESTRICTIVE COVENANTS

As HCC will have a reduced area of adopted highway than usually provided, an easement will be required to ensure that the County Council can undertake its statutory function as local highway authority.

HIGHWAY EASEMENT

The Highways Easement area will be defined on a case-by-case basis through the S38 design audit process and finalised through the S38 agreement. By default, on primary and secondary streets, the easement shall extend from the back of kerb or channel to the back edge of footway and include any intervening verge, swale, parking bay, cycleway or footway. The minimum extent of easement, on tertiary roads, shall be a 0.5m strip from back face of kerb or channel. Any other highways assets outside of this default area will also be required to be covered by an easement.

The Easement will grant HCC the following free and unfettered rights and will need to be entered into upon establishment of highway rights as part of the S38 agreements:

- To enter upon the easement land as and when required, with or without vehicles, plant, machinery, contractors for the purpose of inspection, maintenance, repair or renewal of any equipment, assets or works associated with maintaining the highway
- The right to erect any necessary temporary fencing, signage, traffic management equipment or barriers on the easement land
- The right to remove any trees, hedges, shrubs or other structures built which restrict the Council's ability in maintaining and keeping safe the highway or any of their assets within the easement land
- The right to install new assets, such as drainage, signage, street lighting, lit street furniture, ITS and all other auxiliary equipment required for safety and improvements schemes, following notification of intent to WGVT

HCC under the easement will act reasonably and reinstate to the condition prior to entry onto the easement land and make good, as soon as reasonably practicable, any such damage caused to the land.

RESTRICTIVE COVENANT

All junction visibility splays, inter-visibility and forward visibility required for the adopted roads and where pedestrian/cyclist visibility at crossing locations is required, will be covered by a restrictive covenant, where there isn't a strategic requirement for them to be adopted. WGVT will be bound to the restrictive covenant and be required to:

- Keep the land in good repair and condition
- Maintain, repair, replace, renew and keep any private retaining walls bordering the land in good state of repair and condition
- Not to do or allow anything on the land which could compromise the adjoining highway
- Not to do or allow any building, wall, fence, structure or trees, shrubs, hedges or soft landscaping to exceed 600mm of height
- Not to use the land for anything other than a visibility splay for the benefit of the adjoining highway
- To indemnify the County Council in respect of any liabilities, actions, costs, charges, claims, demands and expenses incurred by the County Council arising out of or incidental to or in connection with WGVT's obligations under the above terms
- In the event WGVT fail to perform any of their obligations, HCC are entitled to access the restrictive covenant land to carry out necessary works and recover the costs incurred from doing so from WGVT
- Comply with all other usual reasonable requirements required by HCC pertaining to restrictive covenants being registered and required where land is disposed/transferred.

4e. MAINTENANCE

WGVT will be responsible for maintaining unadopted areas, including but not limited to, the following:

- Winter maintenance as per HCC guidelines
- Management and maintenance of trees for safety and actionable nuisance and soft landscaping to avoid impact on street lighting and visibility splays
- Management and maintenance of pedestrian and cycle routes, including parking bays
- Maintaining unrestricted public access to all footpaths and cycleways within the highway easement boundary
- Grant the right to the uninterrupted free passage and discharge of surface water run off, at all times, in perpetuity
- Not build any structure or obstruct or impede the discharge water runoff from the adjoining highway
- Retain, inspect, adjust, repair, alter and fully maintain any drainage features taking highway surface water runoff in perpetuity
- Maintain works in such good repair and condition to accept storm water and surface water from the highway so that it does not cause damage to the highway
- To indemnify the County Council in respect of any liabilities, actions, costs, charges, claims, demands and expenses incurred by the County Council arising out of or incidental to or in connection with WGVT's obligations under the above terms
- Grant the right to HCC to make future connections without fee or charge
- Grant the right to enter land without notice, for the purpose of inspection repair renewal and maintenance of the WGVT maintained drainage network, in the event of a breach of the obligations above and recover in full from WGVT all expenses and costs it incurs in so doing
- Comply with all other usual reasonable requirements requested by HCC pertaining to the requirements being registered against the title and required where land is disposed/ transferred.

The management and maintenance will be in line with HCC maintenance regime for public highways as set out in Highway Safety Inspection Manual version 1.7, 18 October 2021 (or any subsequent superseding guidance).

AREAS ADJACENT TO HIGHWAY

A covenant will be placed on all residents to maintain their property frontage. The WGVT will secure step in rights with the ability to undertake maintenance works to areas directly affecting the public highway (e.g., trimming of hedgerows and overhanging trees).

Permitted development rights will be removed for the replacement of any permeable driveways and front boundaries. Any alterations or resurfacing will require WGVT's approval as well as planning approval.

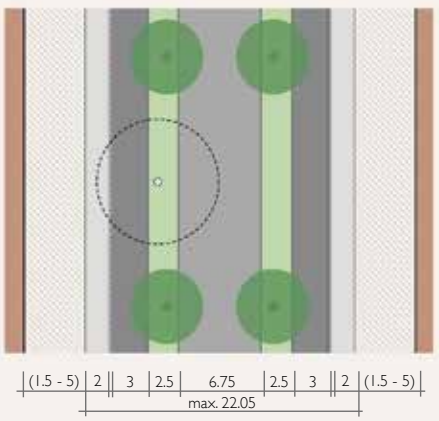
WGVT will secure step rights with the ability to undertake maintenance works to items such as hedging

5. MOVEMENT STRATEGY
5a. STREET HIERARCHY

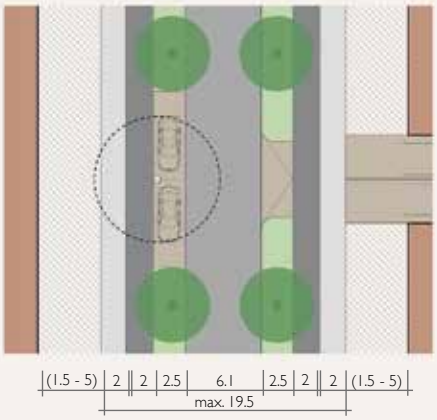
A defining element of Welborne will be its clear hierarchy of street types based on connectivity and importance of route. The hierarchy of streets is based on a carefully considered rationale that focuses on safety and legibility for all use.

Walking and cycling are intended to be the main methods of transportation. Safe cycling routes are well integrated in the street network through the provision of cycleways on Welborne Way, primary and secondary streets. Junctions and crossroads are equally a key feature; at Welborne they will be designed to prioritise pedestrian and cycle movement.

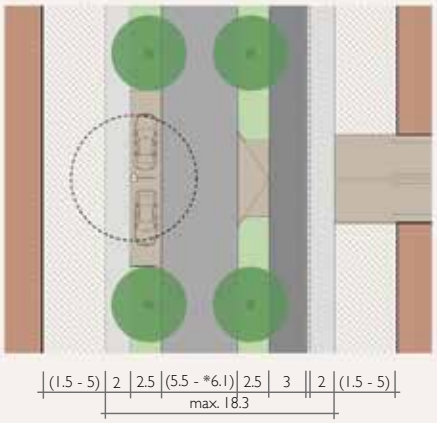
A selection of the street types that form the street network at Welborne, further detail is provided in Section 7.



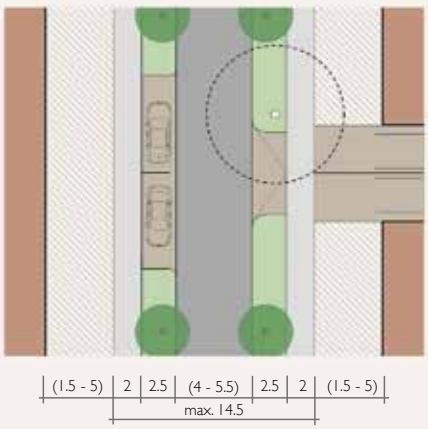
WELBORNE WAY



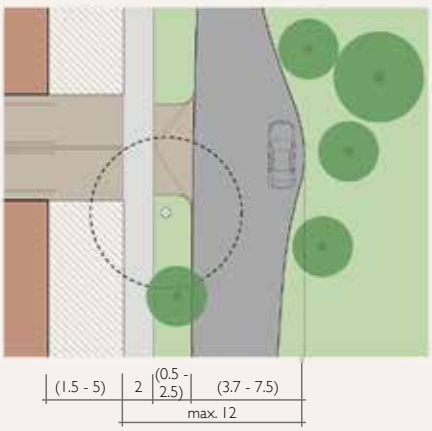
PRIMARY STREET



SECONDARY STREET
(*6.1 ONLY FOR BUS ROUTES)



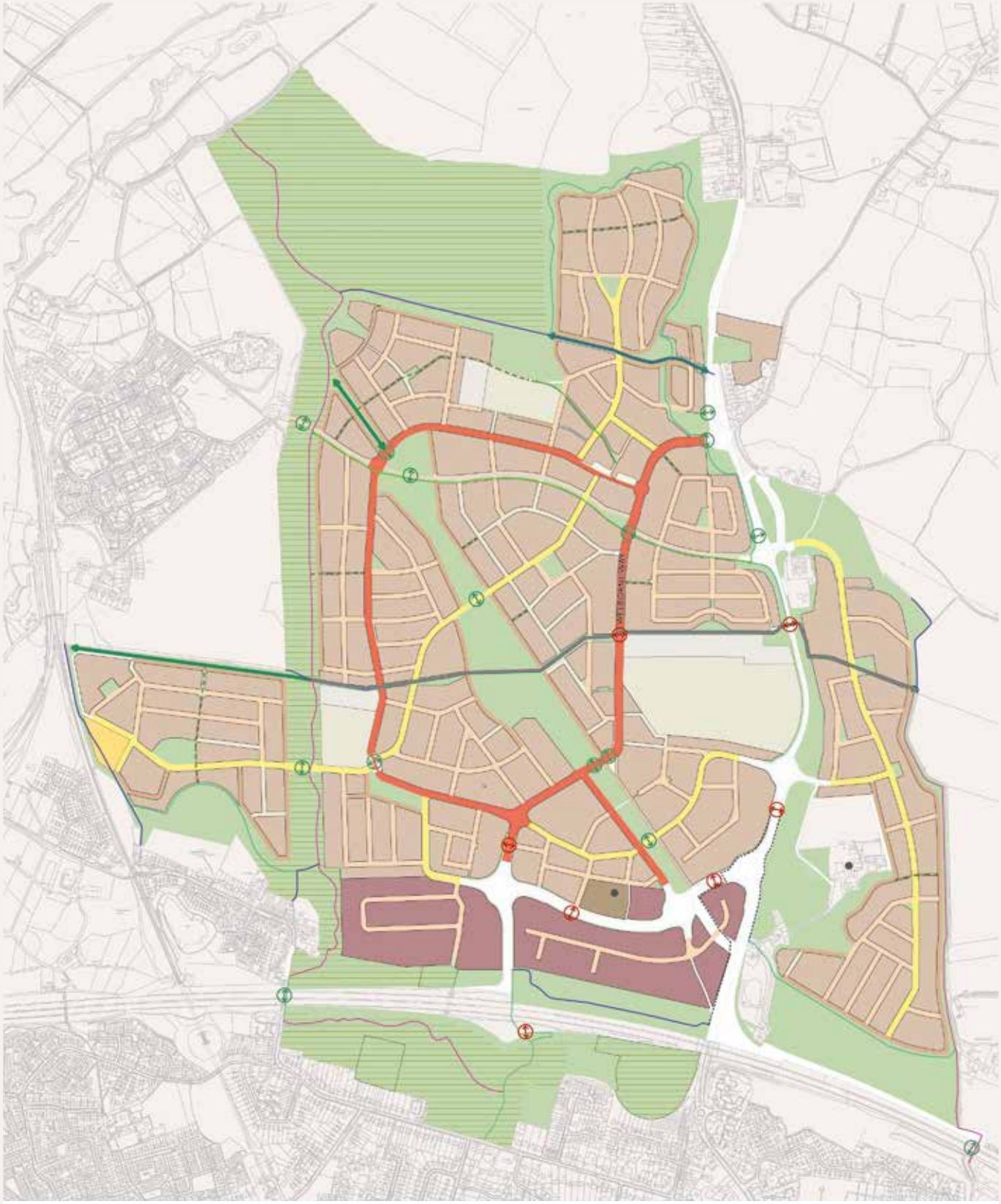
TERTIARY STREET - OPTION 1



EDGE LANE - OPTION 1

GREENWAY

ILLUSTRATIVE STREET HIERARCHY PLAN



KEY

- Primary street
- Secondary street
- Tertiary street
- Edge lane
- Knowle Road
- Tertiary street (Science and Technology Park)
- Rail halt (if required)
- PRoW bridleway
  3m-wide where new
- PRoW footpath
  1.5m-wide where new
- Unsignalised pedestrian crossing
- Signalised pedestrian crossing
- Greenways
  incorporating PRoW bridleways and footpaths as indicated
- Strategic green link
- Illustrative green link
- Strategic open space route
- Illustrative open space route
- 10K loop connection

Indicative plan, all areas subject to detailed design

5b. JUNCTIONS & CROSSROADS

At Welborne junctions and crossroads are an opportunity to assist with the placemaking principles and vision. Junctions and crossroads will be designed to give priority to pedestrians and cyclists to enable them to move around easily and safely. On primary and secondary streets crossings will be provided on a raised surface, so that pedestrians and cyclists can cross on a level surface. This will act to slow traffic on the approach to the crossing as part of a slow speed streets strategy.

Knowle Road will also include raised surface crossing junctions.

Selected key junctions will also require a special enhanced design response, these are where important junctions occur in locations such as the Village Centre and District Centre.

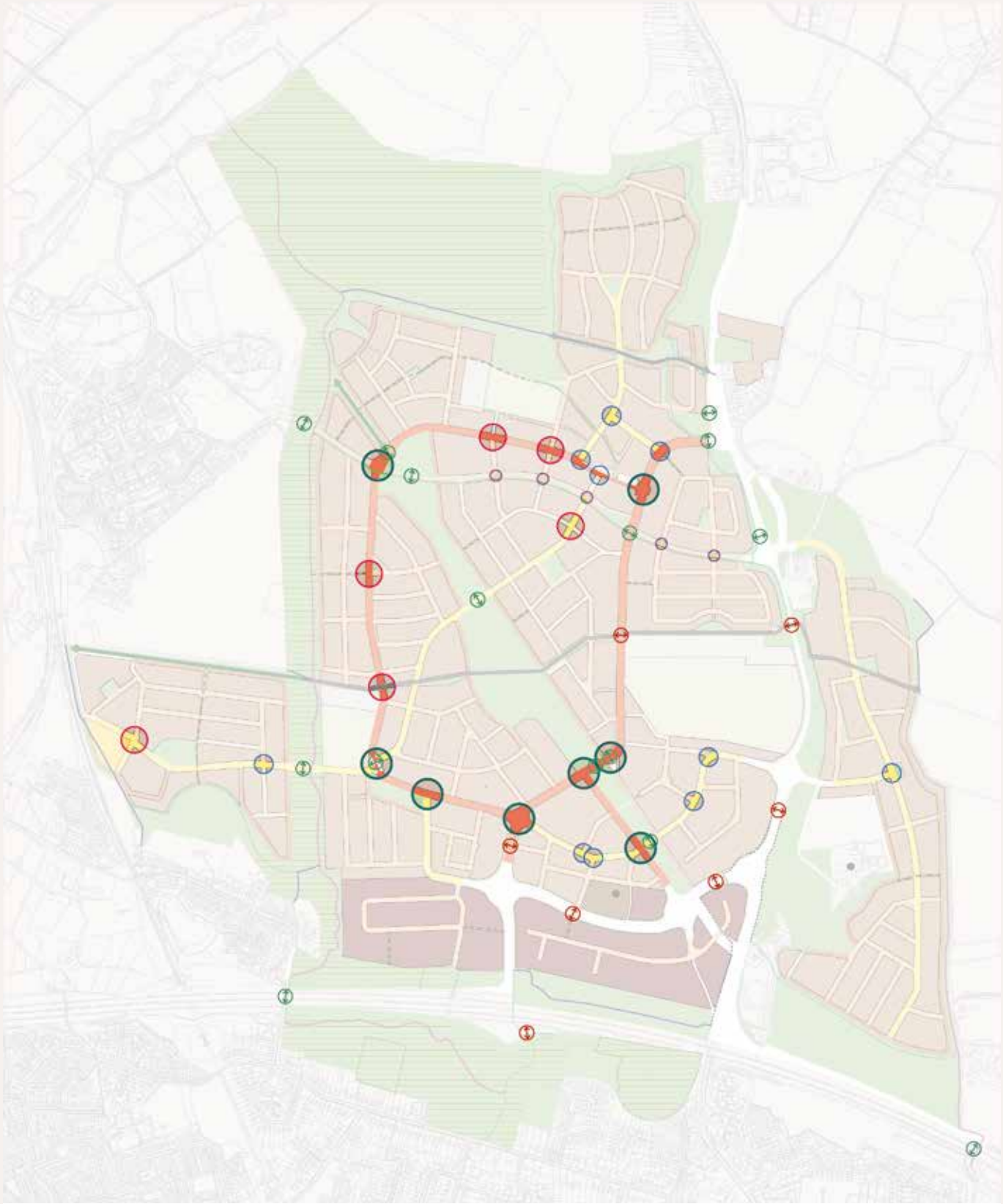
Details on key junctions, crossroads and typical junctions are provided in section 7.

Example of a crossroad on a primary street

KEY

- Footway (Paving Slabs)
- Carriageway (Tarmac)
- Cycleway (Tarmac)
- Tree verge
- Concrete Kerbs (100mm high)
  Conservation kerbs in special places
- Tactile Paving
- Granite slabs
- Street lamp (min. 5m offset to tree trunk)
- Trees
- Parking & Driveway Crossovers (Permeable block paving)
- Crossroad Junction Surface (Resin bonded gravel)
- Cycleway Tactile Paving
- Integrated Cycleway Symbol
- Granite Sett Grip
- Catchpit/Gully
- Bioretention System
- Dropped flush kerb for drainage
- Adoption Boundary

KEY JUNCTIONS PLAN



KEY

- Key Enhanced Junctions on Primary Street
- Crossroads / Pedestrian Crossovers on Primary and Secondary Streets
- T - Junctions on Primary and Secondary Streets
- Knowle Road Crossroads / Pedestrian Crossovers
- Unsignalised Crossing Point
- Signalised Crossing Point

5c. ACTIVE TRAVEL STRATEGY

A proposed hierarchy of active travel routes within the street network and open spaces make best use of existing footways and cycling provision and connect the community to local facilities. This will enable walking and cycling for everyday activities, such as getting to school or to the shops, as well as recreational loops and connections out to the wider countryside and into Fareham.

Key infrastructure improvements will be provided on Kiln Road, Maylings Farm Road, Miller Drive, Arundel Drive, Grove Road, Park Lane, Westbury Path, Funtley Road, A32 Wickham Road, Broadcut and Highlands Road. These facilities, together with improvements provided through Fareham Leisure Centre, will create sustainable transport links, promoting active travel to Fareham town centre, railway station, educational and leisure facilities. Improvements to the A32 Hoads Hill, A334 Winchester Road together with Lavey's Lane/ Fontley Road will provide links for active travel towards Wickham and Whiteley.

WALKING

The Welborne masterplan builds on the 'walkable neighbourhood' concept, where a local centre with facilities are within a 5- to 10-minute (approximately 400m) walking distance.

CYCLING

The network of cycling routes aims to serve a variety of different users. These will be distributed throughout the network. Some will be dedicated to cyclists, some will be shared. Likewise, some routes will be on streets and some will be on specific green routes. Appropriately located and designed cycle parking is to be provided at local community facilities in accordance with Fareham's cycle parking standards. Provision should be conveniently located, easy to use and secure.

HORSE RIDING

Sections of the existing PRoW network or diverted routes will be upgraded to provide a continuous bridleway link from Fareham. Horse box parking facilities will be provided at Funtley Hill and Dashwood SANG carpark.

KEY COMPONENTS *(Must be adhered to)*

Paths within the street network:

- **Welborne Way**: There will be dedicated 3m cycleways on both sides with segregated footways.
- **Primary streets**: There will be dedicated 2m one way cycleways on both sides with segregated footways.
- **Secondary streets**: There will be a dedicated 3m two way cycleway on one side with segregated footways.
- **Tertiary streets and edge lanes**: Varies per option, pedestrian footway on one side or no footway. These streets and lanes will be designed with an emphasis on pedestrians and cyclist comfort so cycling along the carriageway feels safe.
- **Safe routes to schools**: All primary and secondary streets shall be designated with safe routes to schools.

Right: Illustrative image of a proposed active travel route

Paths within open space:
The design of development blocks should ensure that they provide natural surveillance onto green spaces effectively and there is easy access to green corridors for recreational purposes.

- Provision has been made for recreational routes that create a village circuit as part of the 10k Park around the whole Garden Village and smaller circuits of varying lengths around neighbourhoods. These multifunctional routes will provide the development with nature and fitness trails at appropriate locations and with a legible wayfinding strategy. Recreational loops are provided as part of the three SANGs. See Strategic Design Code for further detail.

PUBLIC RIGHTS OF WAY STRATEGY

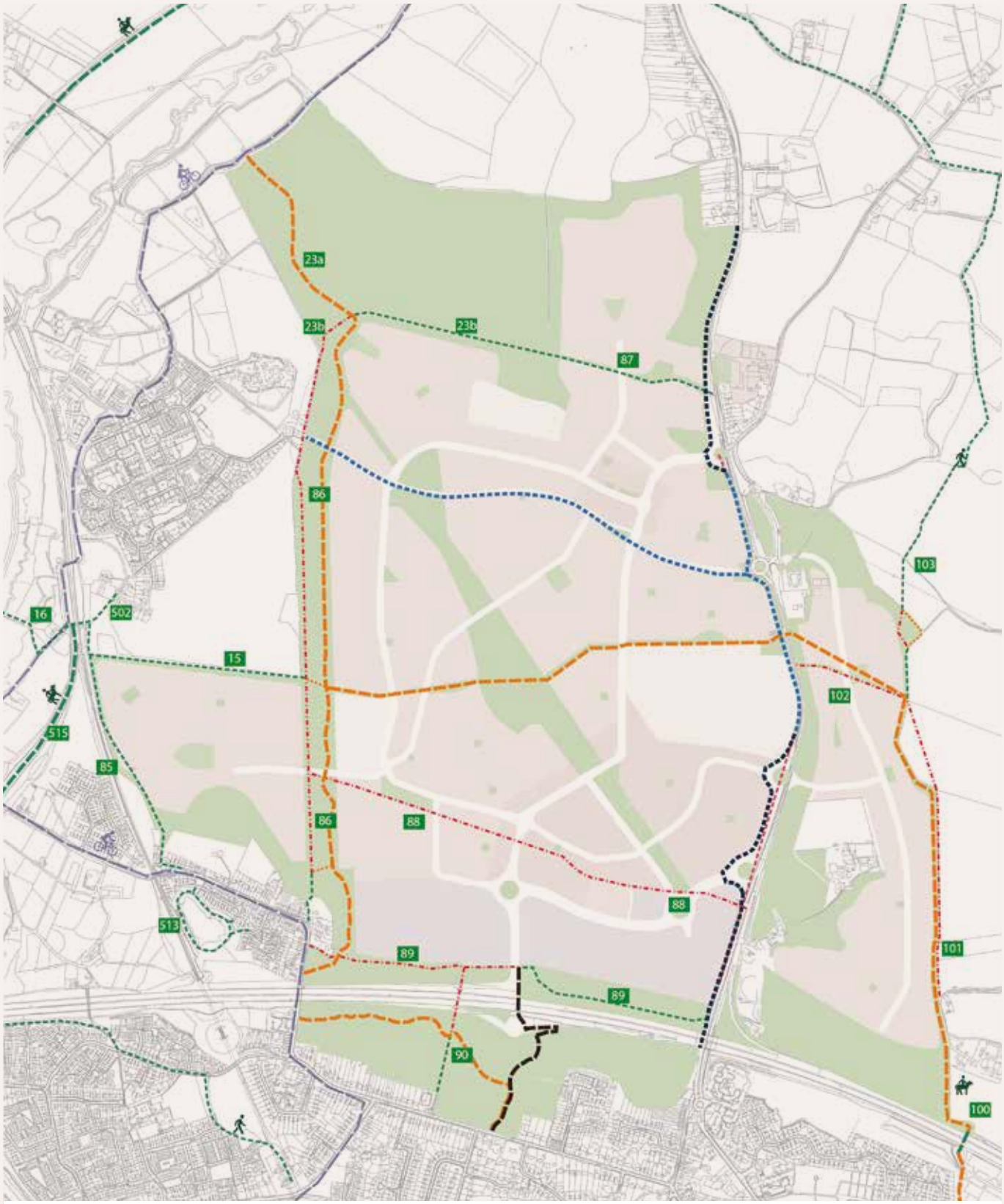
The site benefits from good access to existing Public Rights of Way within the site and connecting beyond to Fareham, Funtley, Knowle, Wickham and the River Meon.

The strategy for retaining, diverting, upgrading, or stopping up existing Public Rights of Way is summarised in the table below and illustrated on the plan opposite.

Table 1:
Strategy for retaining, diverting, upgrading or stopping up existing Public Rights of Way, subject to statuory approval

Footpath 15	Existing PRoW to be retained - outside of site boundary
Footpath 23a	Existing PRoW Footpath 23a to be upgraded to a bridleway, to provide a multi-user connection to Mayles Lane.
Footpath 23b	Eastern section to be retained in current form; western section to be diverted
Footpath 85	To be resurfaced. Possible part-diversion of PRoW, subject to potential rail halt detail design
Footpath 86	Existing PRoW to be diverted and extended to link to Funtley Hill and upgraded to bridleway status
Footpath 87	Existing PRoW to be retained, with part diversion to the south at the easternmost extent, as to provide a connection with the proposed informal pedestrian crossing in this location
Footpath 88	Existing PRoW may be extinguished and replaced by a new east–west multi-user green link to the north
Footpath 89	Potential part diversion of the western half. Diversion to go south of the M27 into Fareham Common
Footpath 90	Northern half stopped up and subway closed
Bridleway 100	Existing PRoW to be retained and upgraded
Footpath 101	Existing PRoW footpath to be diverted onto site, upgraded to a bridleway and extended to the south to provide a connection to the existing bridleway 100 and M27 bridge
Footpath 102	Existing PRoW retained as part of new east–west multi-user PRoW to the north, through new green link. Diversion to accommodate development and link to new pegasus crossing
Footpath 103	Existing PRoW to be part-diverted to the east to align with proposed site boundary

PUBLIC RIGHTS OF WAY PLAN



KEY

Public Rights of Way

- Existing PRoW retained
- Existing bridleway retained
- Existing PRoW stopped up/diverted
- Proposed diversion/upgrade to footpath
- Proposed diversion/upgrade to bridleway
- Multi-user link from M27 J10 works to Kiln Road

National Cycle Network

- NCN 224

Existing Cycle Routes

- Shared-use paths retained
- Shared-use paths realigned
- Proposed shared-used path route

5d. PUBLIC TRANSPORT STRATEGY

Welborne will provide a new bus route to serve the development. The proposed route will link the development site to Fareham railway station, bus station and the town centre.

The proposed route will enter Welborne via a new bus-only link located to the south of the Broadway roundabout. This would pass through the site via the High Street roundabout, connecting to the wider site via a bus-only link through the District Centre. It would then complete a circular course along the primary routes through the site including the western loop (West Way, North Drive) as well as serving the Village and District Centres and the Community Hub via Dashwood and Welborne Way.

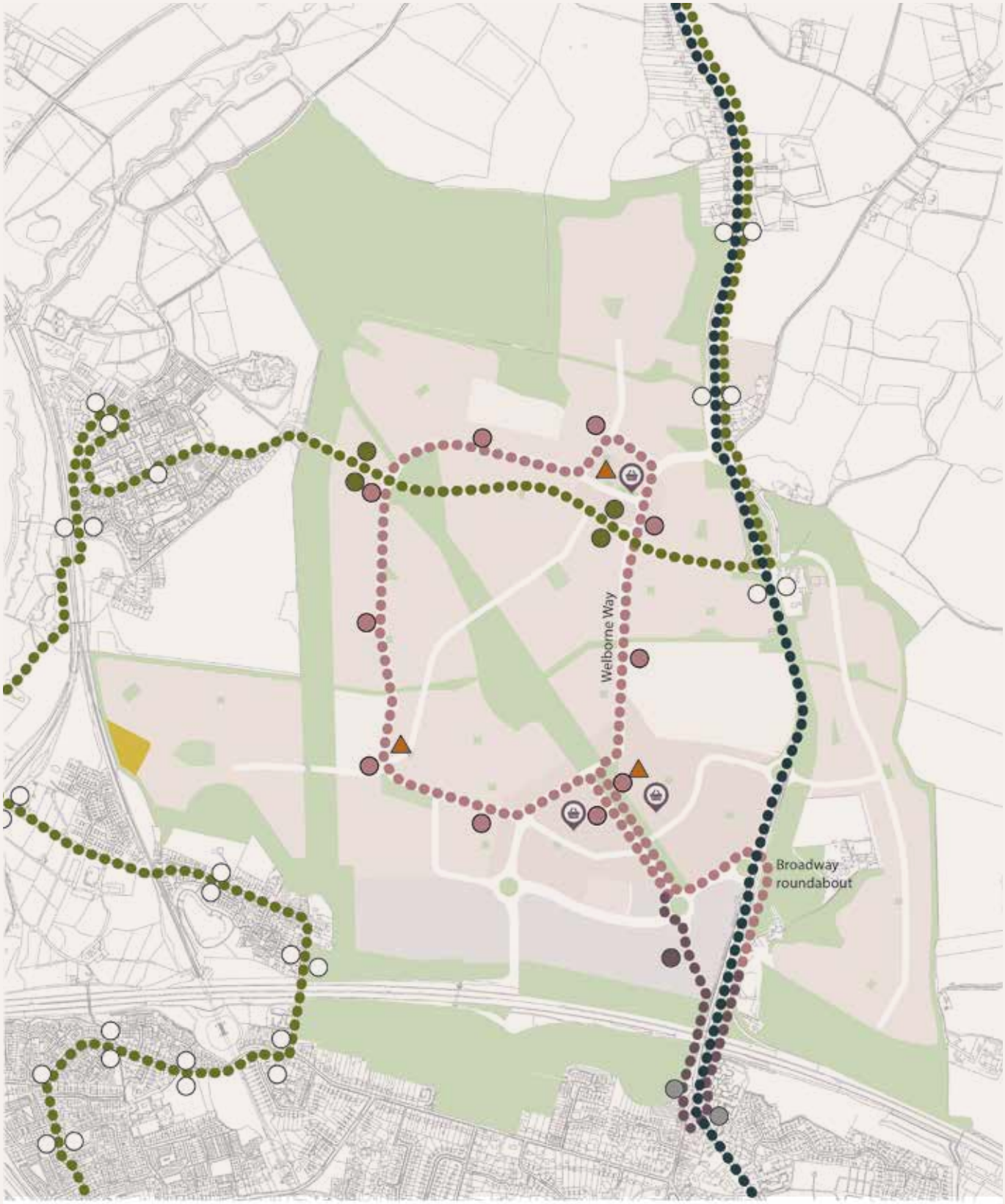
Buses would leave the site via the Broadway roundabout, having returned to the District Centre via the bus-only link from Welborne Way.

Subject to operator requirements, the proposed bus service could operate as an extension to the existing Eclipse BRT service, or as its own independent route. Generally, bus stops will be provided within the site as illustrated on the plan opposite. The precise routing and location of bus stops will be subject to agreements with the bus operators and dealt with at Reserved Matters stage.

Welborne will also be served by the existing Route 69 that currently operates between Fareham and Winchester. There is also an existing bus Route 20 which runs between Wickham and Fareham.

Bus priority measures are provided on external roads to improve service reliability and journey times, with dedicated bus lanes available along the A32 between the Broadway roundabout and North Hill.

PUBLIC TRANSPORT PLAN: ROUTES AND STOPS



KEY

Existing public transport

- Retained Fareham to Wickham (route 20)
- Retained Winchester to Fareham (route 69)
- Retained bus stop
- Relocated existing bus stop
- New bus stop on Knowle Road (route 20)

Proposed public transport

- Welborne and Fareham Town one-way service on carriageway and indicative bus stops
- Dedicated bus lane section and indicative bus stops

- Rail halt (if required)
- Village Centre and District Centre
- Community facility

6. STREET DESIGN PRINICIPLES

6a. TYPICAL STREET & JUNCTION DESIGN

This section considers how the streets will look and feel for people moving around Welborne. The design of the streets will be influenced by several overarching design principles alongside technical requirements.

KEY COMPONENTS *(Must be adhered to)*

- 2.5m wide verges shall be incorporated on all primary, secondary and tertiary street types.
- 3m cycleways on both sides of the street will be incorporated on Welborne Way
- 2m one way cycleways on both sides of the street will be incorporated on primary streets.
- A 3m two way cycleway will be incorporated on one side of a secondary street.
- Junctions on primary and secondary streets will be designed to give priority to pedestrians and cyclists.

- Where raised surface junctions are utilised the vehicular approach to these will be a 1.37 gradient over 3 kerb lengths.
- Raised surfaces that are to be adopted will use a resin bonded surface finish on primary roads and bus routes, block paving is acceptable elsewhere.
- Driveway crossovers and in verge parking spaces will be surfaced in permeable block paving and use a 1m radius quadrant kerb detail
- Street trees will be incorporated in all verges, with street lighting columns located at least 5m from the trunk of trees.
- The design detail of verges will discourage parking on the verge by providing a 100mm kerb, the introduction of planting and trees and where required bollards.

Primary Street incoprporating a raised surface junction

KEY

- Footway (Paving Slabs)
- Carriageway (Tarmac)
- Cycleway (Tarmac)
- Tree verge
- Concrete Kerbs (100mm high)
  Conservation kerbs in special places
- Tactile Paving
- Street lamp (min. 5m offset to tree trunk)
- Trees
- Parking & Driveway Crossovers (Permeable block paving)
- Crossroad Junction Surface (Resin bounded gravel)
- Cycleway Tactile Paving
- Integrated Cycleway Symbol
- Adoption Boundary

6b. STREET TREES

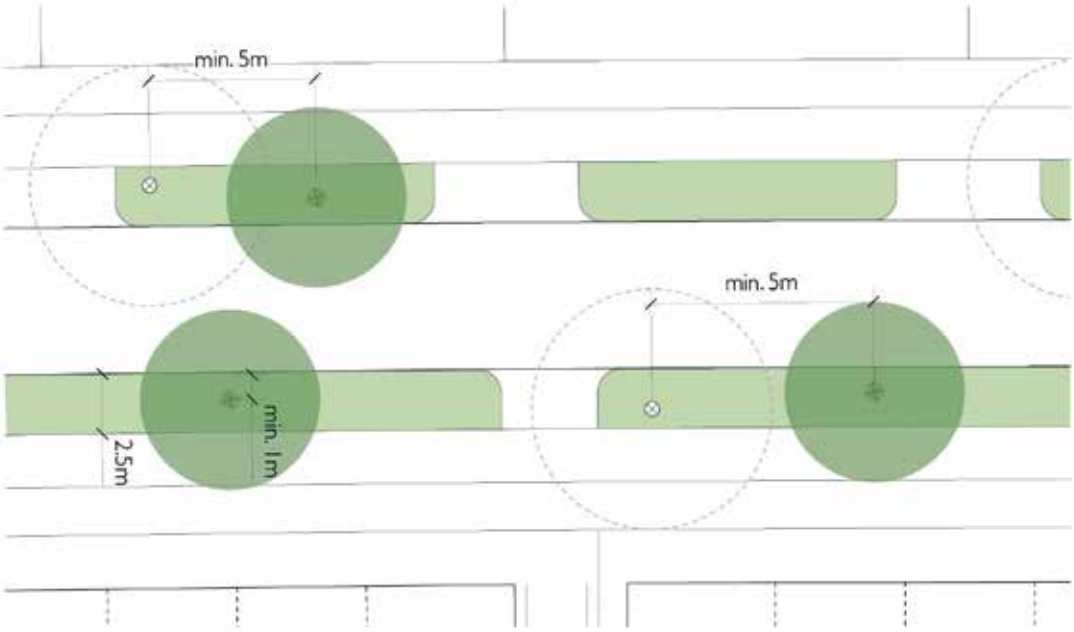
At the heart of the vision for Welborne is to create streets lined with trees and hedges. The streets will be designed to accommodate trees with mature canopy spread supported by management of the trees by WGVT over their lifetime.

Siting of street trees from the public highway will depend on visibility splays, driveway cross overs and street light column spacing. Also to be considered in the detailed design shall be the chosen tree species, required soil volumes for the tree and provision of root protection barriers. Soil volume for street trees will include trenching under verge driveway crossovers and verge visitor parking bars.

Streets designed to incorporate verges, trees and hedges to property boundaries

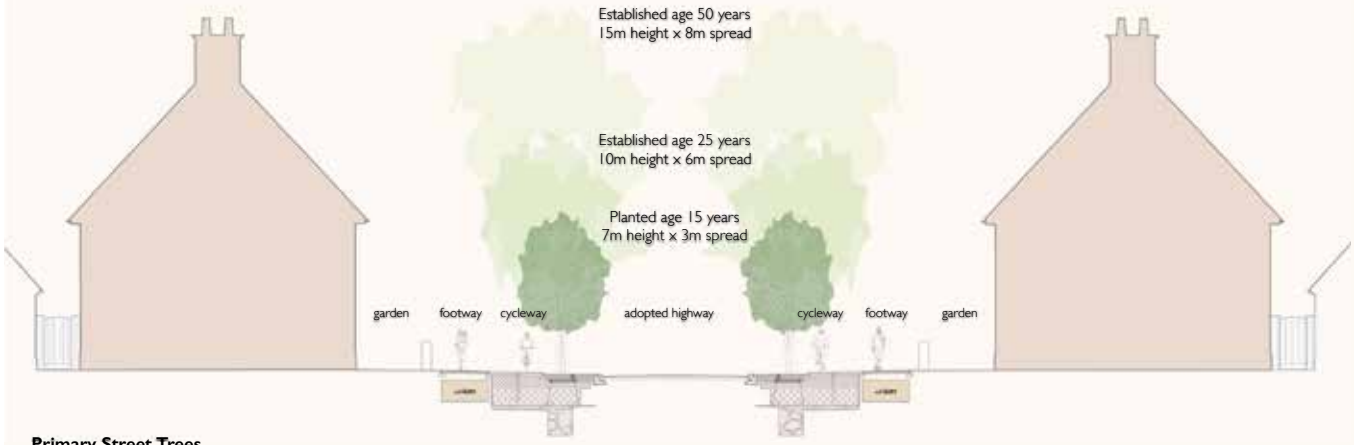
KEY COMPONENTS *(Must be adhered to)*

- Verge widths on streets with trees will be 2.5m.
- Street trees will be centred a minimum of 1m from the edge of the carriageway. Dimension taken from the centre of the tree trunk.
- On occasion trees may be sited within junction visibility splays to achieve the Welborne design vision of tree lined streets. *Due to the low design speeds throughout the development, isolated obstructions should not pose an unacceptable safety risk. The principle is supported by Manual for Streets, which states 'occasional obstacles to visibility that are not large enough to fully obscure a whole vehicle or a pedestrian, including a child or wheelchair user, will not have a significant impact on road safety' (DfT1, 2007, p. 94).*
- Trees may also be sited in visibility splays for front driveway access.
- Street lighting columns will be located at least 5m from the trunk of trees.
- There will be a 1m minimum gap between garden trees and the highway's adopted edge.



The following typical sections demonstrate how street trees (with the required soil volume) and drainage will be incorporated on a primary, secondary and tertiary street..

Primary Street cross-section



Primary Street Trees

Where verges extend alongside cycleways

Large Tree Species provided with 36m³ rooting volume of Stockholm System (equivalent to 28m³ open soft ground)

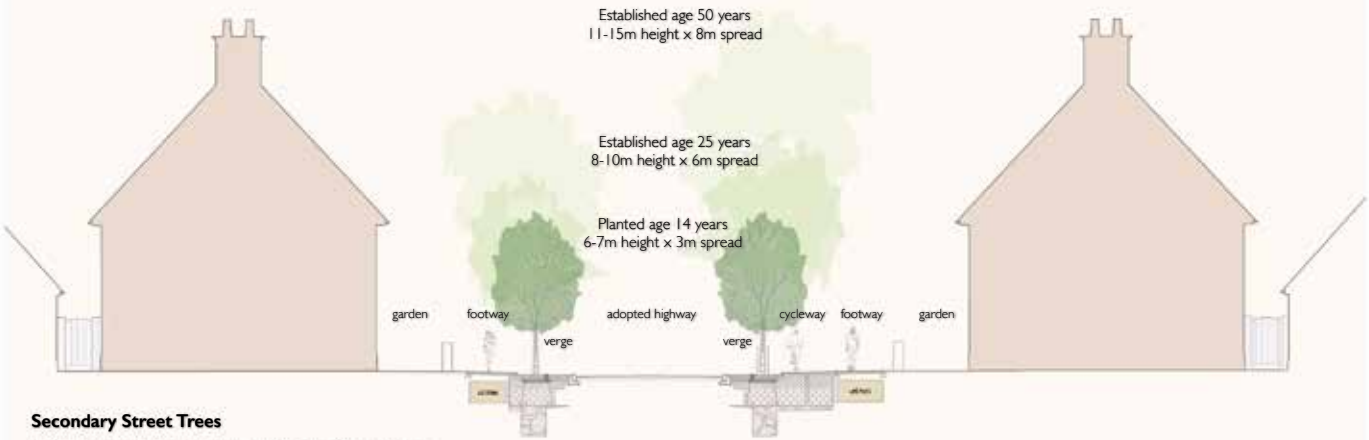
Supply size 35 - 45cm girth
4x transplanted (circa 15 years age)

Tilia cordata 'Greenspire'

- Root volume
- Utilities
- Adopted highway
- Cycleway / Footway
- Verge

Illustrative image of a Primary Street

Secondary Street cross-section



Secondary Street Trees

Where verges extend alongside footways & cycleways

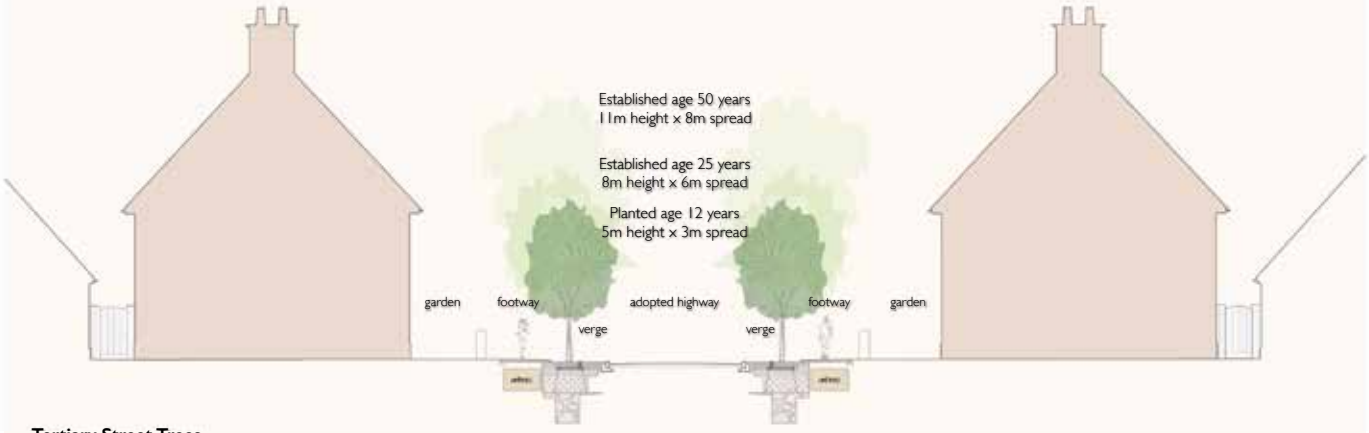
Large Tree Species provided with 36m³ rooting volume of Stockholm System (equivalent to 28m³ open soft ground)
Medium Tree Species provided with 26m³ rooting volume of Stockholm System (equivalent to 20m³ open soft ground)

Supply size 30 - 40cm girth
4x transplanted (circa 14 years age)

Carpinus betulus (Large), Ulmus 'New Horizon' (Medium)

- Root volume
- Utilities
- Adopted highway
- Cycleway / Footway
- Verge

Tertiary Street cross-section



Tertiary Street Trees

Where verges extend alongside footways

Medium Tree Species provided with 26m³ rooting volume of Stockholm System (equivalent to 20m³ open soft ground)

Supply size 20 - 25cm girth
4x transplanted (circa 12 years age)

Acer campestre

- Root volume
- Utilities
- Adopted highway
- Cycleway / Footway
- Verge

6c. STREET LIGHTING

At Welborne, street trees are integral to the proposed landscape structure of the plan and so the coordination of lighting columns and trees is a vital aspect of the design.

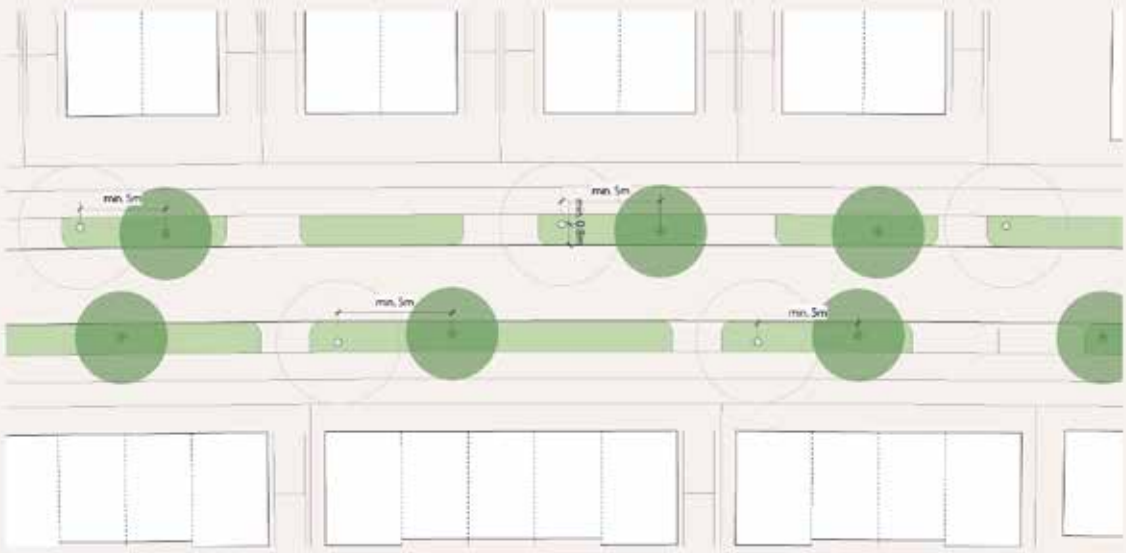
The lighting must achieve the technical and performance requirements of HCC and be successfully integrated into the proposed tree-lined streets across Welborne.

Typical HCC street light

KEY COMPONENTS *(Must be adhered to)*

- Street lighting columns will be located at least 5m from the trunk of trees.
- Street lighting columns to be a minimum of 0.8m set back from the carriageway.
- All street lighting columns will be HCC standard BS48 #12B21 green column except for key areas where there may be black to match street furniture (example Village Centre and District Centre)
- The lighting columns proposed are to be 6m high on primary streets and 5m high on secondary, tertiary and edge lanes. For green links and shared routes, 4m columns or bollard lighting will be proposed.
- Wall mounted lighting on buildings is acceptable in limited instances providing an easement for access to undertake repairs is provided. All junction boxes must be located on the external façade of the building, not in cavities.
- Unadopted roads and footways do not have to be lit to adoptable standards.
- Cycleways and footpaths through open space will be unlit, with the exception of key routes determined on a case by case basis - the route from J10 to Kiln road across Fareham Common shall be lit.

Right: Illustrative plan showing placement of street lighting relative to street trees



6d. DRAINAGE

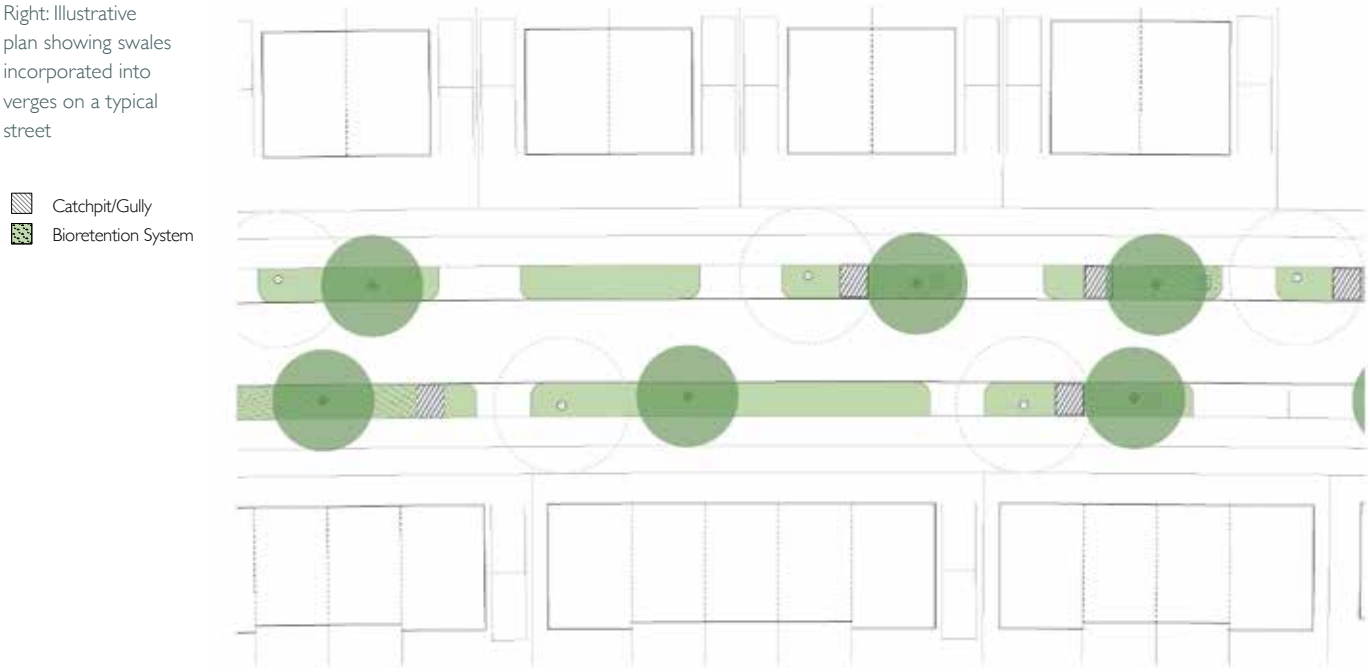
Surface water drainage is required to convey rainwater that falls onto roofs or hard paved areas away from habitable areas, and to ensure that flooding does not occur. At Welborne, the philosophy of surface water drainage is to achieve sustainable, environmentally enriching systems that closely mimic the process seen on a natural landscape. This will include swales within verges, bioretention and permeable paving to capture first flush pollution and minimise run-off from more frequent rainfall events.

Example of a swale incorporated into a verge

KEY COMPONENTS *(Must be adhered to)*

- Verges may be designed to incorporate surface water swales that will be managed by WGVT. These unadopted swales will accept highway drainage.
- Parking bays and driveway crossovers will use permeable paving.
- On primary and secondary roads, highway surface run off, will be managed by WGVT as soon as it leaves the extent of the highway.
- Any highway drainage apparatus, adopted by HCC required outside of the adopted highway, will require a maintenance easement.
- All unadopted lay-bys will fall away from the adopted highway.
- All streets and parking courts will incorporate 'interception storage' whereby the first 5mm of rainfall is captured close to source and disposed of via soakage or evaportation.

Right: Illustrative plan showing swales incorporated into verges on a typical street



6e. SIGNS & LINES

Highway signage and lining is to be kept to an absolute minimum at Welborne in order to create a high- quality public realm and great streets without visual clutter. In short, any sign or line will need to earn its place.

KEY COMPONENTS *(Must be adhered to)*

- Only those signs or lines that are deemed absolutely necessary will be permitted. Some examples of lining that will be required include bus cages on Welborne Way, centre lines and give way markings on significant bends or junctions and safety lining associated with schools.
- If highway signs are required, then they should preferably be co-located on lighting columns or placed on buildings.
- To reduce clutter on footways, street naming signs should be placed on adjacent walls or buildings.
- The positioning of signage should not create an obstruction to pedestrian movement, entrance ways or street cleansing, and must not impede highways visibility splays.
- To ensure that the sustainable transport objectives are met, way-marking should be clear, logical and user friendly.
- Bespoke street signs and general town signage will be designed for Welborne in accordance with the design aspirations and intended vision. The design of this signage will be agreed with FBC and KCC.
- All Highway lines and signage will be compliant with Traffic Signs Regulations and General Directions 2016 & TG12.

Signage and lines shall be kept to a minimum in the street scene at Welborne.

Bespoke street signs and general town signage will be created for Welborne.

6f. MATERIALS & STREET FURNITURE

The overarching principles for the public realm design are that design choices relating to materials and street furniture provide a coherence and legibility across Welborne. Welborne's strategy regarding materials and street furniture promotes simplicity and easy maintenance.

HARD LANDSCAPING MATERIALS

The material palette for the streets within Welborne is divided into three main approaches: typical treatment, informal treatment and special places. This palette will create a varied sense of place where the different treatments are utilised aiding legibility.

Where shared space principles apply, extra consideration should be given to tactile hazard warning paving and contrasting colour palette to aid navigation for everyone and promote an inclusive design approach.

Typical treatment (Hampshire adoptable standards)

- Typical primary, secondary, tertiary streets and courtyard lanes.
- A simple, robust and durable palette of materials for the majority of residential streets.

Informal treatment

- Edge lanes, greenways and green links.
- Some areas within Welborne Park, neighbourhood parks and community green spaces.
- Informal softer material specification to reflect natural edge and landscape locations.

Special places

- Streets and spaces in relation to urban squares and some areas within Welborne Park, neighbourhood parks and community green spaces.
- High-quality materials to highlight a change in the setting from typical residential streets to civic spaces.
- These areas may be considered for adoption and the materials chosen must be in accordance with HCC requirements. Where specified materials do not meet HCC requirements these areas shall be the responsibility of WGVT.
- Where shared space principles apply, extra consideration should be given to tactile hazard warning paving and contrasting colour palette to aid navigation for everyone and promote an inclusive design approach.

TYPICAL TREATMENT

ROADS

Hot rolled asphalt

Resin bonded gravel

FOOTWAYS

Concrete paving slabs

CYCLEWAYS

Hot rolled asphalt

Integrated cycleway symbol

KERBS

Concrete

Kerb channel drain to swale system

CHANGE OF SURFACE

Concrete setts in contrasting colour
(example use include transition strips)

Granite setts in contrasting colour
(example uses include drainage areas in verges and at and junctions)

PARKING & DRIVEWAYS

Permeable concrete setts

Gravel

Where gravel is used for a driveway it will be set back a minimum of 0.5m from the footway to prevent spilling onto highways. A paved or asphalt strip will be required to separate.

INFORMAL TREATMENT

ROADS

Hot rolled asphalt

FOOTWAYS

Asphalt (above)
Breedon gravel (below)
Surfaced dressed gravel

Concrete paving slabs

CYCLEWAYS

Breedon gravel

Integrated cycleway symbol

KERBS

Concrete

Timber edge (above)
Concrete 50mm kerb (below)

No edge

Gravel-path edging can be omitted and the grass or adjacent vegetation allowed to encroach on the edges of the path for a softer edge and to avoid edging becoming trip hazards for cyclists

CHANGE OF SURFACE

Concrete setts in contrasting colour
(example use include transition strips)

Granite setts in contrasting colour
(example uses include drainage areas in verges and at and junctions)

PARKING & DRIVEWAYS

Gravel

Where gravel is used for a driveway it will be set back a minimum of 0.5m from the footway to prevent spilling onto highways. A paved or asphalt strip will be required to separate.

SPECIAL PLACES: STREETS

ROADS

Hot rolled asphalt with natural aggregate chippings

FOOTWAYS

Concrete block paving

CYCLEWAYS

Hot rolled asphalt

Integrated cycleway symbol

KERBS

Conservation kerb

Flush conservation kerb

CHANGE OF SURFACE

Concrete setts in contrasting colour
(example use include transition strips)

Granite setts in contrasting colour
(example uses include drainage areas in verges and at and junctions)

PARKING

Permeable concrete setts in various colour tones

STREET FURNITURE

As per the material palette, the street furniture selection should be specified to enhance the character of the open space around it as a complement to the surrounding architecture and functionality of the place.

A site-wide strategy of products and styles should be used throughout the development to establish a clear family range and ensure a safely navigable public realm.

A standard Hampshire street furniture palette should be used in relation to the streetscape where products must comply to the adoptable standards set out by the Local Authority and respond to Highways requirements.

Welborne's street furniture strategy is divided into three main approaches: Typical Treatment; Informal Treatment; and Special Places.

TYPICAL TREATMENT

- Palette to convey a timeless and tranquil feel with particular attention to robust and hard wearing materials
- Material example: metalwork stainless steel/galvanised steel

INFORMAL TREATMENT

- Natural and semi-natural, softer feel with particular focus on local handmade crafts and arts
- Material example: timber, stone

SPECIAL PLACES

- High-quality street furniture characterised by a robust, natural style and sustainable use of materials that convey the identity of the place
- Material example: FSC hardwood, natural stone, high-quality concrete, metalwork stainless steel/galvanised steel

6g. SLOW-SPEED STREETS

The street network at Welborne will be designed to achieve slow speed streets through the implementation of regular traffic calming measures to reduce traffic speeds and improve quality of place.

Secondary and tertiary streets across Welborne Garden Village will have a maximum design speed of 20mph (32 kph), though, in accordance with para 8.2.13 of Manual for Streets 2 (MFS2), this will be achieved through design rather than a signposted 20mph zone. Following Hampshire County Council TG3 para 3.1.2 visibility splays and minimum stopping sight distance will be based on the 20mph design speed.

To achieve speeds of 20mph, or less, traffic calming features shall be spaced no more than 70m apart (DfT1, 2007, p. 88). Straight uninterrupted links should therefore not exceed 70m in length.

There are various features which can be used to break up a continuous link and slow traffic. Different traffic calming features work in different ways and with varying degrees of effectiveness.

Traffic calming measures proposed for use across tertiary and secondary streets within Welborne are:

- Horizontal alignment – bends with less generous radii (CIHT, 2010, p. 52), chicanes, etc.
- Changes in priority
- Carriageway narrowing using changes in material
- Reduced visibility
- Raised junctions using changes in material
- On-street parking, including chevron and perpendicular bays
- Central islands using changes in material

Psychology and perception are important factors in achieving the desired design speed and establishing a sense of place, although they are not permanent traffic calming features. The presence of pedestrians, cyclists and active frontages can have a strong influence on reducing the speed at which people choose to drive (DfT1, 2007, p. 88).

References

CIHT, 2010. *Manual for Streets 2*, London: CIHT.
DfT1, 2007. *Manual for Streets*, London: Thomas Telford.
DfT2, 2007. *LTN 01/07 Traffic Calming*, London: TSO.

1. Horizontal Alignment

Manual for Streets (MFS) and Manual for Streets 2 (MFS2) recognise that the minimum bend radii required in CD109 are not suitable for designing high-quality streets. For streets with a design speed of 60kph and less, MFS2 recommends implementing horizontal curves with radii four steps below the desirable minimum from CD109, having a v^2/R value equal to 56.

These tighter curve radii can be implemented as traffic calming features (CIHT, 2010, p.52) and will naturally create slower speed streets than the design speed.

Table 1 below shows these minimum acceptable carriageway centreline radii for design speeds of 10, 20 and 30mph. For example, on a 20mph road- a V2/R value of 56 (which is 4 steps below the minimum in CD109; the recommended value for slower speed streets in MfS2), the minimum radius is 18.3m

Table 1:
Percentage speed reduction at bends (CIHT, 2010, p. 52)

Design Speed, V	mph	10	20	30
	kph	16	32	48
MfS2 recommended 4 steps below min. in CD 109, V^2/R		56	56	56
MfS2 recommended radii (using V^2/R)	R (m)	4.6	18.3	41.1

Use of horizontal curve as a traffic calming feature

2. Changes in Priority

Changes in priority at junctions and no defined priority at squares can be introduced as a traffic calming feature to interrupt otherwise continuous links.

Where possible, squares (with no defined priority) should be used in preference to raised junctions.

Square used to introduce change in priority

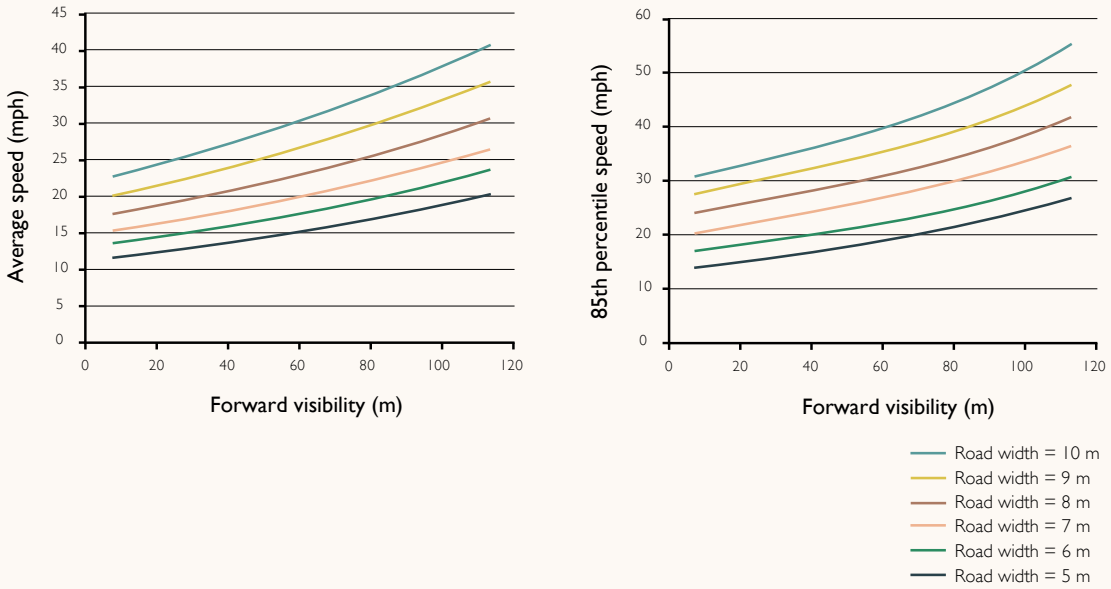
3. Carriageway Narrowing

Carriageway narrowing can have a significant influence on speeds (DfT1, 2007, p. 88). **See Figure 1.** Carriageway narrowing at Welborne will be functional and have a purpose such as crossing points. Change of material surfacing will be used to highlight crossing points. Block paving is proposed for non-primary roads and bus routes.

Narrowed sections shall be a minimum width of 3.7m (1.85m lanes) on tertiary streets and shall be 5m (2.5m lanes) on secondary streets.

Carriageway narrowing to reduce traffic speeds

Figure 1:
Correlation between visibility, carriageway width and vehicle speeds (DfT1, 2007, p. 89)



4. Reduced Foward Visibility

As a traffic calming feature, MFS2 permits minimum forward visibility to be restricted below the minimum stopping sight distance (SSD) (CIHT, 2010, p. 75). The minimum SSD for 20mph and 30mph design speeds are 25m and 43m, respectively. Where used in Welborne, restricted visibility should be introduced naturally into the masterplan.

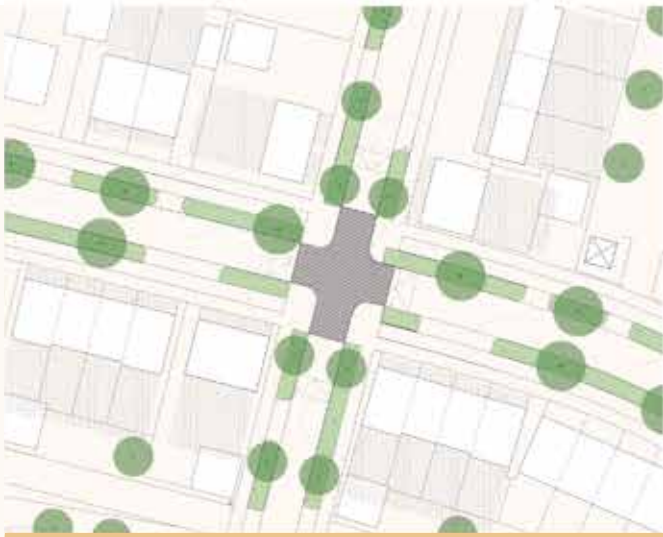
Road alignment with reduced forward visibility that will promote slower vehicle speeds

Houses create reduced forward visibility and speed reduction bend

5. Raised Junctions

Raised junctions can be used on cross-roads and T-junctions to provide traffic calming features, but also to highlight and improve the safety of pedestrian crossings. Raised junctions provide very effective reductions in traffic speeds and accidents and injuries, they cause little delay to emergency services and are well perceived by the public (DfT2, 2007, p. 9).

At Welborne raised junctions will be designed with an approach gradient of 1.37 over 3 standard kerb lengths (2745mm). The surface material of ramps and the raised table will be resin bound gravel.



Raised junction at a cross-roads that shall act as a traffic calming feature

6. On-Street Parking

Perpendicular or echelon formation on-street parking can provide effective traffic calming through the introduction of side friction (DfT1, 2007, p. 88). However, longitudinal parking has a reduced traffic-calming impact.

Perpendicular or echelon parking should be provided in discreet groups, with regular gaps, to maintain good access and visibility for pedestrians.

Perpendicular parking at a proposed public space that will function as a traffic calming feature

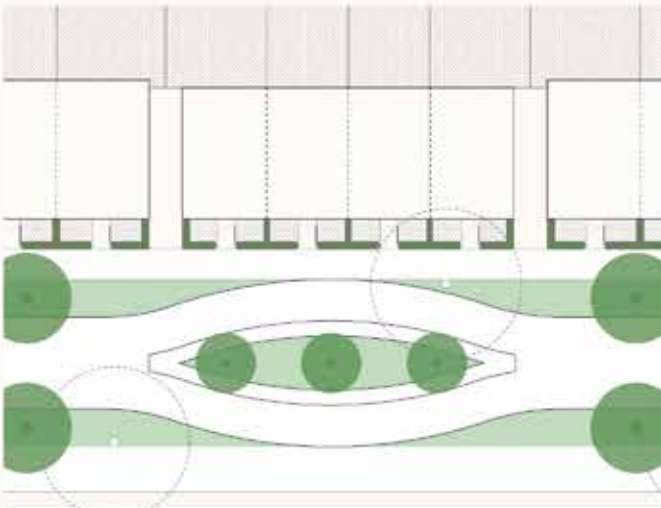
On-street parking to introduce side friction

7. Central Island

Central islands can be provided as traffic calming features on continuous links, and can also provide space for trees and landscaping.

Central islands will be 3m wide with 1m overrun areas on each side (total width 5m), and have 2.75m through lanes. Islands can be developed symmetrically or asymmetrically from the centre line with 1 in 5 tapers.

Any design will need to be tracked for buses and refuse vehicles. Central landscape areas if not adopted by HCC will be the responsibility of WGVT.



Central island feature with tree planting

6h. VISIBILITY

Secondary and tertiary streets across Welborne will have a maximum design speed of 20mph (32 kph). However, the design speed will be dynamic along each street. Reduced forward visibility and tight corner radii will be incorporated into the development to reduce design speed in distinct areas.

A central component of Welborne's ethos will be the presence of a large number of trees throughout the site. Visibility splays, on occasion, will be obstructed by trees; however, this is unavoidable given the nature of the development. Due to the low design speeds throughout the development, isolated obstructions should not pose an unacceptable safety risk. The principle is supported by Manual for Streets, which states 'occasional obstacles to visibility that are not large enough to fully obscure a whole vehicle or a pedestrian, including a child or wheelchair user, will not have a significant impact on road safety' (DfT1, 2007, p. 94).

This section addresses the visibility principles to be adopted across Welborne in relation to:

1. Forward visibility, horizontal and vertical
2. Junction visibility splays
3. Cycle and pedestrian visibility
4. Frontage access visibility splays

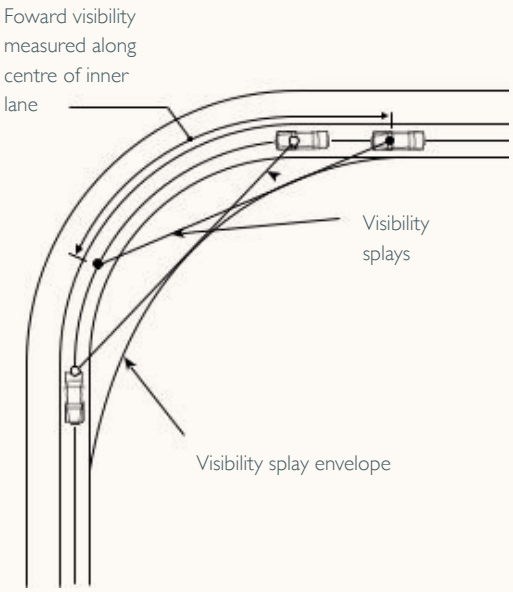


Figure 2:
Measurement of forward visibility (DfT1, 2007, p. 94)

1. Forward Visibility

Forward visibility is the distance a driver needs to see ahead to stop safely for obstructions in the road. The minimum forward visibility is equal to the minimum SSD as required by the design speed, **see Table 2.** It is checked by measuring between points on a curve along the centreline of the inner traffic lane (DfT1, 2007, p. 94). **See Figure 2.**

Reduced visibility can be used as a traffic calming feature, as outlined in below and shown in 5.f 4.

Where tight curve radii or other traffic calming features are used to reduce the local design speed, the minimum SSD can be reduced accordingly. For example, a curve radii of 13m within a 20 mph zone would reduce the required SSD to 18m, a 5m radii curve in a 10 mph zone would reduce the required SSD to 9m, see **Table 1**.

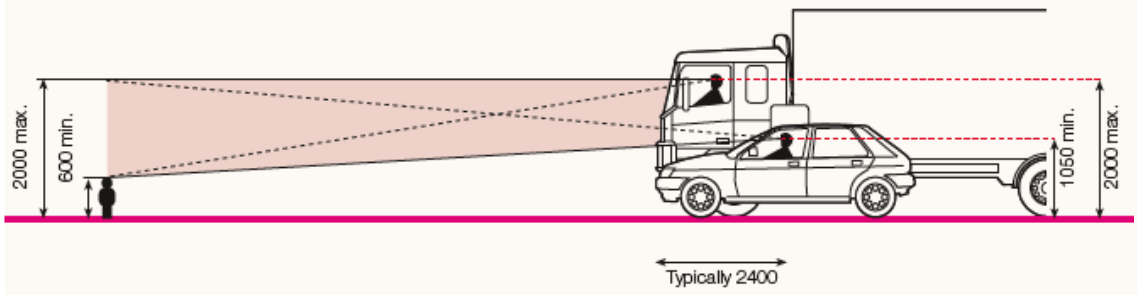


Figure 3:
Vertical visibility envelope

Table 2:
SSD to be adopted across Welborne

Design Speed (Kph/mph)	SSD (m)
16 / 10	11
32 / 20	25
48 / 30	43

Visibility should not be obstructed by vertical obstructions within an envelope 0.6m above the carriageway level to 2m above carriageway level, see **Figure 3**. Boundary treatments adjacent to the carriageway shall be designed accordingly.

2. Junction Visibility

Junction visibility splays ensure there is adequate inter-visibility between vehicles. **See Figure 4**. Within Welborne an X distance of 2.4m shall be used, and the Y distance shall be equal to the minimum SSD as per **Table 2**.

Due to the nature of Welborne, there may be instances where trees fall within junction visibility splays (see above. DfT1, 2007, p. 94).

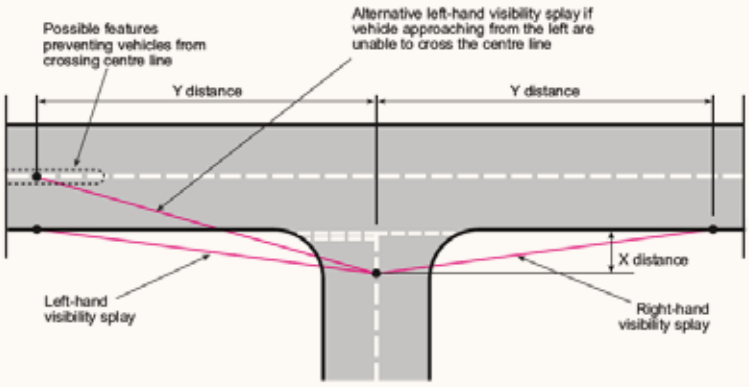


Figure 4:
Junction visibility splay

3. Cycle, pedestrian and equestrian visibility splays

Welborne will promote active travel across the site and the required infrastructure shall be designed into the masterplan. Where non-motorised user (NMU) routes meet the carriageway, visibility splays shall be provided to improve the safety of non-motorised users.

Visibility splays shall be designed according to **Figure 4**, with the X distance measured from the carriageway kerb/channel line. Y distances shall be set according to the carriageway design speed and comply with **Table 2.**

X distances across the development shall be;

- Pedestrians – 1.5m
- Cycles – 2.5m
- Equestrians – 3m

4. Frontage access and visibility

Frontage accesses at Welborne will usually cross a footway and/or cycleway route before reaching the carriageway. **See Figure 5**.

A 2m x 2m inter-visibility zone 0.6m above carriageway level shall be provided from the rear of the footpath/shared space to ensure drivers exiting driveways have good visibility of approaching pedestrians or cyclists, **see Figure 5**.

Visibility splays shall be provided per **Figure 4** with an X distance of 2m measured from the carriageway kerb/channel line, Y distances shall be set in accordance with the design speed. **See Figure 5**.

Figure 5:
Typical Welborne frontage access

References

CIHT, 2010. *Manual for Streets 2*, London: CIHT.

DfT1, 2007. *Manual for Streets*, London: Thomas Telford.

DfT2, 2007. *LTN 01/07 Traffic Calming*, London: TSO.

6i. PARKING & CYCLE PARKING STRATEGY

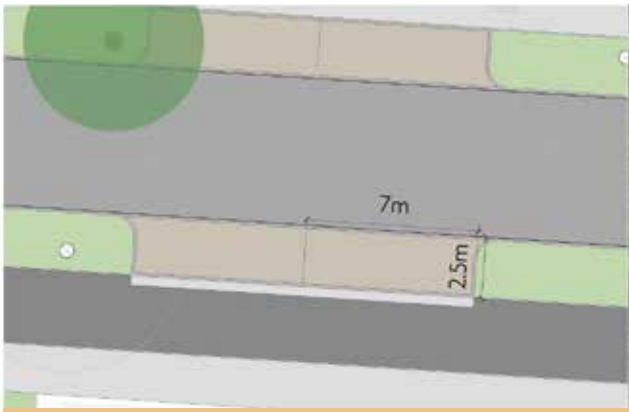
PARKING AND CYCLE STANDARDS

The residential and commercial parking and cycle parking strategy is set out in the Welborne Strategic Design Code and will conform with FBC Parking Standards and key requirements as set out in Welborne Design Guidance by FBC.

Visitor parking will be provided within verges on all street types, in courtyard lanes and parking courts and public parking areas.

KEY COMPONENTS *(Must be adhered to)*

- Standard parking spaces will be 5m x 2.5m (4.8m x 2.4m is considered unacceptable at Welborne)
- Perpendicular parking spaces will be 2.5m x 6m, where provided in a verge the spaces on the end of runs will be 2.5m x 7m to enable a 90-dgree kerb return.
- Communal EV charge points will be provided in the Village Centre, District Centre and other commercial and public parking areas. These will be located in grouped spaces with a charging hub. There will be no EV charging points on typical streets.
- Cycle parking will be provided in accordance with FBC Parking Standards. Cycle parking will be available throughout all public areas in Welborne, particularly in areas of high footfall such as the District Centre and Schools. Cycle parking locations should be well lit, have high levels of natural surveillance, be as close as possible to the destination and allow for bike locking.
- Parking provision for schools should be assessed in relation to the agreed travel plan for each location, and again should be kept to a minimum to help reinforce sustainable and healthy modes of movement to the schools. Drop-off and pick- up areas for vehicles should be discouraged, but details for each site are to be agreed with FBC and HCC.
- Two car parks for access to the SANGs will be provided, one off Knowle Road on the western boundary of the site to access the Welborne Mile and Dashwood to the north, and a second off Funtley Hill for access to Fareham Common and the Welborne Mile. These will include provision for horse box parking.



In verge parking space 2.5m x 7m with a 90 degree kerb returnand change of surface paving slab strip where parking abuts the cycleway

The location and design of non-residential parking shall be an important consideration in the design of streets at Welborne. It can be accommodated as bays within verges, in public spaces or in perpendicular arrangements

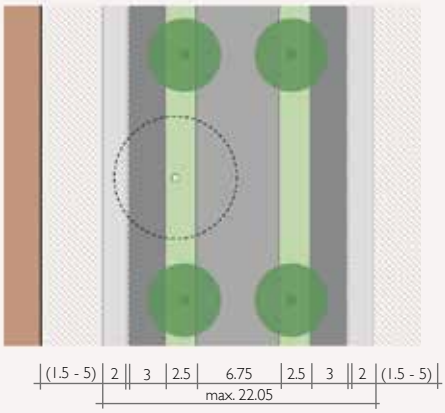
7. STREET LAYOUT
7a. PRINCIPAL STREET TYPES

The patterns of movement that are laid out by streets often have a longevity far greater than the buildings that front onto the spaces. Hence great care shall be taken in the design and layout of the streets. This section sets out the key criteria for street design at Welborne. Each street form is described in terms of design criteria, typical dimensions, cross section, plan form and precedent examples.

The street network at Welborne comprises of typical streets as illustrated in the matrix of types opposite. In addition to these standard streets and paths are the bespoke conditions of Welborne Way and Knowle Road. These routes are two of the most important movement connections within Welborne.

WELBORNE WAY

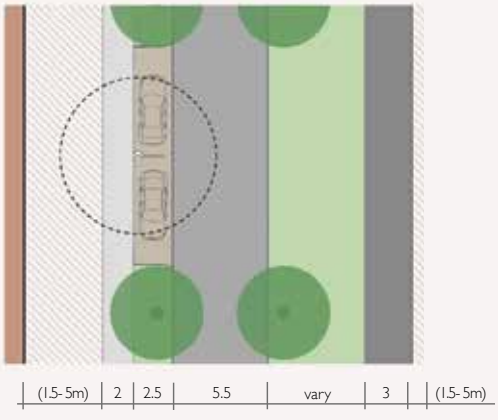
Welborne Way is the principal north-to-south movement route through Welborne, providing a connection to the M27. It shall be important to consider its role both as a vehicular movement route but also one that is conducive to pedestrian and cycle movements.



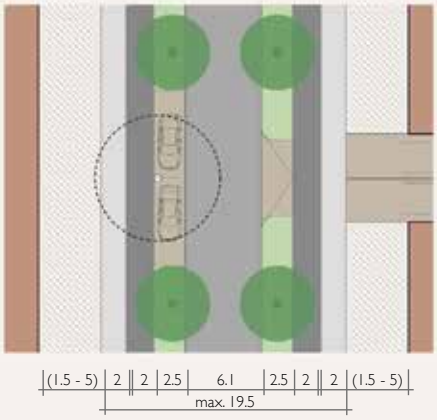
KNOWLE ROAD

Knowle Road is an existing 50mph road connecting Knowle village to the Wickham Road.

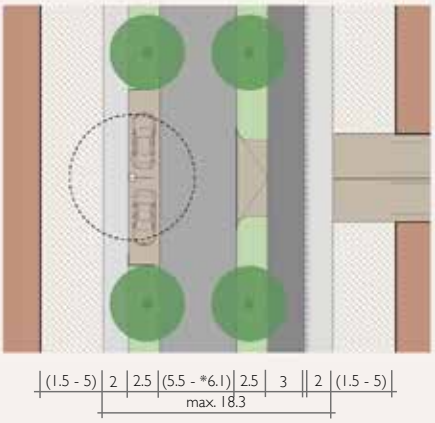
Knowle Road will take on a new character as a residential street with a reduced speed limit of 30mph.



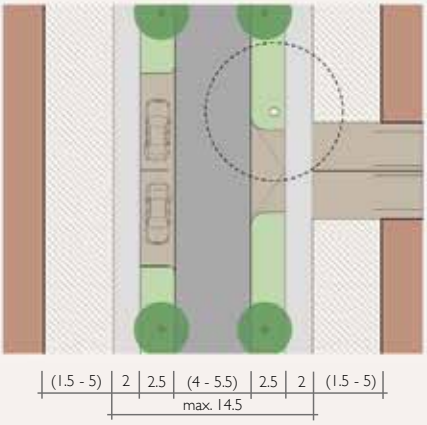
PRINCIPAL STREET TYPES USED ACROSS WELBORNE



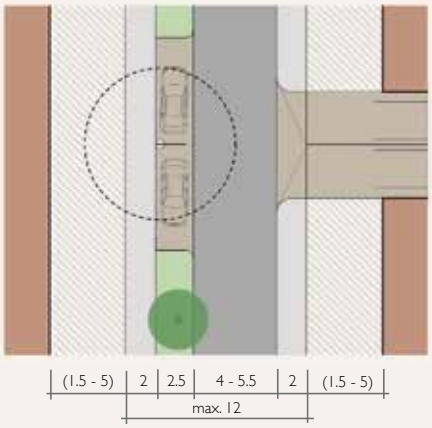
PRIMARY STREET



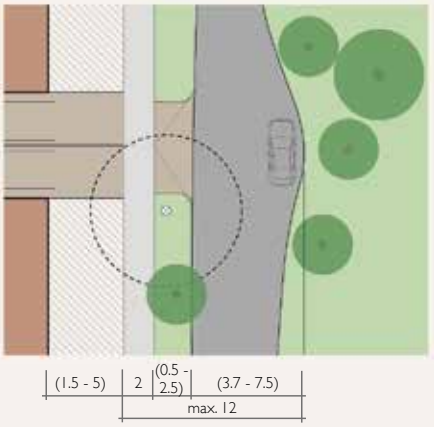
SECONDARY STREET
(*6.1 ONLY FOR BUS ROUTES)



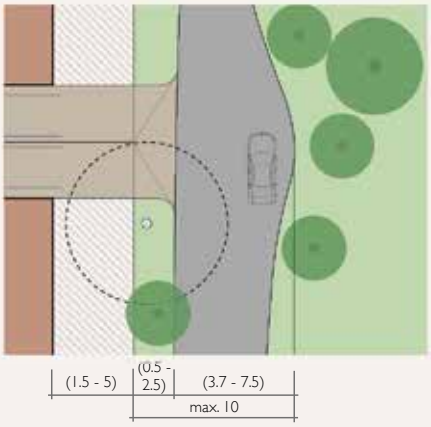
TERTIARY STREET - OPTION 1



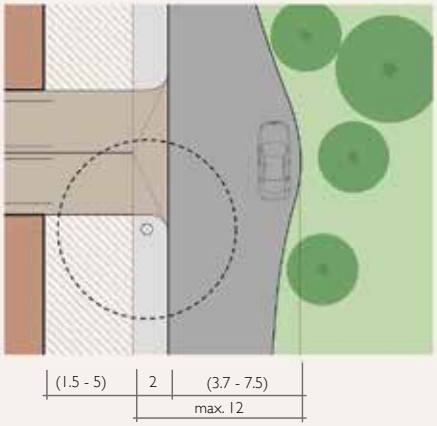
TERTIARY STREET - OPTION 2



EDGE LANE - OPTION 1



EDGE LANE - OPTION 2



EDGE LANE - OPTION 3

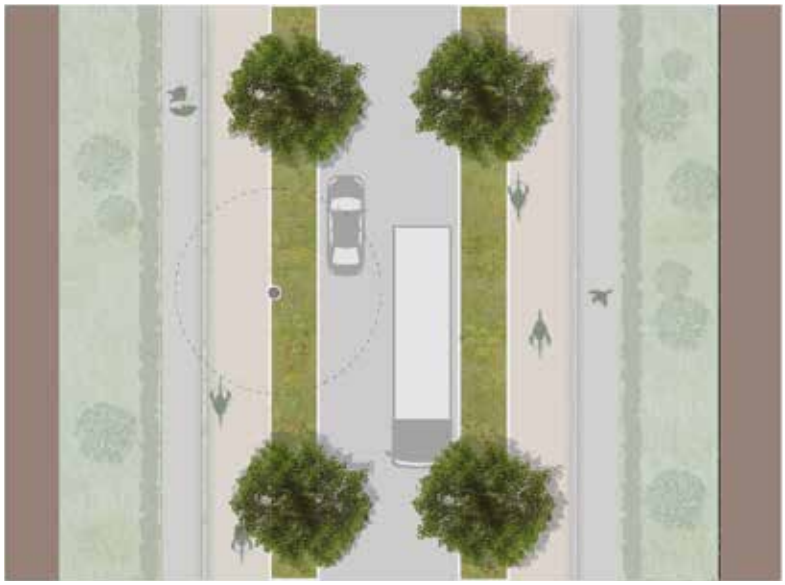
COURTYARD LANE

KEY

- Building block
- Privacy strip/front garden
- Footpath
- Segregation strip
- Cycleway
- Shared cycleway
- Tree verge
- Street lamp
- Tree
- Carriageway
- Parking

All measurements in metres

WELBORNE WAY



All measurements in metres

Welborne Way is the main north–south route through Welborne. Its characteristics will include:

- a generous carriageway with dedicated cycleways in both directions
- a tree verge and footway on both sides
- taller buildings between three- to five-storeys high fronting onto the road
- a tree verge and footway on both sides with tree and planting proposal compatible with SuDS system. Refer to Strategic Design Code for details.

Welborne Way will connect and pass through a number of the principal centres within the settlement including the Village Centre and District Centre. These are opportunities for 'special' junctions and places that emphasise the urban settings.

STREET TYPE: WELBORNE WAY	
Character	Principal movement route, wider, busier, dedicated cycle facilities, taller buildings.
Design speed	30 mph
DESIGN ELEMENTS	
Desired Radii	6.0m (vehicle tracking to be used)
Trees	In verge
Lighting	✓
Bus route	✓
On-street car parking	None
Traffic calming	Junction spacing, squares, bends, positioning of buildings and trees, activity
Utilities	Under footway
Drainage channels	At edge
MATERIALS	
Materials palette	Typical treatment

WELBORNE WAY

LINK CAPACITY

A VISSIM micro simulation model has been prepared to provide data on the traffic implications within the internal Welborne highway network, specifically Welborne Way.

The coding of the VISSIM model has considered the required street width of Welborne Way of 6.75m. Outputs from the model have confirmed that users of Welborne Way would not experience material delays and free flow of traffic would not be compromised.

Examples of the average speeds of traffic using Welborne Way during peak times have been identified using 'Heat Maps' extracted from the VISSIM model. Yellow sections of the Heat Map indicate average vehicle speeds of 30 mph. Given the absence of significant junctions formed with Welborne Way, the majority of Welborne Way will see average traffic speeds of 30 mph being achieved, confirming that sufficient link capacity will be available.

FRONTAGE ACTIVITY

There will be frontages along Welborne Way to provide a high-quality urban environment with a strong sense of place. The frontages will provide good passive surveillance and encourage active travel along the length of Welborne Way. Frontages will mostly be residential. However, there will be distinct areas of leisure and commercial units, in areas close to the Village Centre to the north of Welborne Way, and the District Centre to the south. No further new access points will be facilitated from these centres onto Welborne Way. The centres will be serviced either through access points currently proposed on Welborne Way or by the wider street network.

However, there will be minimal direct accesses onto Welborne Way, as this would compromise the traffic capacity and lead to interruptions of the proposed footway and cycleways.

PARKING RESTRICTIONS

Double yellow lines (Dia 1018.1) will restrict on-street parking along Welborne Way. The gap between the edge of the carriageway and the nearest edge of the longitudinal line shall be approximately 250mm. The lines will be 50mm wide, with a 50mm gap between the lines; they will be painted in No 353 (Deep Cream).

Right: No 353 (Deep Cream)

JUNCTION LOCATIONS AND DESIGN

The main junction on Welborne Way is at the intersection with Dashwood Avenue.

Other junctions along the route shall be priority junctions with passing bays per CD123 Figure 6.25N2.

See Section 7 for diagrams of typical junctions on Welborne Way.

MINIMUM CENTRELINE CURVE RADII

The design speed for Welborne Way will be 30 mph/48 kph; the minimum centreline curve radii along Welborne Way will be 41m, as per Table 8.1 of Manual for Streets 2.

FOOTWAY AND CYCLEWAY DETAILS

To encourage active transport, Welborne Way will have a segregated two-way cycle and pedestrian route on both sides of the carriageway.

Above: Visualisation of Welborne Way

Segregated routes will be provided in preference to shared space routes as they are safer for visually impaired users and young children; they also provide better facilities for cyclists.

Cycleways will be 3m wide, to accommodate two-way cycle traffic, recumbents and child's trailers.

Footways will be 2m wide to allow buggies or wheelchairs to pass each other.

PUBLIC TRANSPORT PROVISION

There will be a proposed bus route along Welborne Way. To avoid interrupting traffic flows, bus stops shall be provided in lay-bys. The Bus Rapid Transit (BRT) route will run along Welborne Way. However, no specific BRT infrastructure will be required to facilitate this, as the route provides sufficient traffic capacity and queuing is not expected.

WELBORNE WAY

PHASING AND DELIVERY

Welborne Way will be delivered in 2 phases

Phase 1 - Welborne Way (Knowle Road to Broadway) Works - the works consisting of the provision of a vehicular link between Knowle Road and Broadway (to include the construction of Welborne Way and the construction of a junction at Knowle Road and the construction of the vehicular link to Broadway) as shown in principle on plan 7328_104 Rev D and as agreed in accordance with any Highways Agreement;

Phase 2 - A32/Welborne Way Roundabout Works - the provision of a permanent vehicular roundabout access onto the A32 as shown in principle on the plan 6091/GA/311 Rev G including the shared use route extension on the southern arm to the "A32 / Knowle Road / Chalk Lane Roundabout Works and as agreed in accordance with any Highways Agreement.

It is important that these junctions are delivered in a timely manner as their main purpose is to alleviate congestion and delays on the A32. Although the transport assessment demonstrated the Welborne Way is only required prior to the occupation of 1,851 units and the roundabout by 2,601 units Buckland, as master developer, will monitor the capacity of Knowle Road and Broadway Roundabout annually from the

Phase 1 - Welborne Way (Knowle Road to Broadway) Works

occupation of 1,160 units. In the event that the RFC values exceed 0.75 on any one arm of the Knowle Road and Broadway Roundabouts, WLL will complete the construction of Welborne Way between Broadway Roundabout to the south and Knowle Road to the north within 12 months. If the RFC values do not exceed 0.75 Buckland will complete the road prior to

- Occupation of 1851 Residential Units within Area X; or
- Occupation of any Residential Unit or Commercial Unit within Area Y; or
- More than 25% Occupation of any land use with the Employment Area;

Once Welborne Way is open to traffic Buckland will continue to monitor Knowle Road and Broadway Roundabout, in the event the RFC values exceed 0.75 on any one arm of the Knowle Road and Broadway Roundabouts, WLL will commence the construction of Welborne Way Roundabout within 6 months. In order to safeguard the earlier delivery of the roundabout, if required, Buckland will submit a S278 preliminary design check prior to the occupation of the 700th units. If the RFC values do not exceed 0.75 Welborne Way Roundabout will be complete prior to the occupation of 2,601st unit

Phase 2 - A32/Welborne Way Roundabout Works

WELBORNE WAY: PLANTING

Effect / Character	• Formal avenue tree planting with native grassland rich in local wildflora • Continous, consistent character through three Landscape Character Areas
Arrangement	• Trees located centre to the verge strip at regular intervals • Specimen trees placed at junctions or in strategic locations shall enhance and frame views • Native species-rich grassland beneath • Street light columns distance to be min. 5m from tree stem. Refer to lighting column guidance • Tree planting to provide a continuous canopy effect and enhance both pedestrain and cyclist experience
Tree type	• Trees to have neat, conical crown canopy shape • Large tree species over 10m • Tree species compatible with SuDS system where located within swales • Semi-mature single clear-stem species (min 2.1m) to avoid visibility issues and clashes with vehicles • Seasonal interest trees as landmak trees are supported in association with footway junctions and resting places
Verge Types	• Species-rich grassland with diverse native wildflora to provide functional biodiversity gain and aesthetic benefit for street character and quality. The diverse grassland overlies a permeable tree planting zone as a continuous trench that will support healthy establishment and long-term growth. Careful placement of root directing barrier will protect below-ground utilities. Surface water will attenuate via the root zone by the sensitively integrated drainage design, enabling vegetation to support silt and nutrient level reduction. from surface water run-off. The cutting regime will maintain a high-quality appearance, for higher infiltration rates and to encourage species diversity

1. Tree planting
2. Verge grassland
3. Private hedgerows

INDICATIVE STREET TREES

1. Quercus palustris
2. Platanus x hispanica
3. Fagus sylvatica

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Quercus palustris (Pin Oak, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of Topsoil
Platanus x hispanica (London Plane, Large)	35-45	
Fagus sylvatica (Beech, Large)	35-45	

INDICATIVE LANDMARK TREES

1. Liquidambar styraciflua
2. Liriodendron tulipfera
3. Quercus robur

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Liquidambar styraciflua (Sweet Gum, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of Topsoil
Liriodendron tulipfera (Tulip Tree, Large)	35-45	
Quercus robur (Pedunculate Oak, Large)	35-45	

INDICATIVE VERGE GRASSLAND

SPECIES MAY INCLUDE
A carefully selected combination of finer, low-growing grass species as an open matrix for wildflora:
Birds-foot-trefoil, Buttercup
Clover
Cowslip
Eyebright
Knapweed
Lawn Chamomile
Ragged Robin
Selfheal
Yarrow

Species selection to respond to Landscape Character Area

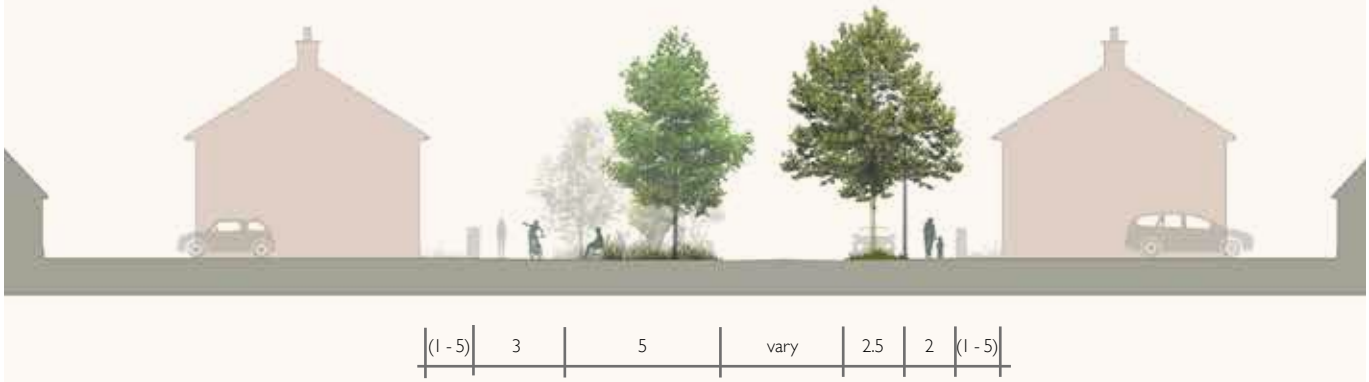
KNOWLE ROAD

Note: This is an existing shared cycle/pedestrian route

All measurements in metres

Knowle Road is a one-off secondary street. It is based on the alignment of the existing road, with some realignment. The existing 50mph speed limit will be lowered. It retains existing planting where possible and introduces additional tree planting. Planting should celebrate the Woodland Landscape Character Area.

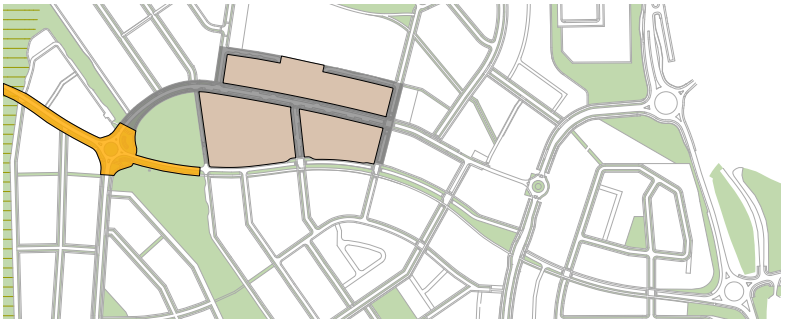
Verge planting includes existing grassland planting where retention is possible on the southern verge with lawn and meadow planting on the northern verge.



STREET TYPE: KNOWLE ROAD	
Character	Woodland and Downland Landscape Character Areas
Design speed	Exiting 50mph to be lowered
DESIGN ELEMENTS	
Desired Radii	6.0m
Trees	In verge
Planting character	Bespoke character incorporating existing planting. Planting responds to Landscape Character Area
Lighting	✓
Bus route	N/A
On-street car parking	Parallel
Traffic calming	Junction spacing, squares, positioning of buildings and trees, activity
Utilities	Existing and proposed under footway and cycle route
Drainage channels	At edge
MATERIALS	
Materials palette	Typical treatment

KNOWLE ROAD

PHASING AND DELIVERY



Phase 1 – Construction works to Knowle Road from the western site boundary to Welborne Park Roundabout. This section of Knowle Road to remain 6.7m in width.

Phase 2 – Construction works to Knowle Road from Welborne Park to Welborne Way. Road width reduced to 5.5m. 2a delivered with adjacent residential units 2b delivered with Village Centre.

Phase 3 – Construction works to Knowle Road from Welborne Way to A32.

SPPED CONTROL CAPACITY

To reduce the travelling speed along Knowle Road it shall be narrowed to 5.5m except for west of Welborne Park where it will remain 6.7m wide.

The provision of the raised junctions will slow traffic.

Where Knowle Road crosses Welborne Way, the junctions will be staggered to reduce conflict at the crossing. The cycleway and footpath shall remain on the current and most direct alignment.

Complete construction of Dashwood Avenue and open the route to traffic

↓

Partial closure of Knowle Road to traffic

↓

Narrow the existing Knowle Road carriageway

↓

Reopen Knowle Road to traffic

↓

Commission speed surveys to check traffic calming measures have been effective

↓

Apply for a Traffic Regulation Order to implement a 30mph limit

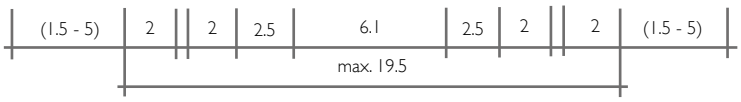
KNOWLE ROAD: PLANTING

1. Northern verge: Formal tree spacings, Medium street trees with landmark trees at junctions or ends of parking bays. Use of smaller ornamental multistem trees and hedge species within understory verge
2. Southern verge: Informal spacings, individual trees, clusters and groups, retaining existing trees and shrub planting where possible, inclusion of rich understory of hedge/shrub species and flowering and ornamental multistems
3. Existing planting retained where possible
4. Additional tree planting within retained grassland area where possible
5. Proposed verge and planting to respond to Woodland Landscape Character Area
6. Hedgerows species to respond to Woodland Landscape Character Area

INDICATIVE TREES

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Northern verge: Street trees		
Acer campestre (Field Maple, Medium)	30 - 40	26m^3 of Stockholm System, which is equivalent to 20m^3 of topsoil
Alnus cordata (Italian Alder, Medium)	30 - 40	
Ulmus 'New Horizon' (resistant Elm, Medium)	30 - 40	
Northern verge: Landmark and ornamental street trees		
Juglans regia (Walnut, Large)	30-40	36m^3 of Stockholm System, which is equivalent to 28m^3 of topsoil
Quercus robur (Pedunculate Oak, Large)	30-40	
Tilia cordata (Lime, small-leaved, Large)	30-40	
Southern verge: Street trees		
Existing retained trees and shrubs		
Acer campestre (Field Maple)		
Prunus Avium (Wild Cherry)		
Corylus avellana (Hazel)		
Quercus robur (Oak)		

PRIMARY STREETS

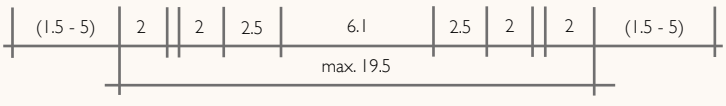


All measurements in metres

Primary streets provide the main green infrastructure within the masterplan. They are the widest streets, with footways and tree verges on either side and taller buildings than on other routes.

These streets are planted with large single tree species selected for their resilience and provision of important habitat. Large canopies will soften and integrate the development within the landscape.

Primary streets will include one way cycle lanes on separate sides of the street.



STREET TYPE: PRIMARY STREETS	
Character	More formal design, constant cross section, larger trees, important routes
Design speed	20 mph
DESIGN ELEMENTS	
Desired Radii	6.0m (vehicle tracking to be used)
Trees	In verge
Lighting	✓
Bus route	N/A
On-street car parking	Parallel or chevron (unmarked)
Traffic calming	Junction spacing, squares, bends, positioning of buildings and trees, activity
Utilities	Under footway
Drainage channels	At edge
MATERIALS	
Materials palette	Typical treatment

PRIMARY STREETS

Effect / Character	• Formal tree planting with verge planting • Continous consistent character through 4no. landscape character areas
Arrangement	• Trees located centre to the verge strip at regular intervals • Single species throughout • Specimen trees placed at junctions or in strategic locations shall enhance and frame views
Tree type	• Tall, large tree species over 10m • Trees to have neat, conical crown canopy shape • Single clear-stem species are supported to avoid visibility issues • Semi-mature types are encouraged to balance with the height of proposed buildings along this street type • Flowering and fruiting trees as landmark trees are supported in association with secondary street junctions • Tree planting to avoid fruiting tree species if associated with on-street parking underneath
Verge Type	• Species-rich grassland with diverse native wildflora to provide functional biodiversity gain and aesthetic benefit for street character and quality. The diverse grassland overlies a permeable tree planting zone as a continuous trench that will support healthy establishment and long-term growth. Careful placement of root directing barrier will protect below-ground utilities. Surface water will attenuate via the root zone by the sensitively integrated drainage design, enabling vegetation to support silt and nutrient level reduction. from surface water run-off. The cutting regime will maintain a high-quality appearance, for higher infiltration rates and to encourage species diversity

1. Tree planting
2. Verge grassland
3. Private hedgerows

INDICATIVE STREET TREES

1. Carpinus betulus
2. Corylus colurna
3. Fagus sylvatica
4. Tilia cordata

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Carpinus betulus (Hornbeam, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of topsoil
Corylus colurna (Turkish Hazel, Large)	35-45	
Fagus sylvatica (Beech, Large)	35-45	
Tilia cordata (Small Leaf Lime, Large)	35-45	

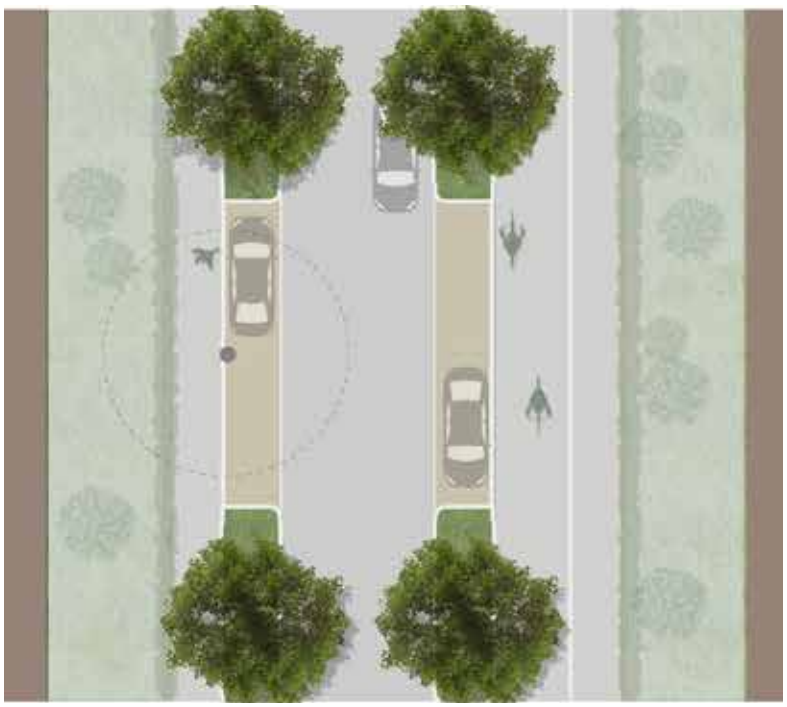
INDICATIVE LANDMARK TREES

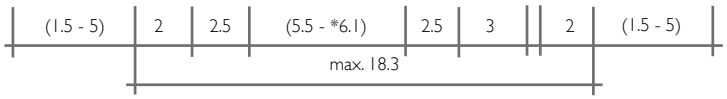
1. Juglans regia
2. Liriodendron tulipfera
3. Pinus sylvestris

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Juglans regia (Walnut, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of topsoil
Liriodendron tulipfera (Tulip Tree, Large)	35-45	
Pinus sylvestris (Scots Pine, Large)	35-45	

Species selection to respond to Landscape Character Area

SECONDARY STREETS



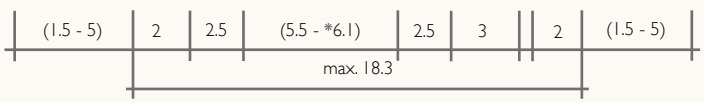


All measurements in metres. *6.1 only for bus routes

Secondary streets are the arteries that link the busier primary street network to the heart of each neighbourhood, providing key routes for the tertiary streets and edge lanes to connect into.

Planting will reflect and celebrate the Landscape Character Areas within which the secondary street is located and the existing soil conditions. Verge planting will be predominantly lawn with the option of meadow planting and highlight planting that may be used to enhance spaces such as key junctions, public buildings and school entrances.

Secondary streets will include a two way 3m wide cycleway.



STREET TYPE: SECONDARY STREETS	
Character	Human scale, tree lined, low traffic volume and speed residential areas.
Design speed	20 mph
DESIGN ELEMENTS	
Desired Radii	2.0m (vehicle tracking to be used)
Trees	In verge
Planting character	Responds to 4no. Landscape Character Areas.
Lighting	✓
Bus route	N/A
On-street car parking	Parallel (unmarked)
Traffic calming	Junction spacing, squares, bends, positioning of buildings and trees, activity
Utilities	Under footway
Drainage channels	At edge
MATERIALS	
Materials palette	Typical treatment

INDICATIVE STREET TREES ALONGSIDE FOOTWAYS

1. Acer campestre
2. Alnus cordata
3. Ulmus 'New Horizon'

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Acer campestre (Field Maple, Medium)	30-40	$26m^3$ of Stockholm System, which is equivalent to $20m^3$ of topsoil
Alnus cordata (Italian Alder, Medium)	30-40	
Ulmus 'New Horizon' (Resistance Elm, Medium	30-40	

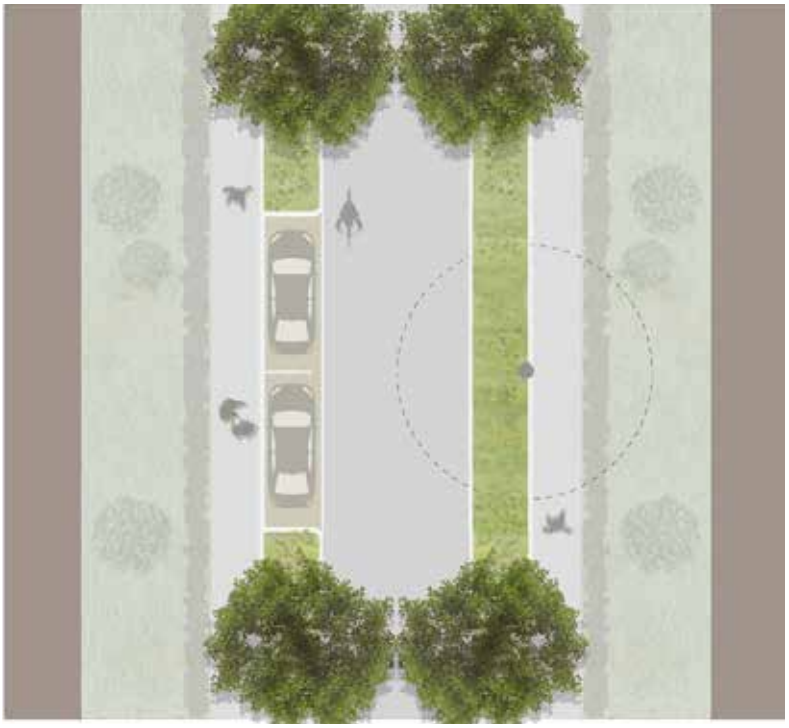
INDICATIVE STREET TREES ALONGSIDE CYCLEWAYS

1. Carpinus betulus
2. Fagus sylvatica
3. Tilia cordata

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Carpinus betulus (Hornbeam, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of topsoil
Fagus sylvatica (Beech, Large)	35-45	
Tilia cordata (Small Leaf Lime, Large)	35-45	

Species selection to respond to Landscape Character Area

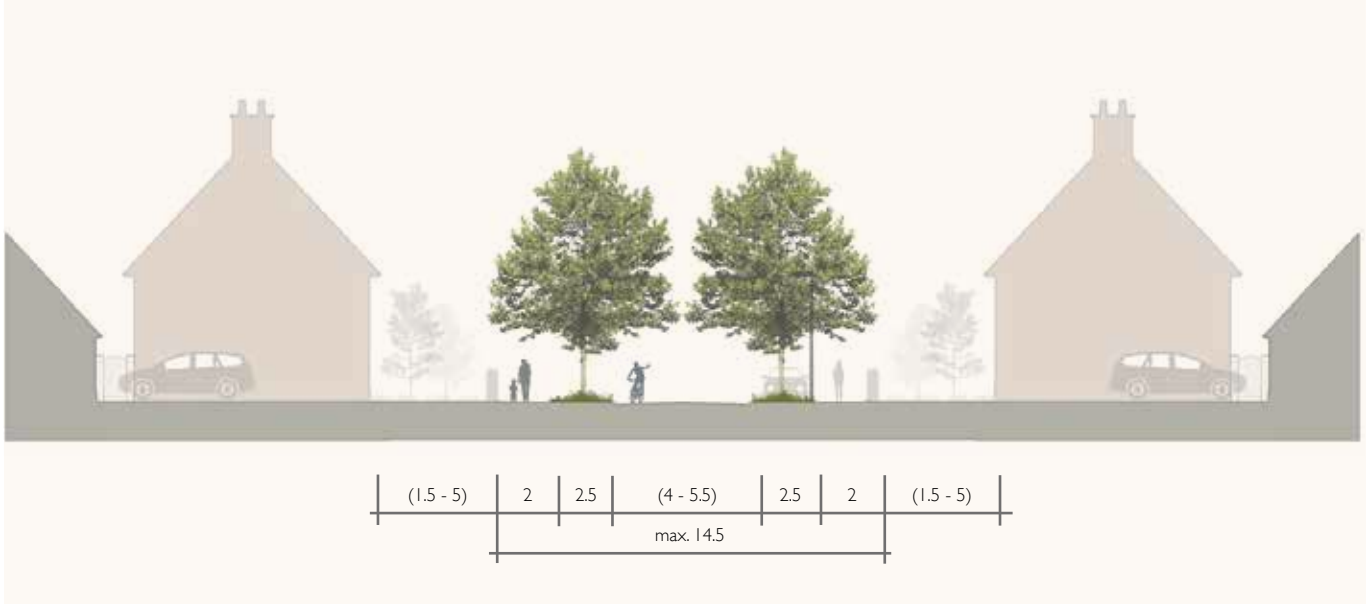
TERTIARY STREETS 1



Tertiary streets are the most common street type at Welborne and will primarily be low-trafficked residential streets. The carriage way width can vary, depending on the status of the street and intended character.

Tertiary streets will use similar planting types as secondary streets to maintain visual consistency and enhance Landscape Character Areas. They will use a wider variety of smaller tree species, particularly flowering, fruiting and nut-bearing varieties of benefit to wildlife. Planted verges provide an opportunity to maintain the distinctiveness of each Landscape Character Area via wild flower and grass mixtures.

All measurements in metres



STREET TYPE: TERTIARY STREETS	
Character	Human scale, tree lined, low traffic volume and speed residential areas
Design speed	20 mph
DESIGN ELEMENTS	
Desired Radii	2.0m (vehicle tracking to be used)
Trees	In verge
Planting character	Responds to 4no. Landscape Character Areas
Lighting	✓
Bus route	N/A
On-street car parking	Parallel, intermittent within verge (unmarked)
Traffic calming	Junction spacing, squares, bends, positioning of buildings and trees, activity
Utilities	Under footway
Drainage channels	At edge
MATERIALS	
Materials palette	Typical treatment

INDICATIVE STREET TREES

1. Acer campestre
2. Alnus cordata
3. Ulmus 'New Horizon'

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Acer campestre (Field Maple, Medium)	30-40	$26m^3$ of Stockholm System, which is equivalent to $20m^3$ of topsoil
Alnus cordata (Italian Alder, Medium)	30-40	
Ulmus 'New Horizon' (Resistance Elm, Medium	30-40	

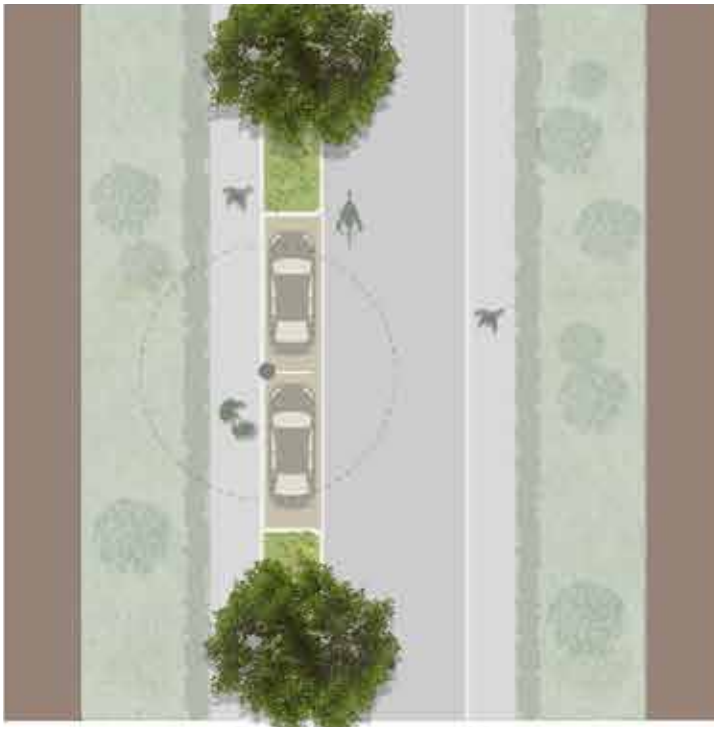
INDICATIVE LANDMARK TREES

1. Juglans nigra
2. Maytenus boaria

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Juglans nigra (Black Walnut, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of topsoil
Maytenus boaria (Mayten, Large)	35-45	

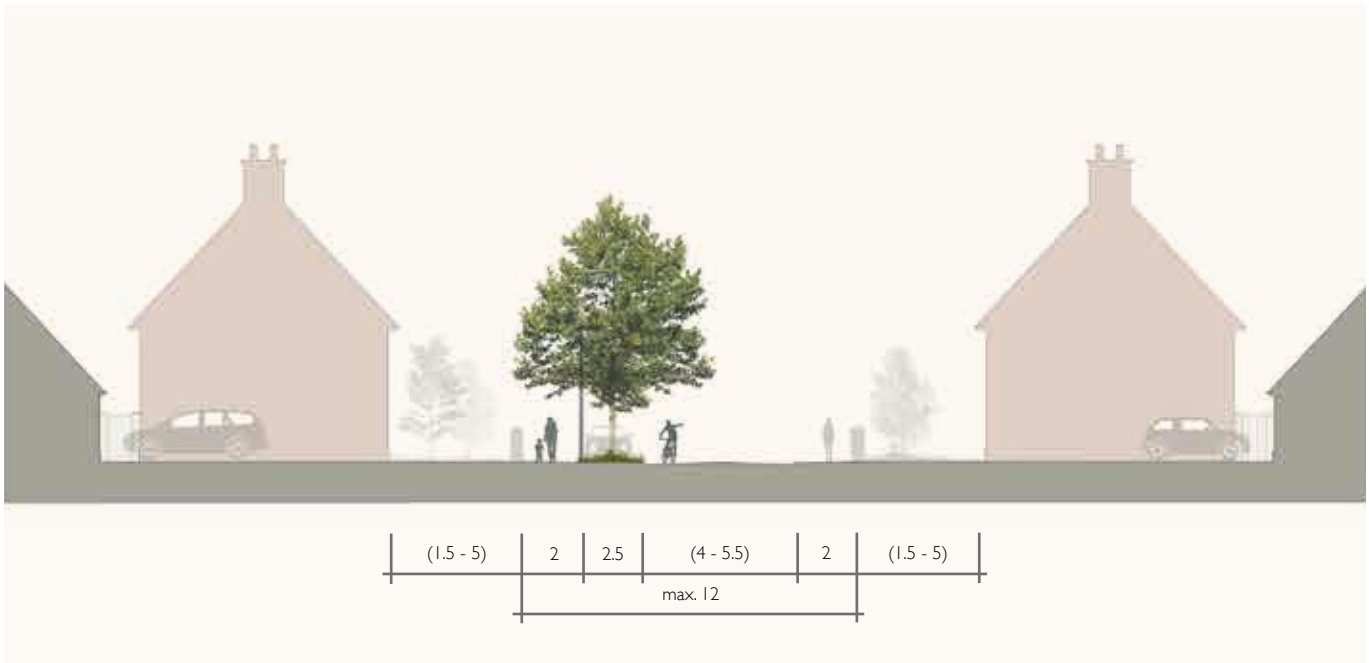
Species selection to respond to Landscape Character Area

TERTIARY STREETS 2



Tertiary streets 2 are a variant of the tertiary street type that has a grassed verge to only one side of the street, with a single line of tree planting. It shall be used for lower-status streets across Welborne.

All measurements in metres



Example of tertiary street 2 type

EDGE LANES 1

All measurements in metres

Edge lanes are found on the edges of the Garden Village. They are the interface between the development and open spaces, such as along the northwestern edges facing the Welborne Mile or Dashwood.

For these types of road, there is likely to be a carriageway capable of accommodating a single lane of traffic in either direction with a footway on one side.

There is also likely to be homes and private front gardens fronting on to the carriageway on both sides, or on just one side with open space on the other side.

STREET TYPE: EDGE LANES	
Character	Shared routes for all modes on green edges of Welborne. Low speed, variable width, level surface, informal parking.
Design speed	10 mph
DESIGN ELEMENTS	
Desired Radii	N/A
Trees	At edges
Planting character	Responds to 4no. Landscape Character Areas
Lighting	To be agreed based on location and Landscape Character Area
Bus route	N/A
On-street car parking	Parallel, informal (unmarked)
Traffic calming	Narrowing to 3.7m, car parking
Utilities	In adjacent green space
Drainage channels	At edge
MATERIALS	
Materials palette	Typical treatment

INDICATIVE STREET TREES ALONGSIDE FOOTWAYS

1. Acer campestre
2. Corylus avellana
3. Sorbus torminalis

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Acer campestre (Field Maple, Medium)	30-40	$26m^3$ of Stockholm System, which is equivalent to $20m^3$ of topsoil
Corylus avellana (Hazel Coppice, Medium)	30-40	
Sorbus torminalis (Wild Service Tree, Medium)	30-40	

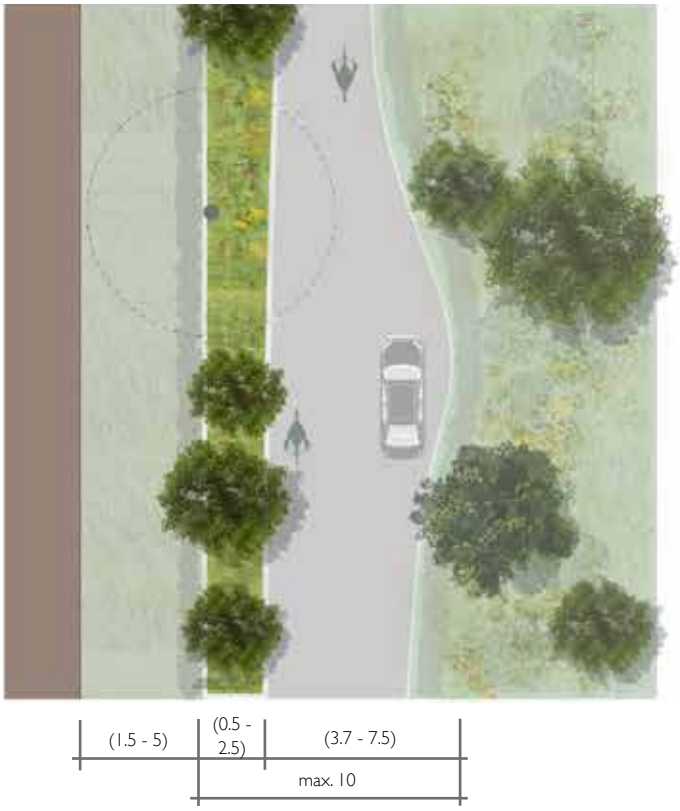
INDICATIVE STREET TREES ALONGSIDE CYCLEWAYS

1. Quercus robur
2. Fagus sylvatica
3. Tilia cordata

SPECIES MAY INCLUDE	GIRTH (cm)	SOIL VOLUME (m^3 min)
Quercus robur (Pedunculate Oak, Large)	35-45	$36m^3$ of Stockholm System, which is equivalent to $28m^3$ of topsoil
Fagus sylvatica (Beech, Large)	35-45	
Tilia cordata (Small Leaf Lime, Large)	35-45	

Species selection to respond to Landscape Character Area

EDGE LANES 2

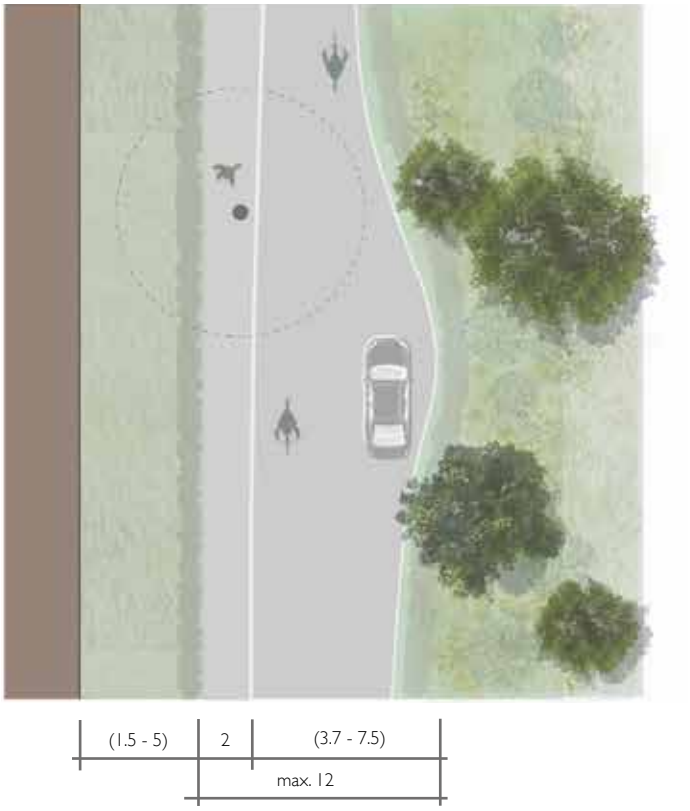


All measurements in metres

The planting character of edge lanes should respond to the Landscape Character Area it is located within and the open space it is fronting.

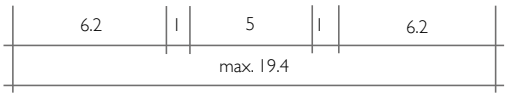
Tree verges may be combined with parking spaces. Trees within verges may vary between single to multi-stem, and will use smaller species corresponding to the Landscape Character Area.

EDGE LANES 3



All measurements in metres

COURTYARD LANES



All measurements in metres

Courtyard lanes provide a secondary network of movement routes. They are shared surface streets providing vehicular and parking access to the rear of properties. The design should prioritise pedestrian movement.

Courtyard lanes shall be used by refuse vehicles for collections and so the lanes need to be designed and vehicle tracked to accommodate this.

It shall be important that sufficient space is allowed for the inclusion of trees and planting areas. This shall be used to break up runs of parking and rear boundaries and to make the lanes enjoyable routes for pedestrians and cyclists.

STREET TYPE: COURTYARD LANES	
Character	Informal combining residential parking and pedestrian and cycle movement routes.
Design speed	20 mph
DESIGN ELEMENTS	
Desired Radii	6.0m (vehicle tracking to be used)
Trees	Between parking spaces, adjacent to boundary walls
Planting character	Responds to 4no. Landscape Character Areas
Lighting	✓
Bus route	N/A
On-street car parking	Allocated private parking with some visitor parking
Traffic calming	Bends, narrowings, positioning of buildings, trees, activity
Utilities	In designated service margin
Drainage channels	At edge or centrally
MATERIALS	
Materials palette	Typical treatment

GREENWAYS

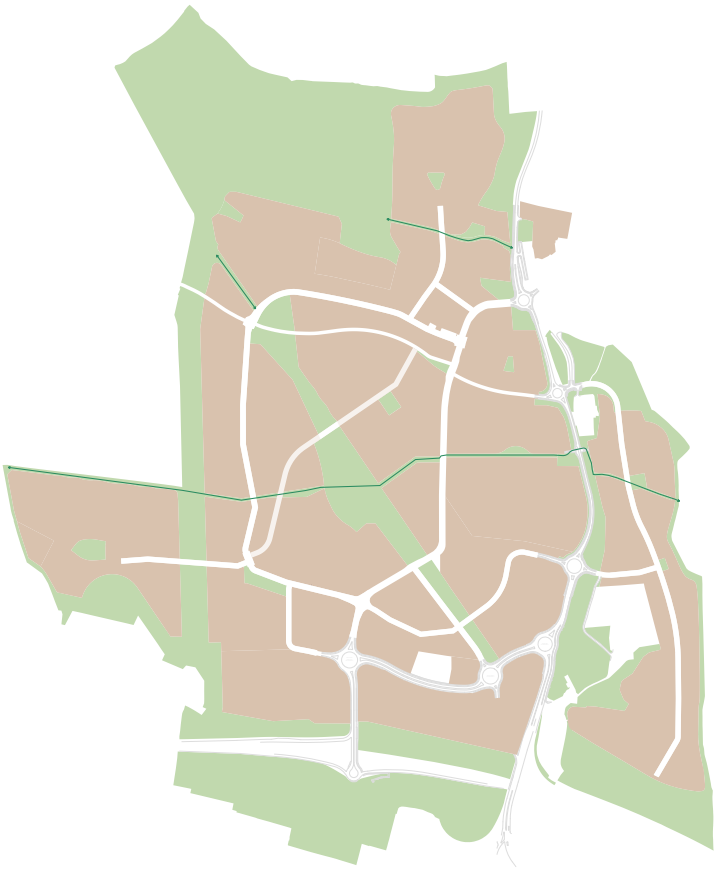
All measurements in metres

Greenways provide multifunctional, continous green routes through the development.

They are a key part of the green infrastructure that provides site-wide strategic east– west non-vehicle infrastructure for pedestrians, cyclists and horse riders. Greenways incorporate existing, diverted or upgraded Public Right of Ways.

They will contain tree planting and generally have development either side, neighbourhood play and fitness trails will be included where space allows.

Greenways will provide a range of natural habitats and continuous corridors for wildlife.

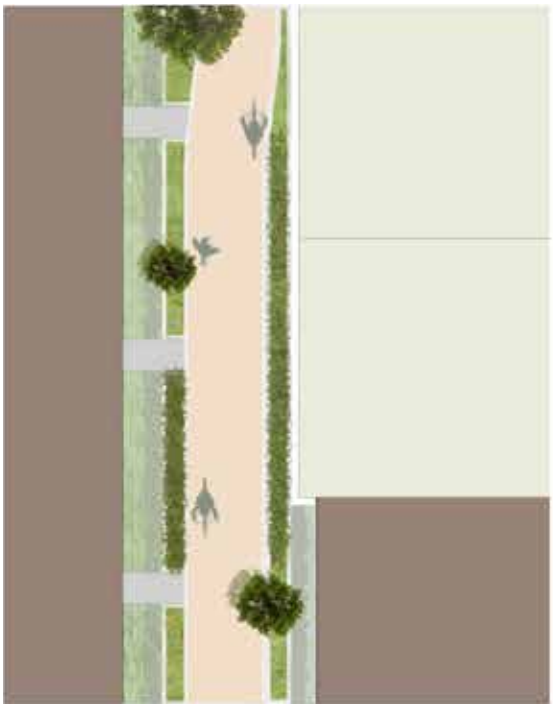


The width will vary to accommodate uses and facilities (max. 12m). Greenways will include lighting (where appropriate) and natural surveillance from neighbouring uses and overlooking buildings. They will be accessed at regular intervals without barriers and provide resting points.

The planting character should respond to the Landscape Character Area it is located within, with a focus on native and natural planting. To achive this, planting may include species identified in the Strategic Design Code planting appendix.

STREET TYPE: GREENWAYS	
Character	Shared green pedestrian and cycle movement routes
Design speed	N/A
DESIGN ELEMENTS	
Desired Radii	N/A
Trees	
Planting character	Responds to 4no. Landscape Character Areas
Lighting	✓
Bus route	N/A
On-street car parking	N/A
Traffic calming	N/A
Utilities	
Drainage channels	N/A
MATERIALS	
Materials palette	Informal treatment

GREEN LINKS

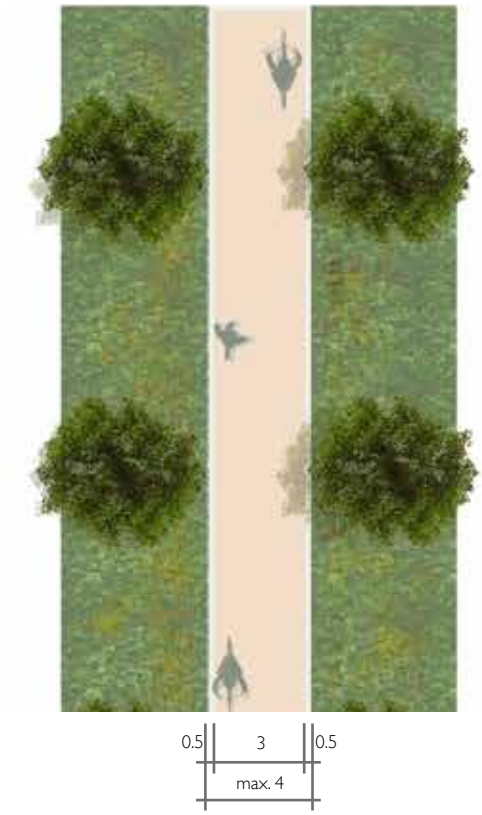


All measurements in metres

Green links provide designated pedestrian and/or cycle movement routes across Welborne. They typically connect open green spaces to the tertiary street network. The width of the green links shall vary but will provide a 3m wide pedestrian and cycle link. They will provide safe spaces, with lighting where appropriate and natural surveillance from neighbouring uses.

The landscape design provides opportunities for tree planting, a range of natural habitats to increase biodiversity, places to meet and rest. The planting character will respond to the Landscape Character Area within which it is located.

OPEN SPACE ROUTES



All measurements in metres

Precedent example of an open space route

Open space routes run through the green spaces surrounding the development parcels and provide semi-natural and safe movement routes. They are divided hierarchically:

- Multi-user paths: footway/cycleway/ bridleway catering for pedestrians, cyclists and horse riders; some are also combined with upgraded or diverted PRoWs.
- Footways and cycleways: Generally 3m-wide shared paths for pedestrians and cyclists.
- Footways: Formal paths up to 2.5m wide that provide desire lines through the development linking residential areas with the wider footpath network, open spaces and facilities.
- Tertiary footpath: Informal pathways up to 2m wide that provide a more rustic character to residential areas and/or a more convoluted, scenic route through open spaces.

Their design will ensure that:

- Surface finishes for each footway, footpath, cycleway and bridleway are appropriate for its location, purpose and frequency of use.
- Routes are of an accessible gradient, appropriately shaded and include regular resting stops.
- Lighting is provided in appropriate locations based on levels of usage; lighting design to consult with ecologists where necessary.
- Routes do not allow access to vehicles except for maintenance and access to infrastructure.
- Planting character responds to the Landscape Character Area it is located within.

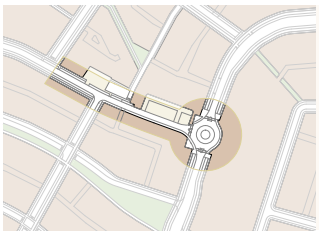
Numerous cycle and/or pedestrian only accesses into the development will be provided or enhanced. Open space routes will incorporate signalised and informal crossing points, with the crossing design appropriate to its location and users.

7b. KEY JUNCTIONS & SPECIAL PLACES

The following junctions and special places have been identified as locations that will require a non-standard street and junction design solution.

The detailed coding regarding the design of these spaces shall be provided in the relevant Neighbourhood Design Codes.

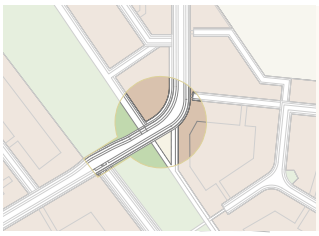
1



Village Centre

Linking to Welborne Way, the Village Centre shall be a focal square with commercial buildings, parking and specimen tree planting. The junction between the primary road network and Welborne Way will be incorporated as part of the public space design.

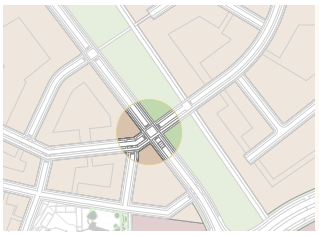
2



District Centre

This shall be the principal civic space within the settlement. Welborne Way will pass through the space. The design shall give priority to pedestrian movement by reducing vehicle speeds but with maintained traffic flow.

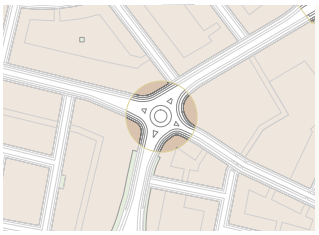
3



Welborne Park South

A key junction where a primary street and secondary street meet adjacent to Welborne Park. It will be designed to prioritise pedestrian east-to-west movement across the park.

4

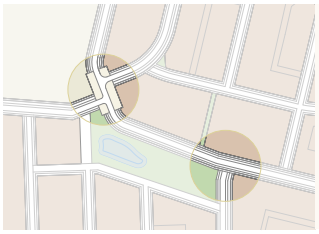


Primary Road Network South

A proposed roundabout junction that connects the primary road network with the M27 link. It will be designed as a special roundabout feature with non-standard geometry.

5

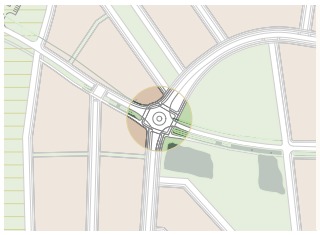
6



Primary Road Network South West

Two junctions of secondary streets adjoining the primary road network that shall require non-standard solutions.

7



Knowle Road West

The junction where the primary road network meets Knowle Road adjacent to the northern end of Welborne Park.

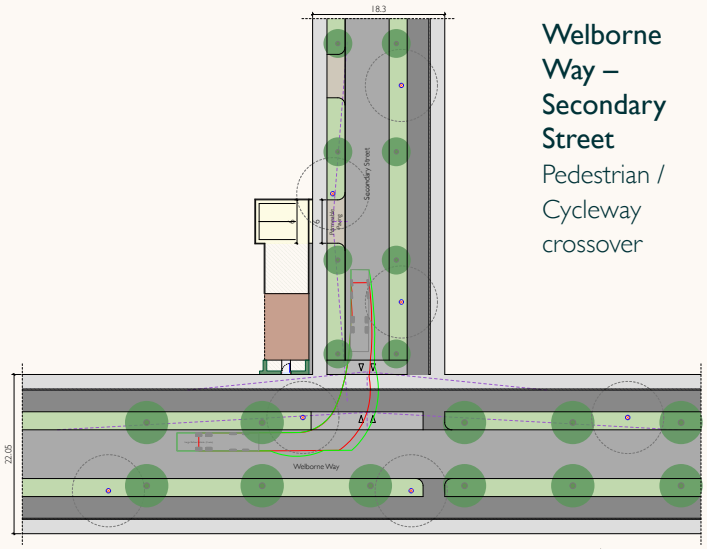
KEY JUNCTIONS PLAN

KEY

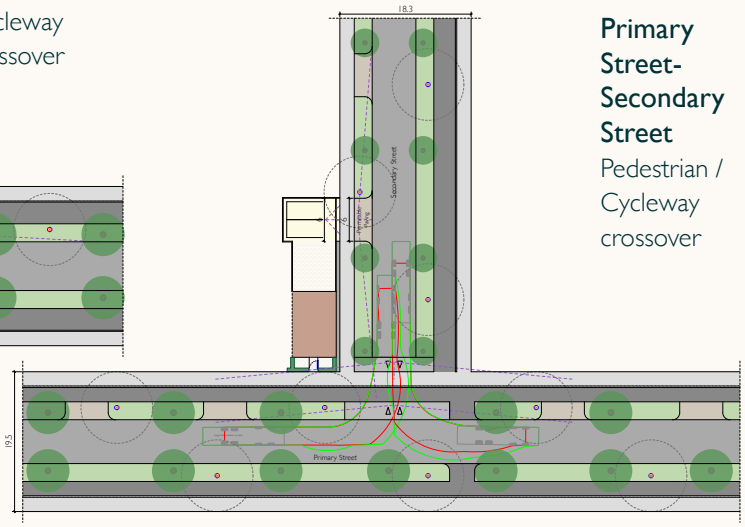
Key junction

7c. TYPICAL JUNCTIONS

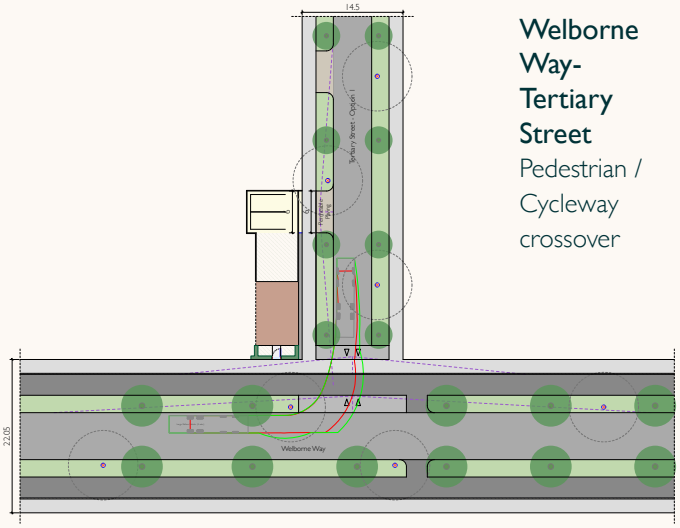
Junctions have been designed to prioritise pedestrians and cyclists by the creation of crossovers. These occur on Welborne Way, primary streets and secondary streets. The following diagrams show the typical street-type junctions.



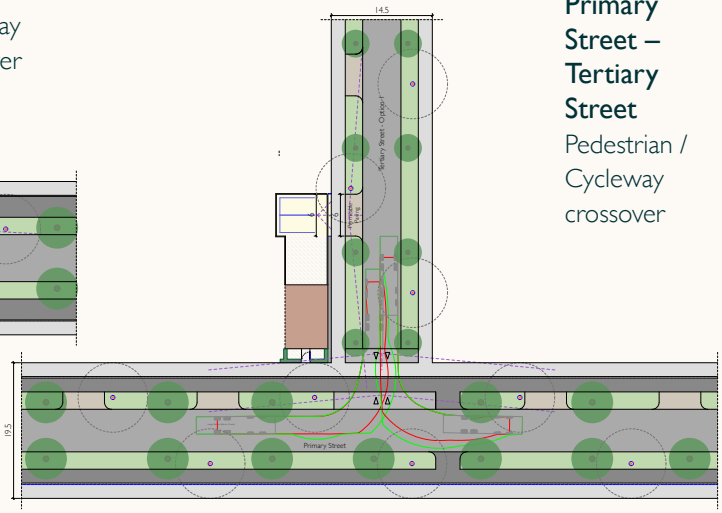
Welborne Way – Secondary Street
Pedestrian / Cycleway crossover



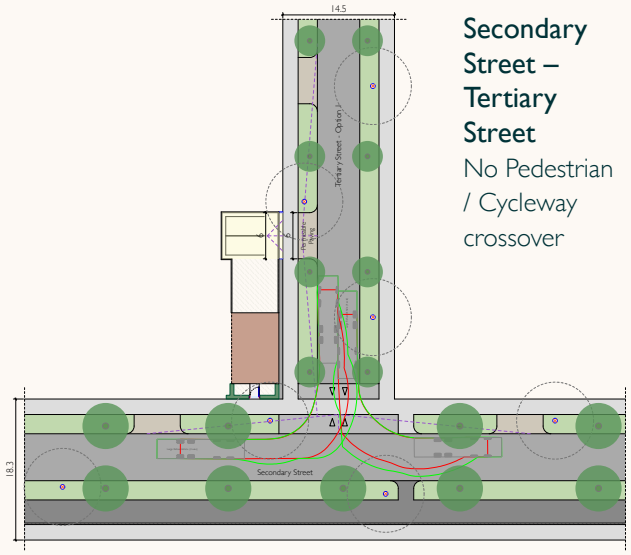
Primary Street- Secondary Street
Pedestrian / Cycleway crossover



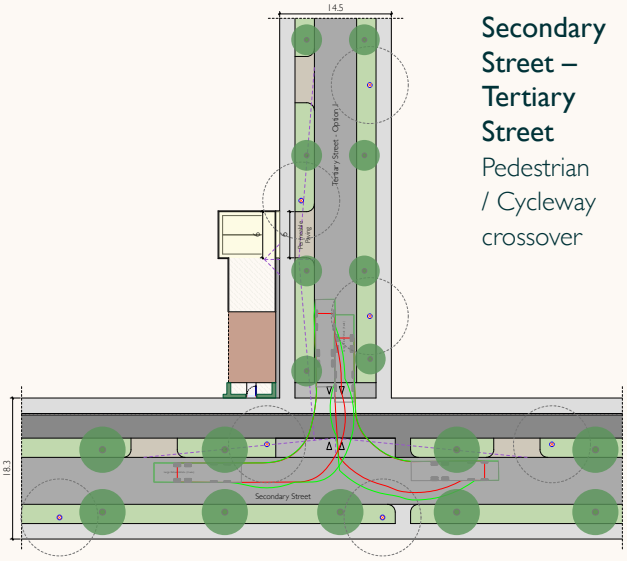
Welborne Way- Tertiary Street
Pedestrian / Cycleway crossover



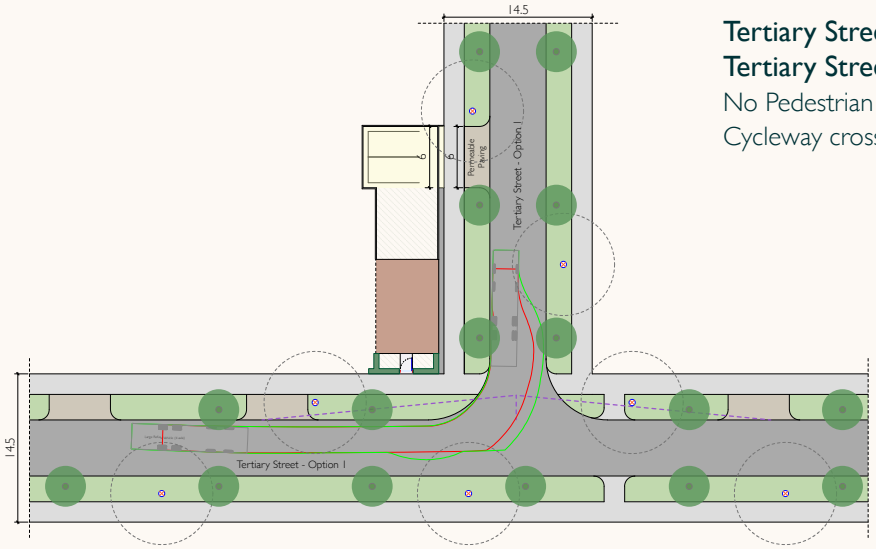
Primary Street – Tertiary Street
Pedestrian / Cycleway crossover



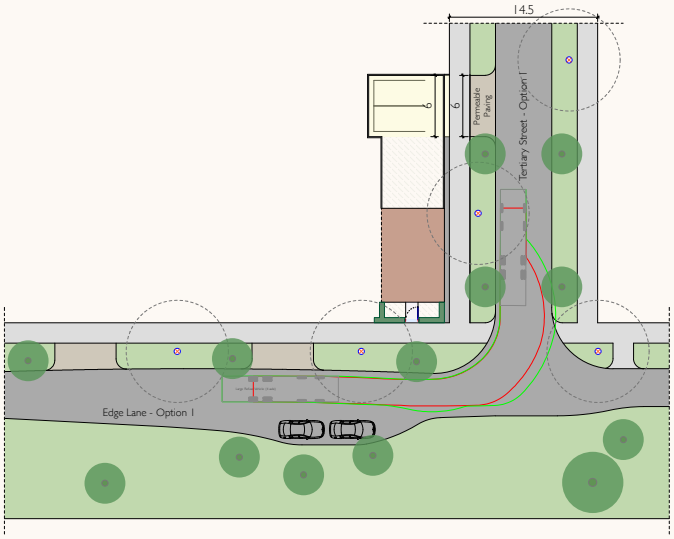
Secondary Street – Tertiary Street
No Pedestrian / Cycleway crossover



Secondary Street – Tertiary Street
Pedestrian / Cycleway crossover



Tertiary Street – Tertiary Street
No Pedestrian / Cycleway crossover



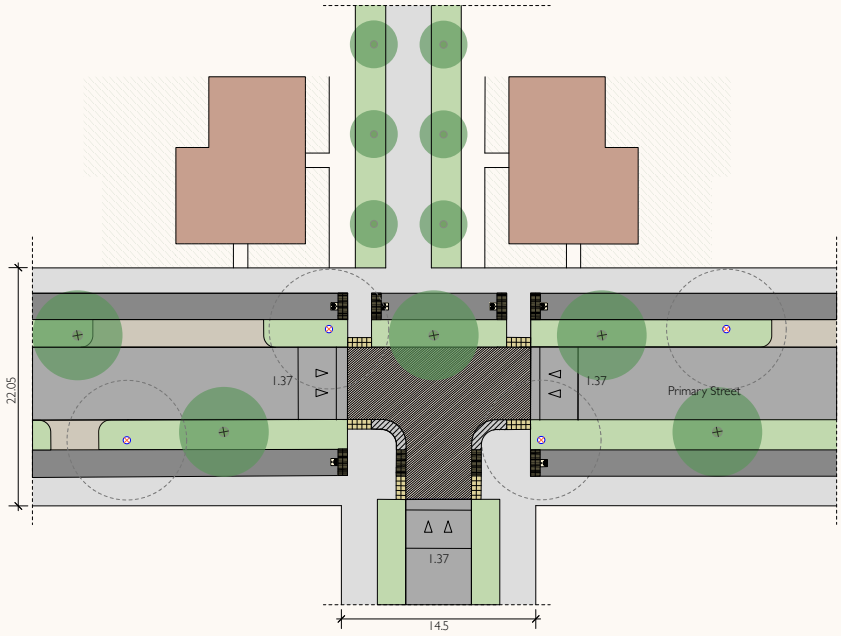
Tertiary Street – Edge Lane
No Pedestrian / Cycleway crossover

KEY

- Building Block
- Front / Rear Garden
- Driveway Crossover / Parking bay
- Footway
- Carriageway
- Cycleway
- Raised Surface
- Hedge
- Verge
- Visibility Splay
- Street Lamp
- Trees
- Tracking

7d. RAISED CROSSROADS & JUNCTIONS

The following diagrams show the typical raised crossroad and raised junction details.



Raised Junction Detail

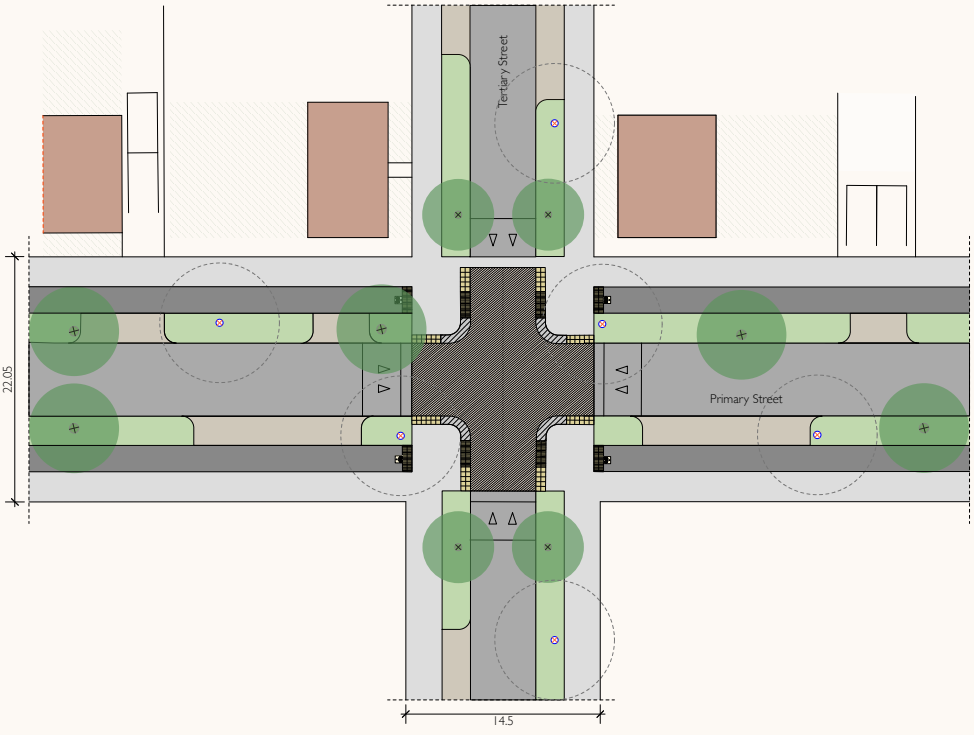
Pedestrian and cycle priority with level surface crossing and change of surface material

Resin bonded gravel to be used on primary and secondary streets for change of surface material. Setts maybe used on tertiary streets and edge lanes

Raised Crossroad Detail

Pedestrian and cycle priority with level surface crossing and change of surface material

Resin bonded gravel to be used on primary and secondary streets for change of surface material. Setts maybe used on tertiary streets and edge lanes

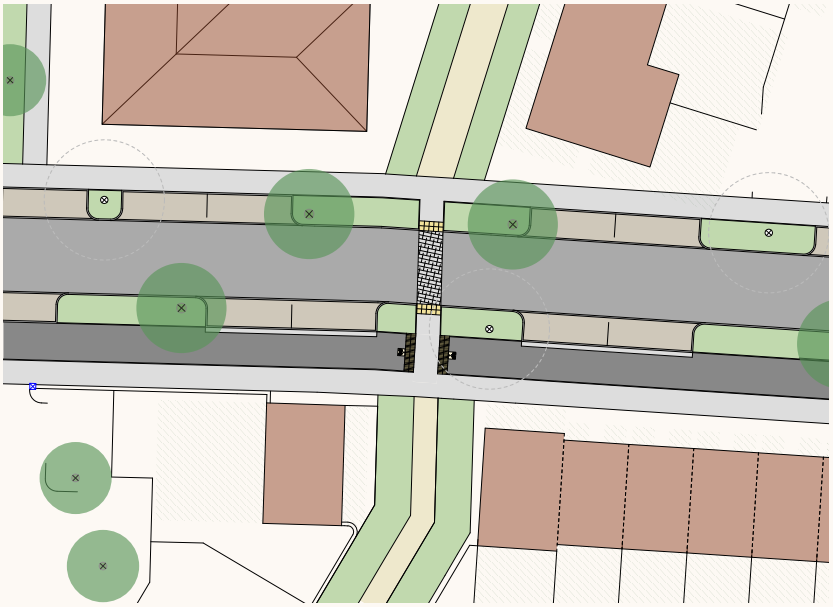


7e. TYPICAL CROSSING DETAILS

The following diagrams show typical instances where a important pedestrian route such as a green link crosses a street.

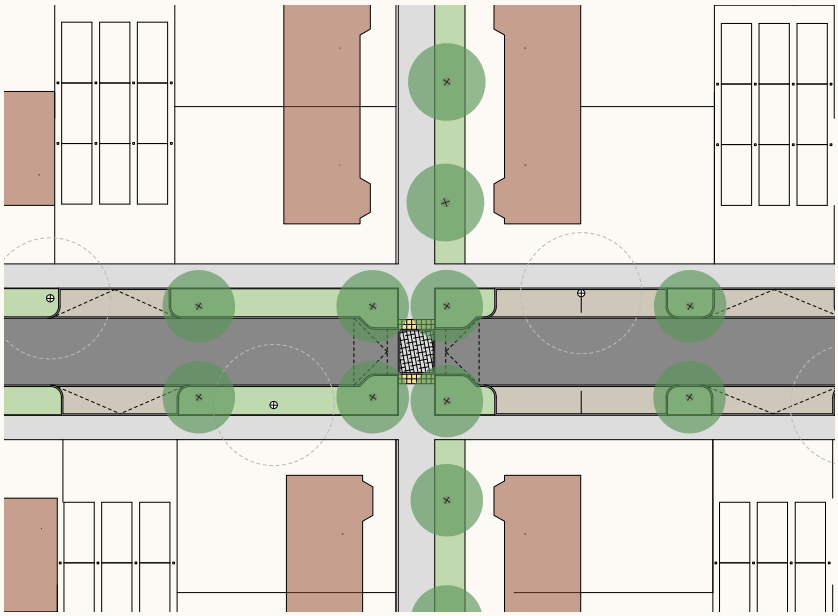
Primary/ Secondary Street Crossing

These will be identified with a change of surface (Resin bonded gravel)



Tertiary Street/ Edge Lane Crossing

These may include a raised surface with a narrowing and/ or a change of surface (Resin bonded gravel or Setts)

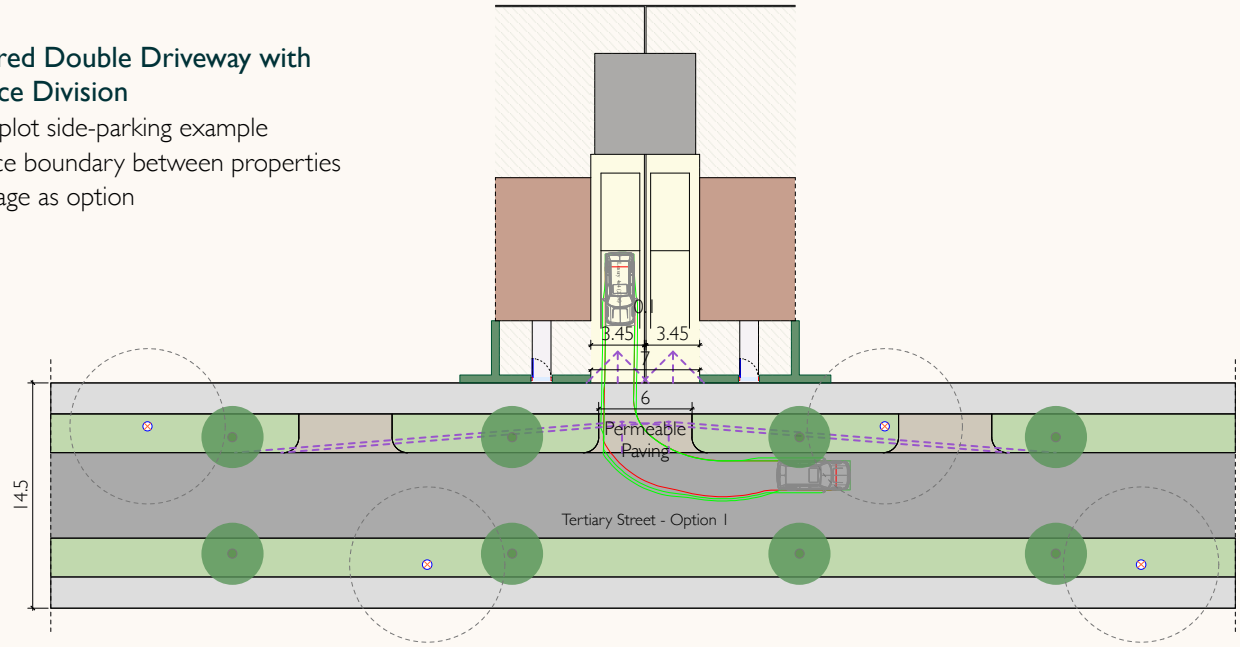


7f. TYPICAL DRIVEWAY DETAILS

The following diagrams show the typical driveway crossover details. Visibility splays are shown in accordance with the coding detailed in Section 5g.

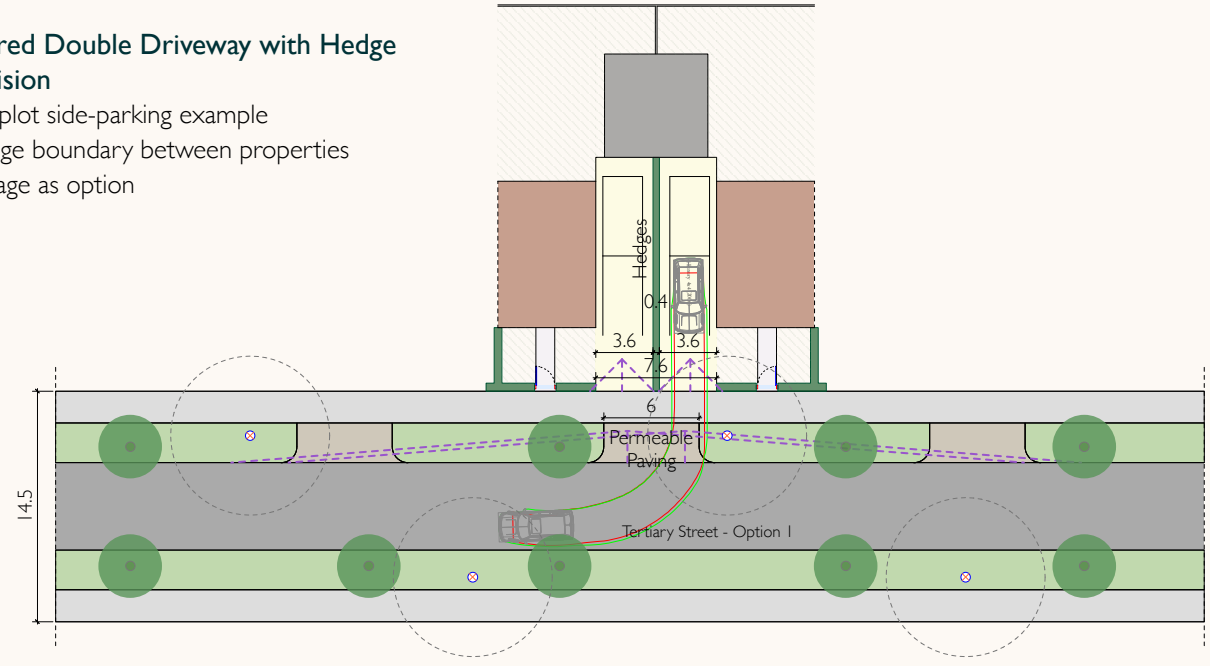
Shared Double Driveway with Fence Division

On-plot side-parking example
Fence boundary between properties
Garage as option



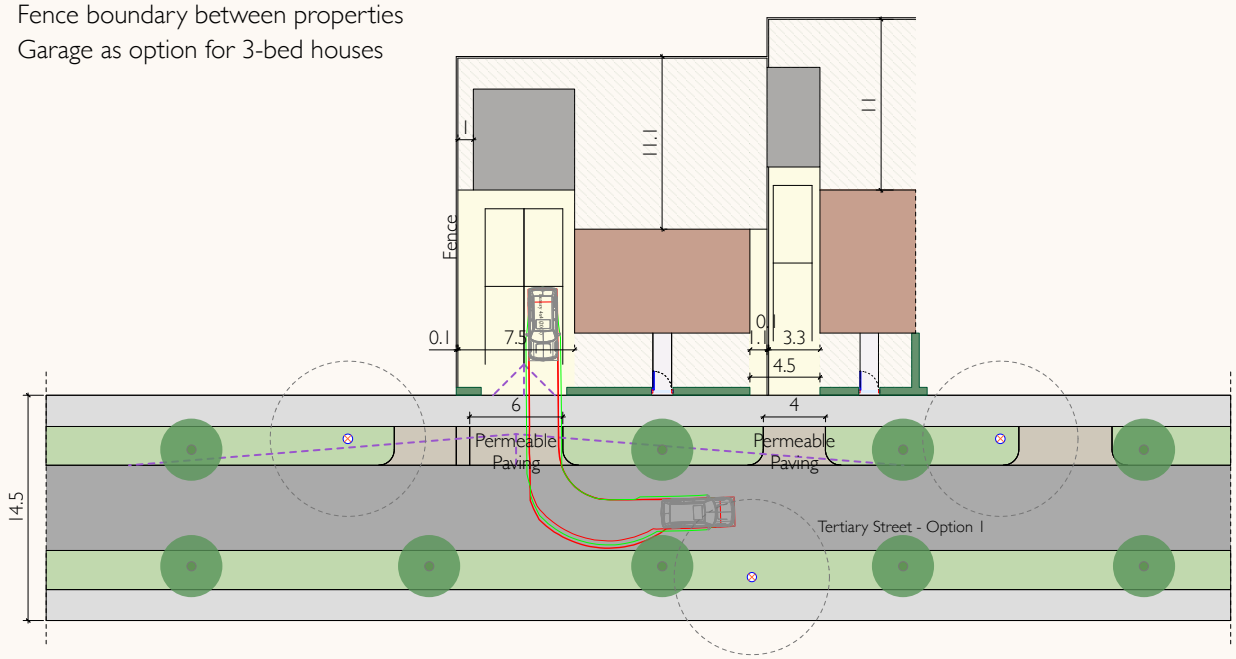
Shared Double Driveway with Hedge Division

On-plot side-parking example
Hedge boundary between properties
Garage as option



Detached Plot with Fence Boundaries

On-plot side-parking example
Fence boundary between properties
Garage as option for 3-bed houses



Detached Plot with Hedge Boundaries

On-plot side-parking example
Hedge boundary between properties
Garage as option for 3-bed houses