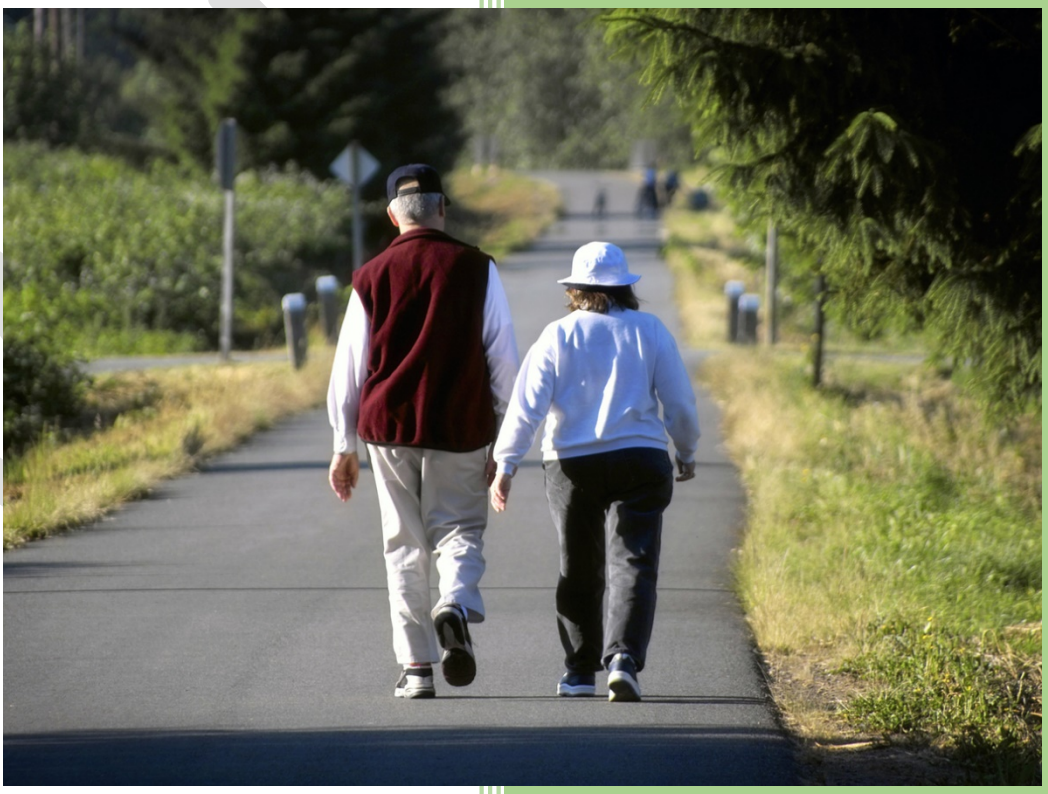
South Brentwood Growth Corridor

A Sustainable Transport Integration Vision



BRENTWOOD BOROUGH COUNCIL

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David Ubaka Placemakers

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1.0 EXECUTIVE SUMMARY

This Integrated sustainable transport vision for the South Brentwood Growth Corridor (SBGC), has its foundation in policies set in Brentwood's Local Plan policies, National Planning Policies and current best practice guidance.

With the ongoing engagement of neighbouring statutory and transport authorities and other stakeholders; this vision seeks to rebalance - those appropriate highways in and around the SBGC, away from car dominance to movement corridors that equally support safe and viable bus, cycling and pedestrian movements.

Situated south of the A127 and east of the M25, SBGC is bordered by Thurrock, Basildon and the London Borough of Havering. The C2C operated London to Fenchurch St line, runs through the SBGC. To the north, Brentwood Town Centre has an Elizabeth Line station. The corridors key highways: A127, A128, B186 and Station Rd - offer significant benefit to private vehicular movements with minimal consideration for sustainable modes. The impact of the Lower Thames Crossing is yet to be demonstrated by its sponsors.

Within the SBGC there are six development sites. Two residential sites at West Horndon and Dunton Hills. Four employment sites at East Horndon, Childerditch, Cobham Hall and land south of Cobham called Brentwood Enterprise Park. These sites are directly served by the aforementioned highway infrastructure and a railway station in West Horndon. All this primary infrastructure requires significant upgrading to encourage, make viable and support sustainable transport choices into the future.

To ensure the viability and deliverability of the required sustainable infrastructure upgrades; and protect the safety and comfort of both the existing population of West Horndon and future Garden Village at Dunton Hills – six principles have been established which control the visions proposals:

Upfront Delivery – of all measures to in the first phase of development.
Existing Land use – measures delivered within highway boundaries or land owned by the development sites.
Traffic Speeds – to be reduced to levels that allow safe and comfortable walking and cycling.
Parking Standards – private parking levels to be reduced
Segregated Cycling/walking – wherever possible to minimise comfort and maximise uptake.
Restrict HGV's – from all residential roads in the SBGC

The proposals - constrained by the principles - have been created to demonstrate and establish the minimum level of Non-Motorised User (NMU), Bus and Rail infrastructure upgrades required by Brentwood Council in the SBGC. And outline the potential requirement regionally by the Joint Strategic Partnership for the A127 corridor.

Costs for all these proposals have been outlined. A process of engagement with the SBGC developers has commenced to establish apportionment of these costs and delivery timelines for the proposals. A Housing Infrastructure Funding bid process is underway in partnership with C2C and the relevant statutory authorities to underpin cost requirements.

WIP

2.0 INTRODUCTION

2.1 Purpose

This report has been prepared to outline the vision, its principles and proposals that will underpin the integrated development of sustainable transport infrastructure, required to support the proposed major development sites within the southern area of Brentwood Borough Council's Local Plan. Named in the Local Plan as the Southern Growth Corridor (SBGC)

Historically the external perception of the Borough as a place, has been the developed central area. This area of densest development with a mix of employment and residential uses – is made up of a collection of towns and urban neighbourhoods comprising of Brentwood Town Centre, Shenfield Town, Hutton, Warley, Brook Street and Pilgrims Hatch. To the north of the borough, Ingatestone Village is the largest development. While to the south the largest is currently West Horndon Village. It is not a coincidence that all the most developed settlements areas each have at their core major sustainable transport infrastructure – primarily in the form of regional railway stations. The central area towns have one each, Brentwood and Shenfield, both of which are part of the new Elizabeth Line.

Looking to the future as set out in the 2019 Brentwood Local Plan, the presence of West Horndon Station in the south allows– in line with how historic development has been supported - a fundamental rebalancing of the residential and employment landscape of the Borough.

Our goal in creating this vision is to enable a shift in current travel behaviours, thereby encouraging a culture change from the private car as first choice to more sustainable choices.

SBGC VISION.

'We will seek to deliver a better balanced urban realm within the South Brentwood Growth Corridor and beyond, which retains the movement function of the Strategic Highway Network, but shifts priority through targeted interventions towards viable sustainable transport choices - for those that will live, work and attend school in a changing area.''

2.2 Policy Context

The National Planning Policy Framework from February 2019 requires Local Plans to promote sustainable transport to support development as set out in the extract below:

‘’102. Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

a) the potential impacts of development on transport networks can be addressed;

b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;

c) opportunities to promote walking, cycling and public transport use are identified and pursued ……’’

The Brentwood Borough Draft Plan 2019 seeks to comply with this national context within the following policies:

BE11 – Strategic Transport Infrastructure.

BE12 – Car Limited Development

BE13 – Sustainable Means of Travel and Walkable Streets

BE14 – Sustainable Passenger Transport

BE15 – Electric and Low Emission Vehicles

BE16 – Mitigating the Transport Impacts of Development

BE17 – Parking Standards

The only policy that causes a conflict slightly with the SBGC vision is BE17 Parking Standards. Brentwood have adopted the Essex County Council Standards from 2009.

The standards appear to be relevant for the ‘key destination’ employment sites within the SBGC. However, for ‘key origin’ residential sites, the ECC standards are contrary to the National guidance given at the time. This guidance asked Local Highway Authorities to reduce residential car parking allocations by setting maximum parking numbers. But to due historic local issues, ECC set residential figures to minimums parking numbers. If followed in SBGC sites, such a policy will propagate the historic cultural transport behaviours towards private vehicle use at a time when car use by young adults is falling.

2.3 Political & Social Context

Currently both politically and socially, the importance and predominance of the private car as the preferred mode of transport within the Borough and Essex county cannot be underestimated.

The SBGC is bordered by the London Borough of Havering to the west; Basildon to the east; and Thurrock to the south. The requirement to cooperate effectively with the neighbouring Local Authorities, can be centred on the sustainable transport and highway capacity challenges common to them all. If the current reliance on car travel isn't challenged and viable sustainable transport options created to encourage modal shift -delivering the sites in the corridor will place too much traffic pressure on neighbouring authorities and the strategic road network.

This SBGC vision will set out some proposals that may require an adjustment to current political, policy and social attitudes.

The vision will seek to rebalance the whole of the SBGC towards movement choices that include a safe, viable sustainable transport network. In this network, walking and cycling will be prioritised and be the fundamental determinate for the proposed alterations to the highway network. Incorporating a protected Bus network will also be an important consideration.

A social behavioural attitude to select sustainable transport as a first choice to get to work, school and home – is the goal. This sustainable travel behaviour needs to be established from day one. Therefore prior to the completion of phase one of the proposed residential and employments sites, sufficient infrastructure needs to be in place. This should allow new residents and employees to the area, to choose to travel sustainably as the norm. And those existing residents and employees will have time to adjust to the changes.

The rebalancing will seek to respect the movement function of the Southern Growth Corridors highway network but alter aspects of it appropriately to make the choice of sustainable transport modes easier for residents and employees alike.

2.4 Regional Context

The South Brentwood Growth Corridor -defined by the orange ellipse – diagram 1, has indirect and direct regional transport influencers.

Brentwood has two major regional rail routes with stations. TfL's Elizabeth Line, running to the north of the SBGC into Brentwood. And the C2C operated Shoeburyness to London Fenchurch Street line, which runs along SBGCs' southern boundary through West Horndon Station. Both provide primary infrastructure which could support a viable network of sustainable transport modes. The District Line terminates at Upminster. Although outside the SBGC, it is close enough to provide those sites located in the west of the SBGC a further rail line to support sustainable travel. Likewise, outside to the east, Laindon Station on the C2C line could impact longer term eastward movements from DHGV.

Highway movement through the region is influenced by the: A12 north of the SBGC, A13 to the south; and most directly by the A127 which runs through its core. The entire A127 corridor to Southend-on-Sea, is an Economic Growth Corridor with a multi-authority Task Force in place to plan its future. The M25 and the A128 are the main North/South connectors impacting movements within the SBGC. Outside of the SBGC the A176 connects Basildon with Billericay. While outside of the SBGC zone the

A176 operates as a safety valve offering motorists an alternative route to Brentwood town and beyond to the A12 and M11 should there be congestion on the A127 and M25

In the future, if delivered, the Lower Thames Crossing (LTC) project could significantly change traffic movement patterns in the regional Highway network. Given its status the exact modelling data behind LTCs preferred option is embargoed at this time. However, the physical changes which the option proposes to J29 of the M25 directly affects the main employment site within the SBGC.

Changes to highways tend to be reactionary rather than proactive. Authorities tend only to invest in roads beyond their use classification in response to accidents and/or fatalities. Given the changing nature of the SBGC, this vision requires the Highway Authorities to be proactive in altering the SBGC network to avoid potential accidents and fatalities.

This report will consider a series of specific solutions within the SBGC as a whole. Each individual residential and employment site will be responsible for their own travel plans – which should respond to this vision to ensure that individual sustainable transport proposals are viable. Therefore, the opportunity for all sites to contribute to the costs of the alterations and interventions - removes the burden from the Highway Authorities.

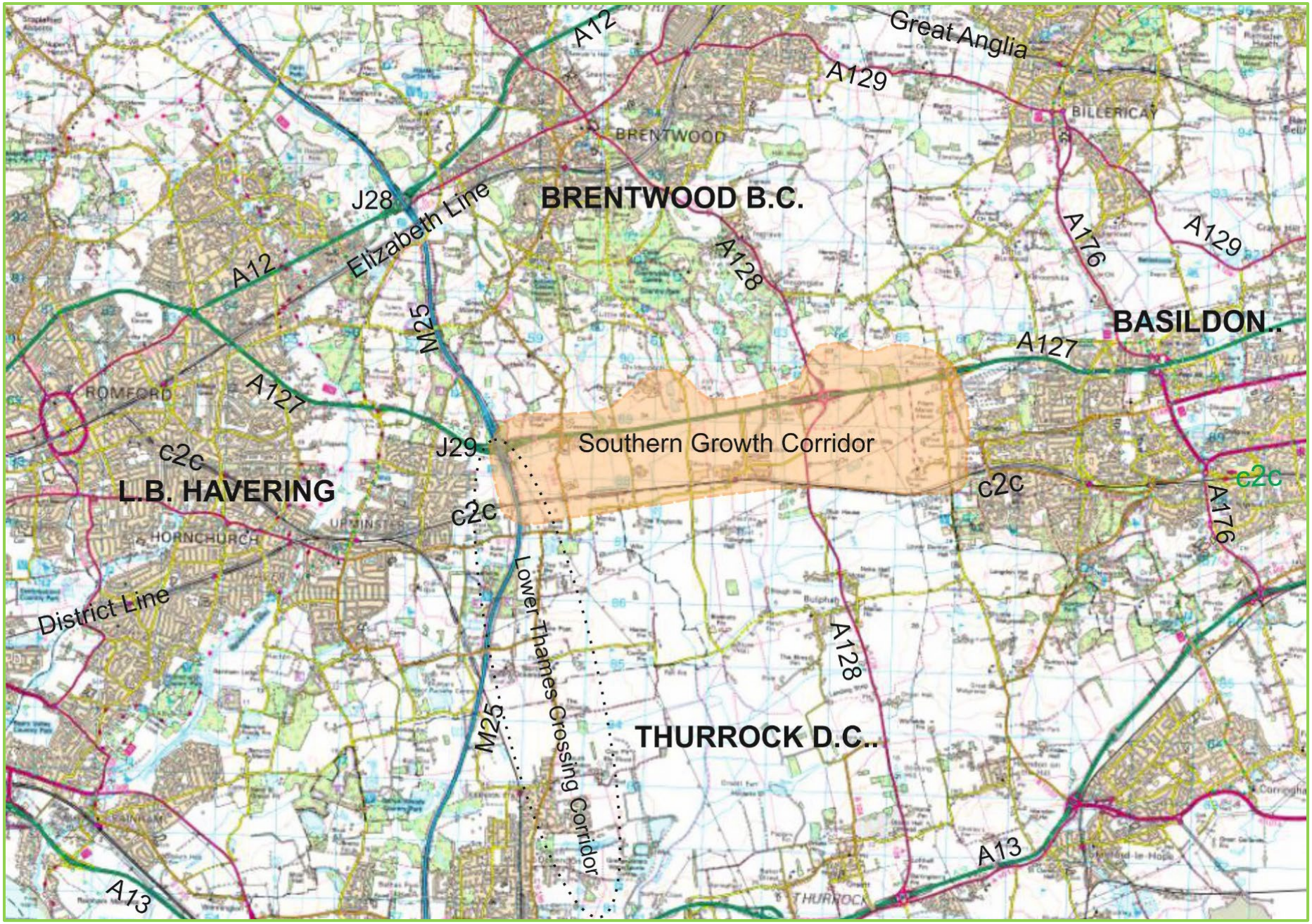


Figure 1. Regional Context

2.5 Local Context

2.5.1 Development sites

There are six proposed development sites within Southern Growth Corridor. The corridor boundary and its contents are shown in more detail in figure 2.

An integrated sustainable transport network in the corridor will require, linked alterations to the highway and rail infrastructure to accommodate growth and support a modal shift. Therefore, each intervention within the corridor is interdependent. They will require the promoters and owners of the sites to engage with the Council, Highway Authorities and Rail operator to agree a coordinated way forward.

The two residential sites Dunton Hills Garden Village (DHGV) and West Horndon will create 2500 and 600 homes respectively within the Local plan period. Following the Local Plan period, Dunton is scheduled to keep growing up to circa 3500 homes. If alterations to the infrastructure can be achieved, other sites within the corridor for residential and/or employment - not currently considered in the Local Plan - may become feasible.

The four employment sites: Cobham Hall Farm, Brentwood Enterprise Park, Childerditch Business Park and East Horndon Hall creates total new employment space of approximately 50 hectares.

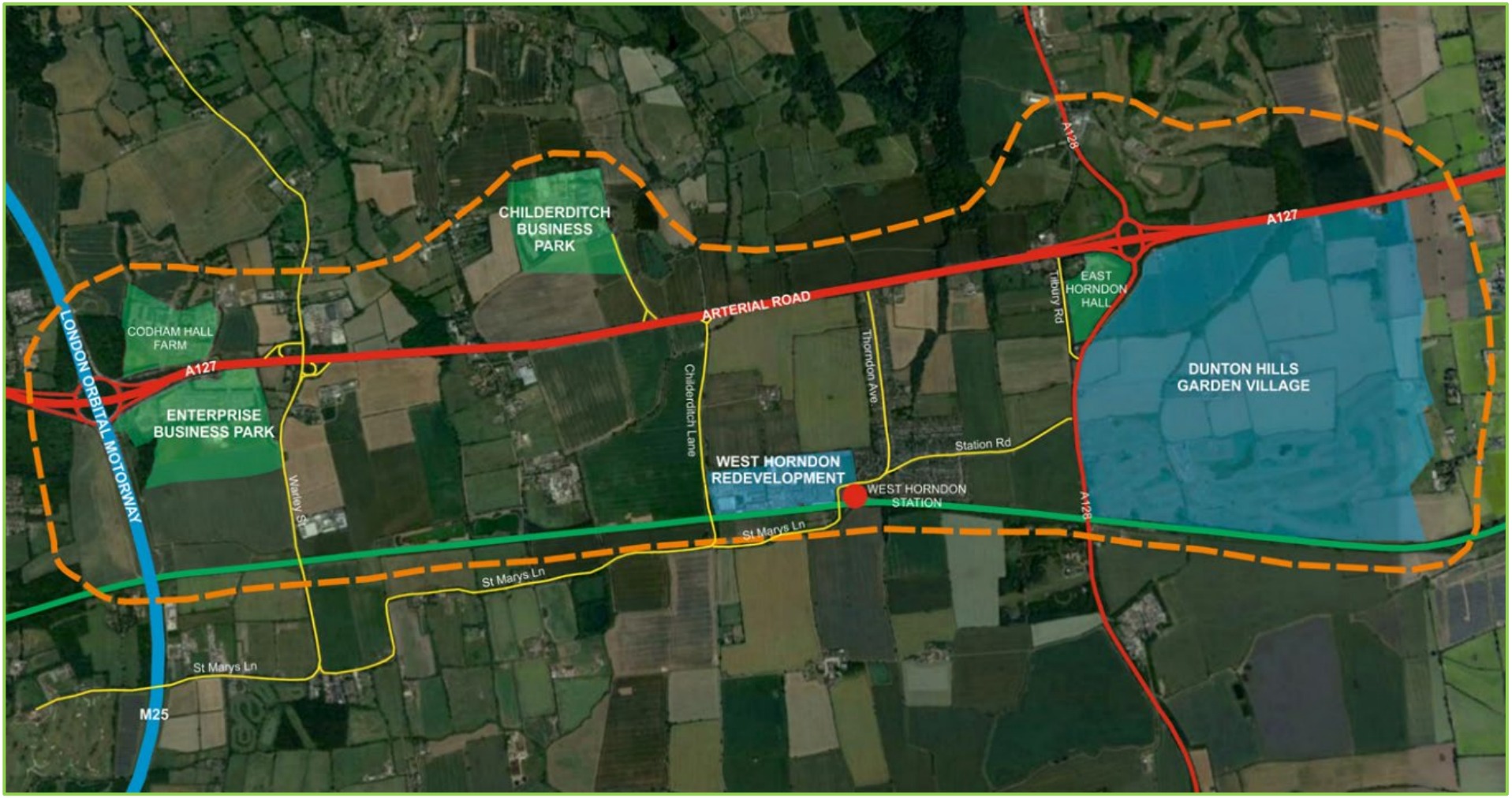


Figure 2. Local Context

2.5.2 Railway Infrastructure

West Horndon Station is located at the edge of the West Horndon redevelopment site. The current vehicular access, Station Approach and its car park are at the junction of St Marys Lane and Station Road. The junction - in particular for vehicles coming from the station towards St Marys Lane - is blind and appears very dangerous for all road users. In particular as HGV's also use this route to access the current West Horndon Industrial estate.

The access from the station junction is unsuitable for buses; therefore, the bus stops for the 565 service, are adjacent to the junction on each side of Station Road.

Pedestrian access from the Bus stops and surrounding area to the station is provided for on a single pavement on one side of Station approach adjacent to St Marys Lane.

Cyclists have to risk using the dangerous road junction as there is no specific lane set aside for their use.

Within the Station, there are only two gate-lines plus one for disabled access to the platforms. Access to the southern tracks is by an old metal overbridge. This provides no unassisted disabled access from the ticket office for passengers traveling to or from the southern platform.

If it is to perform as the core of the sustainable transport network for the SBGC, the station and the highway access to it, is inadequate to support the growth in the corridor.

Vehicles coming north over the railway bridge put all road users risk coming from West Horndon Station as sight to emerging traffic is very restricted. There is also conflict with vehicles coming from the Industrial Estate. The bus stops add to the challenges of this junction.

Vehicles have priority of access to the car park. Pedestrians have a narrow pavement they share with motorcycle parking.

The old metal bridge giving access to the London bound platform doesn't allow for disabled access.

The very long platforms provide significant service growth capacity.

Figure 3. West Horndon Station

2.5.3 Highway Infrastructure

With the exceptions of the M25 and St Marys Lane which come under Highway England and Thurrock responsibilities respectively - all the remaining classifications of roads in the SBGC are the responsibility of Essex Highways.

The goal of this vision is to set out deliverable solutions to allow an immediate behavioural change to movement choices within in the SBGC. A viable sustainable transport network integrated into the highway network - is needed to support this vision. To be economically viable - utilising and transforming the existing highway networks' land is important. The additional cost of buying land to create sustainable transport infrastructure needs to be a last option.

Therefore, the A127 needs to be central to this vision. There appears to be sufficient highway land on the A127 to better accommodate more sustainable transport movements.

The A127 in this location operates at the national speed limit – 70mph - for vehicle classification. As a result of the speed, vehicle types and number of movements - air quality is poor. In addition, noise pollution is high. This makes the road uncomfortable and unsafe for the few pedestrian and cyclists who can occasionally be seen using the route.

There are currently no public Bus services routes using the A127.

At junction 29 of the M25 the A127 enters the SBGC. It leaves after the raised junction with the A128. The highway configuration allows no safe cycle or pedestrian access. Though its remoteness encourages anti-social behaviour.

The vehicle types, quantity and speeds make the A127 a noisy vehicle dominated corridor with poor air quality.

The carriageway configuration has sufficient width if redesigned to accommodate comfortable safer segregated sustainable uses within the highway boundary

Figure 4. A127 Southend Arterial

The B186 known locally as Warley Street runs, north-south crossing over the A127 and will support access to two commercial sites in the corridor. Cobham Hall Farm – north of the A127 - is currently being extended adding additional floor space to the existing estate. Brentwood Enterprise Park is a new proposal south of the A127 to redevelop a former M25 construction staging area.

The B186 is a two-way road with a national speed limit of 60mph. Running north from Grays to Brentwood Town, the majority of the route has no regular street lighting pattern. Through the section within the SBGC, inclusive of where the B186 crosses the A12, the carriageway narrows further onto a bridge. Here there is street lighting on alternative sides of the road

Pedestrian access in parts of the SBGC section of the B186 is dangerous. Over the bridge concrete blocks separate two slim spaces from the carriageway which can be walked on, but it is not clear they were provided for this purpose. South of the bridge, pedestrians are expected to use the grass verges. North of the bridge there is pavement on the western side of the carriageway.

There is no specific provision for cyclists on the B186. Traffic speeds and geometry of the road make cycling - like walking unsafe and an uncomfortable experience.

There is public bus provision on the road. The 269 / X90 route runs from Grays into Brentwood operating Monday to Saturday.

The proposed changes to J29 of the M25 that the Lower Thames Crossing project proposes, makes access from the junction for the Brentwood Enterprise Park (BEP) challenging. Therefore, major changes to the B186 to allow a primary access to the BEP - in addition to delivering sustainable transport measures - may be required.

South of the A127 the B186 has no formal provision for pedestrians and cyclist. Bus stops exist with a lack of waiting space or protection from inclement weather! The carriageway is wide enough to accommodate all of these requirements

Concrete blocks provide a small access area that isn't really sufficient for walking on the narrow bridge with no facility for cycling.

The vehicular speed limit has to decrease to 40mph on the north side of the B186 due to the school. However, alignments, sightlines and the current carriageway widths probably make the national speed limit unachievable.

Figure 5. B186 Warley Road

The A128 connects traffic from the A13 through the centre of Brentwood and to the A12. Within the SBGC the A128 is the western boundary and main access point for Dunton Hills Garden Village and serves the eastern boundary of the East Horndon employment site. It connects these two sites via a raised roundabout to the A127. Therefore, both sites have to deal with an increasing change in level to the A128 as it heads northwards. The other key junction on the A128 is the one with Station road that runs into West Horndon Village and connects to West Horndon Station.

Within the SBGC, South of the A127 junction, the A128 currently has a national speed limit coming off the raised roundabout junction. This gateways approximately halfway down the incline to a 50mph speed limit and this speed limit remains constant through the southern boundary of the road with the SBGC as it passes underneath the Railway bridge. From observation vehicles travel significantly faster than the speed limit in this section of the road.

There is some provision for pedestrian movement running parallel to the carriageway on the western side of the road. However, for the majority of the road, pedestrians are expected to use the grass verges and there are no safe crossing points. Street lighting is regular and constant.

There is no separate cycling provision on the road. Those cyclists observed using the route - in particular northwards towards Brentwood - have to use the carriageway. Due to the highway incline, lane width and volume of traffic – the cyclists cause traffic delay or are put at risk by vehicles passing too close to them at significant speed when overtaking.

There are bus stops on the A128 for the 565 routes. The location of some of the request stops are in questionable and dangerous locations – in particular the southbound stop adjacent to the A127/A128 roundabout junction.

The ramp to the A127 raised junction is the only viable route for cyclists and pedestrians to access the north of the borough. Formal segregated provision is needed.

The width of the highway is substantial prior to the junction with the old Tilbury Road. Provision for bus and pedestrian use exists but will be insufficient for the projected numbers.

From the SBGC boundary at the railway bridge to this important junction with Station road overall highway width is good, but there is no formal provision for cyclists' or pedestrians.

Figure 6. A128 Tilbury Road

Station road is a critical route for the SBGC. It is the most credible route to accommodate improved sustainable infrastructure, linking as it does all routes from the SBGC developments sites to West Horndon Station.

At the junction with the A128, Station Rd gateways signs from 50mph on the A128 to the national speed limit. At the gateway to West Horndon Village, the speed limit reduces to 30mph. However, from observation many vehicles don't reduce to 30mph until several hundred yards into the village.

Pedestrians provision on the national speed section of Station Road, exists on the northern edge of the carriageway. The provision is narrow, poorly maintained and given the speed of vehicles – an uncomfortable environment in which to walk.

There is no separate provision for cyclists in the initial section of Station Road. Given the speed limit of the majority road here and observed poor driver behaviour, cycling would be unsafe. With the grass verge abutting the southern edge of the carriageway remodelling Station road up to the village gateway to better accommodate walking and cycling within the highway boundary may be possible.

As Station Road continues within the Village up to the Station Approach junction, there are pavements for pedestrians on both side of the carriageway. However again these pavements are narrow in places- barely able to support two adults walking side by side.

Private front gardens which abut significant portions of the pavements make widening pavements expensive and potentially unviable. Therefore, there is no opportunity to have a segregated cycleway on this part of Station Road. A solution that includes cyclists within the main carriageway for this section needs to be considered.

The 565 public bus service route utilises Station Road East and West to take the Brentwood Town Centre service to West Horndon Station as a terminating service. Only some of the buses on the route however divert and terminate at the Station. Some go onto Bulphan to terminate and commence.

Station Road at the junction with the A127. Large radii corners, transition to national speed limits. Badly maintained provision of formal pedestrian pavement and unsafe 'place of safety', informal crossing.

A typical section of Station Road squeezes pedestrians, while providing DMRB compliant wide lanes to allow vehicles to speed, toward several semi-blind corners.

The Village gates require vehicles travelling in excess of the national speed limit to slow quickly to 30mph. Many don't achieve this speed requirement until a significant distance into village. The 30mph isn't self-enforcing!

A typical village section of Station Road demonstrates the constraints. Private front gardens define highway boundary. Vehicles partially parking on already narrow pavements

Figure 7. Station Road

Lastly within the Highway network of the SBGC there are four minor roads which provide local residents and workers access from and to the A127.

North of the A127 a private access road, gives access to and from the West bound carriageway of the A127 to the Childerditch Business Park The road has no pavement provision for pedestrian access. It is also a long steep rise to get into the developed area of the site further to the north. Consideration of appropriate Sustainable measures to encourage modal shift for workers is required.

The Tilbury Road joins into the A127 on the east bound slip road from the A128/A127 raised junction. There is no access onto the slip for vehicles, only access onto the road. The pavement on the eastern edge of the carriageway is good and the carriageway itself is wider than required for the residential developments currently. It forms the western boundary of the East Horndon employment site.

Thorndon Avenue is a typical Essex residential road with separate grass verge and pedestrian zones on either side of the carriageway. It connects the East bound carriageway of the A127 to Station Road. If required it has the potential to be adapted to include specific cycling provision.

Childerditch lane runs both North and south of the A127. To the north it is a quiet back route that from the A127 connects at a crossroads with Seven Arches Road and from there into Brentwood Town Centre. To the south it is mainly a feeder road for commercial vehicles accessing the East side of the West Horndon Industrial Estate. While it narrows considerably to go over the railway line, within the SBGC this road has the potential to play a route in the highway network to allow restricted HGV movements to what will remain of the employment function within the West Horndon Industrial Park.

The access road to Childerditch is not a place for pedestrians currently. The gradient climbing to employment site makes trips for cycling and walking very difficult without formal provision.

The Old Tilbury Road is very wide with very good formal provision for pedestrians. It is quiet given limited vehicle access, so cycling is safe on the carriageway

Thornton Avenue with its narrow carriageway and generous pavement areas accommodates all users well – perhaps not cyclists formally but reducing traffic speeds should allow safe cycling.

The narrow railway bridge to the southern boundary of Childerditch Lane south demonstrates the limitations of this road for viable sustainable use.

Figure 8. Other SBGC Roads

2.5.4 Bus Infrastructure

Within the SBGC Bus infrastructure is restricted to north south routes 269 / X90 565 operating on the B186 and A128 respectively. The Bus Stops tend to be located in grass verges – that at times can be overgrown – and are often narrow and difficult to access.

The current commercial service levels are insufficient to support the proposed growth within the SBGC.

A viable alternative to implement an immediate Bus service within the SBGC is a Demand Responsive Travel Bus offer. Correspondence with and researching services existing from providers such as Zeelo and Arriva click has been undertaken to understand this emerging variation on a commercial bus service.

From studying the DRT bus services in existence there are several common threads.

- DRT operates most cost effectively when it is backed by multiple residential and commercial sites.
- Tradition Bus infrastructure such as stops aren't required for service to operate.
- A service area needs to be established at inception of service. This is able to adapt and grow with demand. See SBGC suggested area aside.

Insert SBGC map with area of suggested DRT

3.0 TRANSPORT VISION PRINCIPLES

Giving the future residents and employees within the SBGC a viable alternative to using the private car as a primary transport choice is vital. The health and well-being of the SBGC's future population will be greatly enhanced not only by providing them healthier more sustainable modes of transport, but also decreasing the impact of existing vehicular movements via alterations to the highway network. Both will deliver positive environmental benefits.

To achieve the delivery of an integrated sustainable transport network and overall set of principles is being proposed.

3.1 Upfront Delivery

PRINICIPLE 1
Sustainable transport infrastructure within the Southern Growth Corridor is to be delivered upfront in Phase One of all development sites

New residents and employees to the SBGC should have in place viable sustainable transport alternatives to using the private car when they move into the corridor area. This will ensure that they accept sustainable transport choices as the norm. If provision for the private car is also minimised for the SBGC developments, then potential buyers of new homes will be those that accept and prefer not to have multiple household cars. Therefore, use of alternative sustainable transport would be a primary choice.

A viable sustainable network should be delivered to make the sustainable method more convenient and where possible as quicker than non-sustainable ones. This will help encourage a behavioural change in the existing residents and employees, alongside other educational initiatives.

It is accepted that the delivery timescales of each development site will vary. In addition, for each site, the level of intervention required to sufficiently connect each, to an integrated sustainable network will vary. The majority of costs to deliver the site-specific interventions should practically be met by the SBGC developments. The cost of the interventions that link the site-specific sustainable network will be considered and paid for by a mechanism to be determined by Brentwood Borough Council.

3.2 Existing Land Use.

PRINICIPLE 2
Sustainable transport infrastructure interventions within the Southern Growth Corridor are to be delivered within the existing highway boundary and/or land under the control of the development site owner.

To support the first principle, there is a need for an expedient delivery of the sustainable transport infrastructure. Avoiding design solutions that require land take external to the ownership of the Highway Authority or the site owners is essential. If this principle can't be adhered to, significant time will be added to and therefore impact the ability to deliver within the first phase of projects. Creating a risk that behavioural change to adopt more sustainable forms of movement in the corridor will become more difficult.

Brentwood Borough Council (BBC) can - as good practice - seek to put in place Compulsory Purchase Order (CPO) powers to protect the viability of the development sites once the Local Plan has been adopted. However, such powers wouldn't extend to the Highways where Essex County Council (ECC) are the statutory authority. It is an unknown risk whether ECC will utilise its powers to support sustainable transport upgrades to the Highway network.

The cost of having to purchase additional strips of land could also impact the viability of the development sites. In comparison to costly highway mitigation measures – which in the main offer short term fixes to capacity problems - sustainable transport mitigations on the highway is cheap and greater value for money and will have longer lasting benefit.

3.3 Traffic Speeds

PRINICIPLE 3
Wherever possible the speed of general traffic will be reduced on all SBGC highways to make walking, cycling and the use of other sustainable transport modes – safer, convenient and a viable transport choice.

Due to the lack of connection between statutory planning and highways consideration, the consultants of all the SBGC development sites must currently produce highway designs to demonstrate proposed access to their sites, based on present highway speed classifications. Little recognition is given by Highway Authority officers to the function and future user profile of the new development. Beyond except the technical traffic requirements of that function.

The ECC has a strategy for speed design requirements on new and existing highways called the 'Essex Speed Management Strategy'. The Strategy was published in 2010 and is based on DfT Circular 01/2006 and the accompanying Traffic Advisory Leaflet (TAL) 02/06. This ECC strategy therefore predates the Department for Transport's current guidance in DfT Circular 01/2013, which encourages '…*traffic authorities to consider the introduction of more 20mph limits and zones, over time, in urban areas and built up village streets that are primarily residential to ensure greater safety for cyclists and pedestrians'*
As described in the previous chapter, from observation and use, the current speeds on the majority of the highways within the SBGC are too high to comfortably support sustainable movements – now or within the place which it is due to become - with the development sites delivered. In some cases, current speeds on certain of the SBGC highways are too high for the existing use e.g. Station Road, West Horndon.

Given the residential and educational expansion of Dunton Hills Garden Village and the residential redevelopment of the Industrial Estate in West Horndon Village, there will be a significant increase in pedestrian and cycling movements between the two villages along Station Road. These movements will include vulnerable age group users who will require a package of protective measures taken (primary of which being traffic speed) to the highway network to enable them to safely choose to walk and cycle.

This vision document recommends that speed limits within residential areas of West Horndon Village are reduced to 20mph. Likewise this vision recommends reductions in speeds on the B186, A127 and A128 – to levels as shown in fig 9 to encourage and accommodate walking and cycling within the SBGC. Such speeds will allow

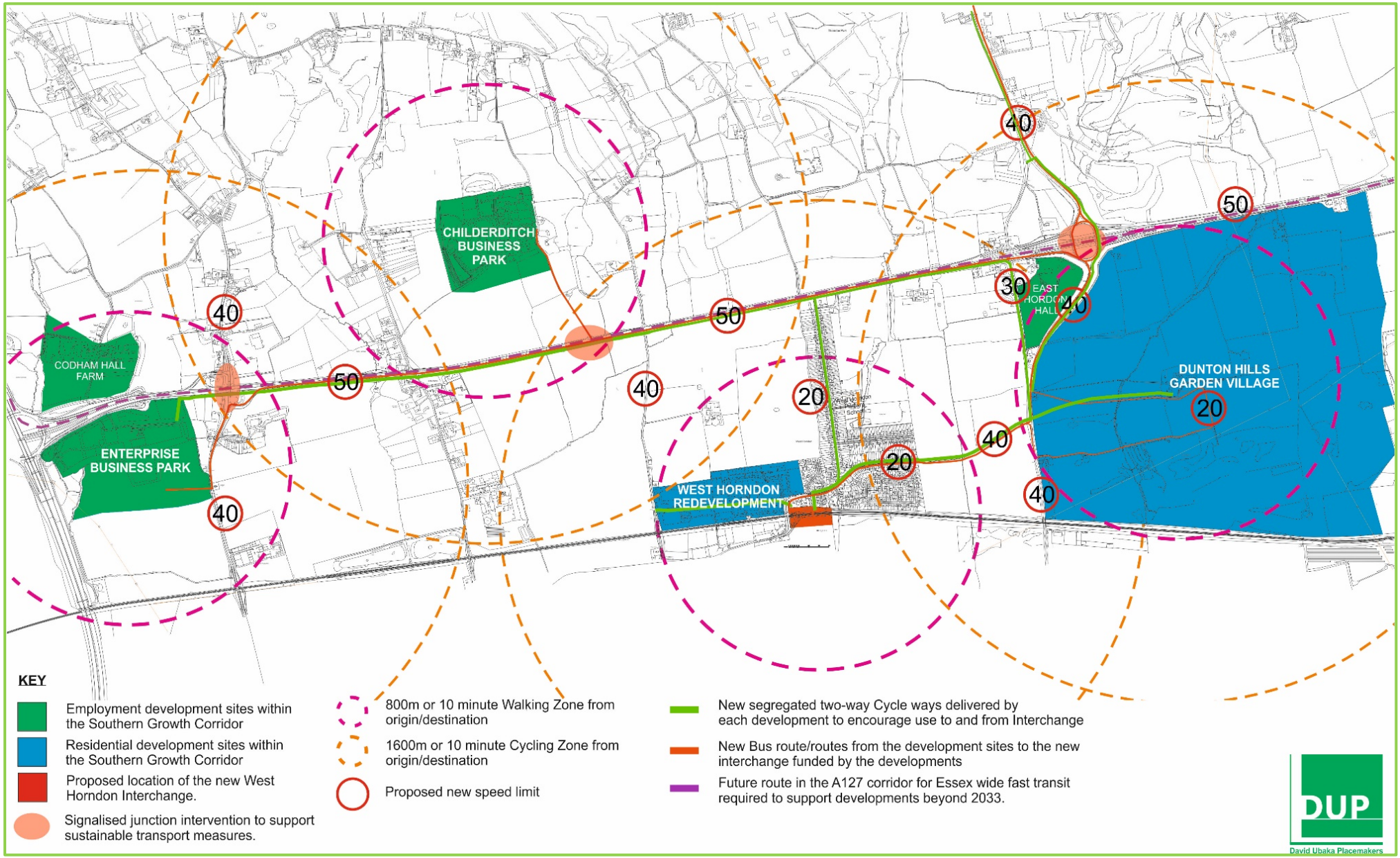


Figure 9. SBGC Measures Vision

all these roads to retain their vehicular throughput functionality while rebalancing them to allow viable sustainable movements.

DfT circular 01-2013 offers the following guidance…. '*Traffic authorities can, over time, introduce 20mph speed limits or zones on:*

Major streets where there are – or could be - significant numbers of journeys on foot, and/or where pedal cycle movements are an important consideration, and this outweighs the disadvantage of longer journey times for motorised traffic.

This is in addition to

Residential streets in cities, towns and villages, particularly where the streets are being used by people on foot and on bicycles, there is community support and the characteristics of the street are suitable….'

In line with this guidance Brentwood Borough Council (BBC) are encouraging site promoters to gather as much evidence as practicable during pre-applications discussions, to present to the Highway Authority and work within the ECC process protocols established in their 2010 strategy.

It is hoped by doing so a way can be agreed to enable Highway designs to be presented at Planning application stage, which reflects the place the SBGC will become and the traffic speed that will be appropriate for it.

The SBGC routes will see a significant increase in pedestrian and cyclist numbers. New and existing routes in residential areas connecting should have measures to reduce vehicle speed and encourage sustainable healthier transport choices

A proactive approach to highway design is required. The current reactive 'business as usual' approach will come at too high a price!

Source: FHWA Pedestrian Safety Strategic Plan Background report 2010

3.4 Parking Standards

PRINICIPLE 4
Within all SBGC residential developments:

- **a.** parking provision for private cars is to be reduced by the application of maximum parking numbers per unit.
- **b.** on street parking provision for private cars is to be banned and abuses to be enforced.
- **c.** Compliance with parking standards is to be achieved through car club provision.

When considering parking BBC's Draft Local Plan, Policy BE17 refers to the ECC – 'Parking Standards – Design and Good Practise' These standards were published in 2009. At the time of their publication Government guidance to minimise parking at trip origin (residential) while maximising them at trip destination (work/shops etc.).

The historic and political reality of personal transport choice in Brentwood, and other parts of Essex, has been a car first mentality. It was fed by the 'baby -boom' generation born post 2nd world war between 1946 and 1964. This generation supported the sustained growth in car ownership from the 1960's to 1980's.

A DfT study titled *'young-peoples travels what's changed and why'* undertaken by academics at University of the West of England in Bristol and the University of Oxford was published in January 2018. The study found that for a variety of socio-economic reasons, using a car among the younger generation is less central to their lives than previous generations. In broad terms, over time there has been a steady percentile drop in car ownership and use. A combination of costs associated with motoring, less certainty around employment and income means, this trend is set to continue.

The vision of delivering a viable sustainable transport network requires patronage. While provision of the network is being made for all age groups, this being a vision for the future - it is this younger generation whose choices will shape the future movement patterns in the SBGC.

There is also evidence stated from the report that the numbers of young adults having driving licenses has decreased. It should also be noted that while there has been an increase in public transport use in the same time the percentile increases of that use aren't directly comparable to the reduction in driving licences in young adults.

Decreasing driving licence numbers is therefore being affected by a suite of factors. Aside from some switch to public transport, technology and how

the young adults communicate with each other for both social and work purposes – means they are spending more time at home and this trend is continuing to grow as technology improves. Through technology the ability to book a cab, bus or use a car club vehicle when needed, also has to be considered when deciding on car parking provision for the future.

Given examples existed at the time of publication, where provision for residential parking was proving inadequate, badly designed or led to unintended street parking - the current ECC parking standards concluded that due to average household car ownership in the County being over 1.5 cars, the government guidance to provide maximum residential parking numbers would be changed to minimum standards.

The current ECC standard encourages House Builders to deliver sites with high numbers of parking spaces per unit. Such housing attracts potential purchasers who want to drive and probably own multiple vehicles.
As with the rule of thumb for highway alterations which dictates that '*delivering additional highway capacity only leading to more traffic filling the new provision'*…. The same rule of thumb applies to parking spaces.

It won't be possible to achieve a ban on all SBGC streets. Where appropriate on-street parking to support local retail should be carefully considered and integrated to minimise impact on sustainable movement requirements.

Inventive well-designed inclusion of residential parking such as planted sensibly sized parking courtyards should be considered to replace on-street parking

Within the SBGC both village sites are within walking distance of the planned West Horndon Interchange. In addition, both villages have sufficient school provision (primary and secondary) to facilitate internalised cycling and walking trips by residents within the SBGC. Therefore, the opportunity to revert to maximum car parking numbers per unit type and reduce parking provision should be taken.

For the redevelopment of West Horndon Industrial Estate - Brentwood Borough Council will need to consider road markings that restrict on-street parking. If the emerging designs of the promoter make this difficult, then a CPZ should be created to stop commuter parking within the development.

DHGV is further away from the new interchange and is less likely to be affected by commuter parking. However, markings on residential roads should impose restriction which allows no on-street parking.

To support the reduction of car parking provision all sites within the SBGC should operate a car club system. Car clubs work best when they can be accessed by both workers and residents – which maximises the use of the vehicles.

Surrey County Council are a champion of car club use. They have partnered with Enterprise Car club and have produced *Draft Guidance on Car Clubs in new developments* in August 2018.

Car Club provision to replace the need or desire for a second car for homeowners. Car Club vehicles also utilised for business cars trips local companies.

3.5 Segregated cycling/walking

PRINICIPLE 5
Within the SBGC new provision of pedestrian walking and cycling lanes will be clearly segregated whenever possible.

In 2017 the DfT 'Cycling and Walking Strategy set an ambition for England: '*We want to make cycling and walking the natural choices for shorter journeys, or as part of a longer journey*'

However, the two user groups are very different and simply creating shared space within the street or highway for both to use - in existing or new developments - leads to conflict.

These conflicts are generally nowhere near as dangerous or frequent as conflicts between either of the groups and vehicular traffic. But, with the increasing number of cycling and walking movements on our streets and highways - conflict between the user groups have increased. The conflict is equally caused by inconsiderate behaviour by both user groups.

Therefore, wherever practicable in the SBGC segregated routes for cycling need to be created to allow cyclist to go at speeds which suit the individual riders need without fear of conflict with car or pedestrians. Adequate separate cycling provision must accommodate both the faster commuter and the leisure cyclist. Segregated routes should be designed with minimal requirement for directional signage and lane division or directional markings.

Where segregation from pedestrians isn't possible provision for cycling needs to be made in the carriageway. In such instances vehicular speed cannot exceed 20mph in built up residential areas or 40mph in connector routes such as the section of station road form the A128.

Given the hilly nature of Brentwood, the vision proposes that a system of electric bikes for hire are part of the strategic offer, through a third-party provider. Electric bikes open up the accessibility of cycling to all age groups as a viable transport choice.

Whether adjacent to the carriageway or on a quiet way – within the SBGC - segregating cyclists and pedestrians is a requirement. Care should be taken where the two groups cross. Priority should be given to pedestrians.

If incorporated into the carriageway a physical separation is required to properly protect and define road space usage for all road users.

The SBGC development sites should consider co-tendering a system of normal and electric bike hire. The system needs to come with dedicated locking parking ports to avoid bikes causing clutter.

3.6 Restrict HGV's

PRINICIPLE 6
Within the residential areas of the SBGC, access of Heavy Goods Vehicles will be restricted.

From observation, the volume of freight movements by Heavy Goods vehicles from origins like Southend Airport and Tilbury docks through the Southern Growth Corridor is significant. Currently HGV's are unrestricted in their access to all roads within the corridor, which causes issues and conflicts. In particular on some of the smaller residential roads where HGV's can occupy a significant percentage of carriageways not designed for them.

The presence and importance to the regional economy of the existing industrial and business parks along the A127, and the addition of new such employment provision within the SBGC, requires a strategy to ensure HGV's can continue to service these employment zones. However, the speed and dominance of HGV's makes walking and cycling uncomfortable, dangerous and in some instances fatal.

Therefore, within the SBGC, HGV movement will be prioritised towards specific routes that require them to fulfil a function and restricted on others, where walking and cycling will be a priority.

Restrictions should be achieved by TRO, which ban vehicles over a certain axle weight. New signage gateway posts should be optimised to indicate both speed limit and maximum axle weight within residential areas. Such gateway signs will be required at the existing junctions of:

A128/Station Road

A127/ Thorndon Avenue

A127/Old Tilbury Road

Also, gateways will be required at the new proposed entry points to DHGV. The emerging DGHV masterplan has an employment area being proposed to the North West. Therefore, access for certain HGV's may be required.

A consultation will need to take place with the promoters and landowners of DHGV and West Horndon Industrial Estate. In the later some of the newer the light industrial units will remain after the redevelopment of the majority of the site. Understanding the freight requirements of these units

To protect pedestrian, cycling and sustainable vehicle movements in the present and future SBGC residential areas. HGV's of this type need to be excluded

Restricting access will need to be enforced at the boundaries of all roads into all SBGC residential areas.

4.0 DESIGN PROPOSALS

This chapter will consider outline design solutions for the highways which reflect how the principles set out in Section 3 can deliver and encourage the use of sustainable transport modes in the SBGC.

We will consider outline vision designs for the A127, B186, A128, Station Road and the new West Horndon Interchange. Within the consideration of the major movement corridors and rail infrastructure for the sites in the SBGC, the design of junction's treatments with the minor linking roads will be addressed.

It should be noted that the sketches which accompany the proposals for each of the roads and interchange aren't engineering drawings, they are illustrative visions only based off OS cad mapping data.

The sketches are presented to further discussion with the landowners in supporting their respective travel plans. At the end of each section we consider the high-level cost of the proposal. It is important to not only understand the costs but propose how funding contributions to deliver the elements will be apportioned.

For the purposes of this vision it will be assumed that the integrated sustainable transport network is mainly funded by the developments proposed within the lifetime of the Local Plan. Current developments sites will be responsible for infrastructure that directly benefits their developments Costs for Infrastructure proposals that link together the site-specific proposals could be spread wider among the development sites within the borough as the SBGC network will benefit the entire borough.

While one of the core principles of this vision is upfront delivery, it is recognised that in the lifetime of the Local Plan, new sites within the SBGC may emerge. Any that come forward during the delivery of the initial measures can contribute directly. For those sites that may come forward following infrastructure delivery, Brentwood Borough Council should consider retrospective contributions for such sites. These retrospective payments could be ring-fenced to upgrade and/or maintain the delivered infrastructure.

4.1 - A127 – Southend Arterial

4.1.1 Existing Sustainable Use

There is informal shared provision for cyclists and pedestrians on the A127, in the form of two irregular pavements spaces on either side of the carriageways. It is a very hostile environment for pedestrians and cyclist due to traffic speeds, air quality and the highway layout. Therefore, numbers of both user groups are a very small percentage compared to vehicular traffic. No public bus service operates on the A127 in either direction.

Most cyclists observed using the route in the SBGC, do so on the southern pavement. There are several potential reasons for this. Firstly, the main employment destination of Basildon and is on the south side of the A127. Secondly, the gradient to reach destinations north of the A127 present a barrier. Lastly there is less interrupted progress on the south side – continued from the A127/A12 to the west - for cyclists albeit the provision widens and narrows due to lay-byes.

4.1.2 Existing Highway Layout

The A127 within the SBGC, is a length of approximately 5300m from J29 of the M25 to its junction with the A128. This length will be used to estimate outline costings for the proposed alterations to the highway in the section 4.1.x.

The main north/south junctions in the SBGC i.e. B186 and A128, will be considered in proposals for those roads. Discounting the road splays created to access these junctions and those of the M25, the average functional width of the A127 is approximately 26m.

The width of the dual carriageway central reservation varies from approximately 5.4m to 6.2m. The reservation has double headed lighting columns centrally placed at regular centres of circa 42m. It is planted with grass and low shrubs, which require annual maintenance. The two carriageways either side of the central reservation are about 7.1m wide. The northern pedestrian pavement is an average width of 2.9m the southern pavement has an average of 3.1m. Both narrow to 2.4m when diverted around lay-byes. And both areas are abutted by grassed verges edged with trees and ditches of 2.3m width to the north and 2.6m to the south (Fig. 10a)

4.1.3 Study Area A - Existing

Area A considers the key junction of the north carriageway of the A127 and the Childerditch Hall Drive a private access road to the Childerditch Industrial Estate. Also, how to provide NMU and protected bus movements within the existing highway boundaries – which require repositioning of historic lay-bys – one of which is evident on the south carriageway.

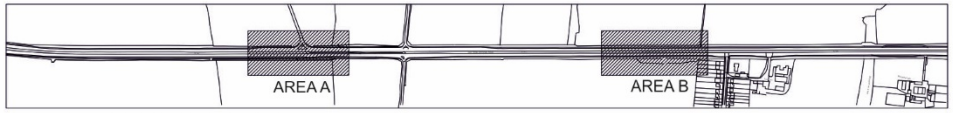
The vehicular approach to and from the junction with the A127 is achieved with long splays. A large triangular grassed reservation area separates traffic accessing and leaving the site. The Childerditch Hall Drive junction is so close to that of Childerditch Lane immediately to the east, that the access lane leaving the Hall Drive continues to Childerditch Lane without breaking – see fig 10a.

The shared pedestrian and cycling path on the A127 have a crossing provided within this reserve but no formal NMU allocation is then provided on Childerditch Hall Drive. From the junction to the Industrial estate is approximately 500m and the gradient during this length is continually uphill from the A127.

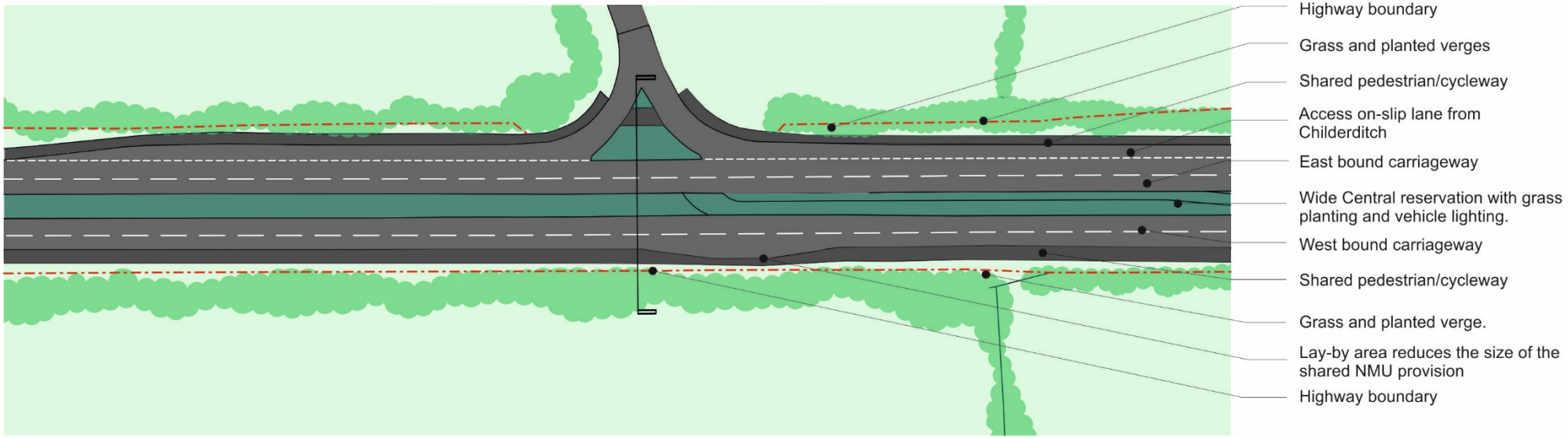
4.1.4 Study Area A - Proposed

When considering the proposals, we felt that there is sufficient space to accommodate segregated routes for all sustainable modes while protecting vehicular flows – within highway boundaries. Elements like Lighting columns and boundary tree should remain for cost, environmental, and aesthetic reasons. For Area A our proposals (see fig 10b) are:

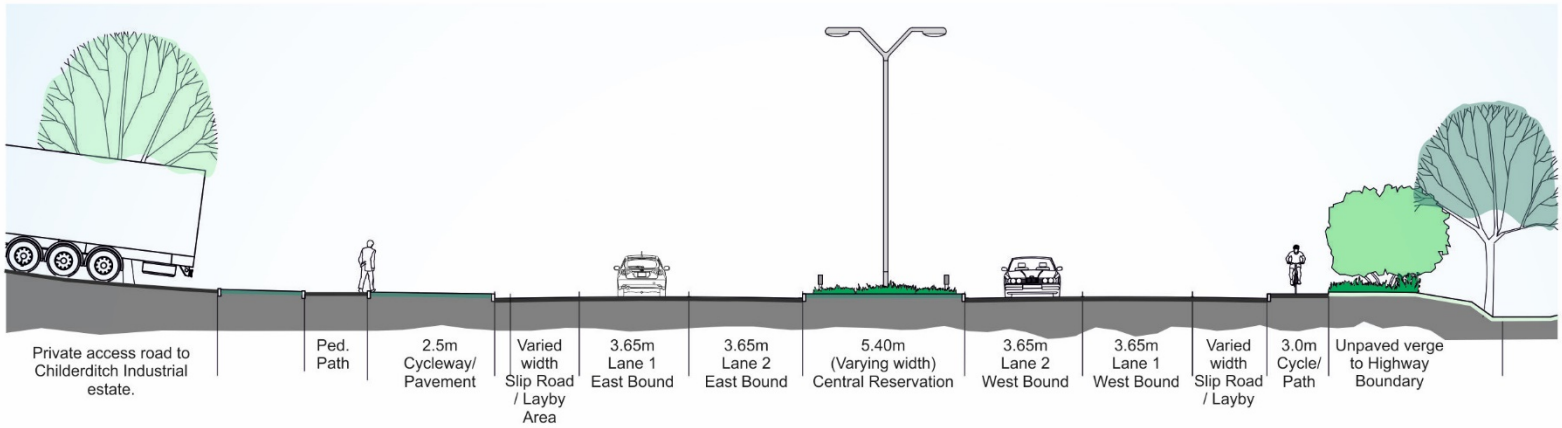
- Narrow the central reservation to the minimum width allowable with a new speed limit of 50mph
- Realign two new 7.3m east and westbound carriageways towards the central reservation.
- Create an East bound Bus Lane with shorter splays for vehicles entering and exiting the Childerditch Hall Drive junction.
- Create minimum width segregated 3.0m cycle and 1.5m ped. paths on Childerditch Hall Drive.
- Adjacent to the westbound carriageway create min. width 3m cycle and 1.5m ped paths repositioning the lay-by and cutting back but not removing verge vegetation.



LOCATION KEY PLAN

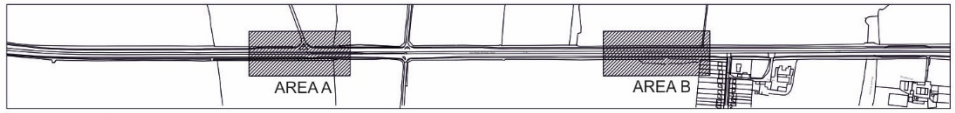


AREA A - EXISTING PLAN JUNCTION ACCESS & LAY-BY - 70MPH

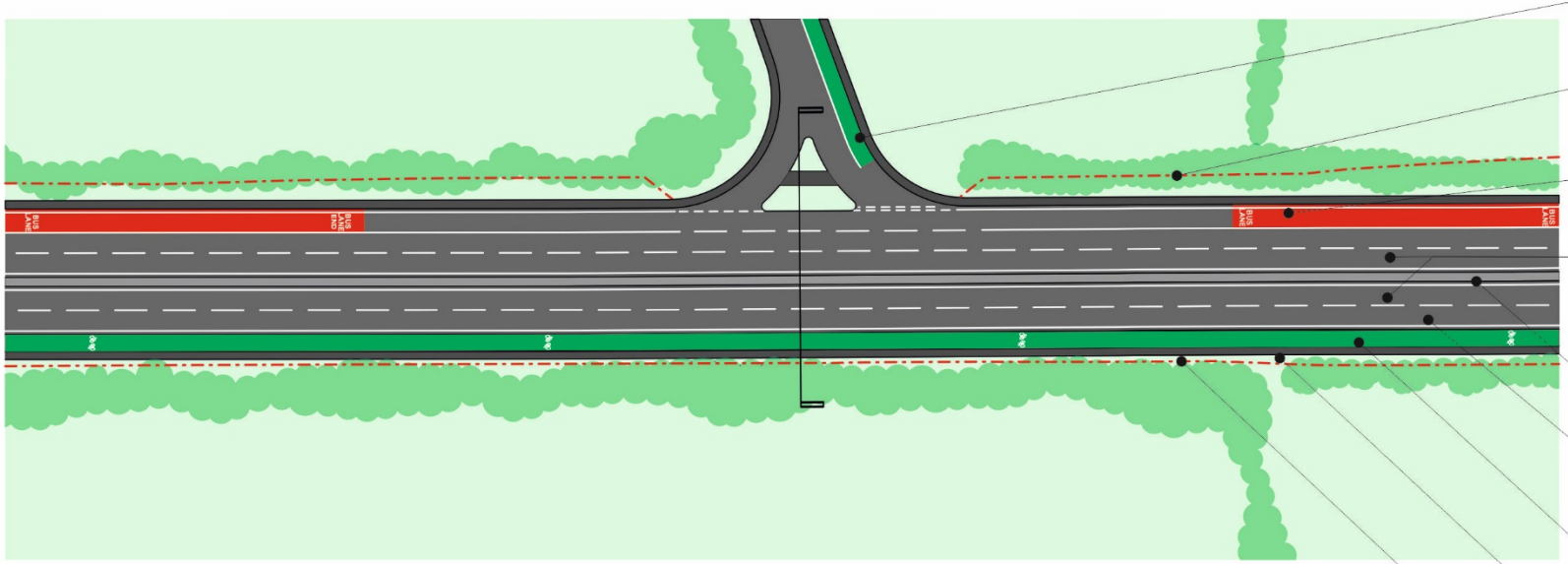


AREA A - EXISTING JUNCTION ACCESS OR LAY-BY - 70MPH

Figure 10a. A127 Vision – Area A - Existing



LOCATION KEY PLAN



New segregated pedestrian and cycle paths minimum width 1.5m and 3.0m respectively.

Highway boundary unaffected by proposals. Some adjustment to verge planting may be required.

New east bound bus lane to protect an express type bus service to Southend Airport etc.

Both E&W bound carriageway lanes relocated towards smaller central reservation with new 50mph speed limits.

Reduced central reservation with lighting and signage no planting.

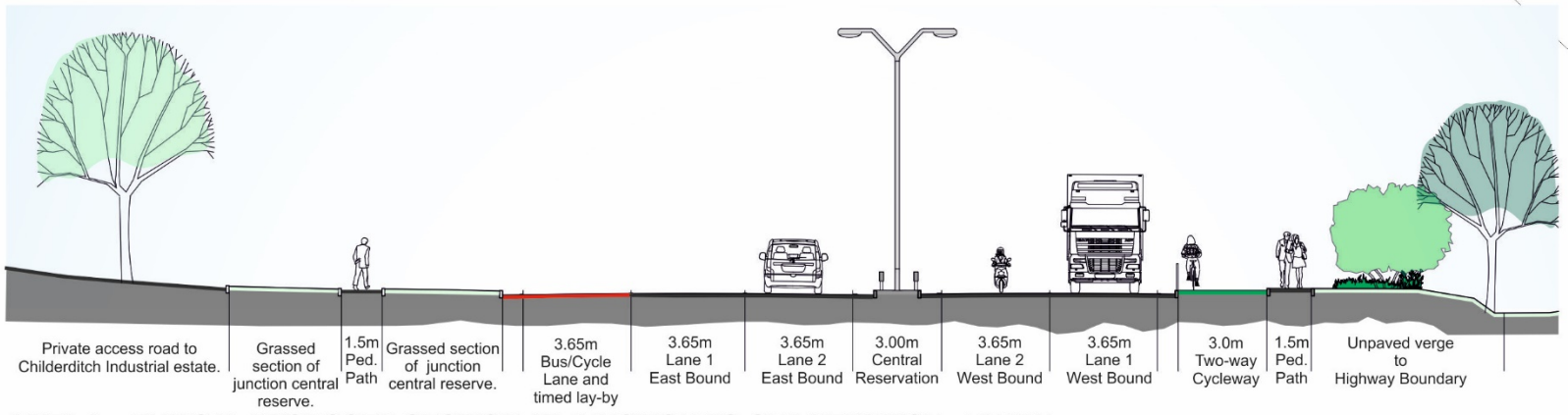
Smart 'peak time' gantries an option to create westbound bus protection when required.

Segregated minimum width 3.0m cycle and 1.5m pedestrian paths. Lay-by's relocated to areas where highway widths allow minimal NMU impact.

Grass verge and boundary planting cut back to accommodate new NMU provision.

Highway boundary unaffected by revisions to carriageway.

AREA A - PROPOSED PLAN JUNCTION ACCESS & LAY-BY - 50MPH



AREA A - TYPICAL PROPOSED SECTION AT JUNCTION TO CHILDERDITCH - 50MPH

Figure 10b. A127 Vision – Area A - Proposed

4.1.5 Study Area B - Existing

Area B considers a typical straight section of the A127.

With no physical limitation's vehicle speeds on these types of sections of the A127 often travel are beyond the 70mph national speed limit. The shared cycling and pedestrian paths either side of the east and westbound carriageways are – as a result of the traffic speeds – not comfortable places to walk or cycle.

The grass and planted verges either side of these shared cycling and pedestrian paths vary in width but can be very wide in places up to the highway boundary.

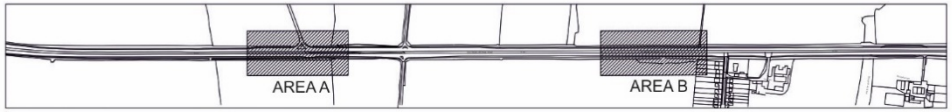
4.1.6 Study Area B - Proposed

Common to the proposal in Area A the central reservation, carriageway realignment; bus lane and segregated NMU provision are created. In addition, common features to the whole of the A127 corridor shown in fig 10d include:

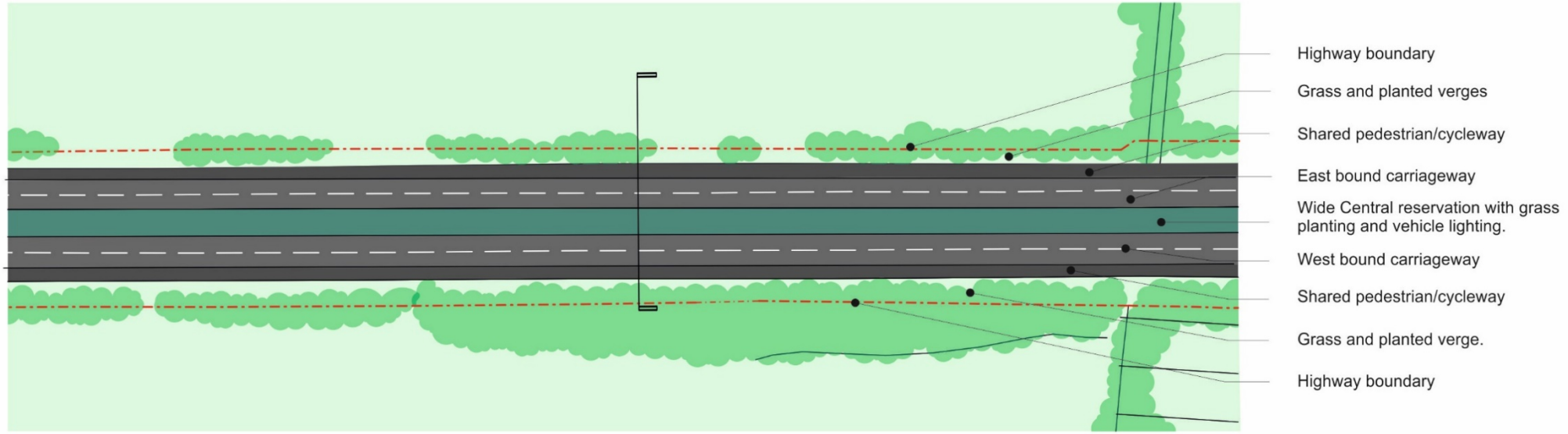
- Within highway boundaries, create new Lay-bys by cutting back, but retaining boundary vegetation. Divert the segregated NMU provision around the new lay-by
- Deliver an AM/PM peak 'smart 'bus lane on the westbound carriageway, including gantry equipment spanning the NMU provision.

As the SBGC and the wider A127 corridor continues to change character, an optional measure to allow more flexible sustainable transport movement would be:

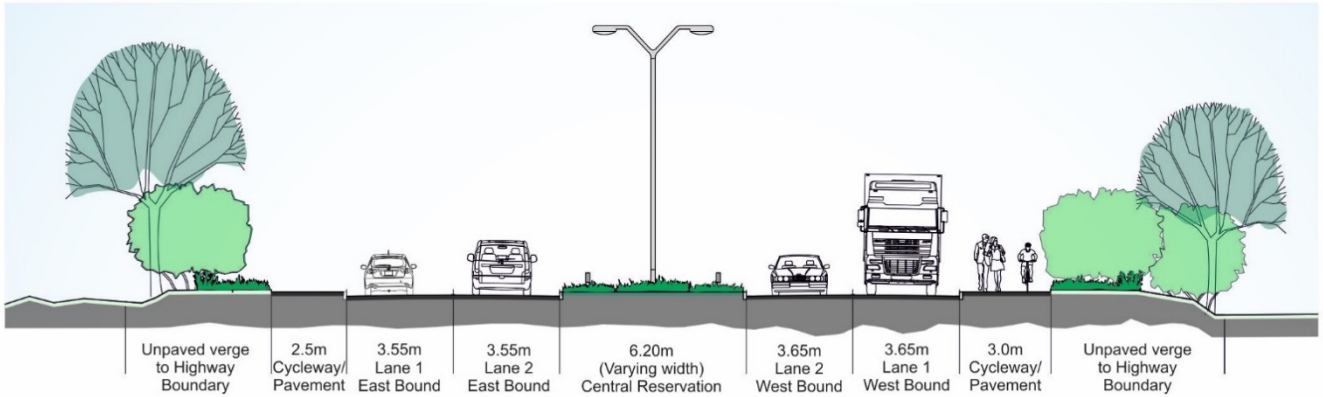
- A signalised crossing junction at Childerditch Lane to allow safe crossing for buses, pedestrians and cyclists.



LOCATION KEY PLAN

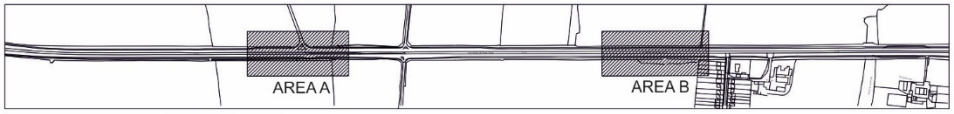


AREA B - EXISTING PLAN (STRAIGHT RUN) - 70MPH

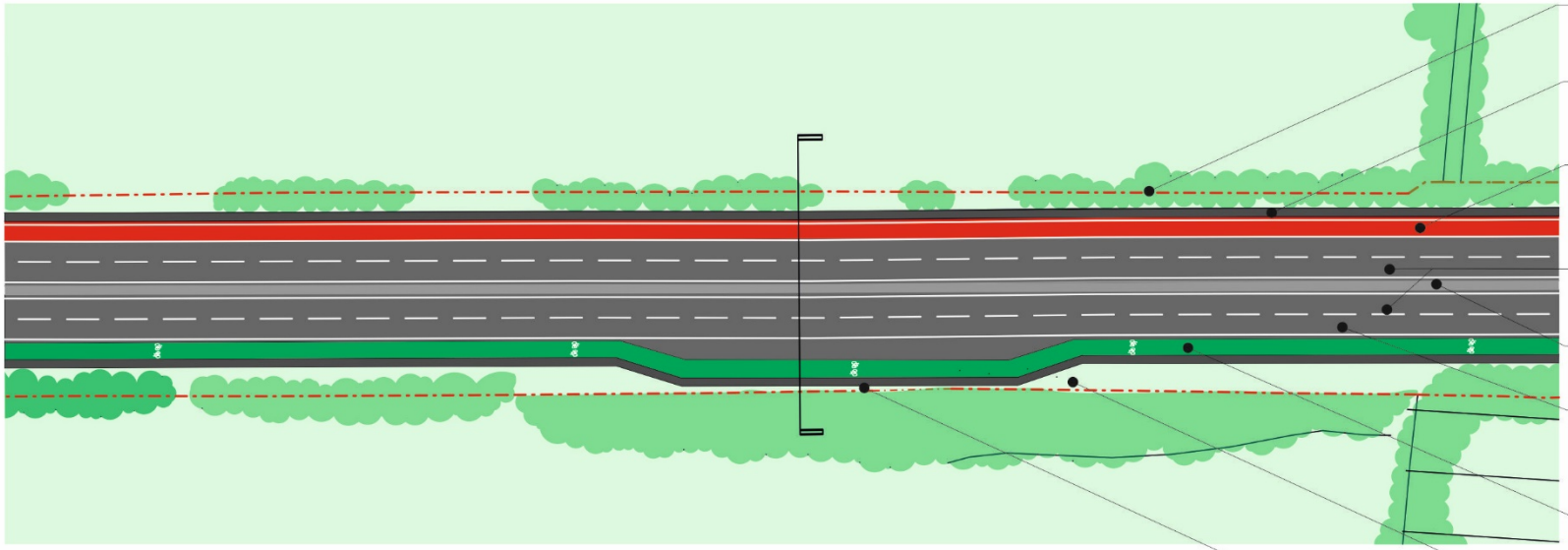


AREA B - EXISTING SECTION (STRAIGHT RUN)- 70MPH

Figure 10c. A127 Vision – Area B - Existing



LOCATION KEY PLAN



Highway boundary unaffected by proposals. Some adjustment to verge planting may be required.

Minimum width 1.5m pedestrian path that can be used by cyclists.

New east bound bus lane to protect an express type bus service to Southend Airport etc.

Both E&W bound carriageway lanes relocated towards smaller central reservation with new 50mph speed limits.

Reduced central reservation with lighting and signage no planting.

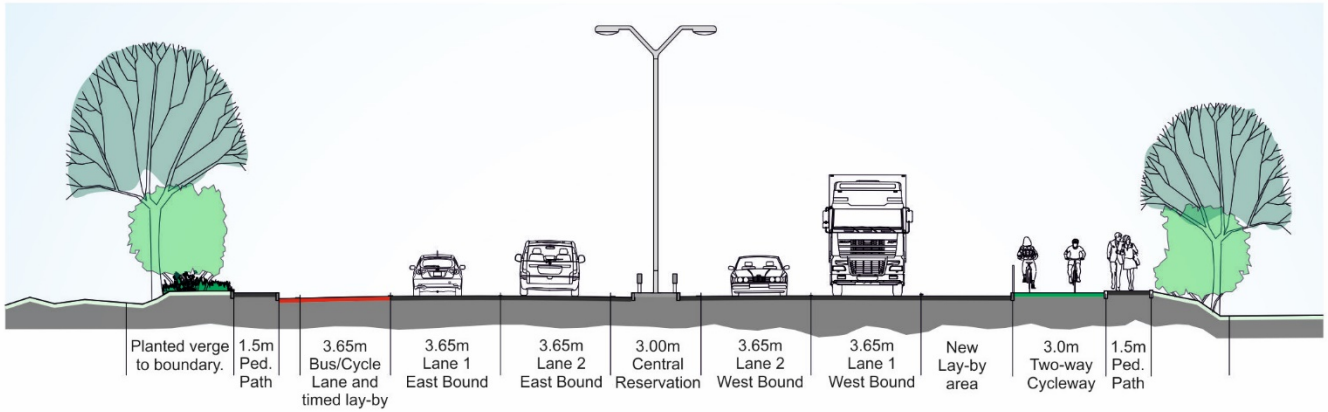
Smart 'peak time' gantries an option to create westbound bus protection when required.

Segregated minimum width 3.0m cycle and 1.5m pedestrian paths.

As grass verge and boundary planting has sufficient width in this location, a new layby can be relocated with the new NMU infrastructure.

Highway boundary unaffected by revisions to carriageway.

AREA B - PROPOSED PLAN (STRAIGHT RUN) - 50MPH



AREA B - TYPICAL PROPOSED SECTION - 50MPH

Figure 10d. A127 Vision – Area B - Proposed

4.1.7 Study Area Cost Estimates

It should be recognised when considering the principle of upfront delivery, specifically relating to the costs in the A127, that the 5.3km corridor from the M25 J29 to the junction with the A128 – as shown in figures 10a to d - already has a degree of sustainable provision.

Further, the corridor is also the subject of a multi authority A127 Task Force. They are currently shaping a brief for what they propose to do with the entire corridor to support economic growth and change.

Therefore, delivery of the elements within these A127 proposals and their costs can - if required - be delivered as a longer-term project than any other of the sustainable proposals in this vision document.

Our proposals and the costs therein to change the A127 within the South Brentwood Growth Corridor, have been considered with the wider corridor very much in mind. For example, the segregated bus lane heading eastward in the Northern section of the highway was designed to be a part of the SBGC sustainable network, to diversify and provide 24-hour sustainable transport access to Southend Airport.

The costs relating to the sketches in Figure 10b & d – are separated into the Northern and Southern parts of the entire highway.

Northern Edge:

- Full pavement construction - 11.3m- £1.8M per km
- Footpath 1.5m at £100k per km

Southern Edge:

- Full pavement construction 8.3m - £1.3M per km
- Footpath/cycleway at £450k per km

Sub-Total – Highway Costs

£3.65M per km = £19.5M

Additional Elements:

- Smart Gantries - £4.5M
- Lighting Diversions - £4M
- Other Utilities - £5M
- Traffic Management - £5M

***Total Vision Costs* - £38M**

There are optional elements at a cost of circa £4M, that might be required in the longer term, if greater North to South, bus and pedestrian/cycling movements are required.

Optional elements:

- Signalising Childerditch Junction - £2M
- 4.No. Pedestrian/cycling bridges - £2M (£500K each)

4.2 - A128 & Tilbury Road

4.2.1 Existing Sustainable Use

There is provision for pedestrians on the western side of the A128 carriageway. This provision carries on northward on the Tilbury road. Neither road has clear provision for cyclists. However, from observation most cyclists observed using the A128 route use the carriageway. When going North towards Brentwood, the steep slope of the A128 decreases cyclist speeds dramatically. From observation motorist caught behind and trying to overtake cyclists heading northward up the hill aren't leaving sufficient space either when following or overtaking cyclists. The speeds of the vehicles using the A128 exceed the 50mph. Tilbury Road is rated for the national speed limit.

Despite the presence of bus stops, a number of residential units, the Dunton Hills farmhouse and Golf Course on the eastern side of the A128 - very little pedestrian movements were observed. Attendees to DHGV workshops arriving by train at West Horndon noted there was no allocation for pedestrians to safely cross the road.

The 565 operates on the A128, within the SBGC either heading: northward towards Brentwood; eastward towards West Horndon Station: or southward under the railway bridge which forms the boundary of the SBGC toward Bulphan.

4.2.2 Existing Highway Layouts

For the purposes of this section, study areas have been identified within this corridor area which demonstrate specific potential sustainable transport solutions. The existing and proposed vision sketches for each study area will be presented as Area A, B, C, D & E – see Key plans included with the vision sketches

The southern part of the A128 below the raised A127 junction to the junction with Tilbury Road is 560m. Study Areas A and C are located either end of the of this section which has an average width of 7.3m.

The length of Tilbury Road study is 560m. Areas C and B are located either end of the road. Tilbury Road has an average width of 7.4m with grass verges either side. The verge on the eastern side is nearly continuous up to the A127 at an average width of 6.8m.

4.2.3 Study Area A - Existing

Area A considers the raised bridge A127/A128 junction and extended roundabout with slip roads connecting the A128 to the A127. Figure 11a

The southern approach to the junction splits north and south bound traffic between a raised grassed triangular shaped central reservation. There are a bus stops located on both arms of the carriageway. In this section there is no formal provision for non-motorised users i.e. cyclists or pedestrians.

The existing roundabout has a two-lane carriageway with some formal tarmac provision for pedestrians on either side of the bridge section. On the west bridge section, the pedestrian connection is connected with unregulated crossing points to the slip roads. No formal provision for cyclists exists.

The northern A128 Approach to the junction also splits north and south bound traffic between a raised grassed triangular shaped central reservation. There is badly maintained, poorly connected, and irregular width pedestrian provision on the east and west of the carriageway. No formal provision is made for cyclists.

4.2.4 Study Area A - Proposed

This area represents the best opportunity for Non-Motorised Users (NMU's) in this part of Brentwood's SBGC to move north and south safely over the A127. In particular for residents of the proposed Garden Village to access the Country Park and Brentwood Town Centre to the north. See Figure 11b.

The prime factor in finalising the proposals in Area A, was the safety of NMU's – avoiding potential future conflict with vehicles – even with speeds reduced as per the vision. For example, when considering NMU provision from the south, we initially proposed the NMU intervention on the west side of the roundabout.

However, on further site analysis we observed that attempting to cross on the south western arm was dangerous for NMU's due to the speed of unseen vehicles emerging from the A128. This risk increases if the mitigation measure subsequently proposed in the TA for this SW corner is implemented. Further from the south residents of DHGV wishing to travel north are safer remaining on the southbound eastern carriageway of the A128. They can directly access DHGV without crossing the A128, see oncoming traffic and although segregated, react to any issues on that carriageway.

Our vision proposals for the whole length of the southern approach to the junction requires:

- Reprofile the eastern embankment of the southern approach section, reposition streetlighting and safety barriers and remove the bus lay-by.
- Deliver a segregated two-way minimum 3.0m wide cycle lane. And a minimum 2.0m wide pedestrian pathway.
- Upgrade the pedestrian pathways on the western carriageway to a minimum width of 2.0m
- Create an unsignalized pedestrian crossing on the carriageway using the central reservation as a place of safety.

On the roundabout, the vision proposals require some removal of existing vegetation. They are:

- Deliver the main crossing point for the cycling network can be delivered as informal initially but placing it on the east allows the potential for a future signalised ‘count-down’ demand crossing to be installed.
- Deliver a lightweight extension to the existing and accommodate a segregated two-way minimum 3.0m wide cycle lane. And a minimum 2.0m wide pedestrian pathway.
- Provide new dual lighting columns for the carriageway and t illuminate the cycle/pedestrian path.
- Upgrade the quality of pedestrian pathways on the all parts of the roundabout to a minimum width of 2.0m
- Create an unsignalized NMU crossings points to all slipway arms on the carriageway

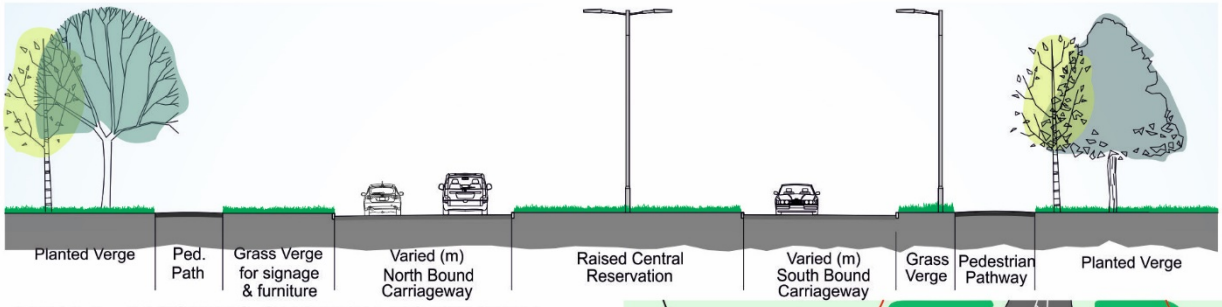
On the northern approach section, it is important to set up NMU provision that has an opportunity to be carried not just to the country park but northward up the A128 toward Brentwood Town Centre. Accommodating NMU provision especially cycling through Herongate and Ingrave, without taking private land, will require careful consideration – given the constraints of private properties so close to the carriageway. Therefore, our proposals for the northern approach are:

- Deliver a segregated two-way minimum 3.0m wide cycle lane. And a minimum 2.0m wide pedestrian pathway on the north east arm of the junction.

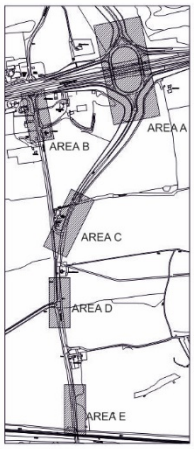
- Create an NMU crossing point incorporated into the top of the triangular shaped central reservation as a place of safety. Allow for this to be upgraded to a ‘demand’ signalised crossing if required.

- North of the crossing split the cycling provision into cycle lanes with a minimum width of 1.5m and minimum 2.0m pedestrian pavement on each side of the carriageway.

- Upgrade the quality of the pedestrian pathways on the western carriageway to a create a minimum width of 2.0m



AREA A - EXISTING SECTION NORTHERN NORTHERN APPROACH - 60MPH



KEY PLAN

A128 Grass and planted verges.

Highway boundaries

Grassed central reservation

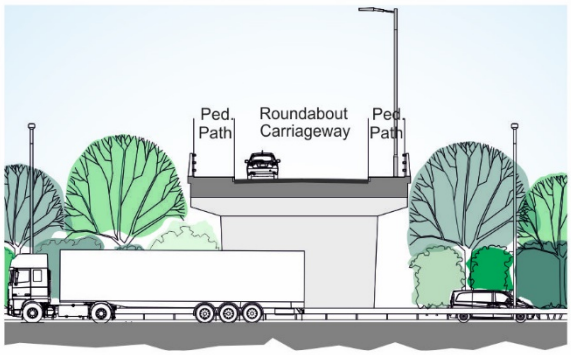
Low quality irregular width pedestrian pathways

North Western on-slip road from A127

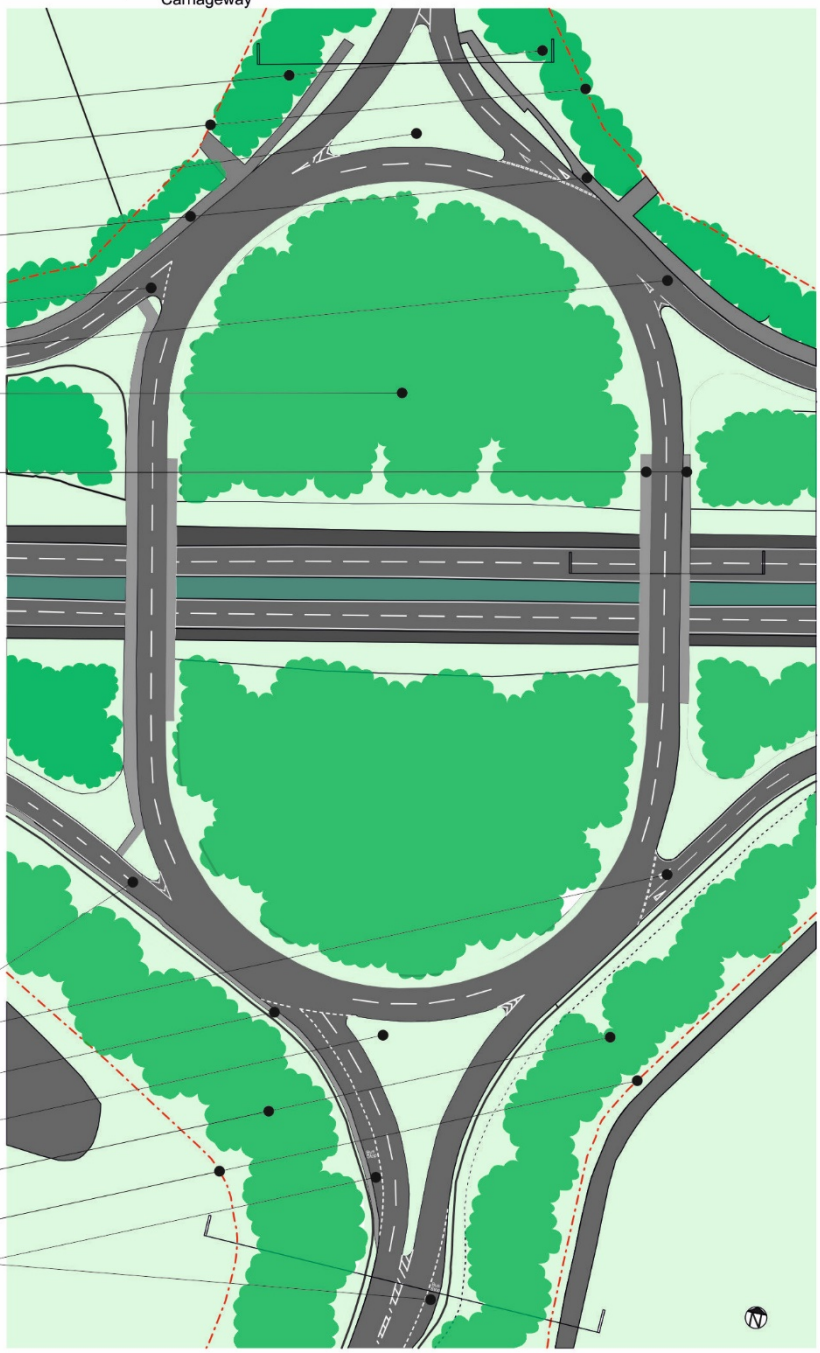
North Eastern off-slip road to A127

Verge trees & planting from A127

Driver 'place of safety path (west) and pedestrian path (east).



AREA A - EXISTING BRIDGE SECTION



South western off-slip to A127.

South eastern on-slip from A127.

Low quality narrow pedestrian path

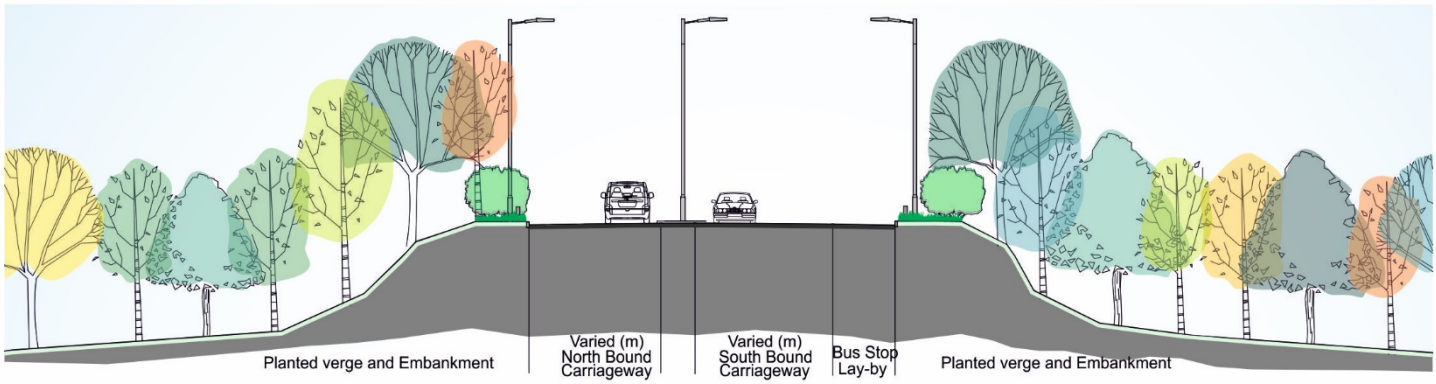
Grassed central reservation.

A128 planted and grassed verges.

Highway boundaries

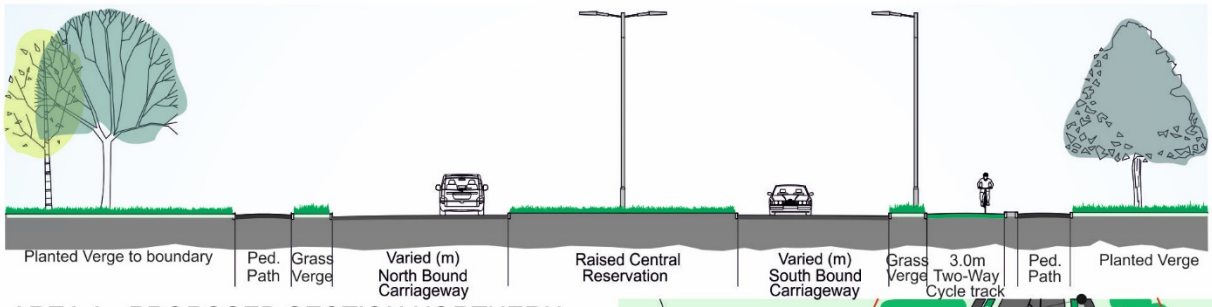
Bus stops.

AREA A - EXISTING PLAN RAISED JUNCTION - 60MPH



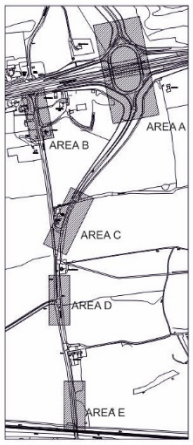
AREA A - EXISTING SECTION SOUTHERN APPROACH - 60MPH

Figure 11a. A128 Vision – Area A - Existing



AREA A - PROPOSED SECTION NORTHERN

NORTHERN APPROACH - 40MPH



KEY PLAN

New segregated min. width 1.5m cycle and 2.0m ped. paths heading north.

Highway boundaries unaffected.

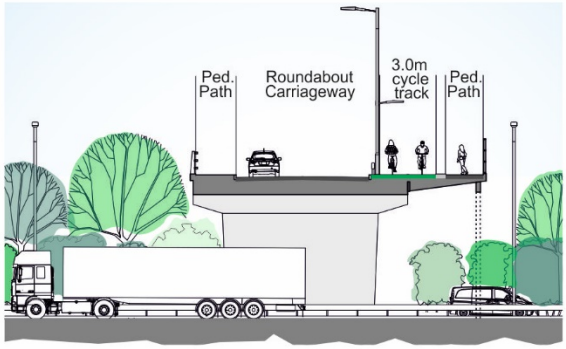
Grassed central reservation

All pedestrians paths upgraded in quality to min 2.0m with informal crossings on the western slip roads.

North Eastern off-slip road to A127 incorporating NMU demand crossing.

Verge trees & planting from A127 adjusted to accommodate new lightweight NMU bridge.

Minimum width 3.0m cycle and 2.0m pedestrian segregated pathways on new lightweight bridge extension.



AREA A - PROPOSED BRIDGE SECTION

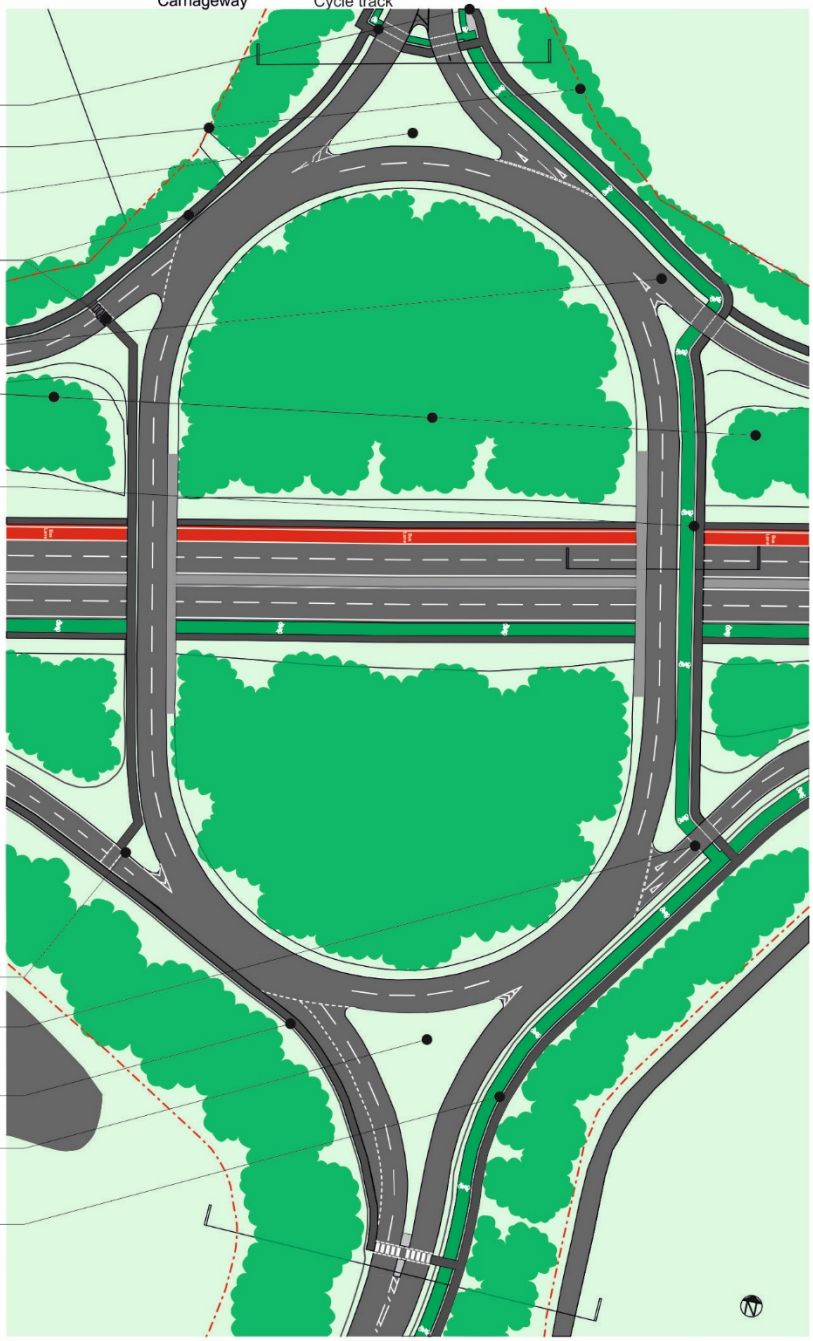
South western off-slip to A127 with informal NMU crossing point.

South eastern on-slip from A127 with demand signalled crossing for NMU's

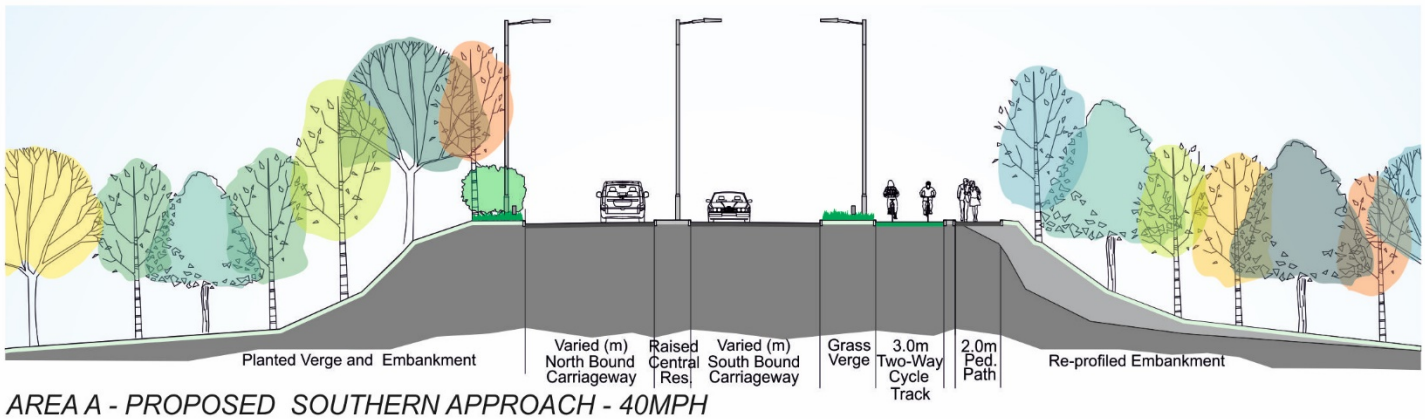
New minimum 2.0m width pedestrian pathway

Grassed central reservation extended to accommodate pedestrian crossing.

Eastern A128 verge and embankment re-profiled to accommodate minimum 3.0m cycle and 2.0m pedestrian paths.



AREA A - PROPOSED PLAN RAISED JUNCTION - 40MPH



AREA A - PROPOSED SOUTHERN APPROACH - 40MPH

Figure 11b. A128 Vision – Area A - Proposed

4.2.5 Study Area B – Existing

Area B considers solutions for the whole of the Tilbury road; however, the vision sketches concentrate on the northern one-way junction with the A127. This junction allows vehicles on the A127 slip road to enter the road but not exit. There are several private access points from the road serving both residential and commercial businesses

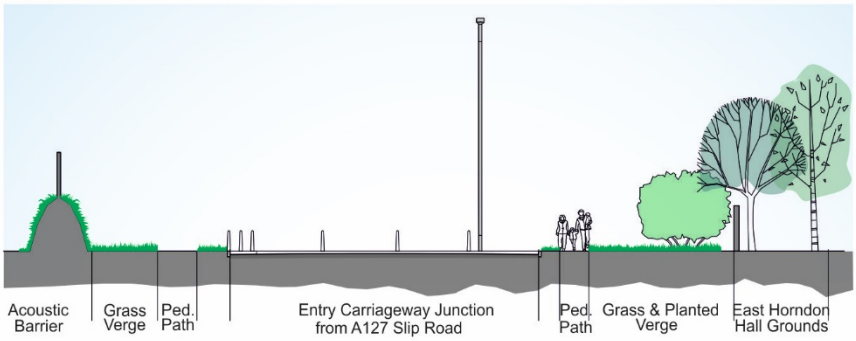
Considering the very low levels of observed vehicle movements, Tilbury Road has an overly wide carriageway. On the western side of the carriageway the green verge to the highway boundary is wide all the way to the A128 junction. On the eastern side, a poor quality narrow pedestrian path runs south through two private access points. A very wide tarmac pavement outside Hall cottages is a strange anomaly. This pavement terminates at a truck lay-by, after which no formal pedestrian path is provided for the remainder of the road.

Tilbury Road is changing in nature with more residential site being developed on it. The new residential development at the northern end adjacent to the one-way entry has incorporated an acoustic bund. There is an immediate need to incorporate sustainable measures for all future occupants and users.

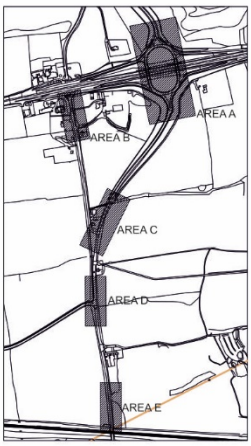
4.2.6 Study Area B – Proposed

The proposals for Tilbury road centred on the opportunity for this road to offer an alternative north - south route, to NMU's wanting to access the A127. The one-way off the slip road also creates an opportunity for a demand response type bus service to access the road for residents and workers – linking them to the new train station and other destinations in the surrounding area. Key proposal includes:

- Rationalise the one-way entry to blend NMU infrastructure into the wider sustainable network.
- Create a minimum 3.0m wide two-way cycle path on the western side of the carriageway.
- Create a minimum 2.0m wide pedestrian path the entire length of the road on the eastern side of the carriageway.
- To reduce vehicle speeds, insert 2 to 3 chicanes in appropriate locations on the road.
- Deliver new street lighting for vehicles and NMU's on the western side of the carriageway.



AREA B - EXISTING SECTION 1- SLIP JUNCTION - 60MPH



KEY PLAN

Westbound slip road from A128 junction

One-way entry from A128 westbound slip road.

Vehicle turning hammer

Low quality, varying width pedestrian paths.

Acoustic bund to new residential development.

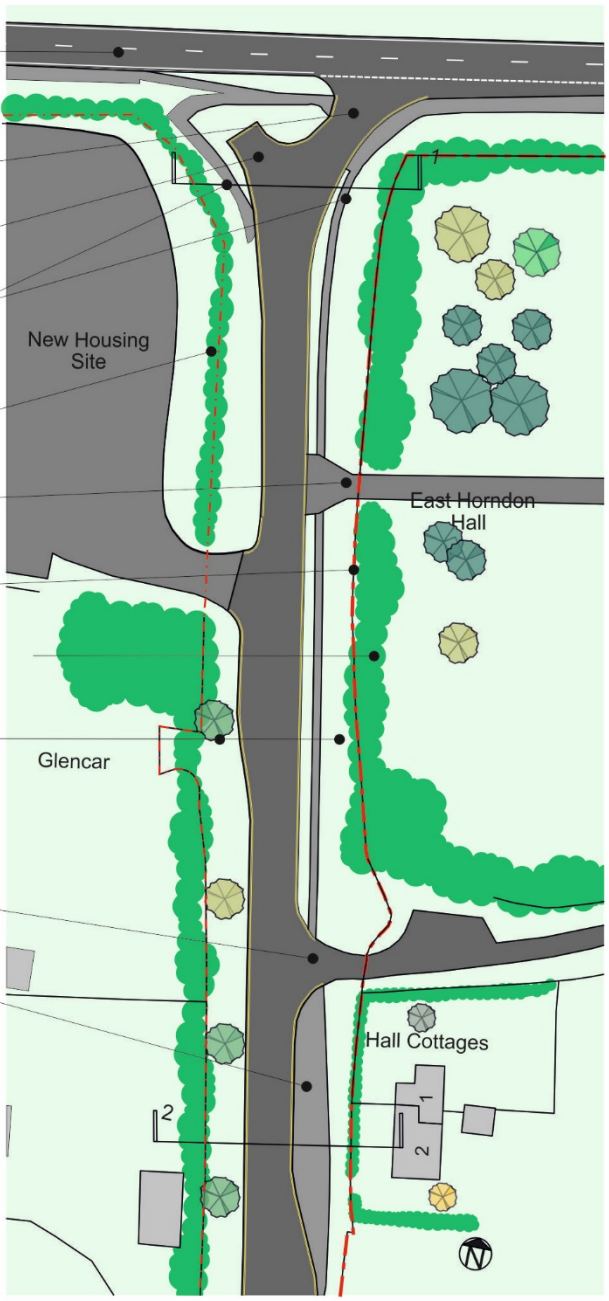
Private entrance to East Horndon Hall

Boundary hedge to East Horndon Hall

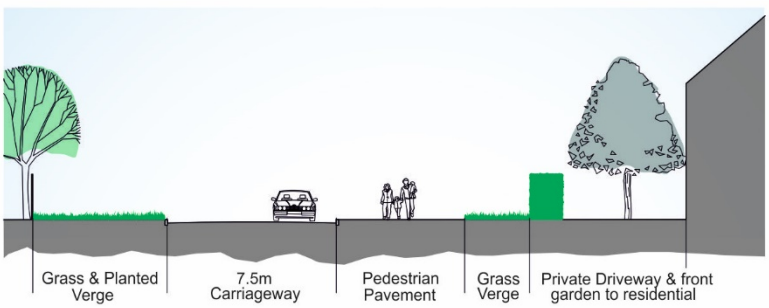
Grass verges and planted boundaries to highway.

Access to East Horndon Hall industrial site.

Wide pavement to front of cottages leading to a lorry lay-by.

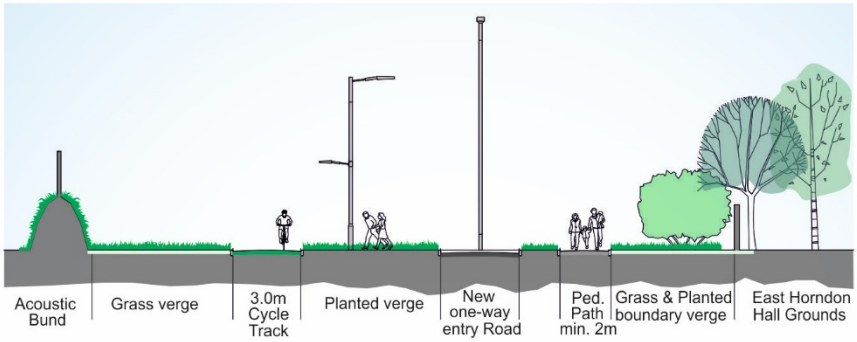


AREA B - EXISTING PLAN TILBURY RD/ A127 JUNCTION - 60MPH

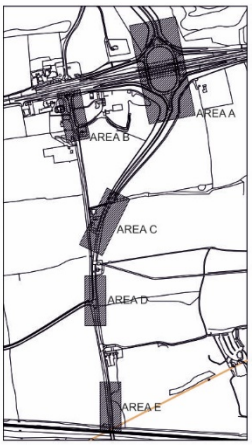


AREA B - EXISTING TYPICAL SECTION 2 - 60MPH

Figure 11c. A128 Vision – Area B - Existing



AREA B - PROPOSED SECTION 1- SLIP JUNCTION - 20MPH



KEY PLAN

Westbound slip road from A128 junction.

One-way entry from slip road revised layout.

Minimum 2m width new pedestrian path.

Vehicle turning hammer

Minimum 3.0m two-way cycle path.

Acoustic bund to new residential development

Private entrance to East Horndon Hall

Boundary Hedge to East Horndon Hall

3 to 4no. new chicanes to length of road to reduce traffic speed.

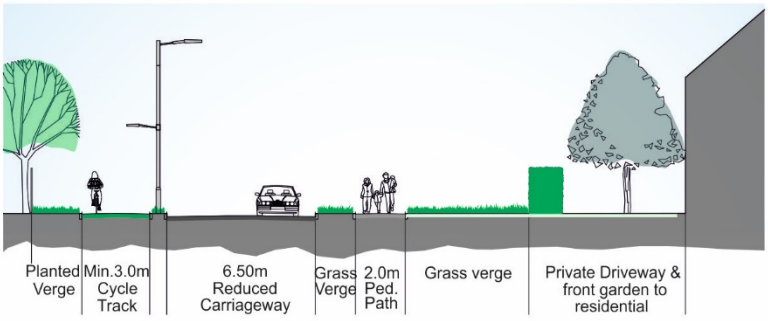
Minimum 3.0m two-way cycle path

Access Road to East Horndon Industrial site.

Pavement to cottages reconfigured to 2.0m minimum with grass verges.

Truck lay-by removed to accommodate safer NMU use of the road.

AREA B - PROPOSED PLAN TILBURY RD/ A127 JUNCTION - 20MPH



AREA B - PROPOSED TYPICAL SECTION 2 - 20MPH

Figure 11d. A128 Vision – Area B - Proposed

4.2.7 Study Area C – Existing

Area C considers solutions for the junction of Tilbury road with the A128. Also, the how NMU provision can be incorporated going north to area A and south to study area D.

There are high levels of traffic on the A128 traffic often exceed the current 50mph speed limit. The Tilbury Road currently allows vehicles to travel at the national speed limit for highway type.

The embankment rising to Area A, starts just after the Tilbury Road junction. The gradient rises steeply making movement difficult for cyclists, especially with no provision other than the carriageway. Street lighting for the A128 is entirely on the western side of the carriageway within this area. The verge here is narrow and constrained compared to the eastern verge.

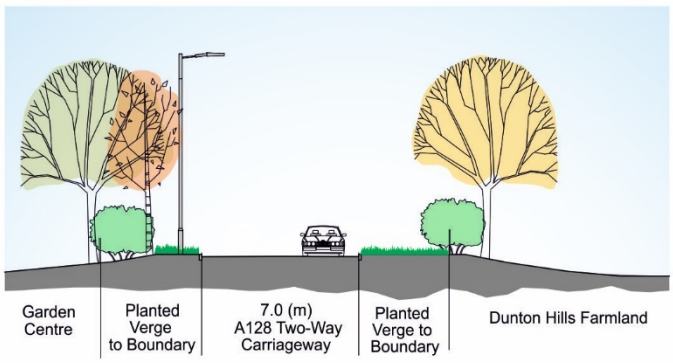
South of the Tilbury Road junction the grass verges are very wide. Within the western verge a low-quality pedestrian path runs from the station road junction in Area D terminating at the first bend of Tilbury Road.

At the edge of this area, the southbound Bus stop is located in the entry splay to the Dunton Hills Farm. This may need relocating to accommodate other NMU uses and alterations to the highway layout.

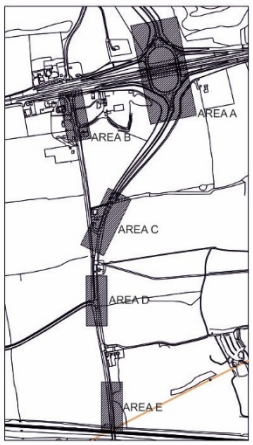
4.2.8 Study Area C – Proposed

The proposals for the area focus on the solution for an appropriate junction that accommodates existing and new vehicular movements to the new development areas. Further, it sets out how NMU movements can be integrated into the new Highway solution to allow safer movements and continue the connected SBGC sustainable network. The key proposals are:

- Extend the eastern embankment to accommodate new segregated minimum width 3.0m two-way cycle and 2.0m pedestrian paths
- The insertion of a new roundabout to give access to the northern part of the DHGV masterplan area.
- Utilise wide grassed and/or planted verge areas to create a safety and comfort zone between the segregated NMU paths and the roundabout
- At the new exit road from DHGV and across the A128 south of the new roundabout, insert on-demand ‘countdown’ signalled crossing points



AREA C - EXISTING SECTION 1 - NORTHERN APPROACH - 50MPH



KEY PLAN

Public access route through to Tilbury Road.

Access road to private land forming part of the DHGV allocation (Mr Low).

Highway boundaries to A128

Zone of street lighting to carriageway on Western verge of A128.

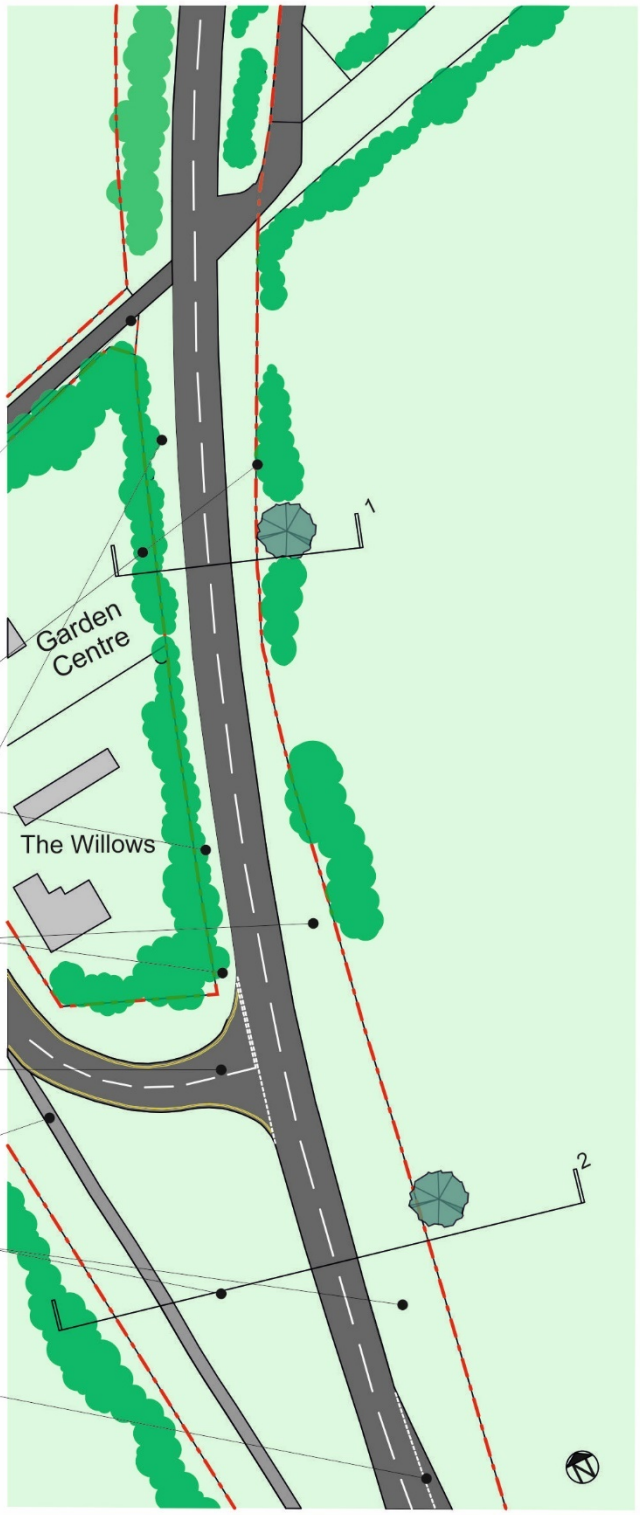
A128 grass and planted verges - start of ramp to raised junction and embankments.

Junction of A128 and Tilbury Road.

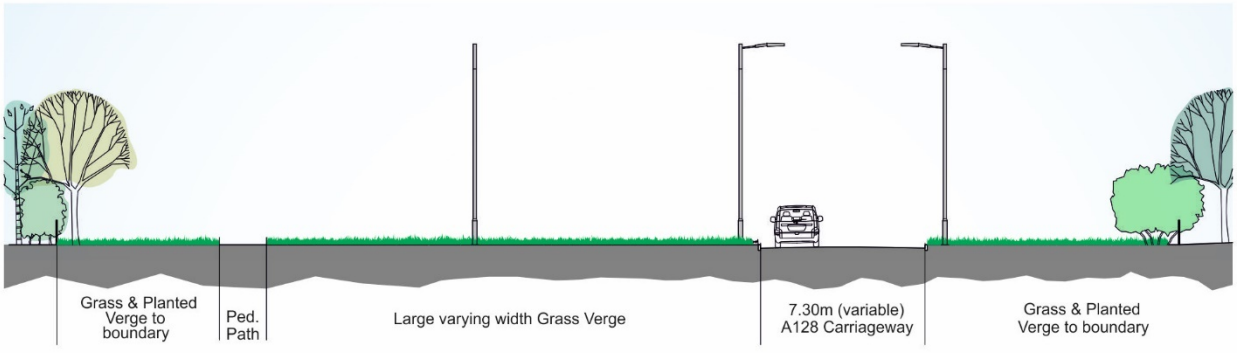
Low quality pedestrian pavement to Tilbury Rd from Station Road..

Wide grass verges within A128 highway boundary.

Combined Bus Stop Lay-by and highway splay entrance to Dunton Hill Farm.

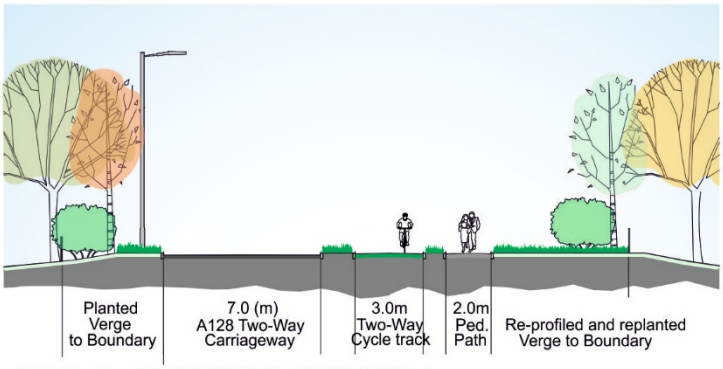


AREA C - EXISTING PLAN A128/TILBURY RD JUNCTION - 50MPH

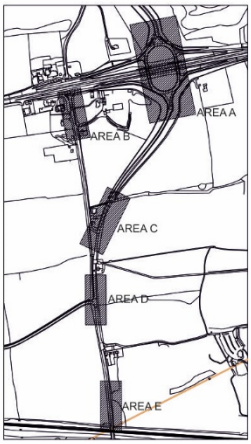


AREA C - EXISTING SECTION 2 - TILBURY ROAD/A128 JUNCTION - 50MPH

Figure 11e. A128 Vision – Area C - Existing



AREA C - PROPOSED SECTION 1 - NORTHERN APPROACH - 50MPH



KEY PLAN

Public access route through to Tilbury Road retained

Access road to private land forming part of the DHGV allocation (Mr Low), removed and realigned to a junction off the new access road to DHGV

Highway boundaries to A128

Eastern embankment to be extended to accommodate new NMU provision.

New segregated minimum width - 3.0m two-way cycle and 2.0m pedestrian paths.

Zone of street lighting to carriageway on Western verge of A128.

A128 grass and planted verges - start of ramp to raised junction and embankments.

New roundabout created as northern access point for DHGV. Consider greening centre to maintain highway feel.

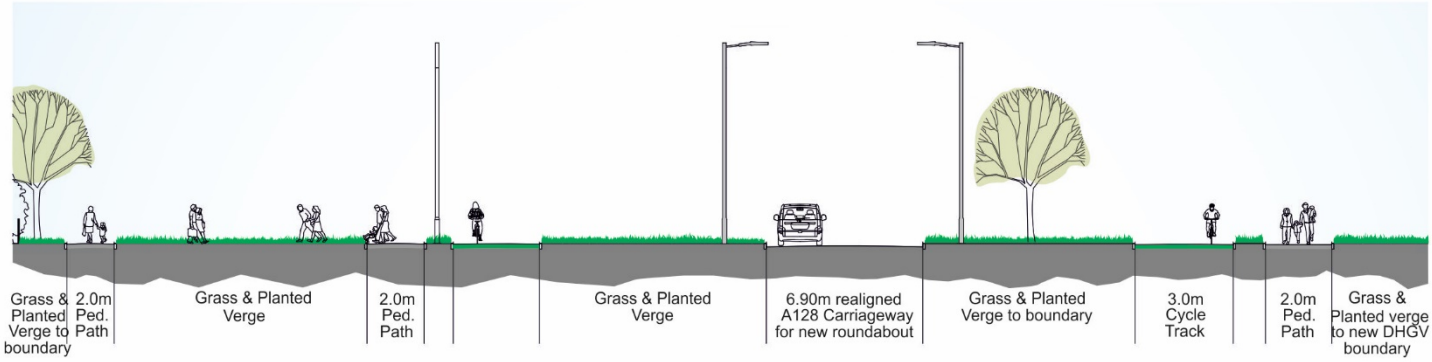
For safety and to maintain greened nature of highways, new segregated cycle and pedestrian paths separated from roundabout by wide grass and planted verges.

New Highway boundary created from DHGV land to accommodate roundabout and NMU provision.

For the safety of all NMU age groups, 'countdown' demand only crossing points to be allowed for at appropriate approaches to the roundabout.

Combined Bus Stop Lay-by and highway splay entrance to Dunton Hill Farm removed.

AREA C - PROPOSED PLAN A128/TILBURY RD JUNCTION - 40MPH



AREA C - PROPOSED SECTION 2 - TILBURY ROAD/A128 JUNCTION - 40MPH

Figure 11f. A128 Vision – Area C - Proposed

4.2.9 Study Area D – Existing

Area D considers the key junction in the SBGC. The junction where Station Road meets the A128, will be key to encourage and support sustainable transport movements from the new garden village to the proposed improved transport interchange created from West Horndon Station.

As can be seen in fig 14a, North of the junction – on the western side of the carriageway - a low quality pedestrian path continues from Station Road going northward within a wide grassed verge to the Area C junction. The path connects to a bus stop. The eastern verge, connecting to the Dunton Hills Farm boundary fence, is also wide – but it narrows as northward being constrained just outside of the study area by the boundary wall of a private house.

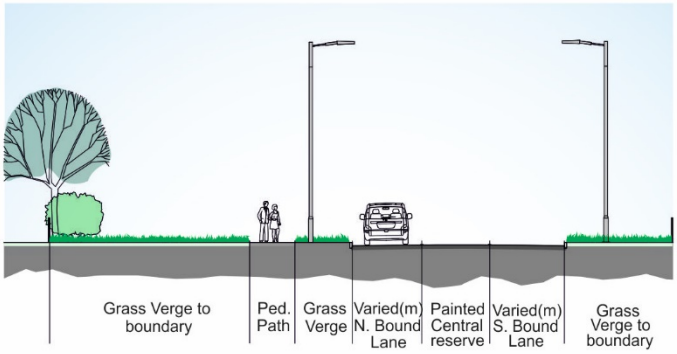
The carriageway of the A128 is wide in this area, having a painted central reserve, to accommodate vehicle turning requirements at various locations. Pedestrian movement across roads and the arms of the junction is hazardous given the high traffic speeds the current high layout allows on both the A128 and Station road. There is no segregated provision for cyclists

.

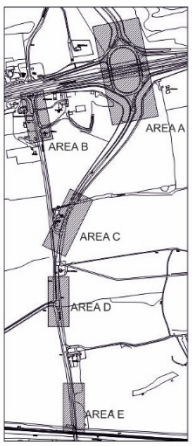
4.2.10 Study Area D – Proposed

The focus of this areas proposals is creating the primary access for pedestrians, cyclists and buses into the new garden village site. Further to provide sustainable infrastructure that connects into the wider growth corridor network. The key proposals are:

- Extend Station road into the DHGV site, revising highway boundaries to create a new crossroad signalised junction. A128 traffic priority with ‘countdown’ crossings for NMU’s at all junctions for diagonal and perpendicular movements. Right turns into DHGV banned.
- North of the junction insert new segregated minimum width 3.0m two-way cycle and 2.0m pedestrian paths within the western verge. And a minimum 2.0m pedestrian path in the Eastern verge.
- South of the junction split cycle provision to minimum 1.5m wide paths on each verge. A minimum width 2.0m pedestrian path to be included in the eastern verge.
- Reduce all radii to crossroad corners to slow traffic movements.



AREA D - EXISTING TYPICAL SECTION 1 - 50MPH



KEY PLAN

Bus Stop on northbound lane of carriageway.

Low surface quality and inconsistent width pedestrian path to the A128 leading into Station Rd

Highway boundaries to A128

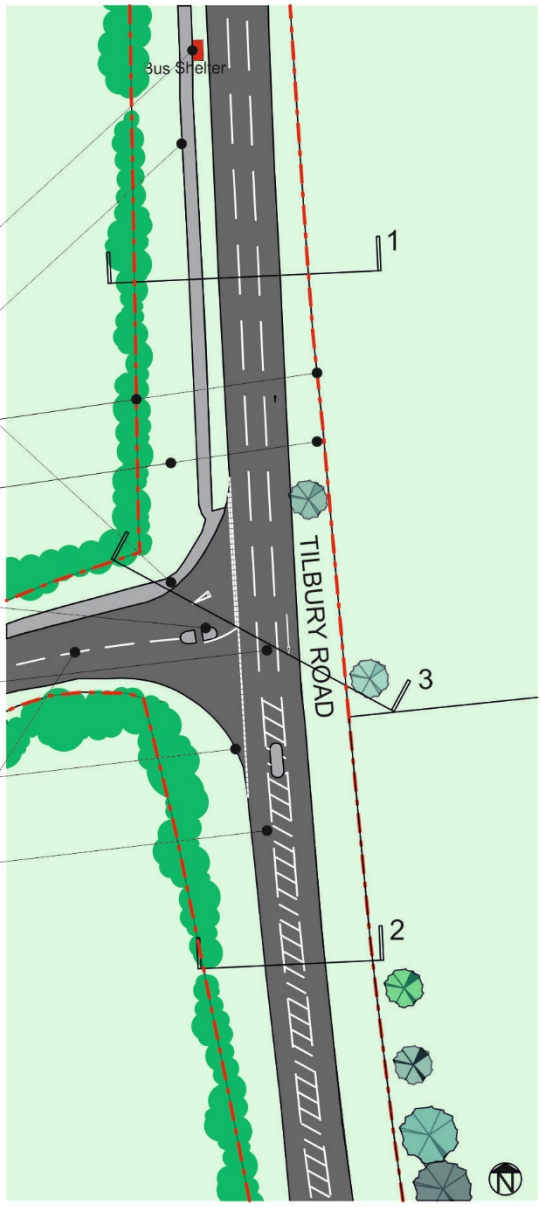
A128 grass and planted verges.

Junction of Station Road and A128 incorporates poor crossing facilities for pedestrians

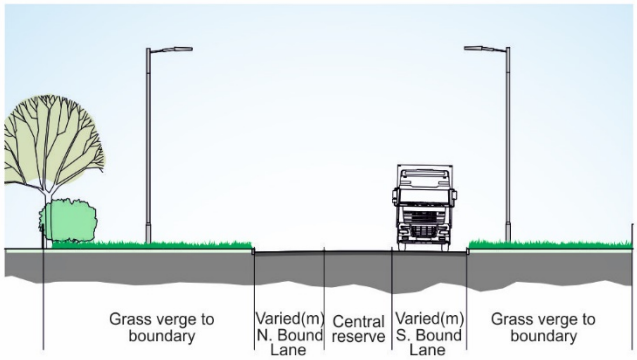
Painted central reserve to A128 to accommodate vehicular turning points at several locations.

Large radii corners allow vehicles heading northward on the A128 to turn left into Station Road at speed

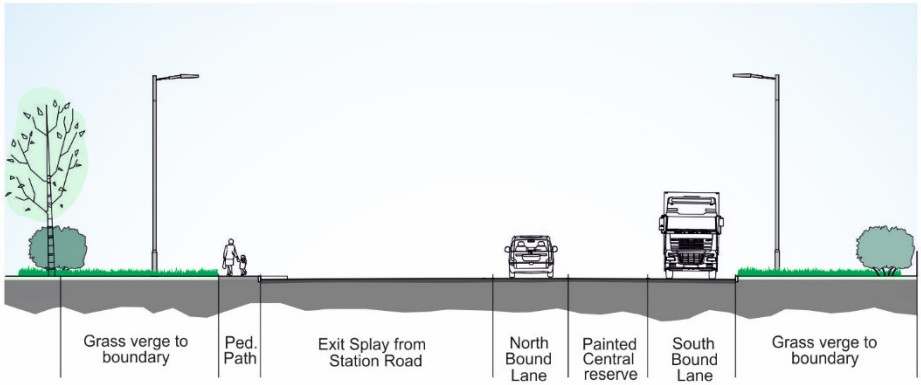
No formal provision on Station Road or the A128 for cyclist allowing access to and from West Horndon station.



AREA D - EXISTING PLAN A128 JUNCTION WITH STATION ROAD

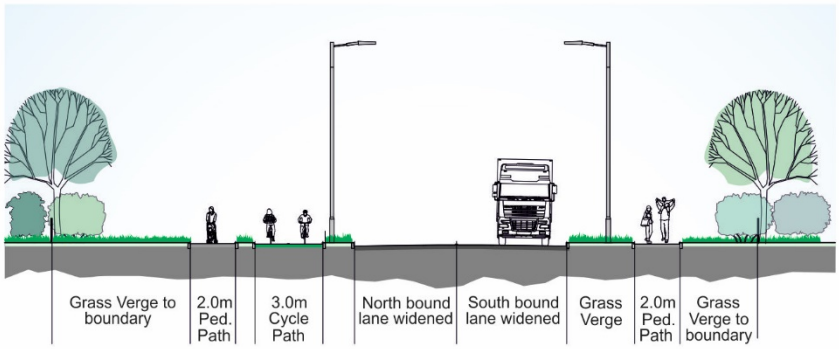


AREA D - EXISTING TYPICAL SECTION 2 - 50MPH

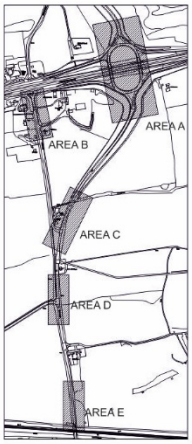


AREA D - EXISTING TYPICAL SECTION 3 - 50MPH

Figure 11h. A128 Vision – Area D - Existing



AREA D - PROPOSED TYPICAL SECTION 1 - 40MPH



KEY PLAN

Bus Stop on northbound lane of carriageway upgraded. New bus stop installed on southbound carriageway. Both stops integrated into pedestrian path with pedestrian priority over cyclists.

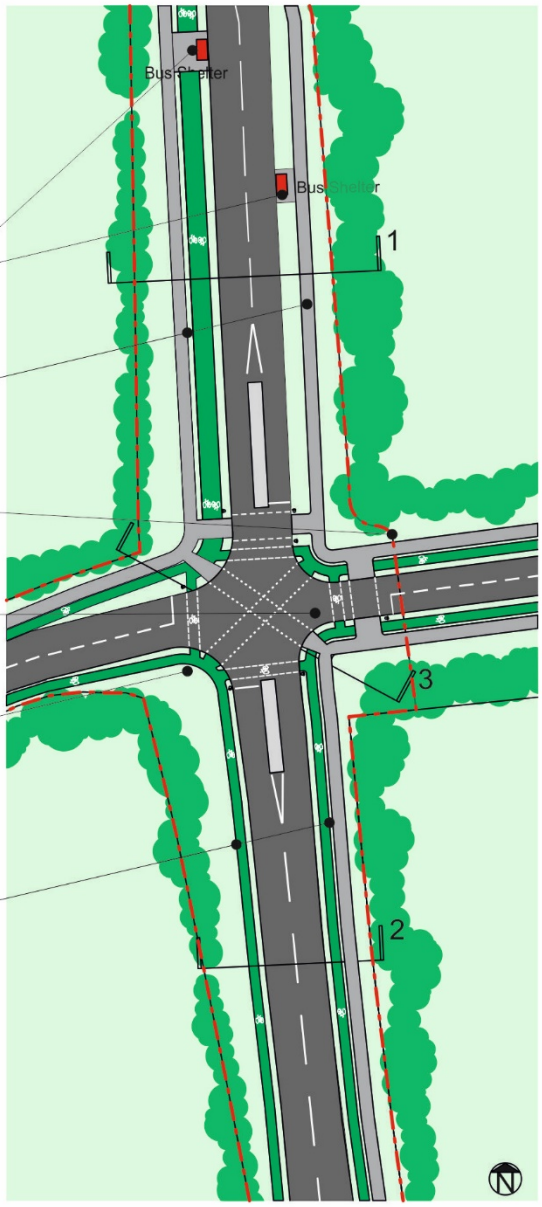
North of new crossroads, incorporates minimum width 2.0m pedestrian paths southbound and northbound. Northbound path segregated, adding a minimum width 3.0m two-way cycle path.

Highway boundaries to A128 revised on the eastern arm entering DHGV to allow signalised crossroads to be created.

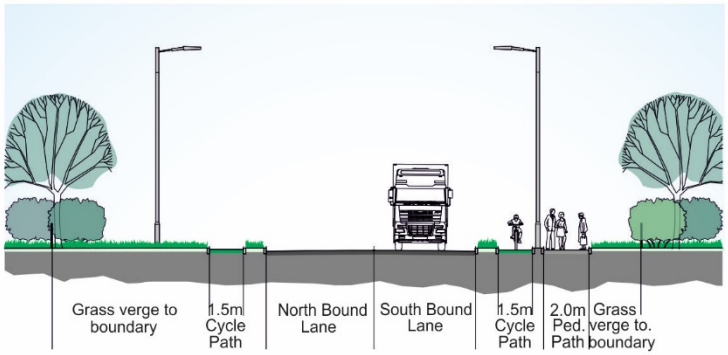
New crossroads. Station Road extended into the DHGV development. Junction to be signalised to allow for prioritised 'on demand' sustainable transport movements.

Turning radius into Station Rd tightened to slow traffic turning left from the A128, making NMU movements safer.

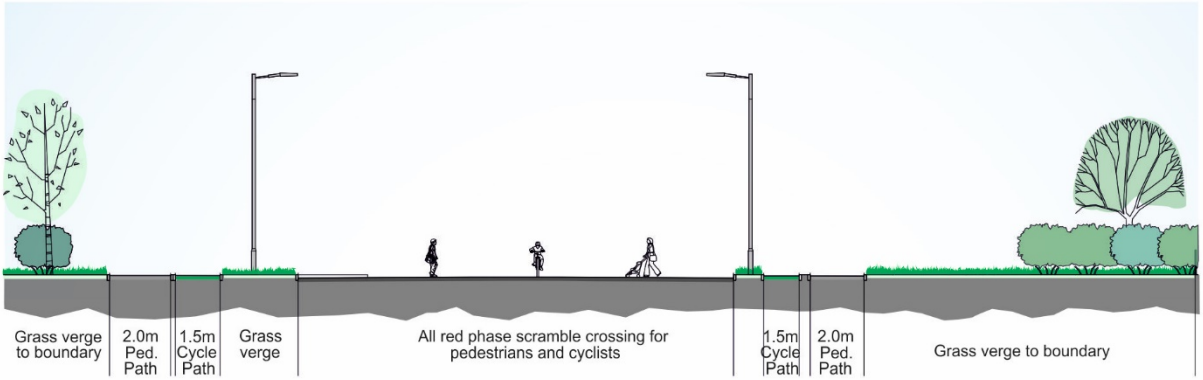
South of the crossroads due to physical constraints and compliance with vision principles, cycling provision split into minimum 1.5m paths segregated from the highway with grass verges. Minimum 2.0m pedestrian pathway created to service DHGV residents to the South.



AREA D - PROPOSED PLAN A128 JUNCTION WITH STATION ROAD



AREA D - PROPOSED TYPICAL SECTION 2 - 40MPH



AREA D - PROPOSED TYPICAL SECTION 3 - 40MPH

Figure 11i. A128 Vision – Area D - Proposed

4.2.11 Study Area E – Existing

Area E considers the southern entry point off the A128 into the DHGV site for vehicles and NMU's. Further it seeks to provide sustainable links through the borough boundary into Thurrock.

In this area the total carriageway width is at its narrowest. A128 lane width appears constant along the whole road, but the painted central reservation is minimal here. There are also no streetlights in this area.

There is no formal segregated provision for either pedestrians or cyclists in the area. Informal pedestrian movement on the grass verges is difficult and dangerous as both widths are constrained by overgrown vegetation, in places, right up to the kerb of the carriageway.

As the A128 passes under the Railway Bridge, which forms the boundary with Thurrock DC, the width available to provide pathways for pedestrian or cyclists is minimal due to the structure of the bridge.

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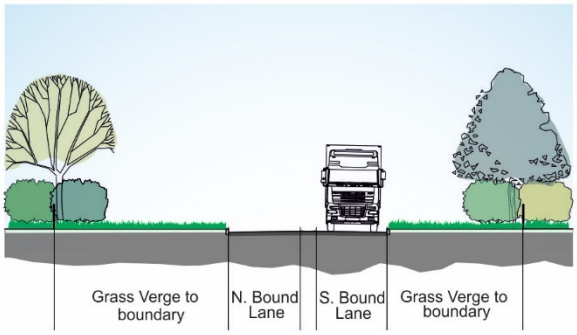
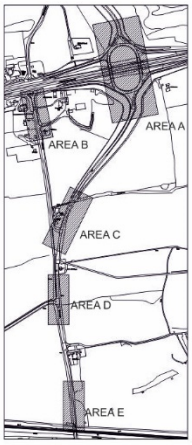
4.2.12 Study Area E – Proposed

The focus of this areas proposals is creating the south access for pedestrians, cyclists, vehicles into the new garden village site. Further to provide sustainable infrastructure that connects into the wider growth corridor network and southward into Thurrock. The key proposals are:

- Revise the highway boundary to accommodate a new roundabout giving access into the southern part of DHGV
- North of and adjacent to the roundabout, split the cycling provision into minimum width1.5m paths either side of the carriageway. On eastern side deliver a segregated minimum width 2.0m pedestrian path.
- South of the roundabout create a cycle path through the borough boundary on the western verge, which also can be used by pedestrians.



AREA E - EXISTING TYPICAL SECTION 1 - 50MPH



KEY PLAN

Vegetation planted in the verges on both side of the carriageway in this section will need to be severely cut back to allow the provision of NMU infrastructure.

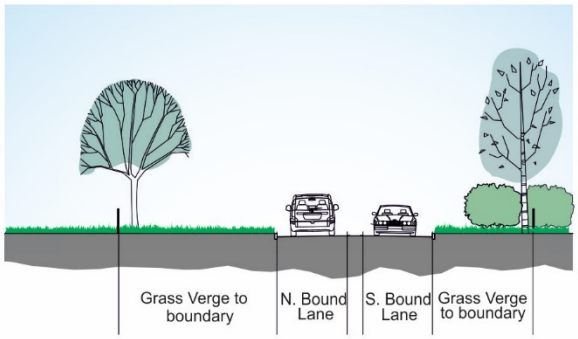
Highway boundaries to A128

No formal provision for pedestrians or cyclists in this section of the A128. Cyclists have to use the carriageway. Walking in the verges is restricted due to vegetation encroachment is some places.

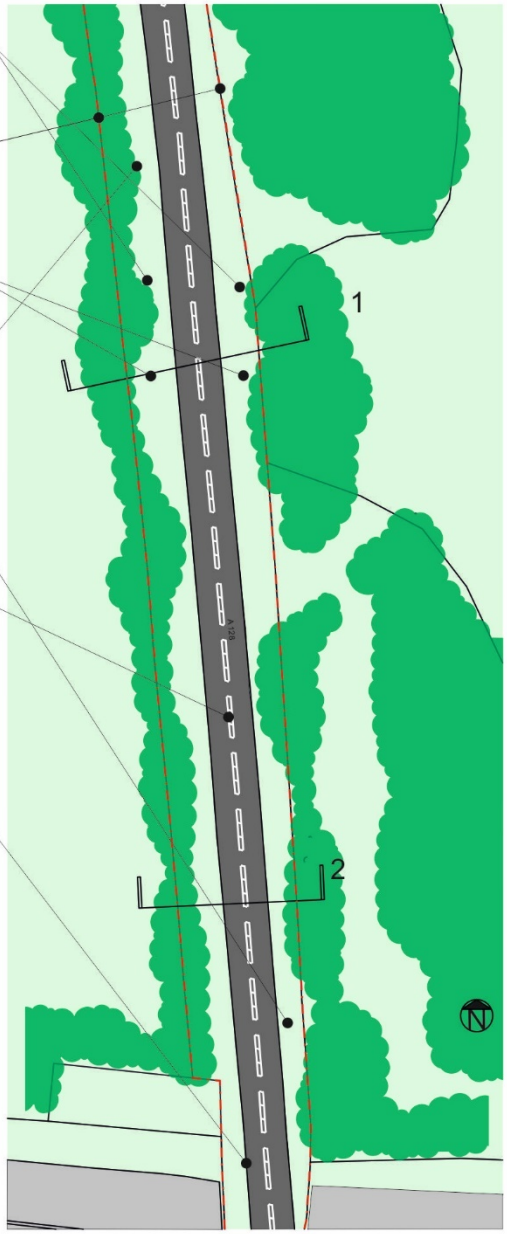
There is currently no street lighting on either side of the carriageway in this section of the A128

Carriageway in this section has the narrowest painted central reservation. Some potential width could be re-provisioned to provide additional NMU facilities.

The structure for the railway bridge forming the boundary between Brentwood and Thurrock, constrains the potential of full segregated NMU provision running into Thurrock.

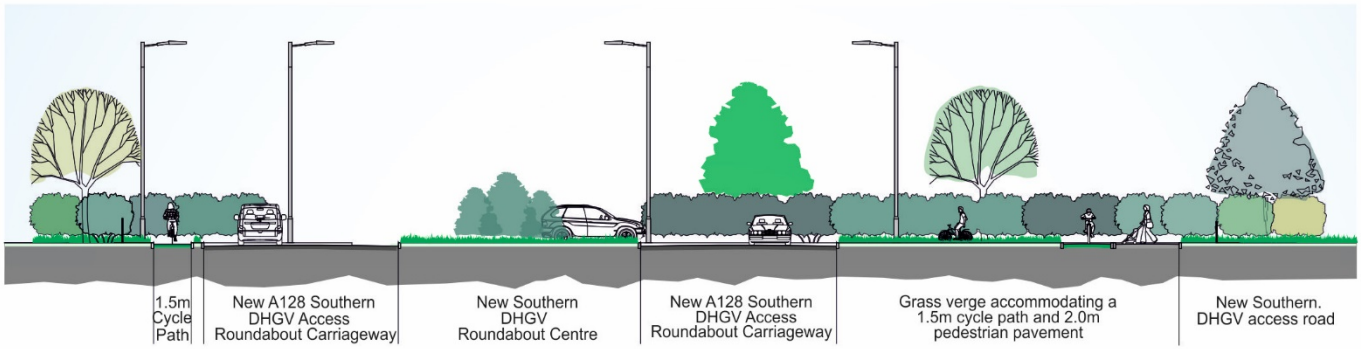


AREA E - EXISTING TYPICAL SECTION 2 - 50MPH

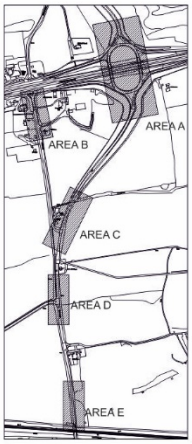


AREA E - EXISTING PLAN A128 TO BOROUGH BOUNDARY - RAIL BRIDGE

Figure 11j. A128 Vision – Area E - Existing



AREA E - PROPOSED TYPICAL SECTION 1 - 40MPH



KEY PLAN

South of the crossroads due to physical constraints and compliance with vision principles, cycling provision split into minimum 1.5m paths segregated from the highway with grass verges. Minimum 2.0m pedestrian pathway created to service DHGV residents to the South.

Highway boundary to the southbound eastern side reset, taking DHGV land to accommodate a new access roundabout.

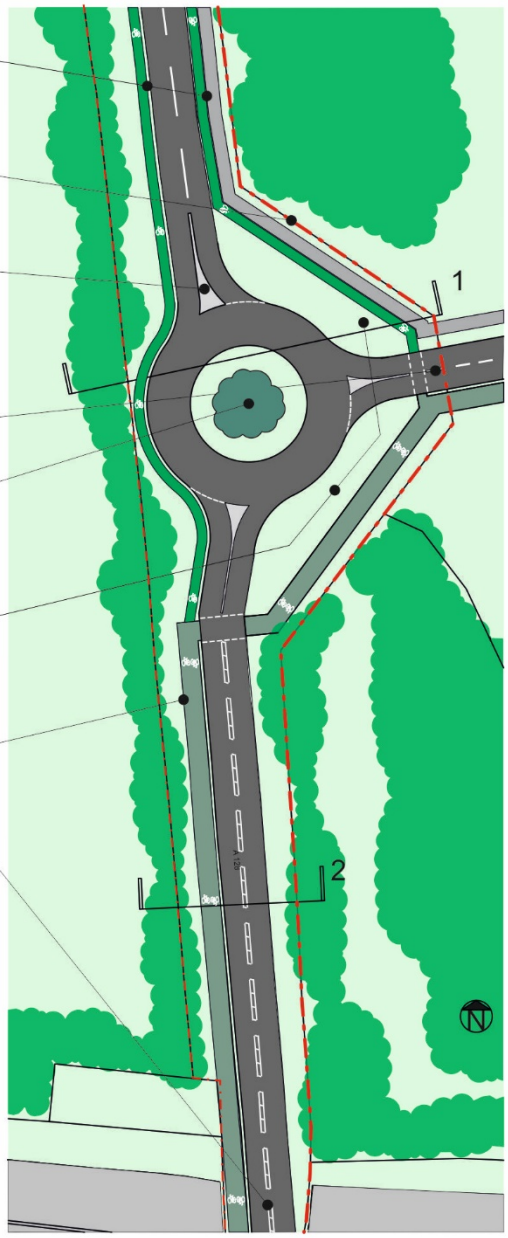
The A128 speed to be reduced to 40mph to make NMU journeys safer and more comfortable. The new junctions to enter DHGV should reduce the average speed of traffic.

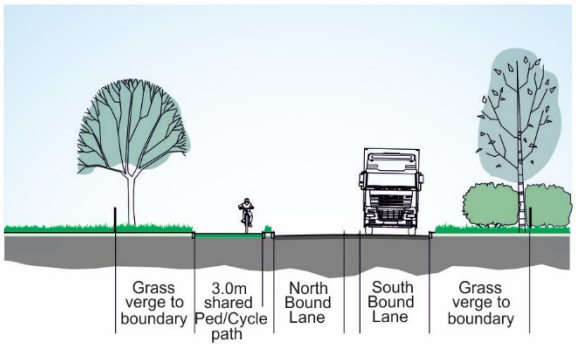
Southern access road into DHGV. Minimum width 2.0m segregated Pedestrian path and 1.5m cycle path is proposed to head northwards.

New roundabout created as southern access point for DHGV. Consider greening centre to maintain typical Essex highway feel.

For safety and to maintain greened nature of highways, new segregated cycle and pedestrian paths separated from roundabout by wide grass and planted verges.

Due to constraints provide the widest possible two-way shared pedestrian and cycle lane connecting DHGV and the SBGC to Thurrock. To avoid the bridge structure and achieve a minimum width of 3.0m under the bridge, the carriageway lanes may need to be narrowed and the central painted reserve removed.





AREA E - PROPOSED TYPICAL SECTION 2 - 40MPH

AREA E - PROPOSED PLAN A128 TO BOROUGH BOUNDARY - RAIL BRIDGE

Figure 11k. A128 Vision – Area E - Proposed

4.2.13 Study Area Cost Estimates

While the vision sketches within the A128 have been presented separately by area for clarity, the costs for the A128 will be considered as follows: A, B&C together and D&E together.

Area A is the largest and most complex of the five study areas in the A128. The key costs for this area are:

AREA - A

Northern Approach:

- New ped. facilities including new crossing points- £150k

Bridge Section:

- Widening of the deck - £1M
- New Parapets cycle/ped. paths and crossing points (x4) £350k

Southern Approach:

- New ped. facilities including crossing point and embankment extension (considering good ground conditions) - £1M

General costs:

- Lighting upgrade - £0.5M
- Resurfacing carriageways Inc. slip roads - £500K

TOTAL AREA A - £3.5M

Tilbury Road has areas B and C at its north and south respectively. It therefore makes sense to consider these area costs together. These are:

AREA - B

- Tilbury Road/A127 Junction New Junction upgrade - £300k
- Cycle/Ped. paths entire road (approx. 500m) - £600k
- New Chicanes* - £100k ea. x 3

Sub-total - £1.2M:

AREA - C

- New Roundabout including new arms, and NMU facilities - £1.5M

General costs:

- Lighting upgrade (all areas) - £700K
- Resurfacing carriageways - £300K

Sub-Total - £2.5M

TOTAL AREAS B&C - £3.7M

The last two areas are the other two junctions required to access the DGHV

AREA - D

- Signalised junction including NMU facilities £750k
- Lighting £250k
- New arm and widening of existing A128 - £250k

Sub-total - £1.25M:

AREA - E

- New roundabout including new arm, realignment of A128 and NMU facilities £1M
- Lighting - £250k

Sub-total - £1.25M

TOTAL AREAS D&E - £2.5M

There are some common costs for elements between specific areas– these are:

COMMON COSTS – C TO E

- *Resurfacing Tilbury road between (500m) - £250k*
- *NMU Facilities connecting Area C and Are E (500m) - £500k*

ALL SECTIONS

- Drainage. Allow £1M
- Diversions/Utilities - £1M
- Traffic management & Landscaping - £2M

TOTAL - £4.5M

Concluding this section total construction costs for the A128 are:

AREA A	*- £3.5M*
AREAS B&C	*- £3.7M*
AREAS D&E	*- £2.5M*
COMMON COSTS	*- £4.5M:*

TOTAL COSTS A128 - £14.2M

4.3 – B186 – Warley Street

4.3.1 Existing Sustainable Use

In the northern area of the B186 has a tarmac pedestrian path on the western side of the carriageway. This provision, adjacent to a planted verge - serves a number of residential properties, a hotel and a few small commercial properties. On the eastern side pedestrians mostly have a grass verge apart from a short tarmac pavement near the entrance to the depot. This verge serves the Woodlands School further north There are bus stops on either side of the carriageway north of the entrance to the depot and before the entrance to the school.

The middle area the B186 is the bridge and its embanked ramps. Here the narrow pedestrian pavement on western side continues. On the bridge pedestrians are protected from the carriageway by a concrete safety barrier. On embanked ramp south of the bridge, the pavement is squeezed between two crash barriers and terminates near its end

The B186 to the south has no formal provision for pedestrians exists. There are two bus stops in the verge, north of the boundary for Brentwood Enterprise Park

Cyclists have no provision other than sharing the carriageway with vehicles on this any section of the B186 within the SBGC

4.3.2 Existing Highway Layout

The northern section of the B186 is approximately 375m and runs from north of the entrance to Woodlands School to south of the entrance to the Kiln Hotel where the embanked ramp up to the bridge starts.

The width of the carriageway varies from approximately 8.5m near the school at its widest where it has a painted central reservation, to approximately 7.0m near the entrance to the hotel. The tarmac pavement on the western side near the schools is approximately 2.0m wide narrowing to 1.5 m near the hotel. The grass verge on the eastern side is in the main is approximately 1.8m throughout the section.

The middle section is approximately 430m long, with the bridge structure taking about 80m of that. On the bridge the carriageway narrows to 6.8m, broadening to a width of 7.4m on both ramped embankments either side of the bridge. The grass verges vary in width on both ramped sections

The Southern section is approximately 300m, running from the junction of Church Lane to just past the entrance to Gladstone Cottages. There are grass verges on both with an average width of approximately 2.1m.

4.3.3 Study Area A – Existing

When considering the proposals for the B186 we felt accommodating segregated routes for cyclists. Pedestrian and bus movements would be challenging. The presence in this part of the corridor of two major employment sites, requires a pragmatic approach given the impact of the Lower Thames Crossing project on J29 of the M25.

Area A considers solutions for the improving sustainable access to Woodlands School, the residences and businesses in this area.

The carriageway is significantly wider than it needs to be. Its average width of 7.8m, facilitates the current 40mph speed limit. The presence of the school makes 40mph too fast. With no formal provision for cyclists, it would be impractical for them to share the carriageway safely.

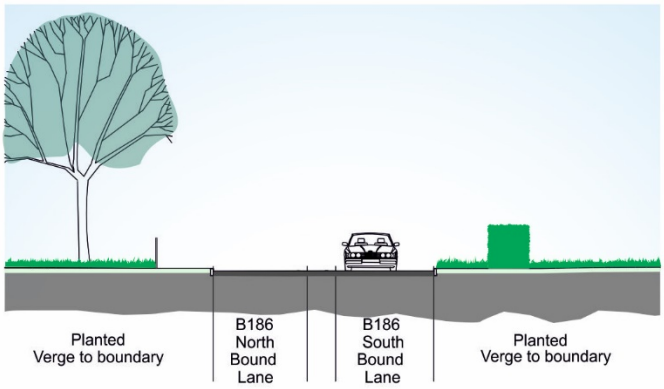
The two bus stops have no protection from inclement weather.

4.3.4 Study Area A – Proposed

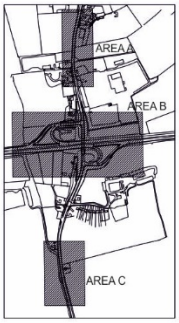
The requirement in this area is to rebalance the provision of space given over to carriageway and allocate regained width to sustainable use.

Key proposal includes:

- Narrow the carriageway to 6.2m
- Widening the existing western path to create cycle path which pedestrians can use - 2.5m minimum
- Introduce ‘zebra’ pedestrian crossings adjacent to the school and bus stops.
- Provide shelter roofs to both bus stops cantilevered over the paths.
- Widen the eastern grass verge to either create 1.5m minimum pedestrian path



AREA A - EXISTING TYPICAL SECTION - 40MPH



KEY PLAN

Woodlands Primary Schools buildings and playing grounds.

Highway boundaries to B186 carriageway average 7.8m wide. Carriageway has no markings to prevent parking.

No provision for cyclists other than using the carriageway.

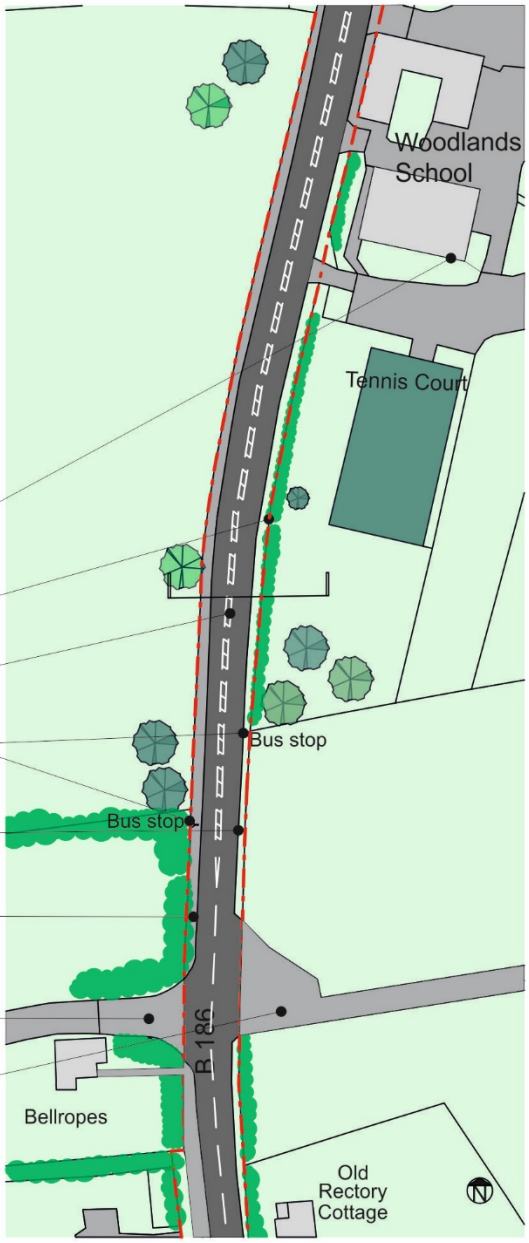
North and southbound bus stops for the 269/X90 services from Grays to Brentwood.

Narrow grass verge to highway boundary on the western side of the B186.

Reasonable quality tarmac pedestrian path to highway boundary on the western side of the B186.

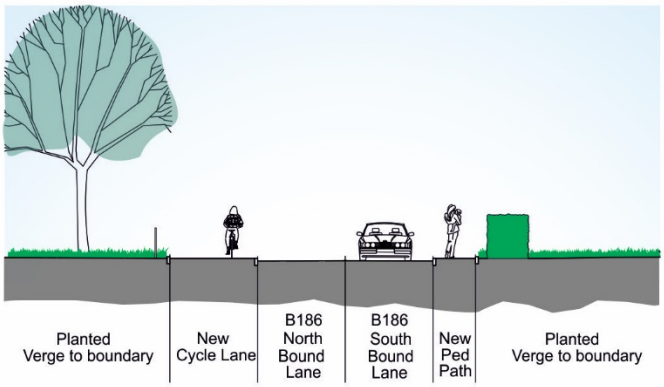
Vehicle access to private Auto salvage commercial site.

Gated and secured vehicle entry to private farmland. Pedestrian access appears to be unrestricted.

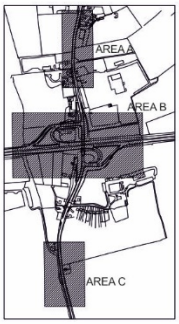


AREA A - EXISTING PLAN B186 40MPH

Figure 12a. B186 Vision – Area A - Existing



AREA A - PROPOSED TYPICAL SECTION - 30MPH



KEY PLAN

Woodlands Primary School to encourage more sustainable trips

Highway boundaries to B186 unaltered but carriageway width reduced to average 6.2m wide. Carriageway markings added to prevent parking.

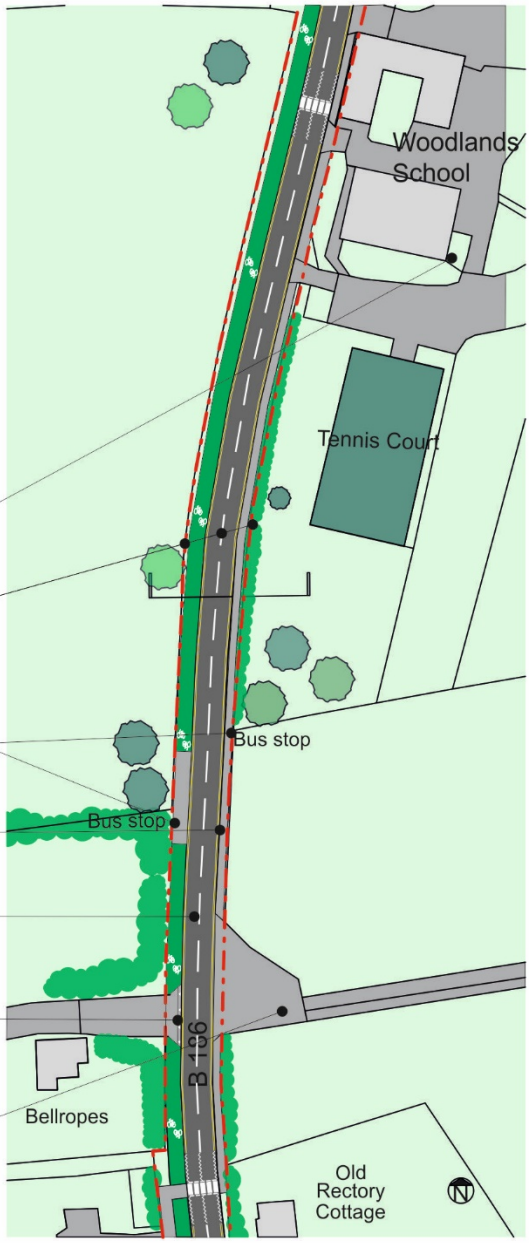
North and southbound bus stops for the 269/X90 services from Grays to Brentwood. To be upgraded with open ended shelters.

Western verge to be widened sufficiently as part of narrowing the carriageway to provide minimum width 1.5 pedestrian path.

Eastern Pavement to be widened from reduction of carriageway to provide a minimum width 2.5m cycle path that can be used by pedestrians.

Vehicle access to private Auto salvage commercial site revised to a raised table entry.

New pedestrian crossing created at the point where the segregated pedestrian path from Area B can no longer carry on in the western verge.



AREA A - PROPOSED PLAN B186 - 30MPH

Figure 12b. B186 Vision – Area A - Proposed

4.3.5 Study Area B – Existing

The vision for the B186 is to achieve a viable multi-modal balanced solution for vehicular and sustainable modes, which provides access to the two employment sites- in particular to the Brentwood Enterprise Park – without the need for vehicles to access from J29 of the M25

Area B considers solutions for the improving vehicular and sustainable access across the existing road bridge – connecting NMU provision into the wider SBGC network.

The bridge has been created for vehicular access. No consideration has been given for adequate NMU provision. The narrow pedestrian path on the west side of the bridge squeezed between a concrete crash barrier and the low balustrade, does connect to pedestrian provision to the north and Area A. Also, for a short distance to the South and Area C.

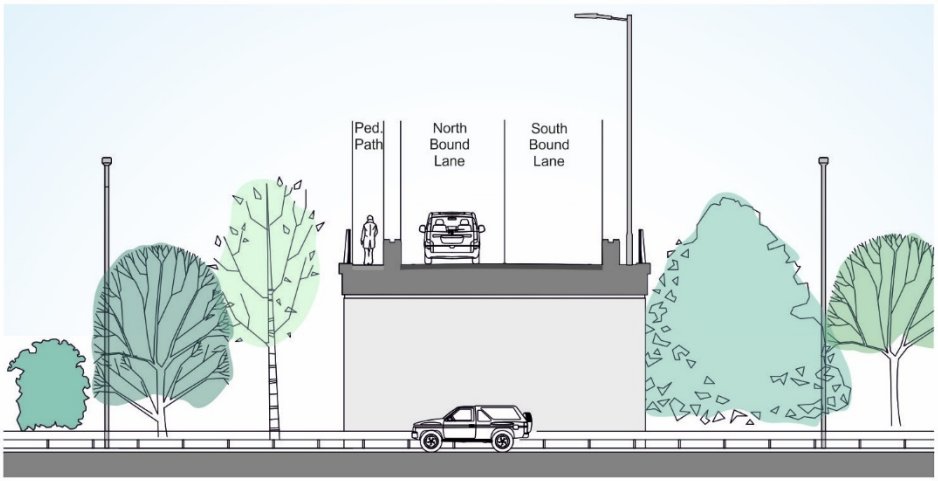
The traffic speeds in this area are the highest on the B186, set at national speed limits.

4.3.6 Study Area B – Proposed

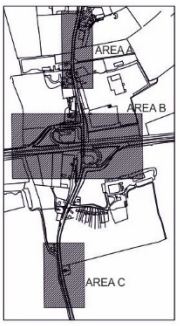
The requirement in this area is to create NMU provision over the bridge which connects to the wider sustainable transport network.

Key proposal includes

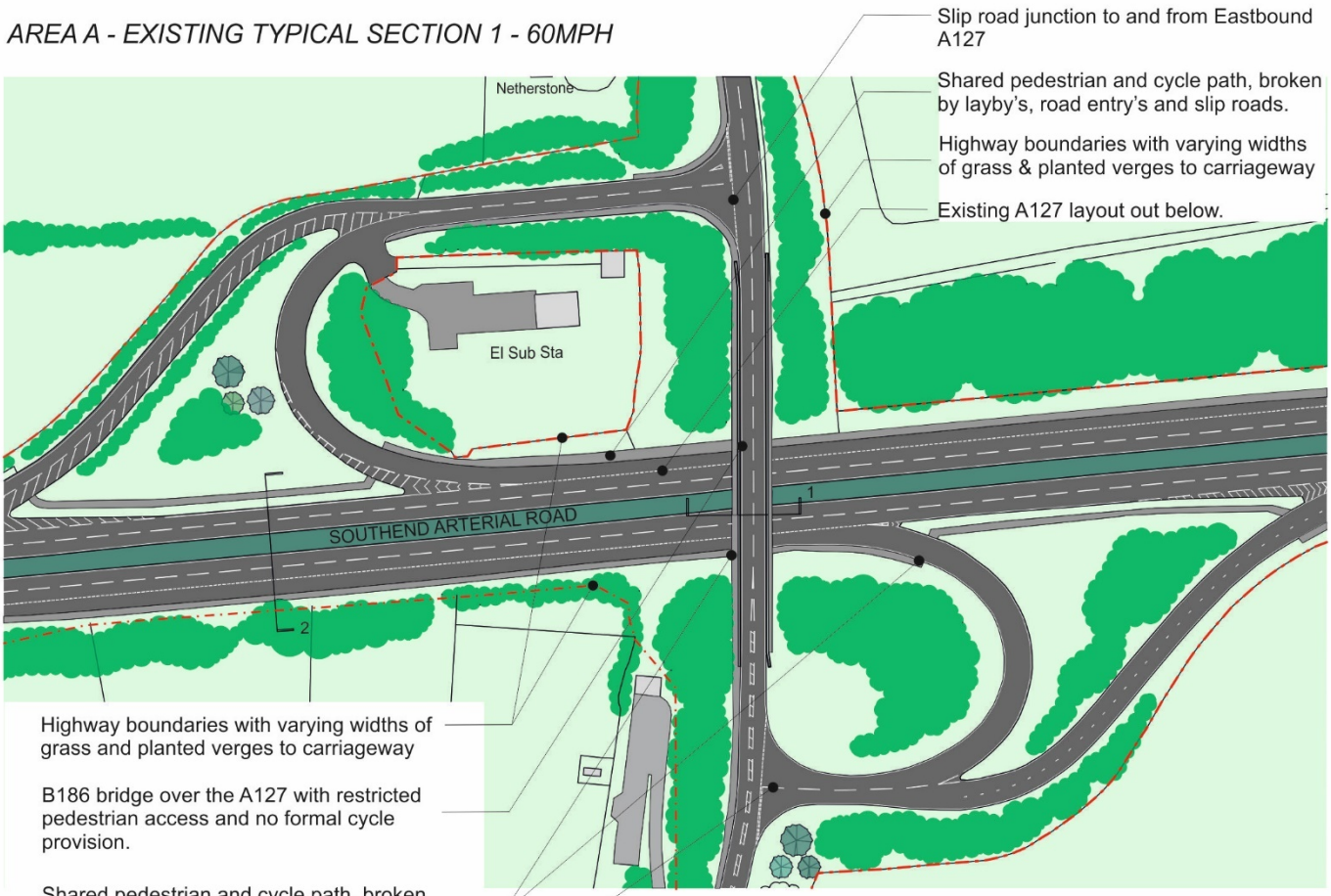
- Create a lightweight bridge extension to deliver segregated cycle lane and pedestrian provision.
- To the north and south of the bridge deliver ‘demand’ signalised crossing points for NMU’s.
- Deliver segregated minimum width 3.0m and 2.0m cycle and pedestrian paths respectively on the southern slip roads to connect to the provision on the A127
- Upgrade pedestrian paths on the northern slip roads to connect to provision on the A127.
- Reduce speed limits over within this section to a maximum of 40MPH.



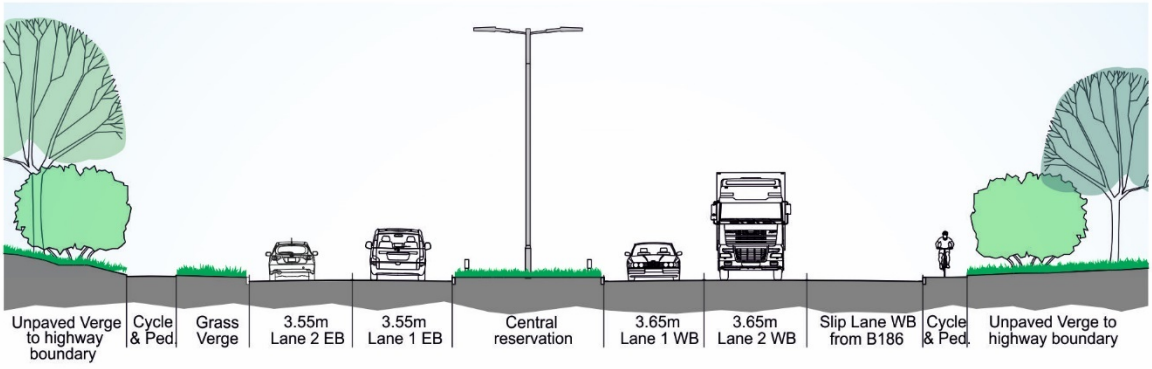
AREA A - EXISTING TYPICAL SECTION 1 - 60MPH



KEY PLAN

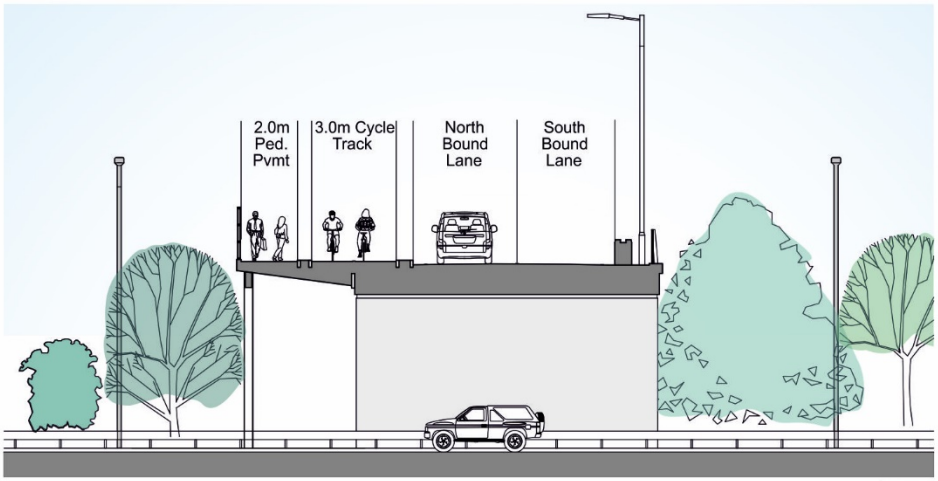


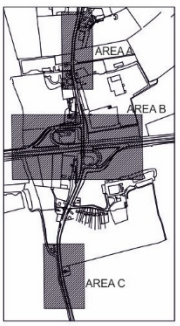
AREA B - EXISTING PLAN B186 - 60MPH



AREA B - EXISTING TYPICAL SECTION 2 - 60MPH

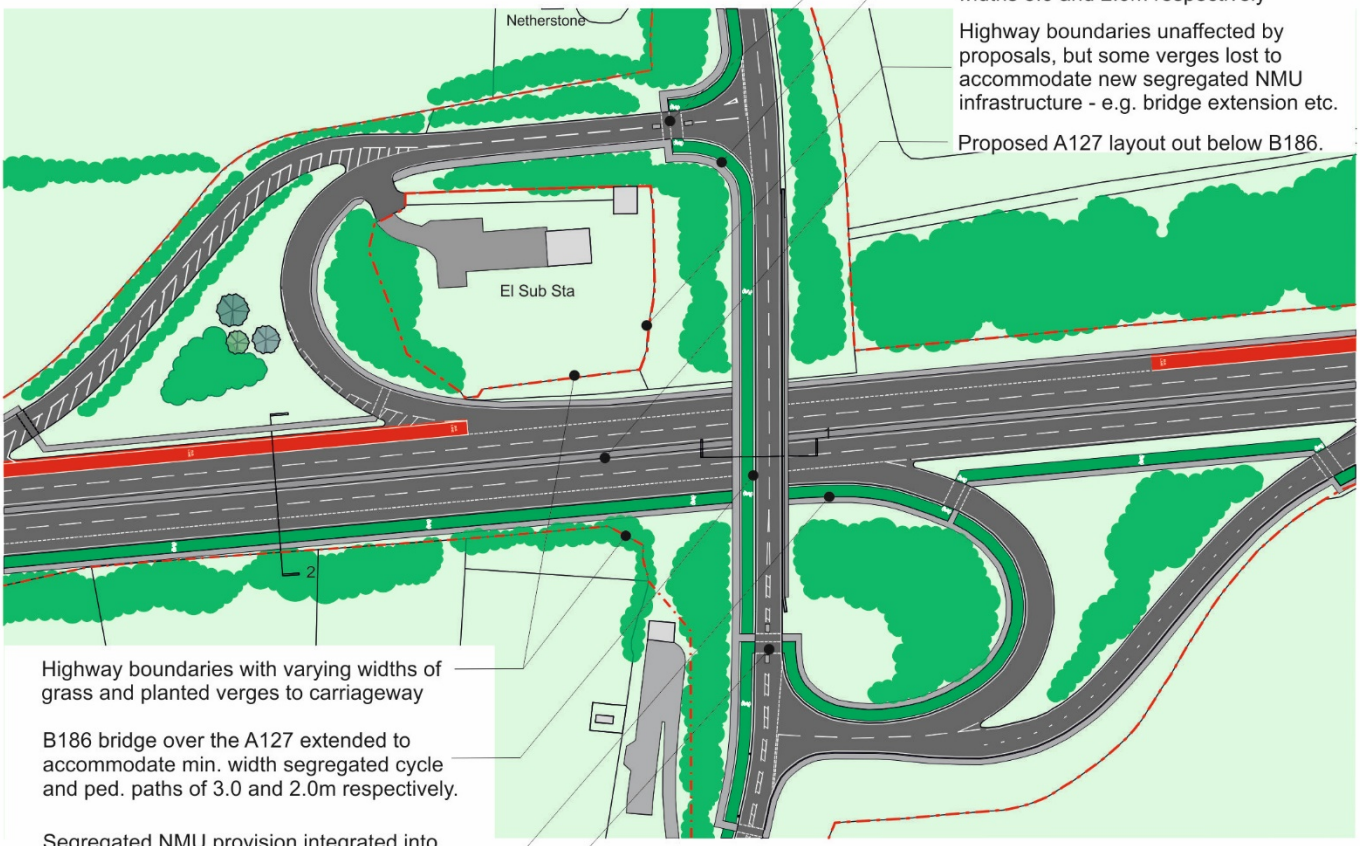
Figure 12c. B186 Vision – Area B - Existing





KEY PLAN

AREA B - PROPOSED TYPICAL SECTION 1 - 40MPH



New NMU demand signalised crossing on the Eastbound A127 Slip road.

Segregated cycle and ped paths, min widths 3.0 and 2.0m respectively

Highway boundaries unaffected by proposals, but some verges lost to accommodate new segregated NMU infrastructure - e.g. bridge extension etc.

Proposed A127 layout out below B186.

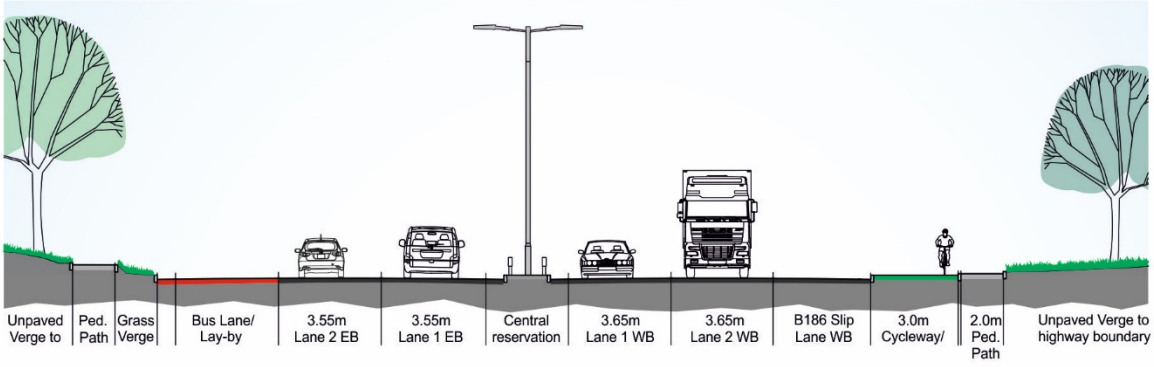
Highway boundaries with varying widths of grass and planted verges to carriageway

B186 bridge over the A127 extended to accommodate min. width segregated cycle and ped. paths of 3.0 and 2.0m respectively.

Segregated NMU provision integrated into slip road and carried up from A127 to the B186. To link SBGC network.

New signalised crossings for NMU at the south end of the extended bridge.

AREA B - PROPOSED PLAN B186 - 40MPH



AREA B - PROPOSED TYPICAL SECTION 2 - 40MPH

Figure 12d. B186 Vision – Area B - Proposed

4.3.7 Study Area C – Existing

Area C consider measures that will allow NMU provision to be incorporated into a constrained highway boundary width. Also, how such provision can be designed into an appropriate junction to slow traffic speeds sufficiently on this section of the road to allow NMU's and vehicular movement safe access to the proposed Brentwood Enterprise Park

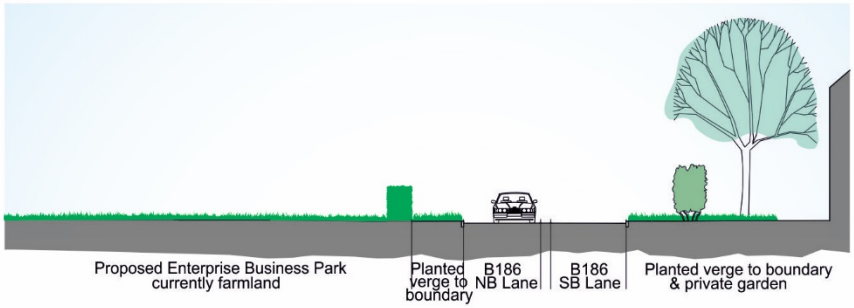
Verges along this area are very narrow compared to those in the north and Area A – see fig 12e. Despite this Bus Stops have been located just outside of this study area on both sides of the road. Passengers waiting for buses have no shelters and must stand in undergrowth buffeted by traffic travelling at national speed limits.

4.3.8 Study Area C – Proposed

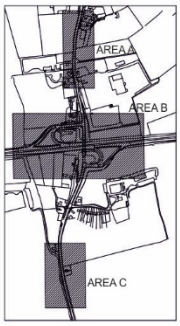
Achieving NMU access to the B.E.P site is challenging in this location. It won't be possible here to adhere to the principle of segregated cycling and pedestrian paths here without breaking the principle of taking land not within the highway or owned by one of the promoters.

Therefore, our vision as per fig 12f proposes the following:

- Reduce the carriageway width to the minimum width ECC will allow – circa 6.2m.
- Create minimum width 1.5m NMU paths on both sides on the carriageway.
- Deliver a new roundabout totally within land owned by B.E.P. reducing speeds on this section to 40MPH.
- Splay the B186 into the new roundabout to create a safe access for the Gladstone cottages and potential future development.



AREA C - EXISTING TYPICAL SECTION - 60MPH



KEY PLAN

Private cottage with access point off the B186

B186 carriageway. with painted central reserve to allow turning into private residences.

No provision for cyclists other than using the carriageway.

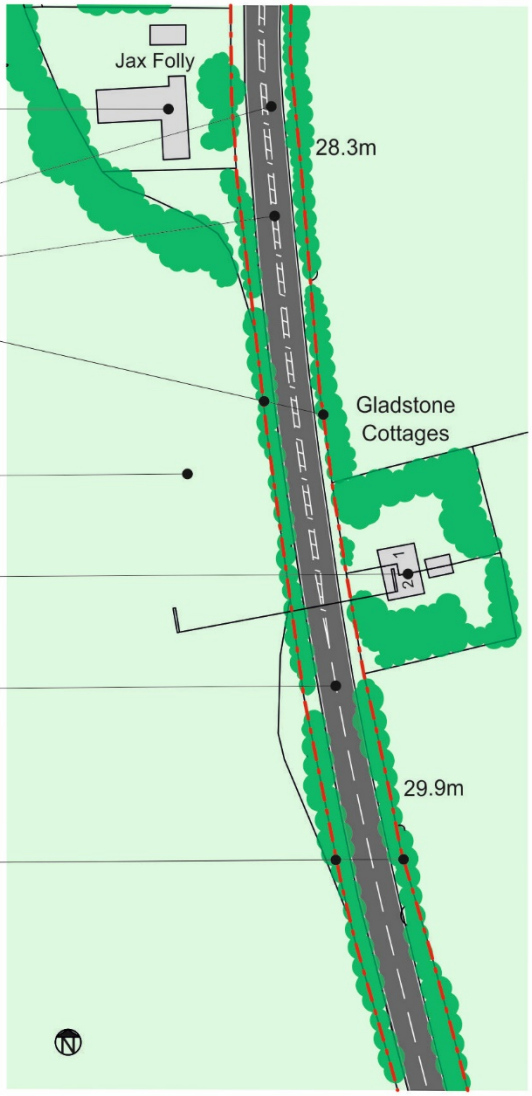
Verges to highway boundaries. Hedges encroach over the grass verge making pedestrian movement very difficult.

Proposed Enterprise Business Park currently Farmland field.

Private cottages with access points directly off the B186.

Top of a blind hill for vehicles travelling at the national speed limit for highway type.

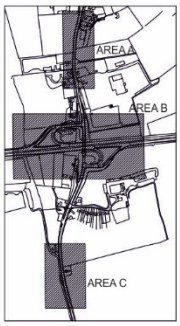
Verges to highway boundaries. Hedges encroach over the grass verge making pedestrian movement very difficult.



AREA C- EXISTING PLAN B186 - 60 MPH

Figure 12e. B186 Vision – Area C - Existing

AREA C - PROPOSED TYPICAL SECTION - 30MPH



KEY PLAN

Private cottage with access point off the B186 retained.

B186 carriageway width reduced to 6.2m. Painted central reserve removed and traffic slowed through design to 40mph in line with County & Government guidance.

Formal minimum width 1.5m tarmac NMU provision either side of the reduced width carriageway. Cycling priority suggested on western path due to presence of the enterprise business park.

Verges to significantly cut back to create clear navigation paths for NMU's

Highway boundary revised into land proposed for Enterprise park to create a new access roundabout. The deflection of the B186 to the roundabout will force traffic speeds to fall in line with the SBGC vision.

New Greened Roundabout and adjacent verges, created as an appropriate junction to slow B186 traffic speed sufficiently to allow vehicles and NMU's to safely enter the Enterprise Business Park.

Private cottages will require their own access points directly from the new roundabout or similar new junction design proposal.

New signage required on blind hill to slow, at an appropriate distance, vehicles approaching the roundabout

Verges to significantly cut back to create clear navigation paths for NMU's

AREA C- PROPOSED PLAN B186 40 MPH

Figure 12f. B186 Vision – Area C - Proposed

4.3.9 Study Area Cost Estimates

Costs for the B186 are fairly straightforward. The costs are estimated without having carried out detailed underground surveys for utilities or condition surveys of the existing bridge.

The key costs for the three areas are as follows:

***AREA - A**:*

- Widen north eastern footway £125,000
- Reduce and resurface carriageway - £200,000
- Widen north western footpath creating cycleway - £175,000*:*

Subtotal - £0.5M

AREA - B

- Widening of the deck - £1M
- Lighting upgrade and additional lighting for NMU - £0.5M
- New Cycleway/footway access from the A127 - £300k

Subtotal - £1.8M

AREA - C

- New Roundabout including new arms, and new approaches - £1.25M
- Eastern footway £125,000
- Resurfacing - £200,000
- Western cycleway - £175,000

Sub -Total - £1.7M

General all section costs:

- Drainage - £700K
- Diversions - £1M
- Traffic Management & Landscaping - £1M

TOTAL COSTS - £7M*

*(*excludes any major highway structures or major utility diversion costs)*

4.4 – Station Road

4.4.1 Existing Sustainable Use

Station Road has two sections with two different characters. Both sections accommodate pedestrian movement to differing degrees and a public bus service operates in both.

From the junction with the A128 to the village gate, Station Road has a narrow low-quality tarmac pavement inside a wider grass verge on the northern side of the carriageway, which allows pedestrians from Dunton and East Horndon to access the West Horndon shops and the train station. This section has a national speed limit making cycling on the carriageway dangerous.

Within West Horndon Village from the gate to the station there are narrow tarmac pavements on both sides off the carriageway to accommodate pedestrian movement. Vehicles tend to park partially on the pavement on both sides, reducing the effective width to less than a meter in places. The speed limit in this section is 30mph. However, many vehicles coming from the A128 junction rarely reduce to this speed until a significant distance into the village. This speed and the parked cars reducing carriageway effective carriageway widths could explain why no cycling, was observed. T

4.4.2 Existing Highway Layout

From the A128 junction to the Village gateway is Station Road is approximately 590m in length. Within the highway boundary, the carriageway - with one lane each way - is approximately 7.3 m wide. The northern pavement has a grass verge of 1.7m, narrow pavement of 1.2m and a planted verge to the boundary of 2.4m. The southern pavement has a grass and hedged verge to the boundary of 2.5m.

Within the Village to the Railway Bridge is approximately 700m. The carriageway has an average width of 6.2m. The Northern pavement width varies between 1.8 and 2.5m along its length. The southern pavement is slightly broadening from 2.2 to 3.0m of defined tarmac pavement. Though in some early parts of the southern side the overall width increases due to lengths of grass verges to the carriageway or to garden walls.

There is no streetlighting present along the length of the initial pre-village section. In the village a regular pattern of streetlights is located at the rear of the northern pavement adjacent to private front garden walls. On the southern pavement streetlights appear in regular patterns sporadically. At various junctions' bollards and guard railing reduce the effective width of the pavements on both sides.

4.4.3 Study Area A - Existing

When considering the proposals for the Station Road accommodating segregated routes for cyclists and pedestrians is vital. Within this vision Station Road is required to connect all development sites within the SBGC east west to the new Interchange at West Horndon.

Station Road in this area – see fig 13a - is constrained in overall highway width. What space is currently available is given over to the carriageway (averaging over 7.3m). The width and straight nature of the road allows vehicles to travel at and beyond the nation speed.

Given traffic speeds the walking experience, on the very narrow badly maintained northern pedestrian path, is an uncomfortable one. The southern verge is narrow – unsuitable for walking. No cycling provision is made, requiring this activity to take place in the carriageway.

4.4.4 Study Area A - Proposed

Our proposals in this area are centred on reallocating the space in the overall width of highway to provide NMU infrastructure, while maintaining the vehicular movement function.

The proposals – see fig. 13b – are as follows:

- Reduce the carriageway width to 6.0 or 6.2m, with narrower traffic lanes each way
- Deliver segregated minimum width 2.0m pedestrian and 1.5m cycle path into the northern verge area.
- Reduce the speed of Section A, down from the national speed limit to a maximum of 40mph
- Deliver a minimum width 1.5m cycle path into the southern verge.
- Reduce traffic speed to a maximum of 40MPH to make NMU trips more comfortable and safer.
- Introduce low level LED directional lighting bollards to illuminate the NMU provision.

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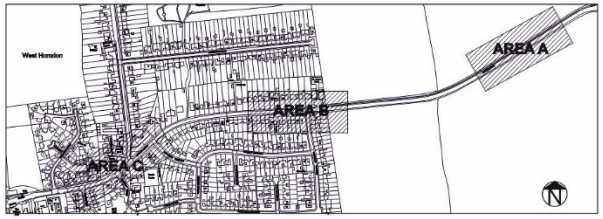
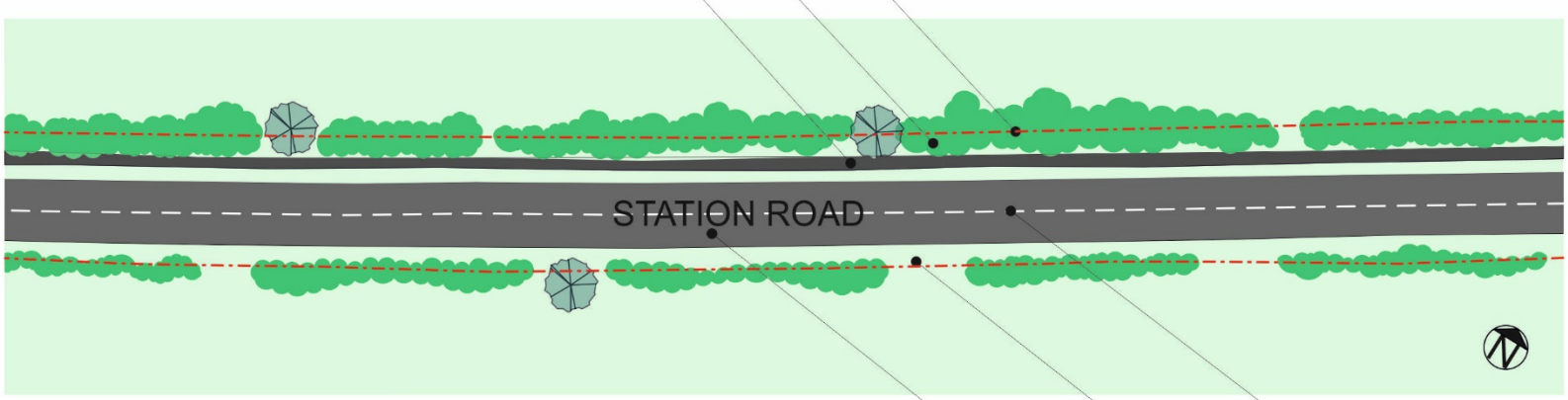
Highway boundaries created by ditch, hedges and trees to private land.

Grass verge to the highway boundary north of the carriageway varies in width but is wide enough to accommodate some walking provision.

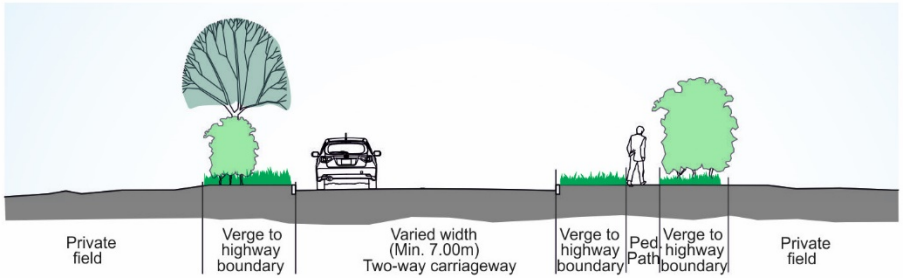
Poor quality narrow pedestrian path



LOCATION KEY PLAN



AREA A - EXISTING PLAN ACCESS ROAD - 60MPH



AREA A - EXISTING SECTION ACCESS ROAD - 60MPH

The average carriageway width of Station Road to the A128 is over 7.3 m, which gives opportunity to narrow it and realocate space for segregated NMU's.

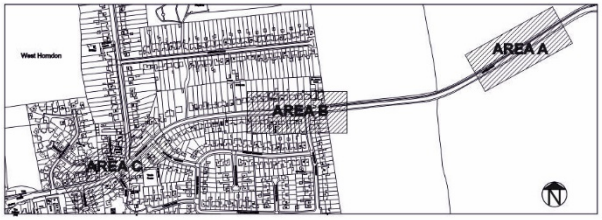
Southern grass and planted verge inconsistent in width and in places overhangs the carriageway.

Station Road is the key only east west link within the borough that connects all proposed SBGC developments to West Horndon Station. St Mary's Lane running from the B186 towards the West Horndon Railway bridge is a Thurrock Highways Road.

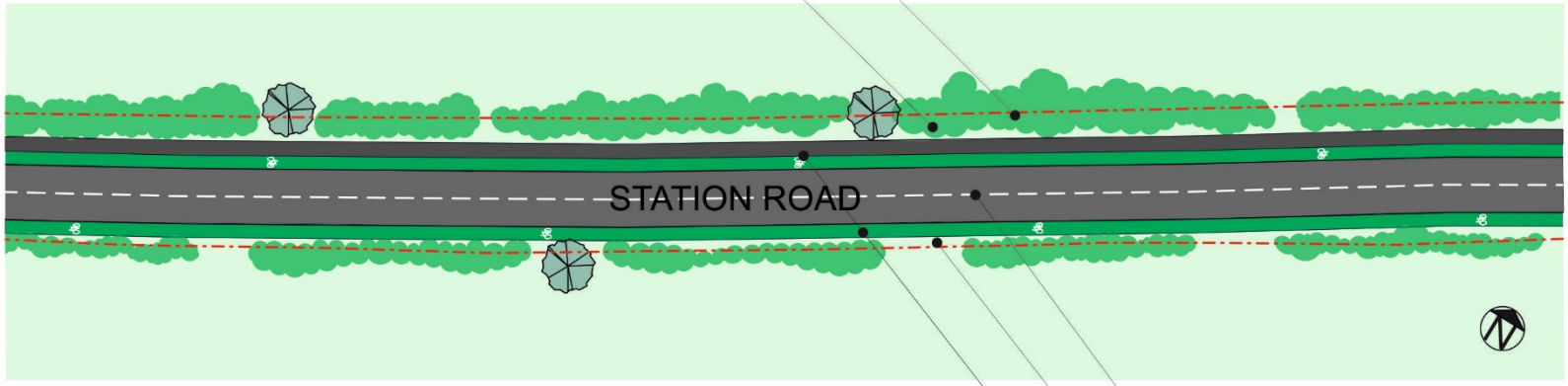
Figure 13a. Station Road Vision – Area A - Existing

Highway boundaries created by ditch, hedges and trees to private land unaffected by proposal.

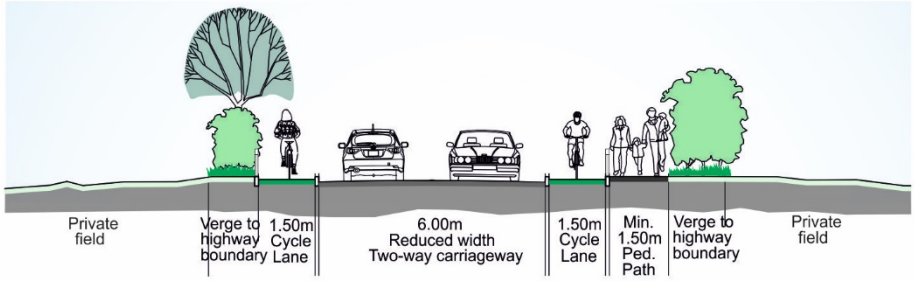
Grass verge to the highway boundary north of the carriageway to be made consistent in width and accommodate minimum width 2.0m pedestrian and 1.5m cycle paths. Paths to be segregated with a kerbings or similar.



LOCATION KEY PLAN



AREA A - PROPOSED PLAN ACCESS ROAD - 40MPH



AREA A - PROPOSED SECTION ACCESS ROAD - 40MPH

The whole carriageway is reduced to a constant 6.0m and speeds on the road reduced to 40mph. This gives back at least 1m to both sides of the carriageway to accommodate NMU requirements.

Southern grass and planted verge to be widened to allow the delivery of a segregated cycle path.

. Low level bollard lighting should be an option for both

Figure 13b. Station Road Vision – Area A - Proposed

4.4.5 Study Area B - Existing

The entrance gates to the village currently demark the exact point at which vehicles travelling at national speed limits are meant to reduce speed to 30mph. This doesn't happen.

Station Road in this area – see fig 13c - is wide in certain areas with significant verges. Boundary walls to private housing on the road forms the highway boundary on each side. While the width of the carriageway reduces, the continued straight nature of the road allows vehicles to keep travelling at speeds well in excess of the assigned 30mph speed limit.

Pedestrian space allocation is better in this area than in area A. However, the parking of cars on single yellow lines reduces the effective width of the carriageway. Most of the houses in this area have very long front gardens on which private cars can be parked.

4.4.6 Study Area B - Proposed

Our proposals in this area are centred on physical measures to change the alignment of the carriageway to enable a change of vehicle speed. This change in line with current ECC requirements would be a self-policing measure – and slowing speeds will enable cyclists to use the carriageway up to West Horndon.

The proposals – see fig. 13d – are as follows:

- Traffic speed signage to be delivered creating a 20mph zone in the whole village of West Horndon.
- Chicanes to be created by using wider areas of highway verge to realign the carriageway to deflect and slow traffic speeds.
- Create a signalised crossing for pedestrians to safely access the northern path outside of the village.
- Create double yellow lines on the carriageway to ban on vehicles parking partly on the pavement.
- Signage and cameras introduced to ban HGV's from Station Road.

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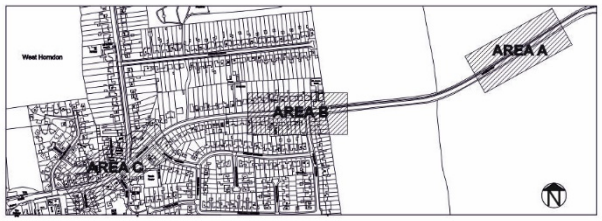


LOCATION KEY PLAN

Highway boundaries created by the private garden walls of houses on Station Road. Some homes have very long gardens..

Two-way carriageway within the village has an average width of circa 6.20m. Therefore there is no opportunity to create segregated NMU provision.

The grass verges in some parts of the village section of Station Road are quite wide.

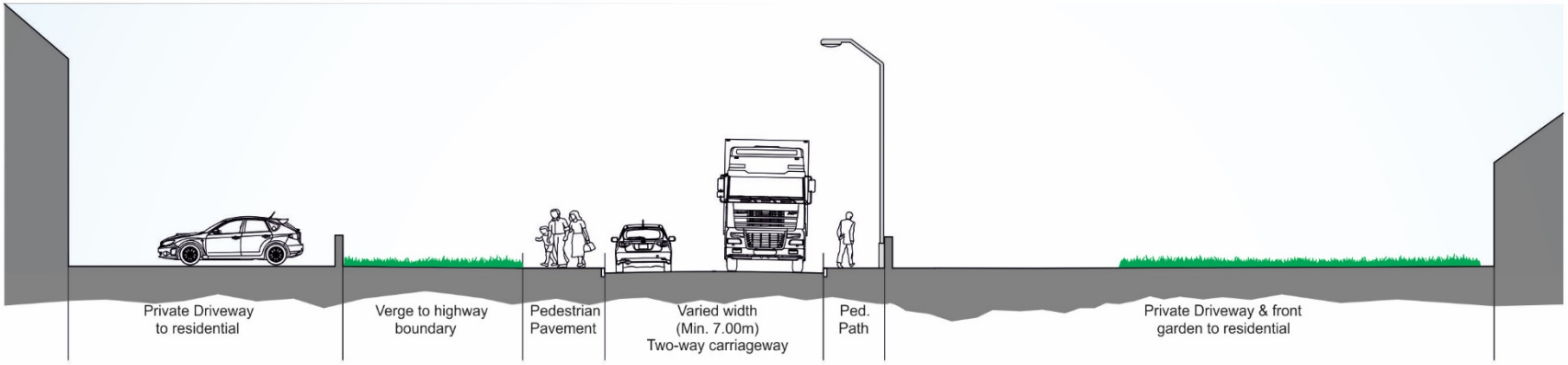
Grass verge to the highway boundary north of the carriageway varies in width but is wide enough to accommodate some walking provision.

The average carriageway width of Station Road to the A128 is over 7m, which gives opportunity to narrow and create space for segregated NMU provision.

Southern grass and planted verge inconsistent in width and in places overhangs the carriageway.

Highway boundaries to station road outside of village defined by typical hedges and ditches.

AREA B - EXISTING PLAN -VILLAGE ENTRANCE - 30MPH



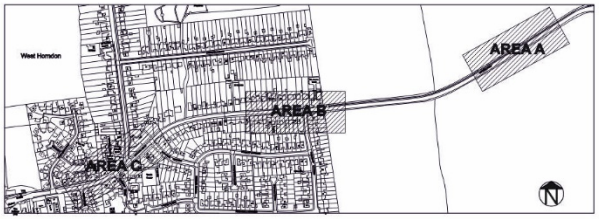
AREAS B & C - EXISTING SECTION TYPICAL - 30MPH

Figure 13c. Station Road Vision – Area B - Existing

Highway boundaries to private homes unaffected though detail design will need to accommodate safe access to driveways.

Two-way carriageway within the village retains its average width of circa 6.20m. By reducing speeds to 20mph and banning HGV's, and controlling parking with new double yellow lines - allows cyclists to more safely use the carriageway.

New chicane created within the available highway boundaries. This measure makes vehicles slow to the 20mph speed limit in the village.



LOCATION KEY PLAN

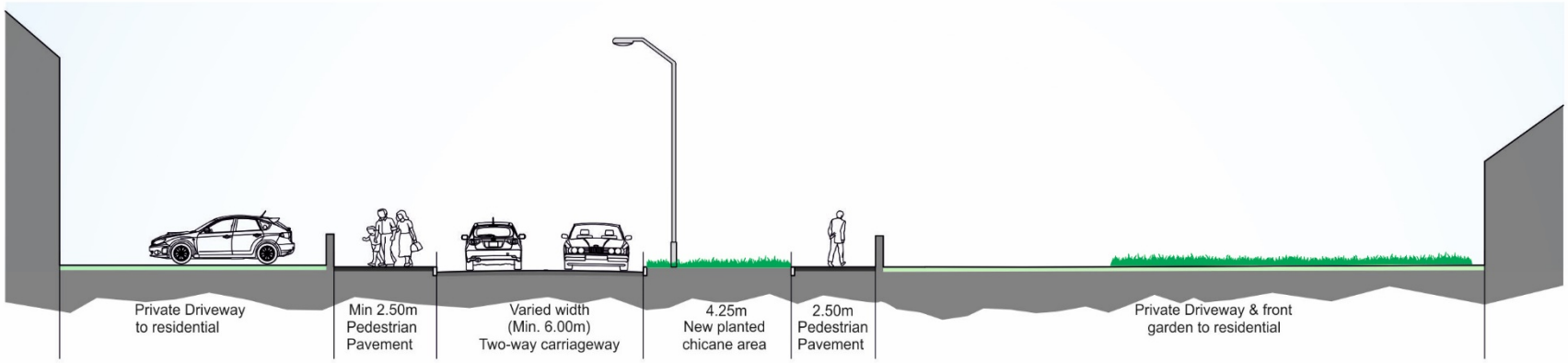
Grass verge to the highway boundary north widened enough to accommodate segregated NMU provision.

The whole carriageway is reduced to a constant 6.2m and speeds on the road reduced to 40mph. This gives back at least 1m to both sides of the carriageway to accommodate NMU requirements.

'Demand' Signalised pedestrian crossing to be introduced to allow access to the north pedestrian path on Station Road outside of the village boundary.

Highway boundaries to station road outside of village unaffected by proposals.

AREA B - PROPOSED PLAN -VILLAGE ENTRANCE - 20MPH



AREAS B - PROPOSED TYPICAL NEW CHICANE SECTION - VILLAGE ENTRANCE - 20MPH

Figure 13d. Station Road Vision – Area B - Proposed

4.4.7 Study Area C - Existing

Further into the village station road isn't straight but the gentle curvature of the carriageway within this area still allows vehicle to travel in excess of the 30mph speed limit.

Station Road in this area – see fig 13e - is wide in certain areas with significant verges adjacent to the carriageway. Boundary walls and fences to private housing forms the highway boundary on each side.

Pedestrian space allocation varies in width in this area. Parking of cars this close to the station is surprisingly allowed in areas with no yellow lines. Where there are single yellow lines parking is only restricted between 2 and 3pm Mondays to Fridays. As with Area B, the parked cars significantly reduce the effective width of the carriageway.

4.4.8 Study Area C - Proposed

Our proposals in this area are centred on physical measures to change the alignment of the carriageway to enable a change of vehicle speed. Also, to remove unfettered street parking Both measures enable cyclists to use the carriageway up to West Horndon Station.

The proposals – see fig. 13f – are as follows:

- Traffic repeater speed signage on existing street furniture to support the 20mph.
- Chicanes to be created by using wider areas of highway verge to realign the carriageway to deflect and slow traffic speeds.
- Introduce a CPZ and create double yellow lines on the carriageway to ban on vehicles parking except in specifically time controlled and paid bays.
- Create paid parking bays half on or within areas where pavement depths are deep enough to not impact space for pedestrians.

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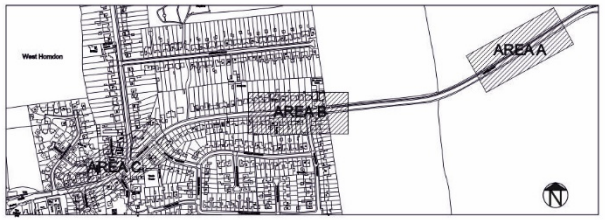


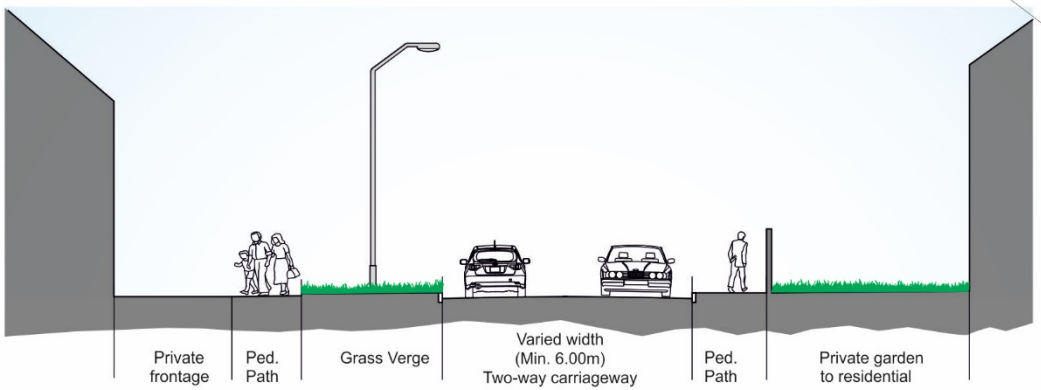
LOCATION KEY PLAN

Overall highway boundary width in this junction location taking into account the verge is sufficient to allow a chicane to be created.

Two-way carriageway within the village has an average width of circa 6.20m. Therefore there is no opportunity to create segregated NMU provision.

The grass verges in some parts of the village section of Station Road are quite wide.

AREA C - EXISTING PLAN - JUNCTIONS - 30MPH



AREAS C - EXISTING SECTION TYPICAL - 30MPH

Overall highway boundary width in this junction location taking into account the verge and wide pavement is sufficient to allow a chicane to be created.

Single yellow lines opposite these unrestricted parking bays, potentially allow cars to stop outside of restricted hours which will further reduce the width of the carriageway.

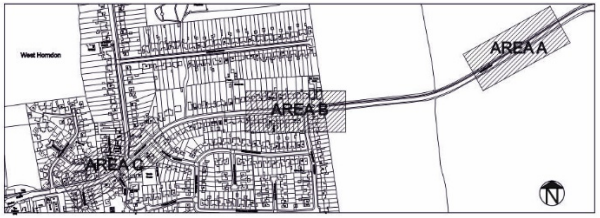
Informal parking area created by breaking the double yellow. The parked cars here reduce the width of the carriageway forcing cars into the opposite lane to pass them.

Figure 13e. Station Road Vision – Area C - Existing

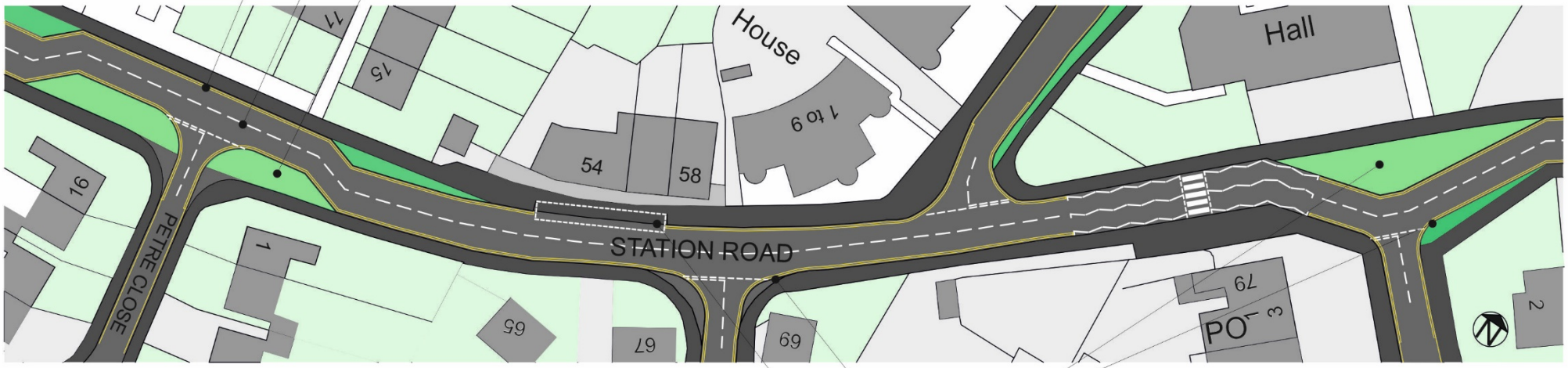
Overall highway boundary width at this junction location allows part of the verge to be removed which creates sufficient deflection of the carriageway for a chicane to be created. Some service diversions may be required.

Introducing chicanes is a physical measure in line with current ECC guidance to enable a traffic speed reduction to 20mph. 20mph enable safer use of the carriageway by cyclists.

New grass verges area created either side of an extended junction entry to Petre Close, thereby maintaining the Essex Highway street design approach.



LOCATION KEY PLAN

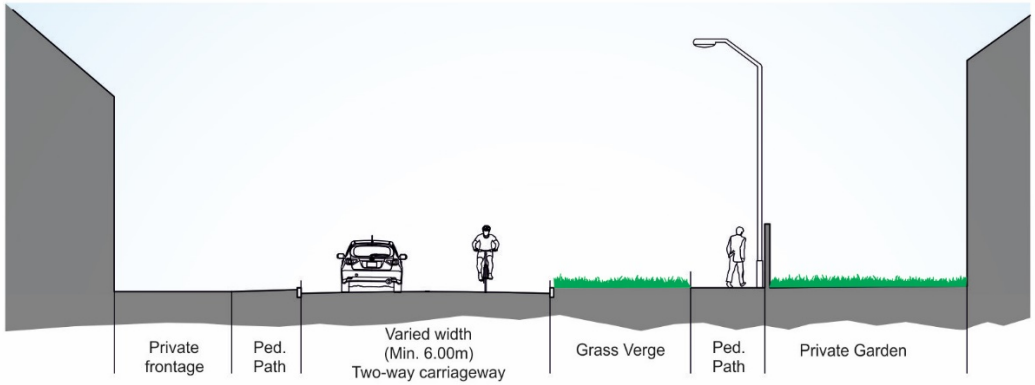


AREA C - PROPOSED PLAN - NEW CHICANE JUNCTIONS IN-VILLAGE - 20MPH

Station Road re-aligned creating a 'negative' junction chicane' reducing the length of the incoming road by and recreating a new verge on the opposite side of the road.

The majority of Station road to be double yellow lined to keep the full carriageway width clear at all times. In line with Manual for Streets corner radii to be reduced, slowing movements from junctions.

Where desired by residents for visitor parking only, formal 'half-on' pavements' parking bays to be created. The whole area to have a CPZ created



AREAS C - PROPOSED SECTION TYPICAL - 20MPH

Figure 13f. Station Road Vision – Area C - Proposed

4.4.9 Study Area Cost Estimates

Costs for the Station road study areas consider whole road sections. The costs are estimated without having carried out detailed underground surveys for utilities or condition surveys of the existing bridge.

The key costs for the three areas are as follows:

***AREA - A**: A128 to Village Gate*

- Resurfacing - £150,000
- New footways/cycleways - £450,000

Subtotal - £0.6M

***AREA – B** Village gate to Station*

- New alignment - £250,000
- Lighting - £100,000
- Utilities Diversion £150,000
- Resurfacing - £20,000

Subtotal - £0.52M

AREA – C

- New alignment - £400,000
- Lighting - £150,000
- Utilities Diversion - £250,000
- Resurfacing - £40,000

Sub -Total - £0.84M

General costs between section:

- Resurfacing - £80,000
- Upgrade lighting - £200,000
- Traffic management & landscaping - £0.5 - 1M

Optional future cost

- Humps (sleep policeman, every 100m) - £50,000

TOTAL COSTS - £2.5 - 3M*

*(*excludes any major highway structures or major utility diversion costs)*

4.5 West Horndon Interchange

4.5.1 Existing Layout

Station Approach gives access to the station from the 'blind' junction with Station road and St Marys Lane bridge. It is approximately 40m in length before opening into the station car park. The car park covers an area of 4700m2 with a capacity for around 200 cars. From observation the carpark is full by the end of AM peak periods most weekdays and remains so until after the PM peak.

The current station building is the original one– built in 1886 when the station was called East Horndon. The Station became West Horndon after the second world war in 1949. Passengers access the platforms through a small ticket hall extension on the west of the main building. The main building of the Station is currently leased as a commercial premise and some staff facilities

The ticket hall operates a 2+1 gate-line system through to the Shoeburyness bound platform. The London Bound platform is accessed from the Shoeburyness platform by a metal passenger bridge. Both platforms are very long – approximately 250m. However, C2C train services which are mostly off-peak at the moment with 2 trains an hour each way. During these times, the shorter length trains are used. Therefore, the station operates at a fraction of its potential capacity – in line with current demand.

Small ticket office and gateline extension to original station building with inadequate capacity for expansion.

Old Station House building let as a commercial property with some retained for staff accommodation

Poor provision for NMU access to the station and no direct bus access to the station frontage.

Dangerous blind junction between the railway bridge, Station Road, and the entrance to West Horndon Industrial Estate.

Old metal station bridge provides no provision for disabled access between platforms.

Width constrained Railway bridge connecting St Mary's Lane to Station Road. with o provision for pedestrians or cyclists.

Station has very long platforms in excess of 250m. Currently served by short trains in off peak times.

Station car park is full from early morming pre-AM peak and empties during and after PM Peaks. Car Park is therefore a commuter facility.

WEST HORNDON INTERCHANGE - EXISTING PLAN

Figure 14a. Interchange Vision - Existing

4.5.2 Proposed Layout

The design approach requires a complete rethink of not only the station and its car park but also the surrounding Highway infrastructure.

The proposals have been created to allow for future growth in Brentwood beyond the current plan period. potential of major development coming forward south of the station in Thurrock, C2C require a new layout for an interchange within the SBGC, which can support better bus, cycling and pedestrian access into the now and allow a phased delivery of additional facilities on the Thurrock side of the tracks.

It has been determined with C2C that the existing station is demolished, and a new interchange created as set out in figure xx. To create the interchange the following measures are required.

- Create a New roundabout which solves the dangerous junction between St Mary's Lane and Station Road.
- Create a new Station Complex with Ticket Hall & disabled access bridge, secure bike park commercial retail unit(s) and 200+ multi- storey car park
- Create new Bus Stops, Pick-up Drop-off area & Car Park entry.
- Demolish the existing garages & adopt the private road creating a two-way segregated cycle track.
- Provide a revised parking allocation for existing flats as part of the extended access road.
- Create a Vehicular access to new potential development site, while maintaining vehicular access for Network Rail
- Create a new lightweight segregated cycling & pedestrian bridge to the westside of the existing road bridge.
- Set aside a new development site east area of the interchange.
- Ensure the design and alignment of the new interchange allows for a future similar offer on the Thurrock side of the tracks.

Old Station House building demolished and replaced with:

- a: New station building with disabled access bridge. Gate-line area able to accommodate future Brentwood growth. Bridge allows new station box to the south.
- b: Racked type secure cycle store
- c: Commercial retail unit.
- d: Multi storey Car park to accommodate a minimum of 200 cars.
- b/c: Small commercial units and multi level secure bike store with electric and normal bike hire stations.

Provision for shared NMU access to the new interchange, shops and cycle parking facilities.

New bus stop area for both public, DRT and other services. Stops to incorporate live screen information panels for bus and train arrival times.

Dangerous blind junction removed and replaced with new roundabout mostly in existing highway but also on West Horndon land.

Railway bridge connecting ramp section realigned to meet new roundabout. New lightweight bridge for pedestrians or cyclists.

Private access road extended to service a potential development site and network maintenance access. Existing garages and spaces relocated to provide new cycle path.

Joint cycling and pedestrian access gate provided to the north east of the car park. Safe route for NMU's incorporated into car park white-lining.

Station platform surfaces and passenger information upgraded. Additional shelter provision to accommodate longer trains.

WEST HORNDON INTERCHANGE - PROPOSED PLAN

Figure 14b. Interchange Vision - Proposed

4.5.3 Study Area Cost Estimates

Costs for the Interchange study considers the highways and other development sites in the vicinity.

The costs are estimated without having carried out detailed underground surveys for utilities or condition surveys of the existing bridge.

The key costs for the three areas are as follows:

DEMOLITION

- Demolition works and disposal - £2M

Subtotal - £2.0M

NEW ROUNDABOUT & HIGHWAYS ELEMENTS

- - Roundabout construction - £1M
- - New Station Parking - £500,000
- - New adopted road - £250,000
- - Utilities diversions - £1M

Subtotal - £2.75M

NEW STATION (INC. TICKET HALL)

- Double Track Platform with disabled bridge - £5M

Subtotal - £5M

RETAIL UNIT

- Adjacent to Ticket Hall 6m high, 110sqm - £1M

CAR PARK

- 3 storey car park over and around station retail and bike store- £4M

General costs:

- Traffic management & landscaping - £1 - 2M

TOTAL COSTS - £14.75 to 16.0 M*

*(*excludes any major highway structures or major utility diversion costs)*

Insert CGI visual of proposed Interchange development as last image

5.0 CONCLUSIONS

The South Brentwood Growth Corridor (SBGC) has the regional highway and railway infrastructure to support significant levels of new homes and employment space that the region requires.

Brentwood Borough Council understands it has a clear opportunity in South Brentwood to expand an existing community based on a viable sustainable transport network– that will create a culture change away from the historic first choice of movement in the Borough, the private car.

This vision has set out principles and illustrations sketches to demonstrate that both delivery of sustainable infrastructure and the safe movement of Non-Motorised Users is achievable. It provides a glimpse into a more sustainable possible future for the whole Borough.

Sustainable transport movements and the infrastructure required for it, have been considered beyond the timescales of the current local plan, and beyond the SBGC boundary to ensure connectivity with neighbouring authorities.

The proposals presented in this vision aren't definitive, rather they set the aspiration level of the council which they expect all developers to attain – in whatever detailed way works best for them. However, not reaching and delivering the levels established in the principles and supporting sketches will not be acceptable.

5.1 The Highways

To achieve this vision a step change and upgrade to the regional highway authorities, standards and guidance documents are is required. As a minimum such documents need updating to align with current government advise and standards.

For the safety and future health of the SBGC's expanding population, traffic speeds on all roads need to be reduced. Commercial and residential parking standards need to be reconsidered, lowering the levels allowed and aligning such reductions with the delivery of viable alternative transport modes.

Installing NMU infrastructure on all the roads considered within this vision, to access the employment and residential sites is required. Albeit some highways have a greater priority.

The remodelling of Station Road is the most critical upgrade to highways within the SBGC. Protecting the residents of West Horndon and future DGHV, from high traffic speeds, excessive commuter parking and inappropriate large vehicles will help to encourage NMU's on SBGC roads.

The highways in the SGBC cannot be considered in isolation as many of them cross borough and highway authority boundaries. Therefore, continued engagement with neighbouring authorities to align sustainable transport goals is vital

The A127's future must be decided on a regional basis by several joint authority initiatives, set up by the authorities it connects. Some upgrades to A127 NMU facilities are required immediately. Bus protection measures could be optional. However, supporting the work of the JSP, the vision establishes that SBGC developers should allow for contribution to future regional proposals to the A127

5.2 Rail

West Horndon Interchange will be the hub of all SBGC sustainable movements – a point from and to which bus, cycling and pedestrian movements will originate. C2C and Network Rail continue to be key and cooperative stakeholders in defining the requirements for this intervention. The capacity of the new station and train services will be sufficient to support Brentwood growth well beyond current Local Plan numbers.

5.3 Bus

To immediately support the residential and commercial developments, a cooperative Demand Responsive Travel (DRT) Bus service shared between the development sites should be established. The existing commercial bus services might in time improve the current service level, to take advantage of the increasing demand. But to ensure residents, school children and workers can choose buses from the completion of phase one – DRT is the way forward.

5.4 Funding and Delivery

The SBGC developments sites have a symbiotic relationship in their responsibilities in the delivering the future sustainable network. This responsibility goes beyond just the infrastructure required adjacent to their individual sites. Therefore, the costs identified in each of the study areas, must be considered holistically.

- West Horndon Interchange - £14.75M
- Station Road - £3M
- B186 Warley Street - £7.0M
- A128 Tilbury Road - £14.2M
- A127 Southend Rd - £38M

TOTAL COSTS - £76.95 - 80M*

*(*excludes any major highway structures or major utility diversion costs)*

Discussions are taking place with each development site to ascertain the level of funding required to deliver the full extent of the visions proposals. Brentwood are establishing an apportionment equation to ensure equality between commercial and residential sites.

A Housing Infrastructure Fund (HIF) bid to deliver a proportion of the interchange and sustainable measures is being proposed. C2C, Brentwood, and the relevant statutory transport authorities are in discussion to co-sponsor the bid.

6.0 REFERENCES

to be completed