

key

- - - site boundary
- settlement
- water bodies
- topography

landscape structure plan

- recreation, leisure and community
- wooded hedgerows
- woodland structure

site designations and technical features

site designations

The site is wholly located in the London Metropolitan Green Belt. The site is also located to the southern edge of the Thorndon Country Park before it was segregated by the A127. The remnant southern area (to the north of the site) contains a number of designations including:

- Thorndon Country Park Conservation Area;
- the TCP grade II listed park and garden;
- ancient woodland

Further north within the park there is also a scheduled monument and SSSI although these areas lie to the other side of the heavily trafficked A127, a major east/west road corridor.

conclusions for the site justification

- the site is adjacent to a protected landscape and therefore should have boundary protection to retain the character of the park

drivers for the masterplan

- provide woodland buffer to the southern edge of the Thorndon Country Park;
- connect new woodland into the ancient woodland to the west and north to increase local ecological biodiversity

site technical features

The site contains a small number of restrictive constraints that would need to be taken into account when developing it. These include:

- area A: a gas main running perpendicular to Station Road and adjacent to the existing settlement boundary - we see this main as enabling the provision of a landscape and open space buffer between the Cadogan Street housing and the proposed development whilst allowing for pedestrian/cycle connection across it (to ensure permeability);
- area B: a water main running diagonally across the site - this presents the most problematic constraint as it is aligned counter to the strong rectilinear grid site character. We believe a suitable layout can still be accommodated by locating public open space across it, therefore preventing it from impacting on the likely layout.
- area C: a private water main running diagonally across the south western corner of the site - this pipe, although in a poor location for development is considered to be redundant once the field is developed and therefore not a constraint.

conclusions for the site justification

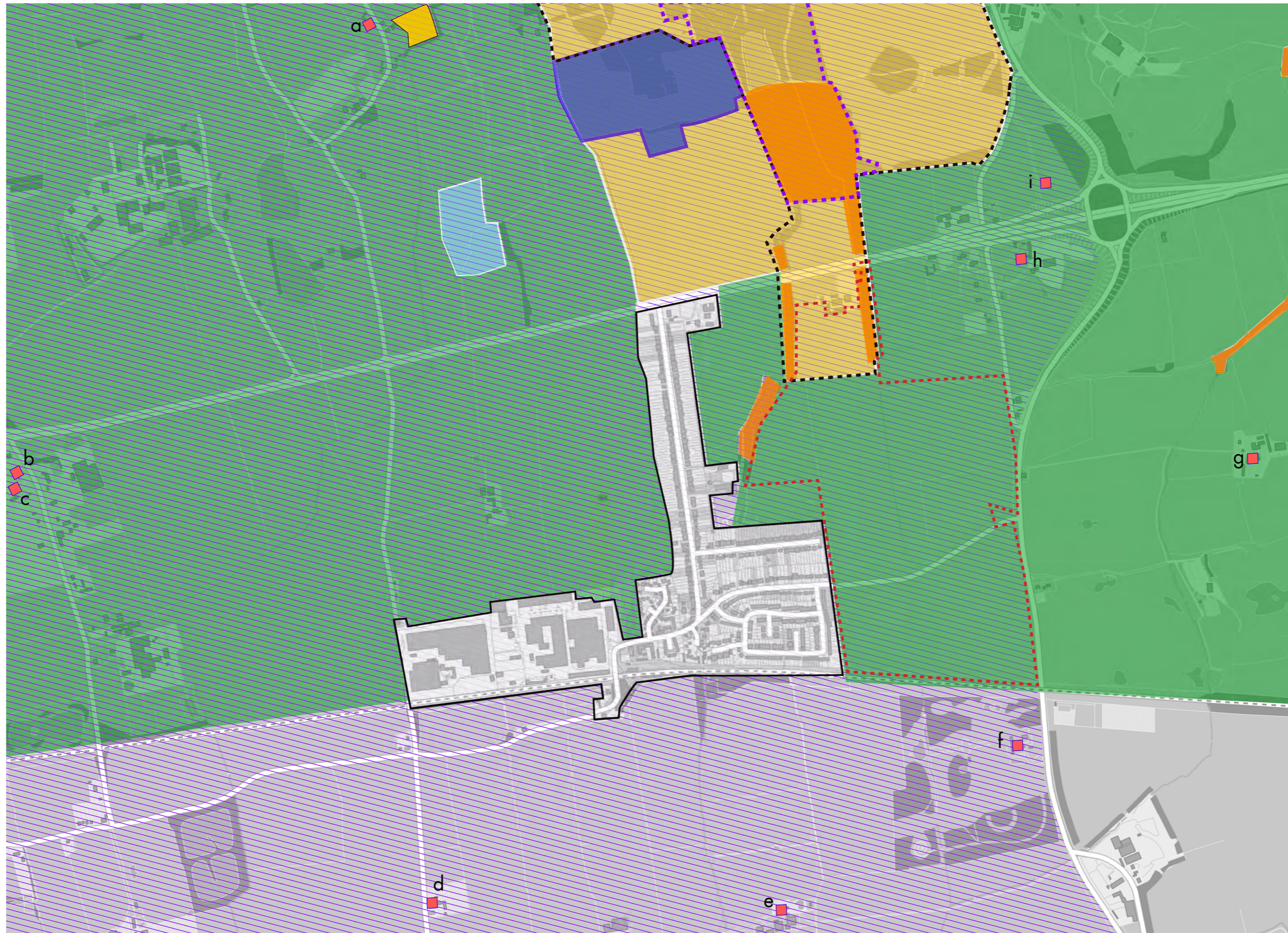
- the technical constraints require some creative layout responses however they do not present any restriction to the deliverability of a suitable solution to the site

drivers for the masterplan

- create opportunities from the constraints by designating a higher proportion of land as public open space



technical features approximate location plan



key

- ⋯ site boundary
 - 2001 Settlements
 - Green Belt
GB1, GB2 ,GB3, H10
 - conservation area
 - scheduled monuments
 - registered parks and gardens - grade II
 - SSSI
 - ancient and semi-natural woodland
 - undetermined grassland
BAP Priority Habitat
 - traditional orchard BAP
priority habitat
 - community forests
 - listed buildings
- a. The Fruit Farm
 - b. Little Warley
 - c. St. Peter's Church
 - d. Little Tilingham Hall
 - e. Filed House
 - f. Barnards
 - g. Dunton Hills
 - h. East Horndon Hall
 - i. All Saints Church

local settlement character

As well as a rectilinear landscape structure to the fenlands character area, the urban settlements continue this character. West Horndon is a good example, particularly Thorndon Avenue and Cadogan Street. Further to the south, the villages of Bulphan, Horndon on the Hill and Orsett have similar strong and simple layout. When seen at a larger scale the villages become an intrinsic part of the 'patchwork quilt' effect of the landscape

conclusions for the site justification

- with the strong, intact landscape structure, a layout using similar rectilinear form reflecting the local urban character is entirely appropriate to the site

drivers for the masterplan

- create strong east/west and north/south grid of streets and spaces arranged by the existing landscape structure



West Horndon aerial photo (courtesy of Google Earth 2013)



Bulphan village aerial photo (courtesy of Google Earth 2013)



Orsett aerial photo (courtesy of Google Earth 2013)



Horndon on the Hill village aerial photo (courtesy of Google Earth 2013)
- - - - - site boundary for scale comparison

masterplan concept

a balanced settlement

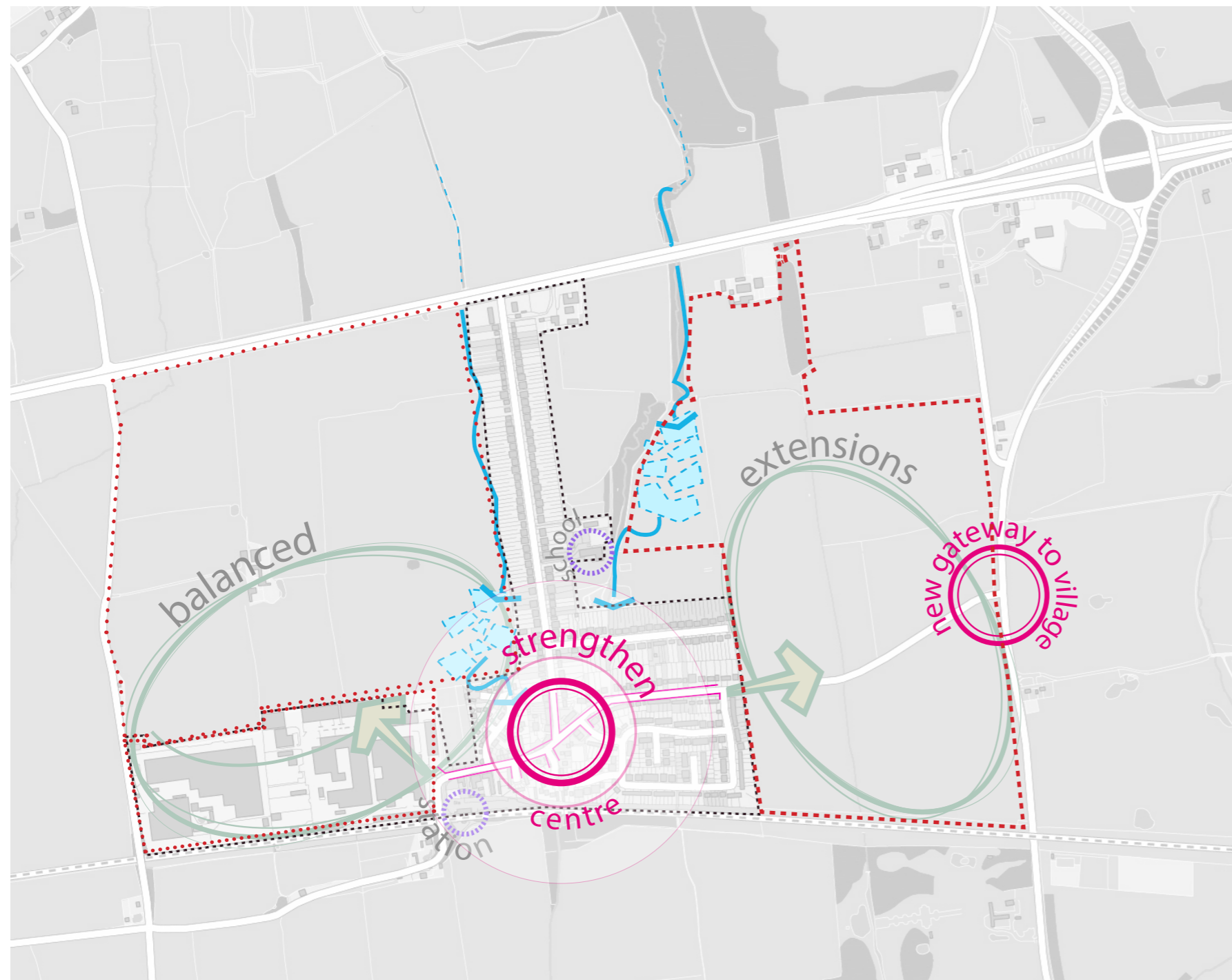
Our approach to the planning of the site has come from understanding the needs of the village and should not unduly affect the functioning of the village, in fact should strengthen the centre. We believe that the current Preferred Option would not create a stronger centre but instead would shift the centre westwards.

We propose a balanced extension that follows the thinking in the early SHLAA document by providing an equal quantum of development to either side of the village thereby ensuring an equal accessibility to the village centre and strengthening its current location.

The provision of some development to the east of West Horndon will enable the entrance to the village to be properly addressed as well as the 'capturing' of traffic before it passes through the centre causing undue congestion to reach the site to the west. The proximity of the eastern site to the primary school and local park would enable easy and logical expansion of each as well as providing further, more varied facilities within the same location.

We propose a sustainable and balanced settlement extension.

- site boundary
- - - settlement
- ... boundary to E&A Strategic Land site
- boundary to 2 industrial sites



the balanced settlement concept diagram

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the balanced extensions development principles

We have developed a series of principles drawn from these drivers to deliver a masterplan that contains a local character and that enhances the features of the site area:

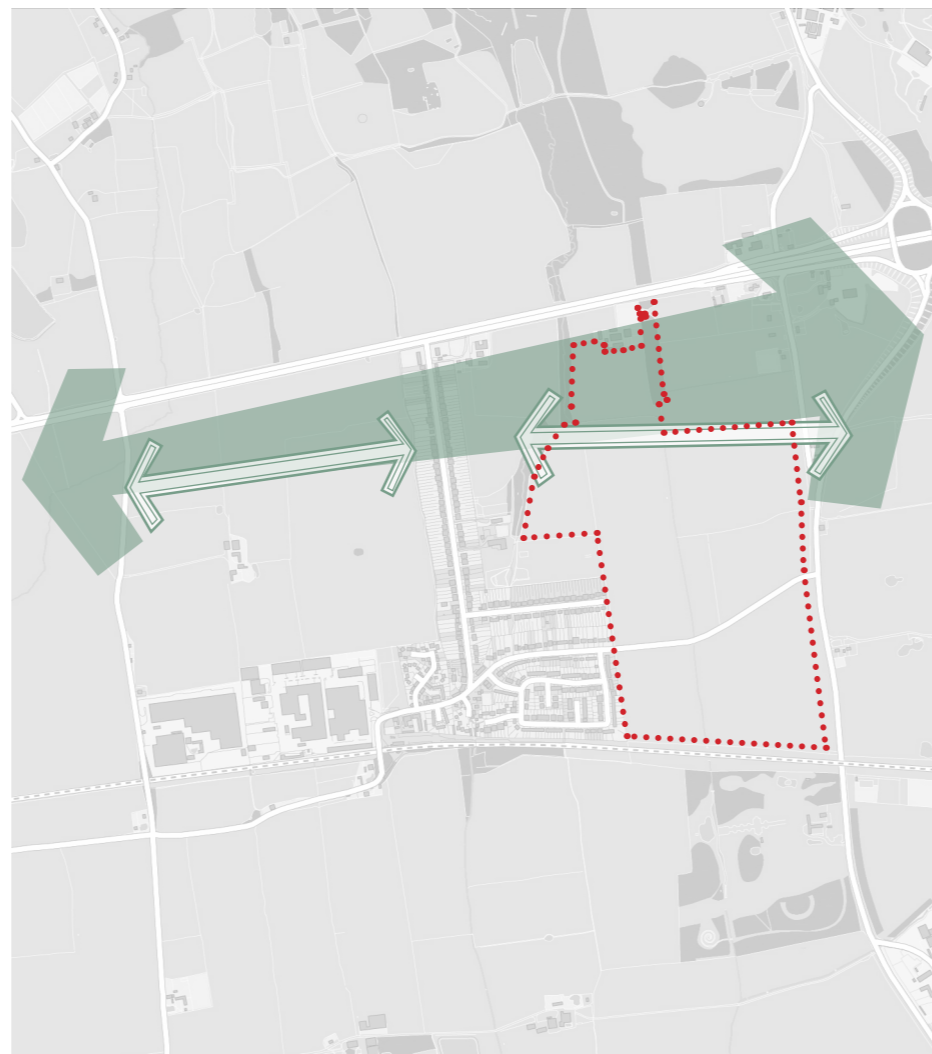
Strengthening of N/S woodland character in fenlands

This principle draws from the strong landscape character of the fenlands and proposes the strengthening of existing hedgerows to create woodland opportunities as well as utilising the drainage corridors



Connected woodland protecting heritage

To create a new woodland along the northern edge of the site to protect the Conservation Area and minimise visual impact from local listed buildings and the Country Park



Create connected E/W landscape structure

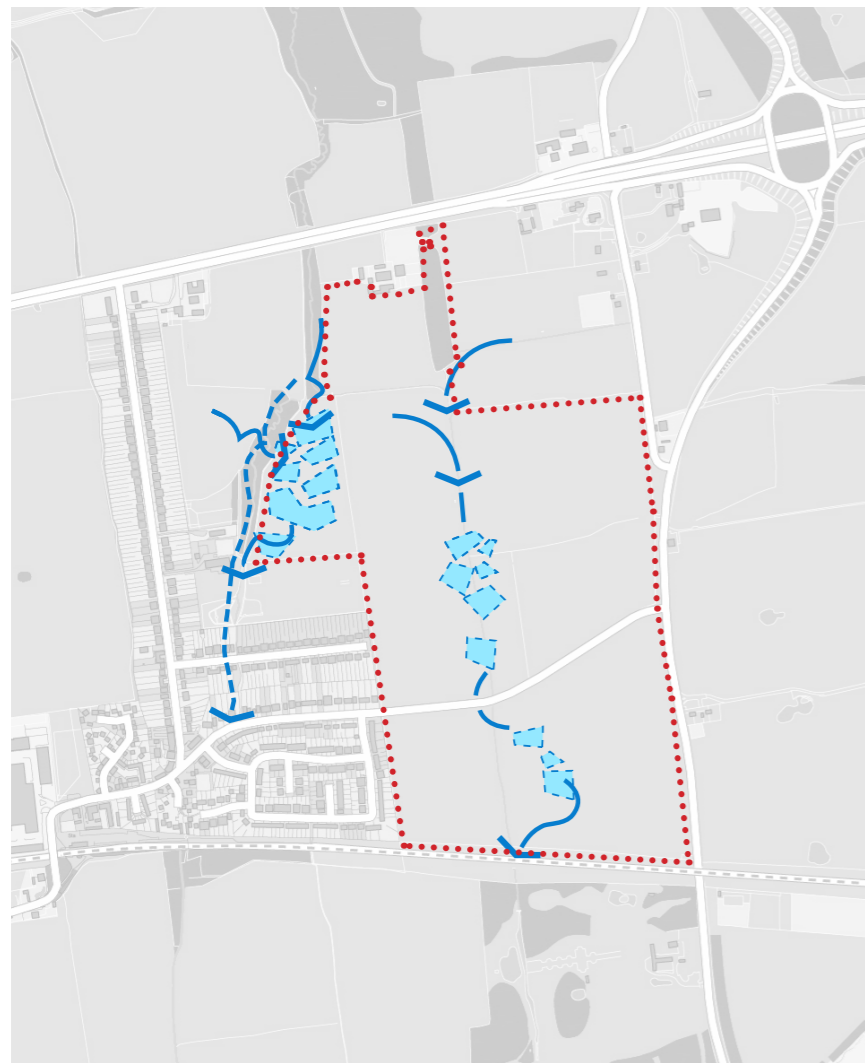
This will improve ecological biodiversity across the site and beyond whilst reducing exposure of the site to the south westerlies off the Thames Estuary and mitigating any visual impact from the north



site specific development principles

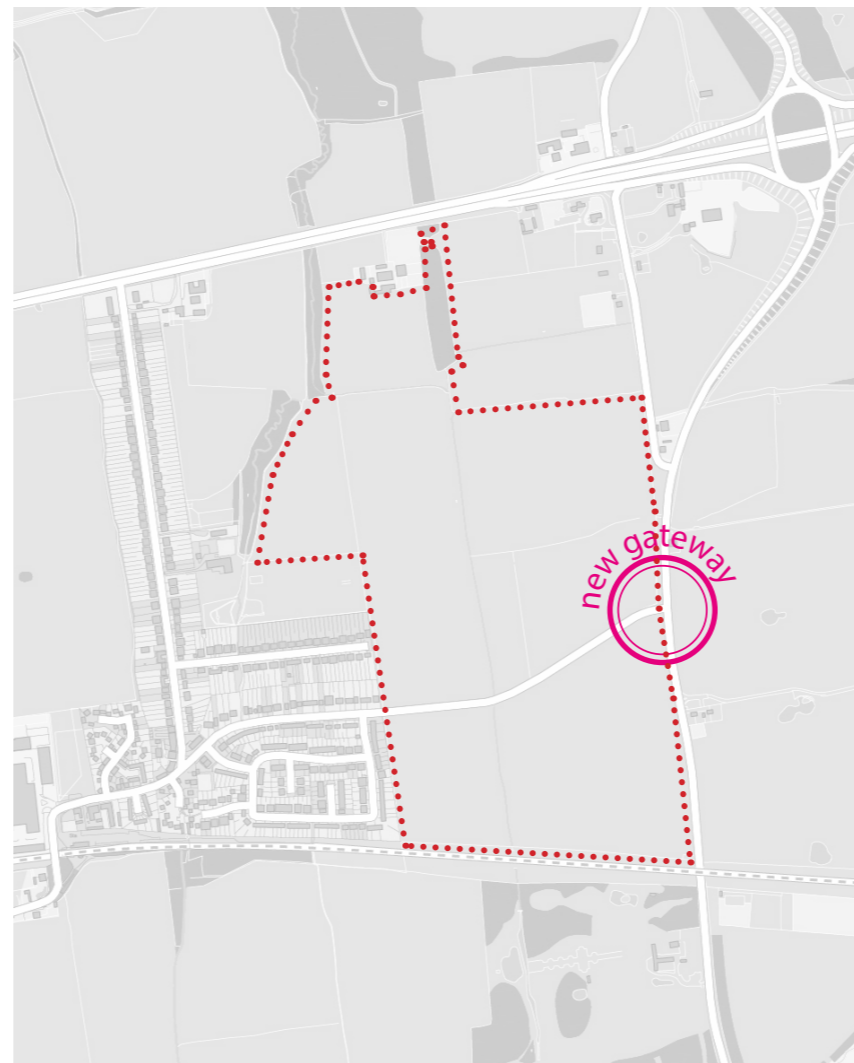
Surface water strategy

Utilise the drainage corridors on the site and adjacent to it to create a series of connected wetlands that mitigate any local flooding whilst creating a rich and diverse ecological habitat and varied quality of open space



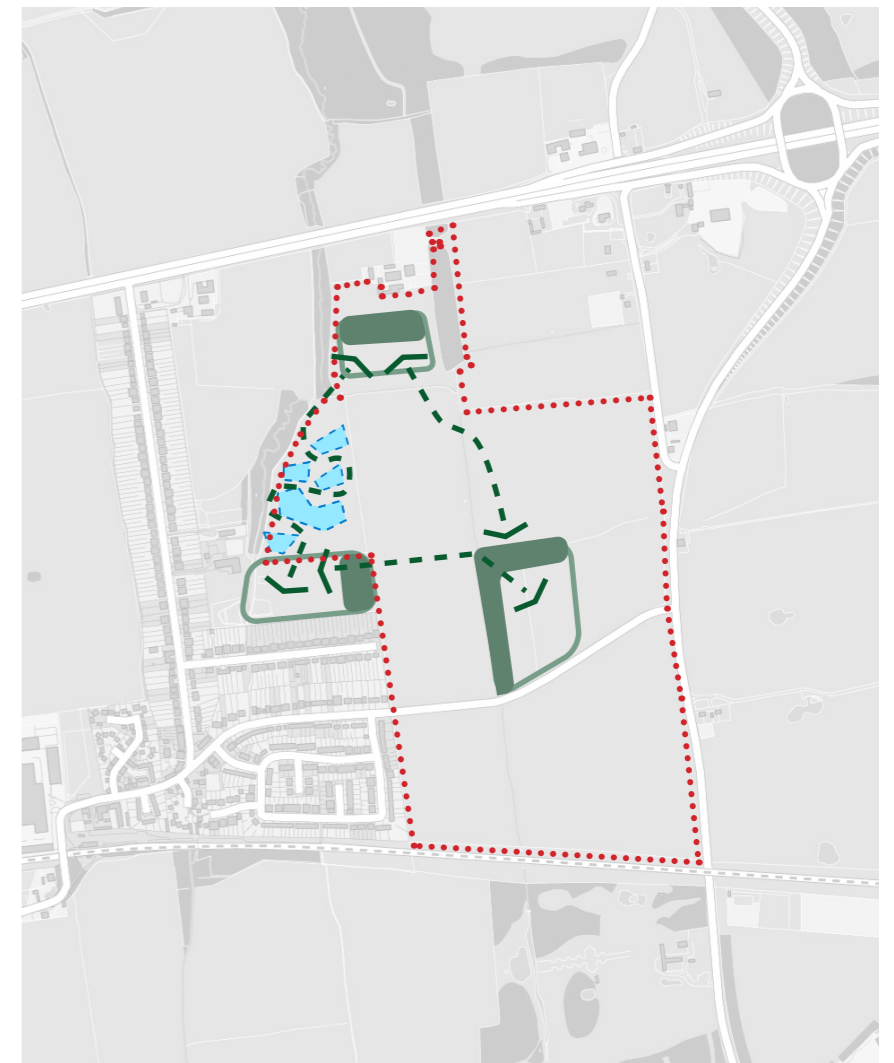
Create a positive entrance to the village

The positive, planned entrance to the village directly off the A128 will both improve the sense of arrival by creating a setting whilst also resolving traffic speeds off the A128.



Connected and varied public open space

The development to the east of the village enables the direct connection to existing community open space with varied landscape treatments, footpaths, natural play and improved pedestrian access to the Country Park.



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concept masterplan

Our proposed masterplan concept (shown here with the landscape principles for a potential western solution as part of the balanced settlement) shows a clear landscape structure with the creation of a new gateway to West Horndon, centrally located and connected public open space, wetlands and new residential blocks arranged in a rectilinear layout. Key to the development of a defensible edge are the linear hedgerows and woodland that run to the northern quarters of the land to the east and west of West Horndon. This linear feature could connect through the ancient woodland with other drainage corridors and assist in the mitigation of development from the public viewpoints to the north.

The concept plan provides for the following areas:

61.26Ha

Land east of West Horndon area

37.26Ha (61%)

Land for open space, community facilities and infrastructure

24Ha (39%)

Proposed housing development area

This provides for between:

550-650 houses

with the remainder to the west of the village.

This leaves the remaining houses for the land to the west of the centre include the farmland and industrial sites. The other land on this site can be used to improve the landscape structure and reintegrate it to the north whilst also mitigating the visual impact identified in the site visibility analysis.



The balanced settlement concept masterplan for east and west extension areas of West Horndon

The analysis raised a number of drivers to deliver an appropriate and site specific masterplan. These included:

- enhance the north/south landscape structure;
- improve the Station Road character as an historic lane and central feature to the masterplan
- the north/south alignment of the site is ideal to arrange blocks along the drainage corridors and hedgerows which leads to east/west facing properites that will maximise light
- strengthen the existing network of landscape structure to mitigate development on the site
- selectively add additional hedgerows to further assist in mitigating development impact
- provide wetlands to reduce flood risk
- create varying habitats through wetland areas
- create a variety of public routes through wetlands to improve amenity
- strengthen existing east/west hedgerow and north/south woodland grid
- provide woodland buffer to the southern edge of the Thorndon Country Park;
- connect new woodland inot the ancient woodland to the west and north to increase local ecological biodiversity
- strengthen the green grid;
- connect public open space on the site into West Horndon Park;
- potentially provide improved access to the Thorndon Country Park
- create opportunities from the constraints by designating a higher porportion of land as public open space
- create strong east/west and north/south grid of streets and spaces arranged by the existing landscape structure

Each of these components has been delivered in the adjacent concept masterplan for the land east of West Horndon.

- proposed woodland planting to provide a buffer to the Conservation Area
- local park extension as wetlands and boardwalk public access
- improved primary school
- central open space (over water mains) with public access and wildlife habitats
- new entrance gateway into the settlement
- varied landscape edge with footpaths and enhanced hedgerows
- proposed development parcels



The concept masterplan for the land east of West Horndon
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**LAND AT WEST HORNDON
BRENTWOOD, ESSEX**

Strategic Growth Options - Highways

**Report No. 13-158-06
February 2015**

**LAND AT WEST HORNDON
BRENTWOOD, ESSEX**

Strategic Growth Options - Highways

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- 13-158-003 Existing Village Centre Layout
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- B West Horndon Bus Services
- C TRICS Output Files
- D DMRB TA79/99 Traffic Capacity of Urban Roads

1.0 INTRODUCTION

1.1 Odyssey Markides are acting for Countryside in relation to highways and transportation matters which affect a potential residential development site at West Horndon, Essex. Countryside are promoting this site through the Strategic Growth Options Consultation. The potential development site is shown on **Figure 1**.

1.2 The Strategic Growth Options Consultation (January 2015) document has been reviewed and the key highways matters are summarised in **Section 2.0**. Following initial review of the aforementioned documents **Section 3.0** sets out the existing pedestrian and cycle accessibility in West Horndon, whilst the public transport networks, both rail and bus, are set out in **Section 4.0**. These sections also discuss where, should the c.550-650 unit residential development site come forward, there may be scope for developer funded improvements in the village.

1.3 The strategic and local highway network is discussed in **Section 5.0** along with the potential areas where local improvements could be made within West Horndon. The potential site accesses are set out in **Section 6.0**, whilst the capacity on the local highway network is analysed in **Section 7.0**. The off-site sustainable transport impacts are discussed in **Section 8.0** and the summary and conclusions are set out in **Section 9.0**.

2.0 STRATEGIC GROWTH OPTIONS CONSULTATION (JANUARY 2015)

2.1 This Strategic Growth Options Consultation (January 2015), prepared by Brentwood Borough Council (BrBC), is a consultation on areas for potential growth and specific sites across Brentwood Borough and informs the emerging Brentwood Local Plan.

2.2 As set out in that document it is essential that the Local Plan is informed by robust up-to-date evidence. The transport evidence is not yet published by BrBC; however the consultation document states that both Crossrail Economic Impacts and Highways Modelling evidence are forthcoming.

2.3 There are 11 Strategic objectives set out; two being key with respect to highways. These are as follows:

- *Quality of Life & Community Infrastructure:*
 - *Improve public transport, cycling and walking facilities and encourage sustainable transport choices; and*
 - *Secure the delivery of essential infrastructure, including transportation schemes and community facilities in order to support new development growth throughout its delivery.*

2.4 The Borough has been split into three areas within this document, with the key area for our own report being the 'A127 Corridor'. It is noted that, in Brentwood Borough, the A127 corridor contains the single settlement of West Horndon and potentially has a greater capacity for growth than elsewhere in the Borough.

2.5 Although the A127 suffers from some congestion problems it has a greater scope for improvements than the A12, to the north. Therefore the A127 corridor operates to a better relative capacity than the A12.

2.6 The A127 Corridor Housing Site Options are shown on Figure 9 and show land east and west of West Horndon as housing site options. The area being promoted by Countryside is approximately those labelled 038A, 038B and 126 on Figure 9. This figure also shows the area put forward for the Dunton Garden Suburb as an urban area.

2.7 It is stated that development along this corridor could potentially provide funding for improvements to capacity along the A127. The text associated with the West Horndon developments and Dunton Garden Suburb states 'or', which infers only one of these areas would come forward. The site details are contained in Appendix 1.

2.8 BrBC are also preparing an Infrastructure Delivery Plan. This will prioritise the facilities that should be funded by the Community Infrastructure Levy (CIL) and identify the greatest need. With respect to transport it states that BrBC will be working with Essex County Council (ECC) to consider an overall transport strategy including the strategic development impacts on the A127 and beyond. In this regard further transport modelling will inform this strategy.

3.0 PEDESTRIAN AND CYCLE NETWORK

3.1 This section sets out the sustainable location of the site with respect to walking and cycling to key facilities in West Horndon. The areas where improvements to these networks could be made through funding from this potential development are also discussed.

3.2 As shown on **Figure 1**, the site is situated in a sustainable location with respect to walking and cycling and in this regard it is suitable for residential development in accordance with paragraph 34 of the National Planning Policy Framework (NPPF).

Pedestrian Network

3.3 There are footways on both sides of Station Road through West Horndon that connect residents to the centre of the village. East of the current built form there is only a footway on the northern side of Station Road, which benefits from a grass verge separating the footway from the carriageway. This footway leads to the northbound bus stop on the western side of the A128 Tilbury Road.

3.4 West Horndon's existing village centre includes a public house, newsagents / post office, café, GP Surgery and community centre located around the Station Road junctions with Thorndon Avenue and Chafford Gardens.

3.5 The centre of the site is within a c.950m walk of the centre of West Horndon and c.1.4km from the railway station. The site will provide pedestrian access onto the footway along Station Road where future residents can then comfortably walk into the centre of the village.

3.6 The CHIT Guidelines for Providing Journeys on Foot (2000) contains suggested acceptable walking distances to some common facilities; this information is replicated in **Table 3.1**.

Table 3.1 Suggested Acceptable Walking Distances (CIHT)

	Town centres (m)	Commuting / School Sight- seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred maximum	800	2000	1200

3.7 It is considered that the village centre is within an acceptable walking distance of the centre of the site, as the village centre is not a town centre and being in a more rural location residents would be willing to walk further than those within a town. The railway station is within the preferred maximum walking distance for commuting and is indeed closer to the acceptable walking distance.

3.8 Access between the site and West Horndon Primary School is also good. Should a new primary school be proposed it is highly likely that this would similarly be suitably accessible by foot for future residents of the site.

3.9 In the centre of West Horndon there is a zebra crossing on Station Road between the junctions with Chafford Gardens and Thorndon Avenue. This provides safe crossing for pedestrians between the village hall and the local shops. This area is shown on **Drawing 13-158-003**.

3.10 It is understood that the Parish Council, as set out in their Annual Report 2013-2014, would like a second zebra crossing and safety barriers outside of the village hall and play area on Station Road. It is understood that Essex Highways are to address this following a meeting with Cllr Sibbald.

3.11 Although it is not considered that a second zebra crossing so close to the existing zebra crossing would be suitable, this could be further reviewed through discussions with the Parish Council and ECC. Extension

of the barriers from the existing zebra crossing to the children's play area could be achieved; however this would require the footway in this location to be widened and thus the Station Road carriageway narrowed. A potential scheme showing how this could be achieved is shown on **Drawing 13-158-004**.

3.12 The potential development site is within walking distance of all facilities within West Horndon, including the railway station, and is suitably located to connect to the good quality existing pedestrian network in the village. Therefore the site is in a very sustainable location with respect to pedestrian movements. Furthermore the development could help realise the Parish Council's wish for pedestrian related improvements in the centre of the village.

Cycle Network

3.13 All of the local facilities within West Horndon would be accessible by cycle from the site, being within 5km. The low volume of traffic and low speeds, within the 30mph speed limit, through the village are conducive to cycling on the road.

3.14 Within the site itself cycling facilities would be intrinsically designed into the scheme from the outset, as required, to ensure safe passage of cyclists through the development and connecting with the local rail and highway network.

3.15 Although there is little in the way of cycle facilities through West Horndon the development could fund additional cycle parking at the railway station and in the centre of the village. Further cycle routes could also be facilitated.

4.0 PUBLIC TRANSPORT NETWORK

4.1 This section sets out the sustainable location of the site with respect to rail and bus travel. The areas where improvements to these networks could be made through funding from this potential development are also discussed.

4.2 As shown on **Figure 1**, the site is situated in a sustainable location with respect to rail and bus travel and in this regard it is suitable for residential development in accordance with paragraph 34 of the NPPF.

Rail Network

4.3 West Horndon railway station is on the London Tilbury and Southend (LT&S) railway line, which is a typical suburban railway line, whose main purpose is to carry people to work in central London in the morning and return them home in the evening. The line is two track throughout, which means that trains cannot overtake each other. In order to minimize passengers' journey times, and to optimise the use of train capacity, a system of skip-stopping is in use during peak periods.

4.4 At these times, most trains from Shoeburyness run non-stop from Pitsea, Basildon or Laindon to London, usually also calling at either Upminster or Barking, but not both. Passengers starting their journeys at West Horndon are catered for by a series of trains at roughly 15 minute intervals which start from Laindon.

4.5 **Table 4.1** shows a summary of service frequencies as operated by c2c, both currently and those that will be operational from December 2015 subject to consultation. Travel into London Fenchurch Street takes c.30 minutes and to Shoeburyness takes c.40 minutes.

Table 4.1: Rail Service Frequencies for West Horndon

Period	Current		From Dec. 2015	
	To London	From London	To London	From London
Weekday				
• AM Peak	15	30	15	15
• Daytime	30	30	30	30
• PM Peak	20	20	15	15
Saturday	30	30	NC	NC
Sunday	30	30	NC	NC

*NC = No Change from current timetable

4.6 The facilities provided at West Horndon railway station are set out, from the 'c2c-online' website, in **Appendix A**.

4.7 The centre of the site is within a c.1.4km walk of West Horndon railway station and there is a good existing footway network between the site and the station. Due to the frequency of trains to and from London there is no option to increase the number of trains on this line; however there is the option of increasing the number of train carriages from the current eight up to 12 carriages. The potential demand for these additional carriages, due to the additional rail passengers that the development may generate, is further discussed in **Section 8.0**.

Potential Rail Improvements

4.8 It is understood that the Parish Council would like improvements to the footway linking the railway station with the footway adjacent to Station Road, disabled access to both of the station platforms and they also have concerns about the junction visibility when exiting the station car park onto Station Road.

4.9 Improvements could be made to the footway access to the railway station to provide pedestrians with a safer crossing arrangement from the westbound bus stop to the footway on the western side of the station approach road. A developer funded scheme could be designed and

implemented in this location should development in West Horndon come forward.

4.10 Any provision of disabled access to both railway station platforms would have to be undertaken by c2c and Network Rail; however the development would be able to provide a financial contribution towards implementing this.

4.11 The normal way to achieve disabled access to all platforms at a station is to install lifts at the footbridge, these being located on the opposite side of the bridge from the stairways. Network Rail are currently implementing a programme of improvements of this type; however this does not include West Horndon. The existing footbridge at West Horndon appears suitable for lifts to be added, which would probably cost of the order of £1m.

4.12 With respect to the visibility when leaving the railway station car park, there is little in alignment terms that can be done to improve this situation. Signage could be significantly increased and a mirrored sign could be placed opposite the station exit to provide drivers with a better view of vehicles travelling along Station Road over the railway bridge. The vegetation between the station car park exit and Station Road, on the approach to the bridge, could also be significantly cut back to improve direct visibility looking left from the station exit.

4.13 The existing Horndon Industrial Park, which is located on the northern side of Station Road opposite the railway station, may be redeveloped potentially for a B1 office / B2 light industrial use. Should this industrial site be redeveloped it would also likely review the highway layout in this location taking account of the industrial site access, Station Road overbridge and railway station access.

4.14 It is understood that the railway station car park is heavily used and there may be an option for c2c / Network Rail to increase the number of car parking spaces by constructing a two level multi-storey car park. There are

currently 146 car parking spaces and 10 cycle parking spaces at the station. It is conservatively considered that providing a two level car park could increase the number of spaces by 30-50%, which would then provide 190-219 spaces. Additional cycle parking could also be implemented, as required.

4.15 It may even be more economical for c2c / Network Rail to purchase additional land for surface parking. There would appear to be space on the south side of the tracks at West Horndon which could be used for this purpose.

4.16 The potential development will be within walking distance of West Horndon railway station. West Horndon railway station provides high quality and frequent rail services to and from London, Southend and Shoeburyness. The number of carriages for each train could be increased from eight to up to 12 to cater for an increase in rail passenger demand. It would also be possible to provide disabled access and additional car / cycle parking at the railway station, to cater for increased demand in the future.

Bus Network

4.17 There are existing bus services that operate along both Station Road through West Horndon and along the A128 Tilbury Road, refer to **Figure 3**.

4.18 The existing bus routes that serve West Horndon are the 265, 477 and 565. Route 265 is operated by Amber Coaches and provides an hourly service Monday to Saturday to / from Grays to the south. Route 477 is a school bus service to / from Brentwood County High School that operates in the AM and PM school peaks. Route 565 is operated by Regal Busways and provides three AM peak services to / from Brentwood. The timetables for these services are attached in **Appendix B**, whilst the routes and nearest existing stops are shown on **Figure 3**.

Potential Bus Improvements

4.19 Improvements to these services, including route diversion through the site, would be sought alongside development of the site. This would enable there to be a suitably frequent bus route serving all future residents of the site within a 400m walk of their home, in accordance with the ECC Design Guide.

4.20 Bus routes 265 and 565 that route to West Horndon would be redirected. Instead of routeing from the A128 Tilbury Road and Station Road the 265 bus service would turn into the site off the A128 Tilbury Road, route through the site and exit the site onto Station Road and then route through West Horndon. This diversion would be similar for the 565 service, but in the opposite direction. This is further discussed in **Section 8.0**.

4.21 It is understood that the Parish Council has tried to improve the bus services and to bring more buses into the village. The future residents of the proposed development will increase the commercial viability of the current bus services and increase the likelihood of having a greater number and frequency of buses through the village, to the benefit of all West Horndon residents. This is further discussed in **Section 8.0**.

4.22 The existing buses that route via the railway station would still do so with any potential diversion of the services through the site. Any new bus service would also route to the railway station, as this would be a key benefit for the future residents of the development as it would be for the existing residents of West Horndon.

4.23 West Horndon benefits from a good bus network that the development could significantly improve with both increased revenue from future residents' patronage and from developer funding.

5.0 HIGHWAY NETWORK

5.1 This section discusses the local highway network in the vicinity of the site and where development of the site could potentially enable local highway improvements to be realised within West Horndon village.

Strategic Highway Network

5.2 The key strategic road in the vicinity of the site is the A127 Southern Arterial Road, which connects the M25 Junction 29 to Southend. The A127 junction with the A1245, to the east of Basildon, provides connection to the A130 and A13 to the M25 Junction 30. These roads can be seen on **Figure 2**.

5.3 The A127 Southern Arterial Road is a dual carriageway subject to the national speed limit. There are a number of left-in left-out junctions connecting to the A127 that are substandard, such as Thorndon Avenue and Childerditch Lane. The A127 / A128 Halfway House junction is an all movements grade separated junction to the north east of the site.

A127 Corridor for Growth (March 2014)

5.4 The 'A127 – Corridor for Growth: An Economic Plan' is a joint strategy between ECC and Southend-on-Sea Borough Council (SoSBC) to assess the current issues and potential future improvements to the A127 corridor.

5.5 The study sets out the A127 corridor's economic importance. It suggests improvement works to provide greater journey time reliability and to facilitate future growth in the region.

5.6 This study states that the A127 between the M25 and Laindon is currently (broadly speaking) not over capacity, with ratio of flow to capacities (RFC) of between 0.9 and 1.0.

5.7 For the western end of the A127, introducing variable speed limits would aid in reducing collisions and increasing reliability; however, this may increase journey times.

5.8 The A127 / A128 Halfway House junction was identified as having a sub-standard horizontal alignment which is thought to be contributing to the high proportion of shunt-type collisions. It is suggested that realigning these entries would address the issue and would also offer better visibility of the junction to the right and the give way line.

5.9 It is stated that the realignment works of both exit slip roads at the roundabout would cost £360,000, with another £100,000 required for the stabilising works for the slipping embankments.

Local Highway Network

5.10 With respect to the local highway network the A128 is a single carriageway road subject to a 50mph speed limit and connects Brentwood in the north of the A13 to southern destinations.

5.11 In the immediate vicinity of the site is the junction of the A128 Tilbury Road / Station Road; this is a ghost island priority junction. Station Road is a single carriageway road with a footway on the northern side and subject to the national speed limit to the east of the built form of West Horndon. Station Road is subject to a 30mph speed limit through the village.

Village Centre Car Parking

5.12 At the corner of Station Road and Chafford Gardens there is a McColl's newsagents, Headlines unisex hairdressing salon and Aura fireplaces. There is a long drop kerb on the western side of Chafford Gardens, which allows for a crossover for car parking at 90 degrees to the road between the building and the footway, refer to **Drawing 13-158-003** for this existing arrangement. It is understood that the Parish Council is

concerned about the organisation of the parking in this location, where there has been an accident in recent years.

5.13 This arrangement could be improved by creating a short one-way service road with marked parking spaces as shown on **Drawing 13-158-004**. This would remove the long drop kerb length and therefore improve pedestrian safety. It would also remove the need for drivers to reverse back onto Chafford Gardens, as drivers would use the service road and exit onto Chafford Gardens in a forward gear, thus also improving driver / pedestrian safety.

Heavy Goods Vehicle Movements

5.14 It is understood that there is local concern with the movement of heavy goods vehicles (HGVs) through the village, between the A128 Tilbury Road and Horndon Industrial Park. Firstly, as discussed above, the industrial estate may be redeveloped for B1/B2 use; therefore if it were to be redeveloped for B1 office use there would not be any regular daily HGV movements associated with this site.

5.15 If the industrial estate continues to generate HGV movements there is the potential for a traffic calming scheme, with horizontal deflection, to be implemented on Station Road. This would reduce the speed of HGVs through the village and increase both perceived and actual safety. With any redevelopment there is the potential for BrBC to ensure HGV movements are limited, in volume and hours of operation, for the benefit of local residents.

5.16 The development could contribute towards the implementation of local highway schemes considered necessary by the Parish Council to overcome existing problems.

6.0 DEVELOPMENT ACCESS

6.1 This section demonstrates that suitable access to the site can be achieved for all modes of transport.

Pedestrian Accessibility

6.2 The site will be designed to have a very permeable pedestrian network of footways, and where applicable footpaths. These will connect to the existing off-site footway on the north side of Station Road and are also likely to connect to the footways on Cadogan Avenue.

6.3 This will enable future residents of the site to comfortably access the village centre, bus stops (both existing and future) and railway station by foot.

Site Access

6.4 The site has frontage in excess of 500m onto both sides of Station Road, between West Horndon village and the A128 Tilbury Road. The potential development however is only proposing to have residential dwellings on the north side of Station Road.

6.5 The highway alignment along the site frontage of Station Road is relatively straight and therefore providing a site access junction with suitable visibility splays onto Station Road is comfortably achievable.

6.6 There is an existing gap in the hedge / tree line along Station Road that currently provides access to the field. It is this gap in the hedge that could be used to enable a site access to be achieved with Station Road. This site access could have a 6.2m wide carriageway and two 2.0m wide footways. This carriageway width would cater for a bus to divert through the site and therefore the spine road through the site would act as a bus route. The footways at the site access would connect with the existing footways along Station Road.

6.7 Another site access could be realised onto the A128 Tilbury Road. This site access could take the form of a ghost island give way priority junction, similar to the other junctions located along the A128 Tilbury Road in this area. In order to accommodate this junction the existing junction of the A128 Tilbury Road and Tilbury Road would be closed, with Tilbury Road realigned to connect with the spine road of the development.

6.8 There is sufficient area on site to accommodate a permeable highway network with suitable access for emergency, refuse and delivery vehicles.

Parking

6.9 On-site car parking will be provided in accordance with ECC's, Parking Standards: Design and Good Practice 2009, minimum car parking standards. This will ensure that all on-site car parking is catered for within the site itself with no overspill onto the existing highway network.

6.10 The development can easily achieve suitable accesses from the existing highway network to the site. These would cater for a bus to route through the site, enable the site access junctions to operate within capacity and also provide access for emergency, refuse and delivery vehicles.

7.0 HIGHWAYS IMPACT

7.1 The generation and routeing of development traffic and its impact on the local highway network is set out in this section.

Base Traffic

7.2 Traffic surveys have been undertaken on the A127 and local highway network. The key junctions in the immediate vicinity of the site that have been surveyed are the A127 / A128 Halfway House grade separated junction and the A128 Tilbury Road / Station Road ghost island priority junction.

Vehicle Trip Generation

7.3 The TRICS database has been analysed in order to calculate the likely vehicle trips that the development site would generate. **Table 7.1** shows the vehicle trip rates and trips that the site would generate in the AM and PM peak hours. The TRICS output files are contained in **Appendix C**.

Table 7.1 Vehicle Trip Generation

	AM Peak		PM Peak	
	In	Out	In	Out
Trip Rates	0.14	0.43	0.36	0.21
Trips	92	282	235	139

7.4 As shown in **Table 7.1** the site would generate 374 two-way vehicle trips in each of the peak hours.

Routeing

7.5 It is envisaged that the majority of traffic associated with the site would travel onto the A128 Tilbury Road and then onto the A127 corridor, either eastbound towards Basildon or westbound towards the M25 and

London. It is not expected that a significant proportion of the traffic generated by the site would travel through West Horndon village itself.

7.6 Accessing the A127 corridor, via the A128, would avoid any delays of travelling through the village and potential queuing on the substandard slip roads waiting for a gap in the heavy traffic flow along the A127. Travelling via the A128 would be the most direct route onto the A127 corridor and the A127 / A128 Halfway House junction has standardised slip roads onto the A127, which would make it easier to access the A127 corridor.

Increases in Traffic Flows on Roads

7.7 The development site will increase the level of traffic on the local and strategic roads in vicinity of the site. The degree of increases in traffic compared to the surveyed flows are shown in **Table 7.2**.

Table 7.2 Increases in Traffic Flows

Road	Existing Flow		Ex. + Dev. Flow	
	AM	PM	AM	PM
Station Road	604	590	679	665
A128 Tilbury Road	1,484	1,585	1,785	1,914
A127 (west of A128)	5,632	5,676	5,699	5,767
A127 (east of A128)	6,626	6,590	6,759	6,710

7.8 As shown in **Table 7.2** the development of up to 650 residential dwellings would increase traffic on the local highway network, but not to a materially significant amount.

7.9 The Design Manual for Roads and Bridges (DMRB) TA 79/99 Traffic Capacity of Urban Roads sets out the capacities of urban roads; extracts of this guidance are attached in **Appendix D**.

7.10 It can be seen that the 'with development' traffic flow along Station Road would not exceed the link capacity for a UAP3 road. Although the A128 is more of a rural road it can be safely seen that its link capacity would not be exceeded with the development traffic added.

7.11 It can be seen that the A127 corridor is operating within, albeit close to, capacity as a UAP1 road (7.3m wide lanes); this has been set out in the A127 Corridor for Growth study. The development would not materially increase the traffic flow on the A127 and would not result in this corridor operating over its link capacity.

7.12 The development generated traffic would not result in any road in the vicinity of the site operating over its link capacity.

Off-Site Junction Capacity

7.13 The main sections of the local highway network in the vicinity of the site that would be further reviewed as part any planning application are as follows:

1. M25 Junction 29 - A127 Southern Arterial Road;
2. A127 Southern Arterial Road link capacity and safety issues;
3. A127 Southern Arterial Road / A128 Tilbury Road grade separated junction;
4. A128 Tilbury Road / Station Road ghost island priority junction;
5. A127 Southern Arterial Road left-in left-out junctions:
 - Thorndon Avenue;
 - Childerditch Lane;
 - Little Warley Hall Lane;
6. A127 Southern Arterial Road / Warley Street grade separated junction; and
7. Increases in traffic flow along Station Road and St Mary's Lane.

7.14 The A128 Tilbury Road / Station Road ghost island priority junction currently operates within capacity; however may require mitigation measures in the future should development in West Horndon come forward. There is a significant amount of highway and developer controlled land at this junction and therefore it would be possible to adequately mitigate the impact of development related traffic in this location.

7.15 As discussed earlier in this section the A127 currently operates close to its link capacity in the vicinity of the A127 / A128 Halfway House junction, with this junction also operating, within, but close to capacity. There appears to be scope to improve the capacity of this junction, which may include increasing the number of entry lanes, from two to three, on the A127 eastbound and westbound off-slips and the A128 northbound approach.

7.16 It is the long term aim of ECC Highways to improve this corridor and development at West Horndon would result in developer funding, towards the cost of upgrade works to this junction with the A127, being realised.

Other Junctions and Links

7.19 Taking each of the remaining aforementioned junctions in turn the M25 Junction 29 and the A127 corridor will need to be assessed with the development traffic added in order to enable mitigation schemes to be proposed, should these be required.

7.20 Any mitigation measures proposed for the M25 Junction 29 and the A127 corridor would have to be carefully discussed with both the Highways Agency and ECC Highways in order to suitably link with the long term strategic plans for this area of the strategic highway network.

7.21 It is envisaged that, if required, the development would be able to provide funding towards these potential improvement works, proportionally based on the quantum of development, along with other developer funding. It is considered that this approach would result in the development being

able to satisfactorily mitigate its impact on the highway network and thus ensure that the development is acceptable in highways terms.

7.22 As discussed earlier in this section it is *not* envisaged that any of the future residents of the site would choose to access the A127 corridor via the local country roads of Thorndon Avenue, Childerditch Lane or Little Warley Hall Lane, all of which have substandard left-in left-out junctions onto the A127. Similarly it is not envisaged that any of the site generated traffic would use the A127 / Warley Street junction.

7.23 The immediate junctions in the vicinity of the site would either operate within capacity or could be improved in order to be made to operate within capacity, with the development traffic added to the existing traffic movements. The proposed development will therefore not result in any unacceptable traffic impact.

8.0 SUSTAINABLE TRANSPORT

8.1 This section sets out the non-car modes of travel likely to be generated by the development, of up to 650 residential dwellings. The number of non-car trips and their impact on the sustainable transport networks is analysed.

Non-Car Trips

8.2 Further to the TRICS database being analysed for vehicle trips, Journey to Work data from the 2011 Census has also been analysed for the 'Herongate, Ingrave and West Horndon' ward. This data enables a suitable mode split for the potential development site, as is specifically based on census data for the area. These mode splits are shown in **Table 8.1**, which includes for an adjusted percentage mode split excluding those persons working from home, not in employment and 'other'.

Table 8.1 Journey to Work by Mode

Mode	No.	Percentage	Adjusted Percentage
Work from Home	135	5.1%	N/A
Train	451	17.1%	26.3%
Bus	11	0.4%	0.6%
Taxi	8	0.3%	0.5%
Motorcycle	19	0.7%	1.1%
Car	1,073	40.6%	62.6%
Car Passenger	63	2.4%	3.7%
Cycle	14	0.5%	0.8%
Pedestrian	76	2.9%	4.4%
Other	14	0.5%	N/A
Not in Employment	777	29.4%	N/A
Total	2,641	100%	100%

8.3 In order to apply the percentage mode splits to the 650 residential dwellings, proposed for the development site, the adjusted percentages shown in **Table 8.1** have been used along with the car driver trips shown in **Table 7.1**. **Table 8.2** shows the subsequent multi-modal trips that the development will generate.

Table 8.2 Development Trips

Mode	Percentage	AM Peak		PM Peak	
		In	Out	In	Out
Car	100%	92	282	235	139
Car	5.9%	5	17	14	8
Passenger					
Pedestrian	7.1%	6	20	17	10
Cycle	1.3%	1	4	3	2
Bus	1.0%	1	3	2	1
Rail	42.0%	5	17	14	8
Taxi	0.7%	1	2	2	1
Total	-	112	344	287	170

8.4 As shown in **Table 8.2** the development would generate up to 27 pedestrian trips, five cycle trips, four bus trips, 22 rail trips and three taxi trips in the busiest peak periods.

Non-Car Impact

8.5 The potential impacts of the non-car modes of transport are discussed in the following paragraphs.

Pedestrian Impact

8.6 The development will generate c.240 pedestrian movements per day. This level of additional pedestrian movement on the footway network in West Horndon will not have a material impact on the flows or safety of pedestrians in the village.

8.7 These additional pedestrians will indeed commercially benefit the local facilities and add to the vibrancy of the village.

8.8 A plethora of pedestrian linkages can be provided to create a permeable development. This will also lead to commercial benefits of the existing local facilities.

Cyclist Impact

8.9 The number of cycle trips that the site would generate are small, at c. five peak period trips and c. 40-50 daily trips. These cycle trips can be safely accommodated on the local highway network.

8.10 A plethora of cycle linkages can be provided to create a permeable development. This will also lead to commercial benefits of the existing local facilities.

Rail Passenger Impact

8.11 The site would generate c. 200 daily rail passenger trips; c. 100 outbound trips and c. 100 inbound trips. There would be c. 22 peak hour rail trips from the site.

8.12 There is sufficient platform length at West Horndon railway station to increase the train carriages from eight to up to 12 carriages, should this be required and indeed commercially beneficial. Although it is unlikely that the addition of c. 22 peak hour passengers would warrant such an increase; this along with other increases in rail demand along this line may lead to it being commercially beneficial for one additional carriage to be realised.

8.13 It is understood that the existing train service into Fenchurch Street is often overcrowded in the peak periods. The development could potentially provide funding to c. 2c towards providing additional carriages to ease this congestion.

8.14 The development will be close to West Horndon rail station with frequent connections to London and other destinations. Several improvements at the station (more parking provision, better access and provision of disabled facilities) as well as to the train services (longer carriages) will vastly improve the existing rail offer.

Impact of a new Railway Station at Dunton Garden Suburb

8.15 Should the Dunton Garden Suburb proposal come forward and provide a new railway station this will likely affect the commercial viability of Laindon and West Horndon railway stations.

Bus Passenger Impact

8.16 The site would generate up to c.four peak hour and c.35 daily bus trips. This is not likely to lead to the demand for additional buses or service frequencies; however as discussed earlier in this report the development could provide funding towards an increased frequency bus service, if required.

8.17 As discussed in **Section 4.0** there is scope for the Route 265 and 565 bus services to divert through the site. Diverting buses through the site would require a degree of additional travel distance and therefore travel time.

8.18 For the buses to divert through the site there would be an additional travel distance of c.600m and c.100m for the 265 and 565 services respectively. These distances equate to an additional travel time of c.1 minute 30 seconds and c.15 seconds respectively, using a conservative average bus speed of 15mph.

8.19 It can be seen from review of the timetables for Routes 265 and 565, in **Appendix B**, that they generally have a 17 minute and seven minute

layover in Grays and Brentwood respectively. Therefore diversion through the site could generally comfortably be achieved without significant changes to the remainder of the respective bus service.

8.20 There is sufficient provision of bus services in the area. The proposed development would facilitate betterment of these services as well as the diversion of some of the bus routes through the site.

9.0 CONCLUSIONS

9.1 Odyssey Markides are acting for Countryside in promoting the development east of West Horndon through the Strategic Growth Options Consultation.

9.2 It has been demonstrated within this report that the development being promoted by Countryside would be able to achieve the highways related strategic objectives set out in the Strategic Growth Options Consultation document; this is to improve public transport, cycling and walking facilities and secure the delivery of essential infrastructure.

9.3 The potential development site is within walking distance of all facilities within West Horndon, including the railway station, and is suitably located to connect to the good quality existing pedestrian network in the village. Furthermore the development could help realise the Parish Council's wish for pedestrian related improvements in the centre of the village.

9.4 Although there is little in the way of cycle facilities through West Horndon the development could fund additional cycle parking at the railway station and in the centre of the village. Further cycle routes could also be facilitated.

9.5 The potential development will be within walking distance of West Horndon railway station. West Horndon railway station provides high quality and frequent rail services to and from London, Southend and Shoeburyness. Several improvements of the station (more parking provision, better access and provision of disabled facilities) as well as to the train services (longer carriages) will vastly improve the existing rail offer.

9.6 West Horndon benefits from a good bus network that the development could significantly improve with both increased revenue from future residents' patronage and from developer funding.

9.7 The development could contribute towards the implementation of local highway schemes considered necessary by the Parish Council to overcome existing problems.

9.8 The development can easily achieve suitable accesses from the existing highway network to the site. These would cater for a bus to route through the site, enable the site access junctions to operate within capacity and also provide access for emergency, refuse and delivery vehicles.

9.9 The link capacities of the roads within the vicinity of the site would not be exceeded, even with the development traffic added. The immediate junctions in the vicinity of the site would either operate within capacity or

could be improved in order to be made to operate within capacity, with the development traffic added to the existing traffic movements.

9.10 The proposed development will therefore not result in any unacceptable traffic impact.

FIGURES