



APPENDIX 2

Schedule of Email Correspondence with Braintree District Council & Relevant Attachments

Appendices v - vii

February 2018

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Appendix v



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NORTH ESSEX GARDEN COMMUNITIES

MONKS WOOD CONCEPT FEASIBILITY STUDY

VOLUME 1: BASELINE COMPENDIUM

MARCH 2017



Monks Wood

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Introduction

Braintree District Council, Colchester Borough Council and Tendring District Council are working together, alongside Essex County Council to identify and deliver an agreed approach to the allocation and distribution of large scale housing led mixed use development in the form of potential Garden Communities.

The Councils have already commissioned initial work assessing strategic sites that were nominated through the call for sites for garden villages. The evidence base is presented within a family of documents that comprise the AECOM North Essex Garden Communities Concept Feasibility Study. The previous study focused on the assessment of four strategic sites.

This document has been prepared for Lightwood Strategic and provides baseline synthesis and key findings associated with the promotion of an alternative strategic site at Monks Wood. For consistency, the methodology for the baseline assessment shadows the approach previously commissioned by the Councils.



Aerial of the site

Definitions

Throughout this baseline report, the following key terms and definitions are used when referring to the potential location of Monks Wood for a Garden Community.

Site Study Area

Potential Garden Community locations either already consider by the council put forward by Lightwood Strategic, are shown on Figure 1.

5km Buffer Zone

The study area has been defined with a 5km buffer around the outer boundary of the area under investigation and shown in Figure 1.

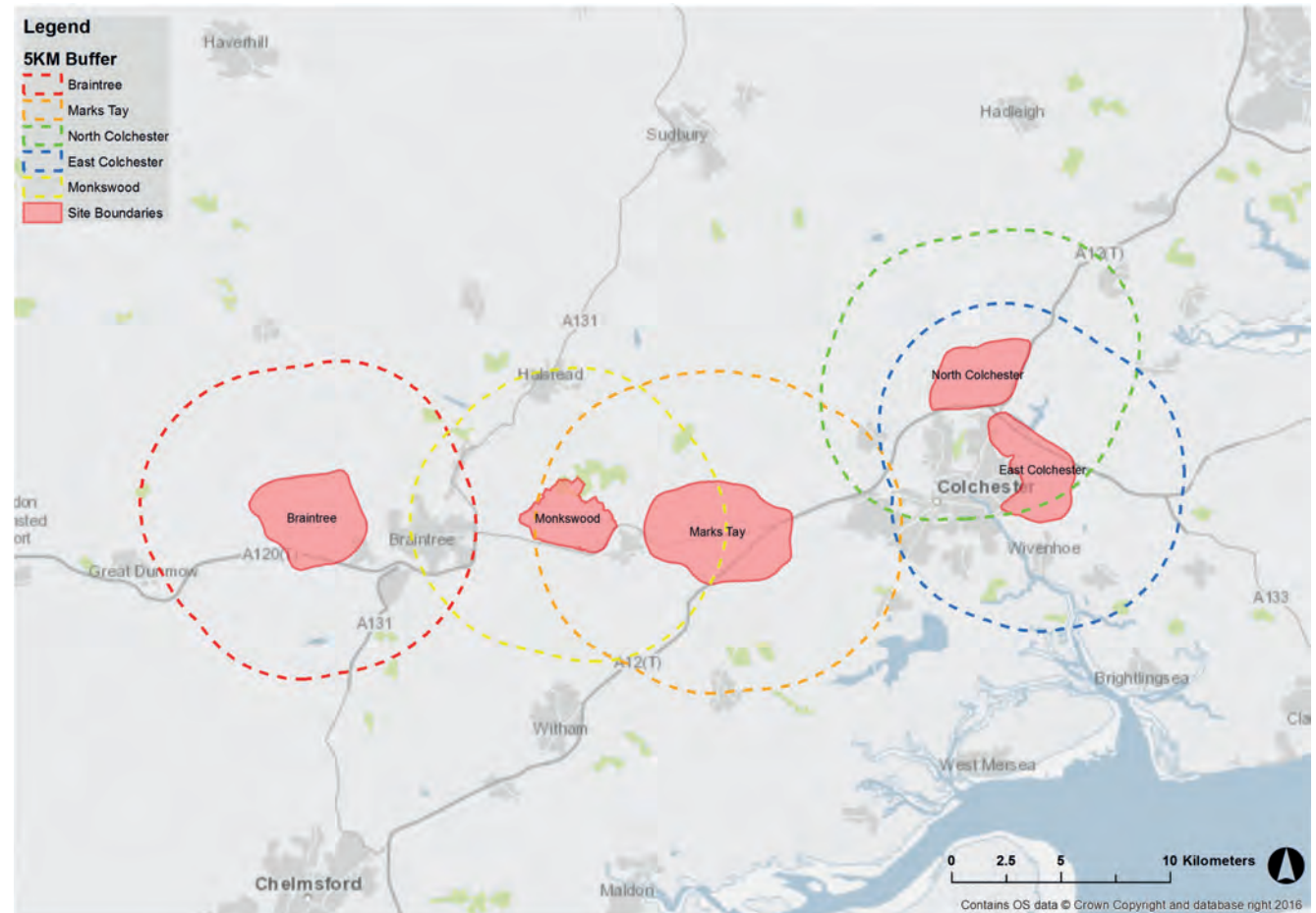


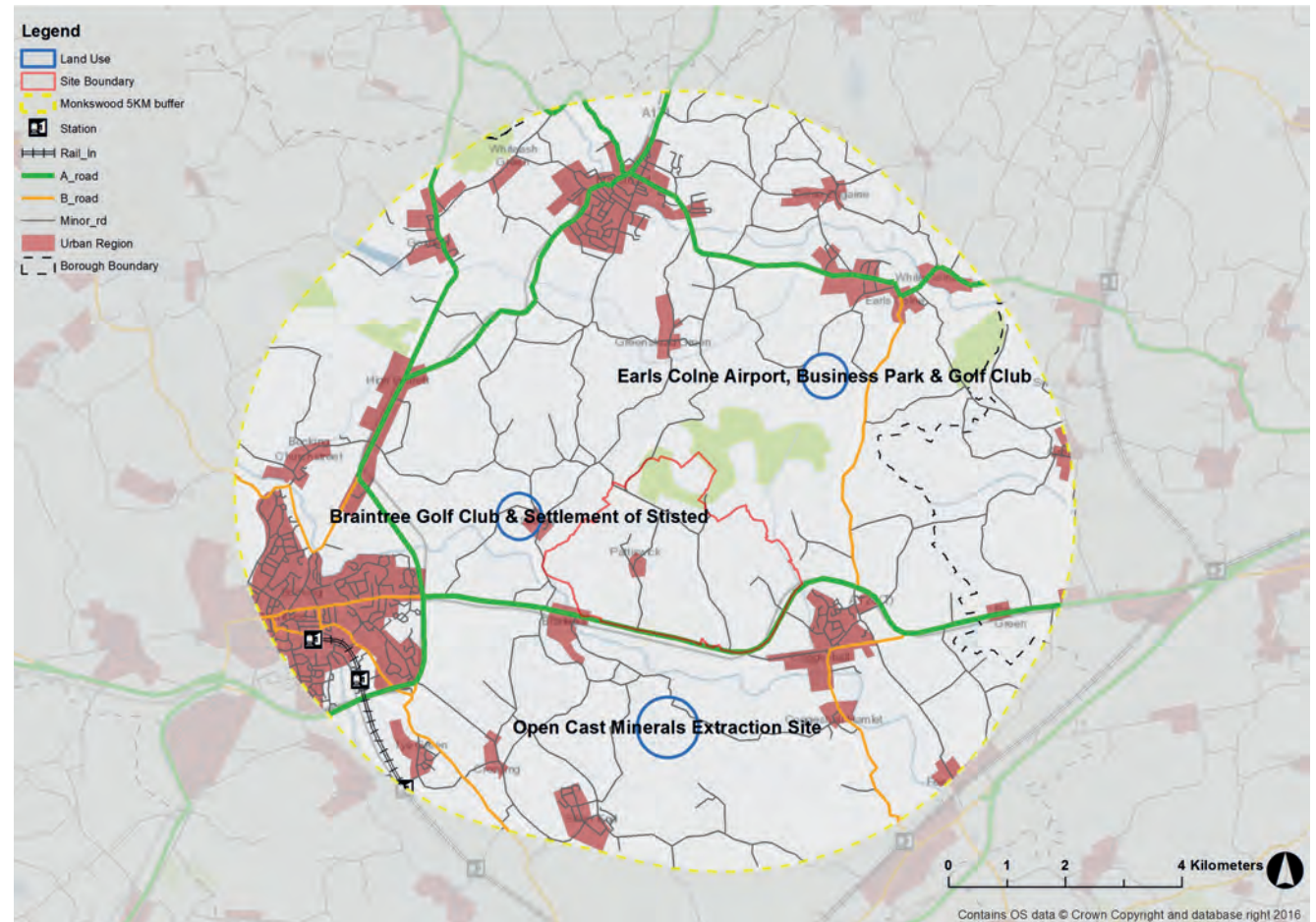
Figure 1: Buffers

Site Overview and Land Use

Centred at National Grid reference TL826237 (easting 582630, northing 223702) the Monks Wood strategic site is located less than 5km to the east of Braintree and is situated to the immediate north of the A120.

The entire site is located within the administrative area of Braintree District Council. The A120 is an important and strategically significant road connecting Braintree to Coggeshall and then to Colchester beyond.

The land use within the strategic site is predominately agricultural and occupied and managed in hand by the Estate. The agricultural fields are interspersed by numerous woodland, ancient woodlands and copses including The Rookery, Orange Wood, Vineyard and Peg's Folly. The strategic site is surrounded by a variety of land uses including an airfield, two golf courses and an open cast mineral extraction site.

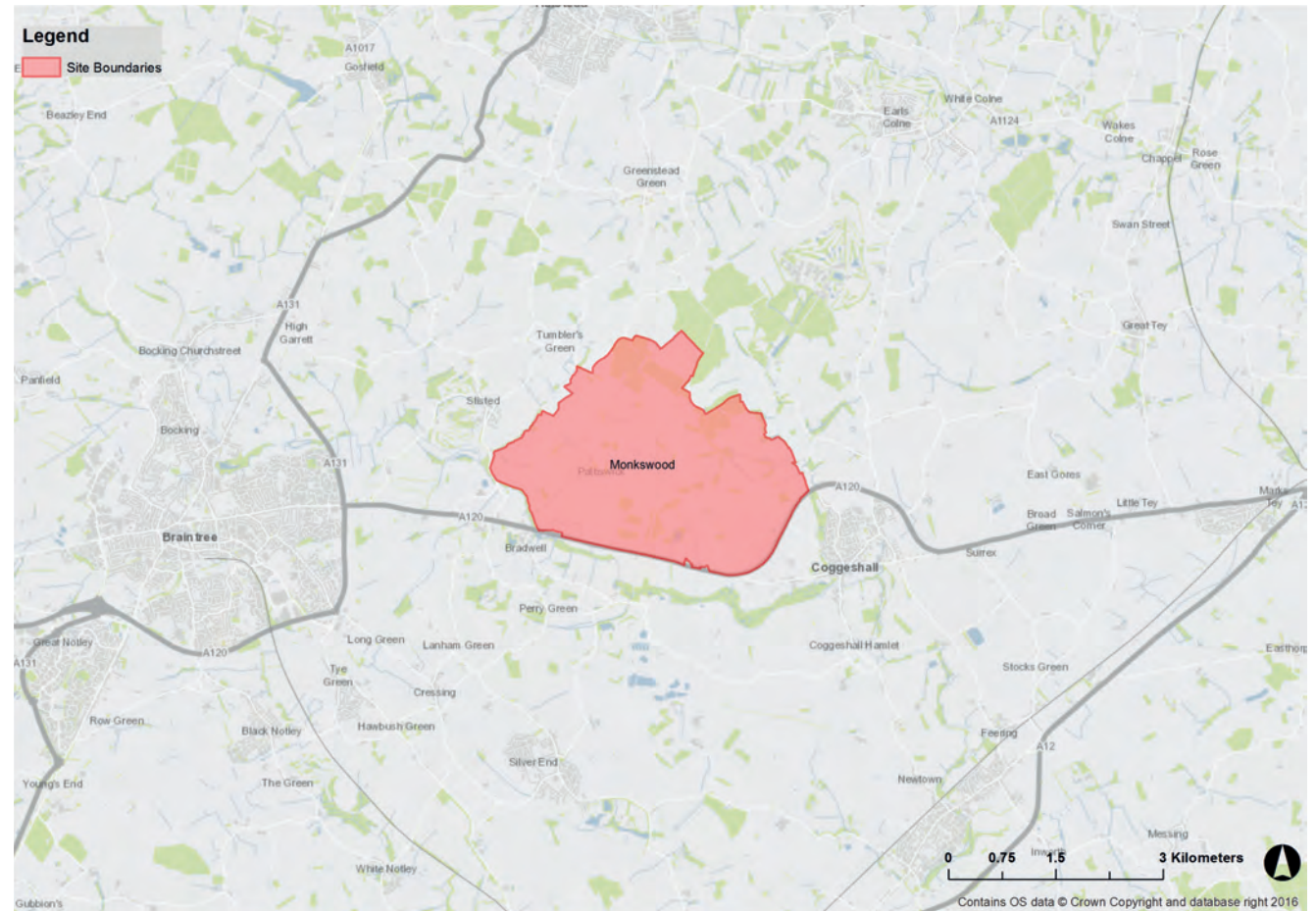


Land Use Plan

Emerging Draft Local Plan

Key findings

- Braintree District Council are making good progress on their emerging development plan whereby the Local Plan was subject to an 8 week public consultation which concluded on the 19th August 2016. It contained four initial broad areas of search for the provision of Garden Communities.
- The Monks Wood strategic site was put forward as an alternative Garden Village Settlement as part of the Draft Braintree Local Plan Consultation Process.
- The Estate extends to some 2,244 acres and has a long term capability of accommodating garden village (1,500 to 10,00 homes) or a garden town (in excess of 20,000 homes).



Draft Local Plan

Sources

- Draft Braintree Local Plan

Land Promoters and Development

Key findings

- The proposed allocation is made up of the following land titles EX520171, EX815497, EX815506, EX815507, EX884456 and EX884459.
- This strategic site is under a single ownership, namely the Pattiswick Estate, and is solely promoted by Lightwood Strategic Limited.
- This opportunity is unique to the other sites put forward as Graden Village due to its simplicity of the ownership and developer arrangement. All other sites have multiple landowners which are likely to procrastinate the delivery of those sites.

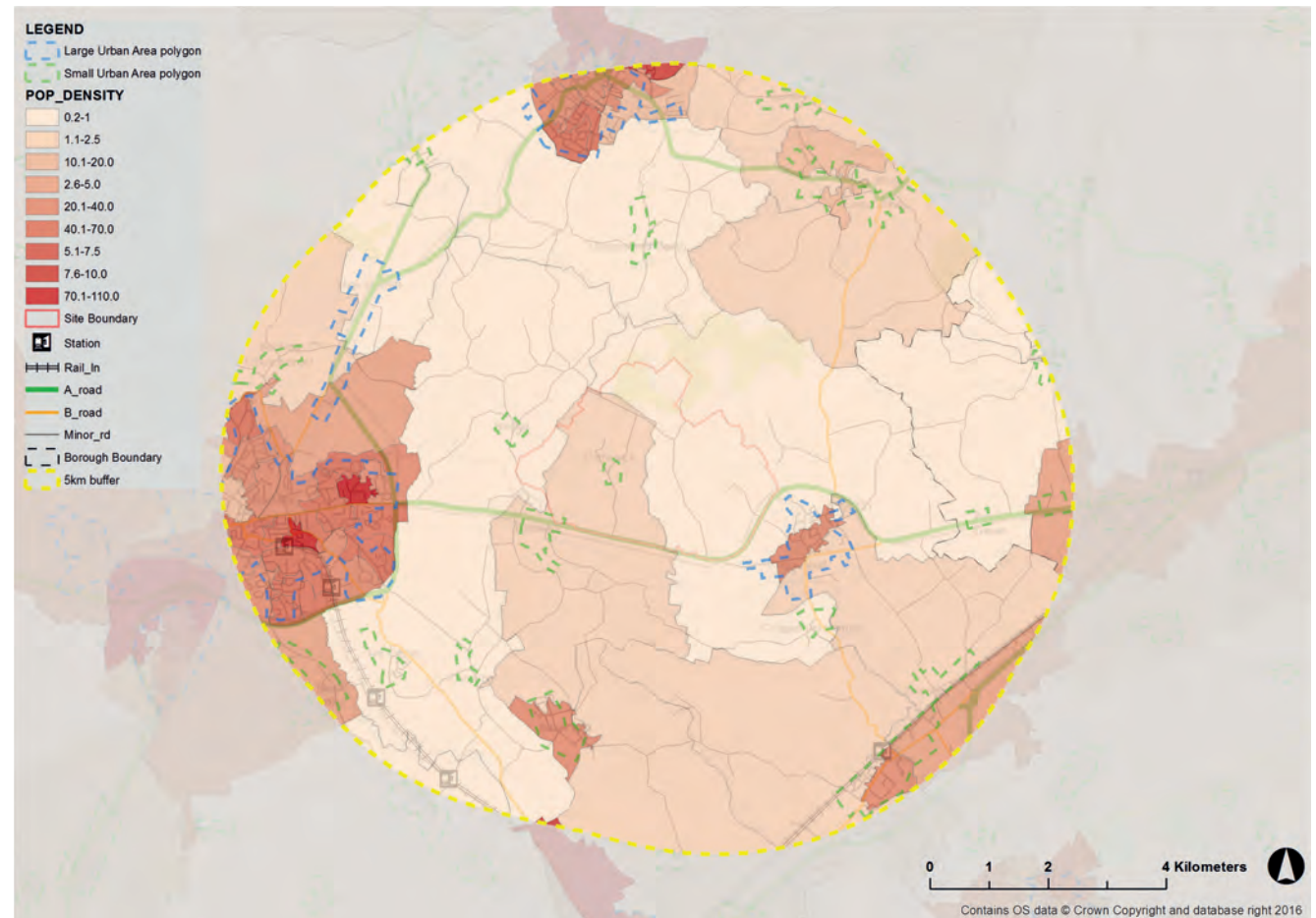


Caption

Surrounding Settlement Hierarchy

Key findings

- Monks Wood is synonymous of a working rural landscape that is managed and governed by an rural estate.
- The site fronts onto the A120 which connects Braintree to Coggeshall.
- The urban area of Braintree has the highest concentration of population and economic activity in the wider area and is located 2m to the west of the site.
- Turning north, the rural character is pepper potted by more intensive land uses which include the Earls Colne Airfield, Business Park and County Golf Club (located 1km to the north east of the site) and the hamlet of Greenstead Green (located 1km to the north of the site).
- To the east, and beyond the A120, is the settlement of Coggeshall which is a service village offering essential amenity.
- To the south, and beyond the A120, whilst the area is rural in context with numerous hamlets, we have a variety of larger commercial land uses including the Allshot Enterprise Park and an open cast mineral extraction site. Both are located circa 1km away from the Monks Wood site.
- Monks Wood location off the A120 enables it to facilitate wider forms of economic activity associated with the Braintree / Colchester corridor.



Pop Density Plan

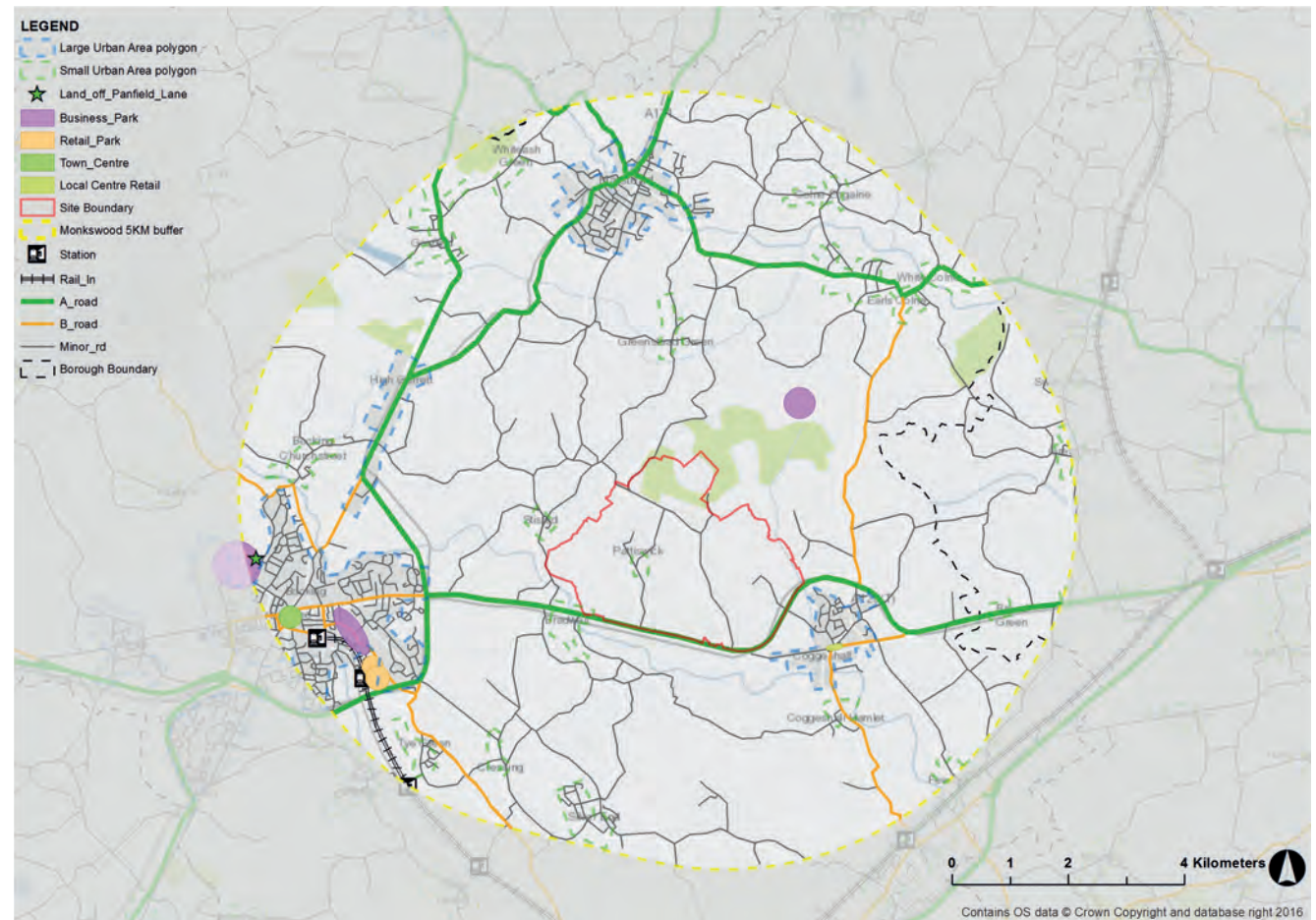
Sources

- Draft Braintree Local Plan June 2016

Economic Context

Key findings

- The existing business parks and office space within Braintree district exhibit high levels of occupation and a requirement for additional high quality employment space.
- The District has strong linkages with its surrounding areas: London and the Districts of Chelmsford, Colchester and Uttlesford, both in terms of the movement of people to jobs and businesses supply chain relationships, clients and markets. As a result, the distribution of industrial land is driven by the strategic routes that run through the south of the District. The potential for dualling of the A120 between Braintree and Marks Tey within the plan period will promote the District as a location for employment activity.
- To attract future business, flexible and highly accessible employment space most likely to be in demand.



Economic Context Plan

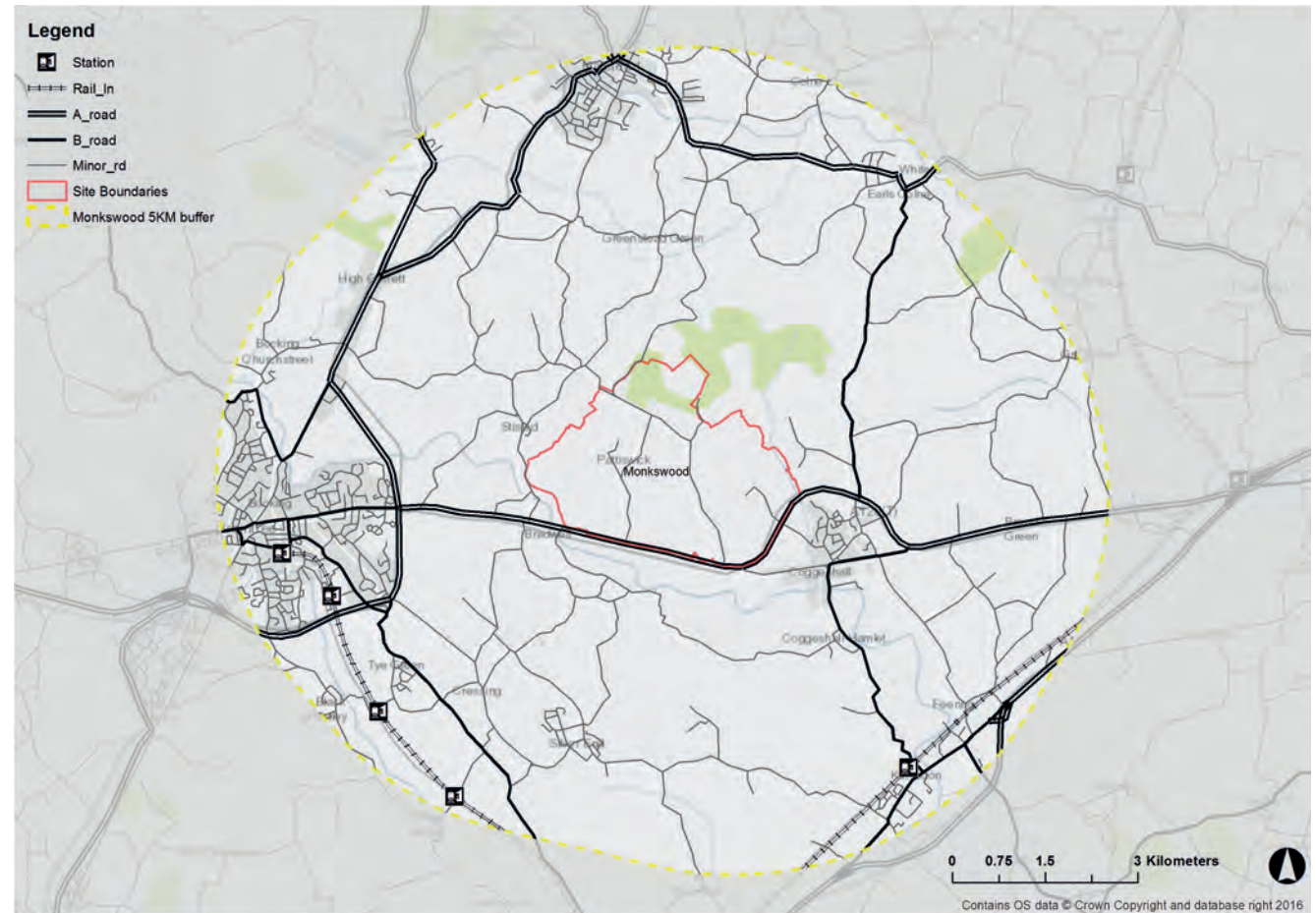
Sources

- Braintree District Employment Land Needs Assessment 2015.

Movement and Connectivity

Key findings

- The study site fronts onto the A120 which forms part of the strategic road network.
- Essex County Council is committed towards the dualling of the A120 and are now consulting on five possible route options. Route Option 'A' runs alongside the study site.
- London Stanstead Airport lies approximately 25km to the west and accessed via the A120.
- There are numerous bus stops located along the A120 which provide strategic services connecting Chelmsford to Colchester (First and Regal Busways) and Stansted Airport to Colchester (Arriva). These are high frequency service routes.
- Vehicular access within the study area is predominately provide by B-roads and other farm tracks. The nature of roads mean that pedestrian footway connections are limited.
- The nearest branch of the National Cycle Route is located at Braintree (NCR 16).

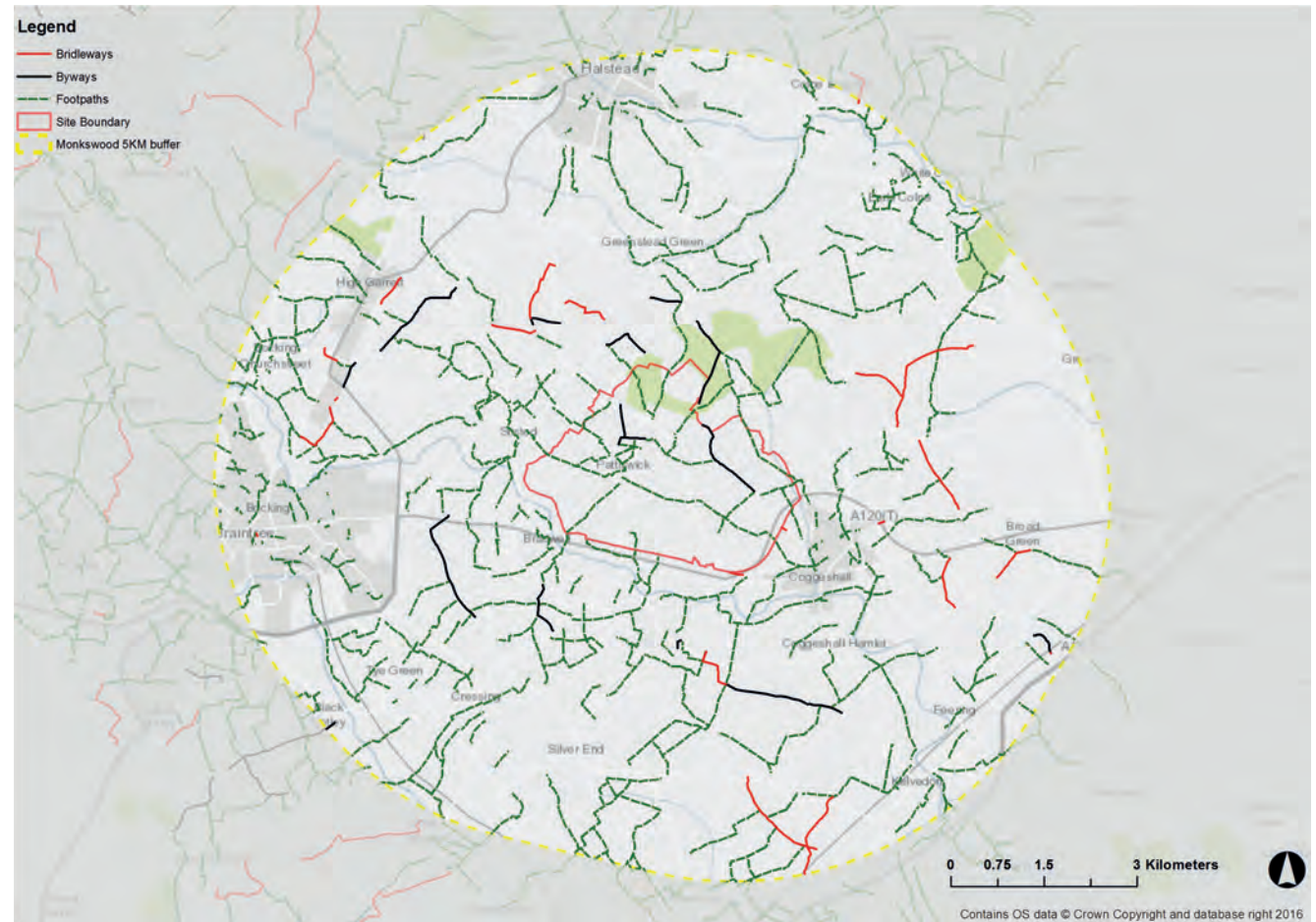


Transport Plan

Movement and Connectivity

Rights of Way

- A patchwork of public right of way footpaths, bridleway and byway traverse the study areas and continue to disperse across the wider 5km buffer zone.



Rights of Way Plan

Sources

- Essex Definitive Map
- Essex Bus
- Sustrans

Landscape Character, Sensitivity and Condition

Key findings

- The Essex Landscape Character Appraisal identifies the majority of the strategic site as siting within the Blackwater /Brian/Lower Chelmer Valley Character Area.
- At a local level, the Braintree Landscape Character Assessment locates the site within the Blackwater River Valley, whereby the key characteristics of the land is a shallow valley with predominantly arable farmland on the valley slopes. With an overall strong sense of place and tranquillity and away from the settlement of Braintree.
- The roman roads and the A120 have left their imprint on the modern landscape, influencing field alignment and settlement distribution.
- The proposed landscape objectives seek to protect and enhance positive features that are essential in contributing to local distinctiveness and sense of place through effective planning and positive land management issues. Together with enhancing the integrity of the landscape and reinforce its character by introducing new and/or enhanced elements where distinctive features or characteristics are absent.

Image to come

Caption

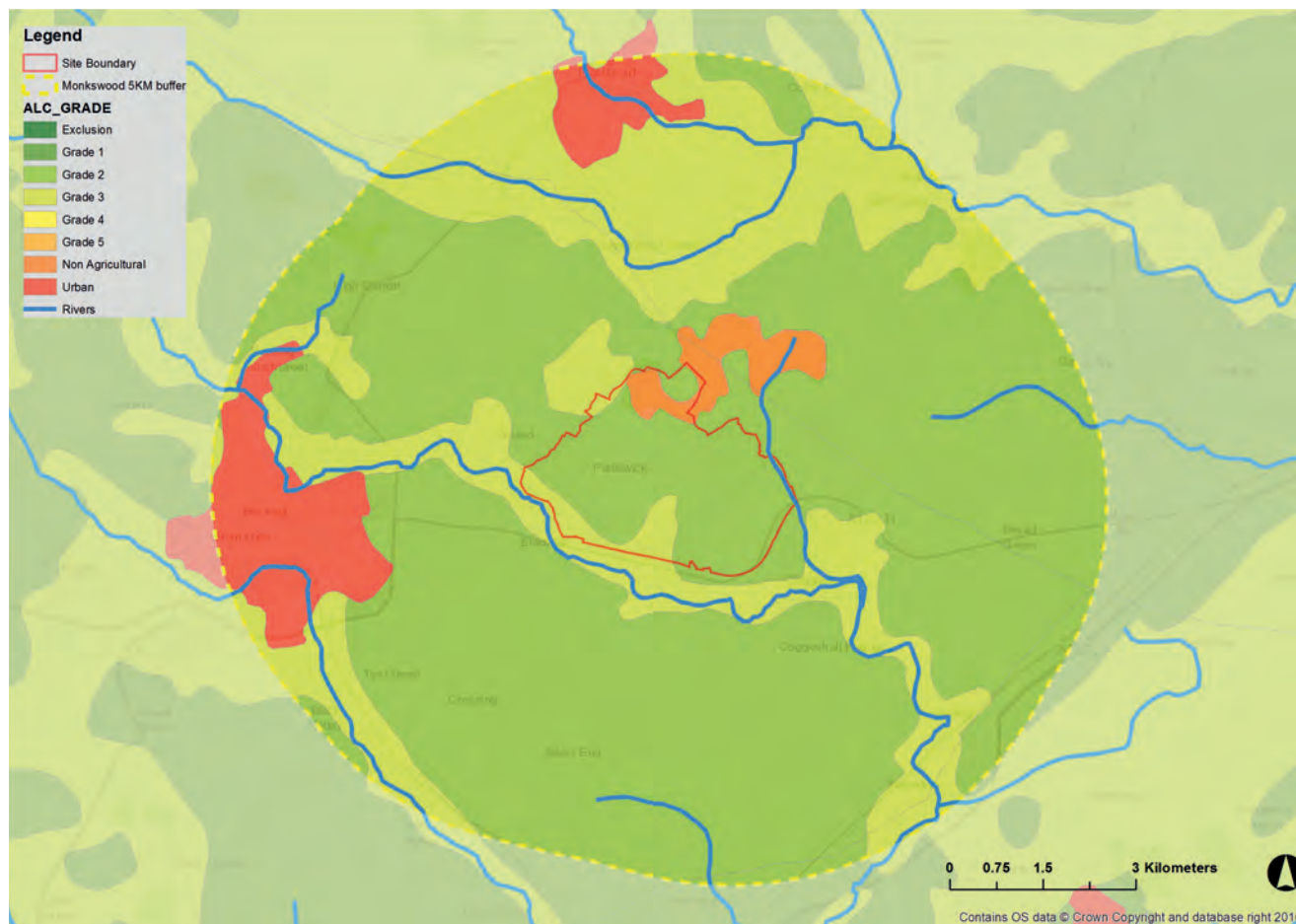
Sources

- Braintree Landscape Character Appraisal
- Essex landscape Character Appraisal

Agricultural Land Classification and Mineral Safeguarding Areas

Key findings

- The quality of agricultural land within Monks Wood is predominately Grade 2 land, with pockets of undifferentiated Grade 3 land to the south, and non-agricultural land to the north.
- The entire site is washed over by a Sand and Gravel Minerals Safeguarding Area. The safeguarding does not prevent future development but extraction and mineral resource may be considered in the land use planning decision.
- There are mineral extraction sites within the locality.



Agricultural Land Classification and Mineral Safeguarding Areas Plan

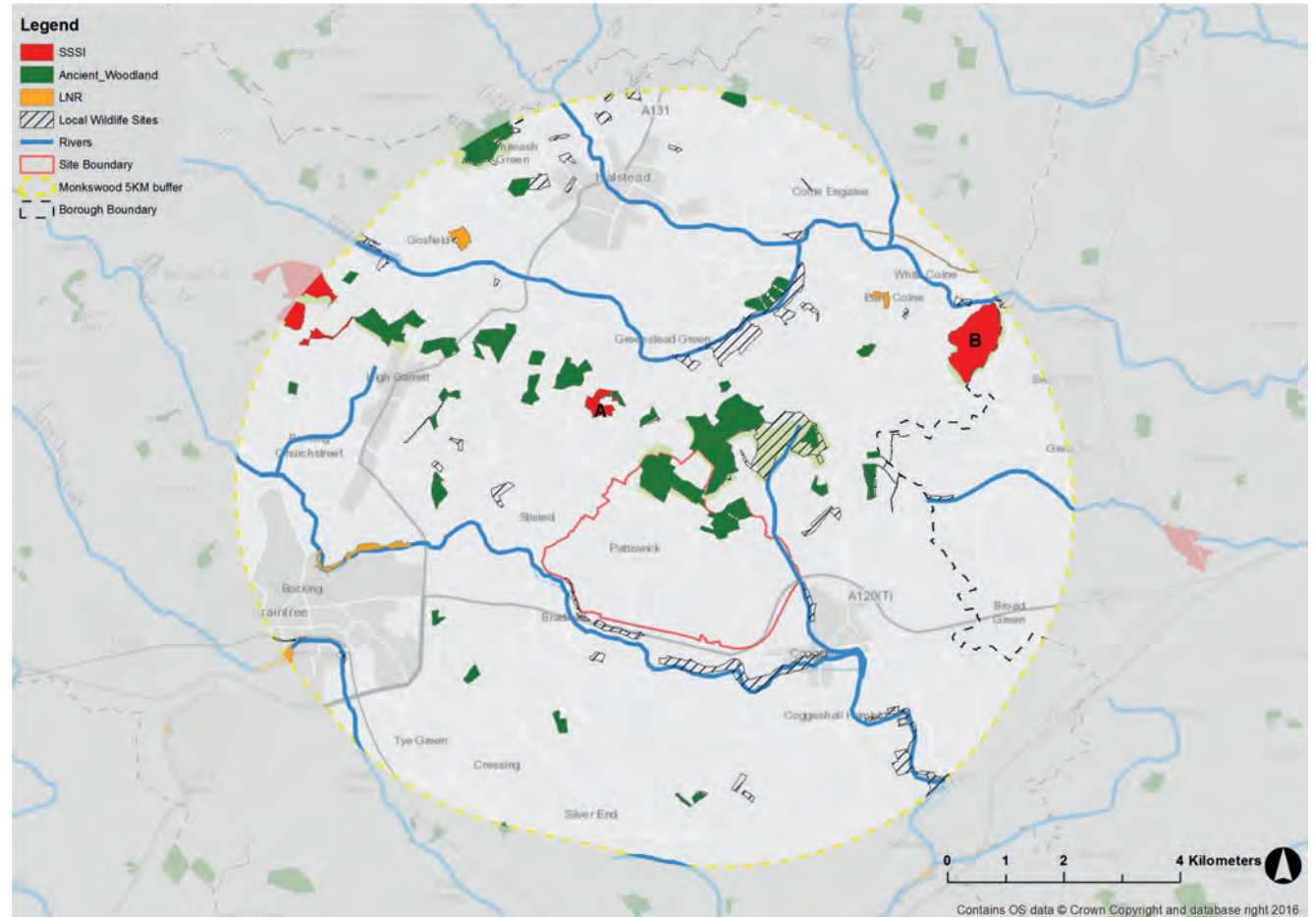
Sources

- Essex Minerals Local Plan
- Natural England Regional Agricultural Land Classification maps

Ecological Designations

Key findings

- There are no international and national ecological designations located within the site.
- Belcher's & Broadfield Woods SSSI (A) is located due north and Chalkney Wood SSSI (B) is located to the north east of the Monks Wood site (beyond Earls Colne Airfield).
- Local Wildlife sites within and around the strategic include Great Monks Wood, Markshall Woodlands, Blackwater Plantation, Bungate Wood, Raynor's Wood, Link's Wood, Park House Meadow and Blackwater Plantation.

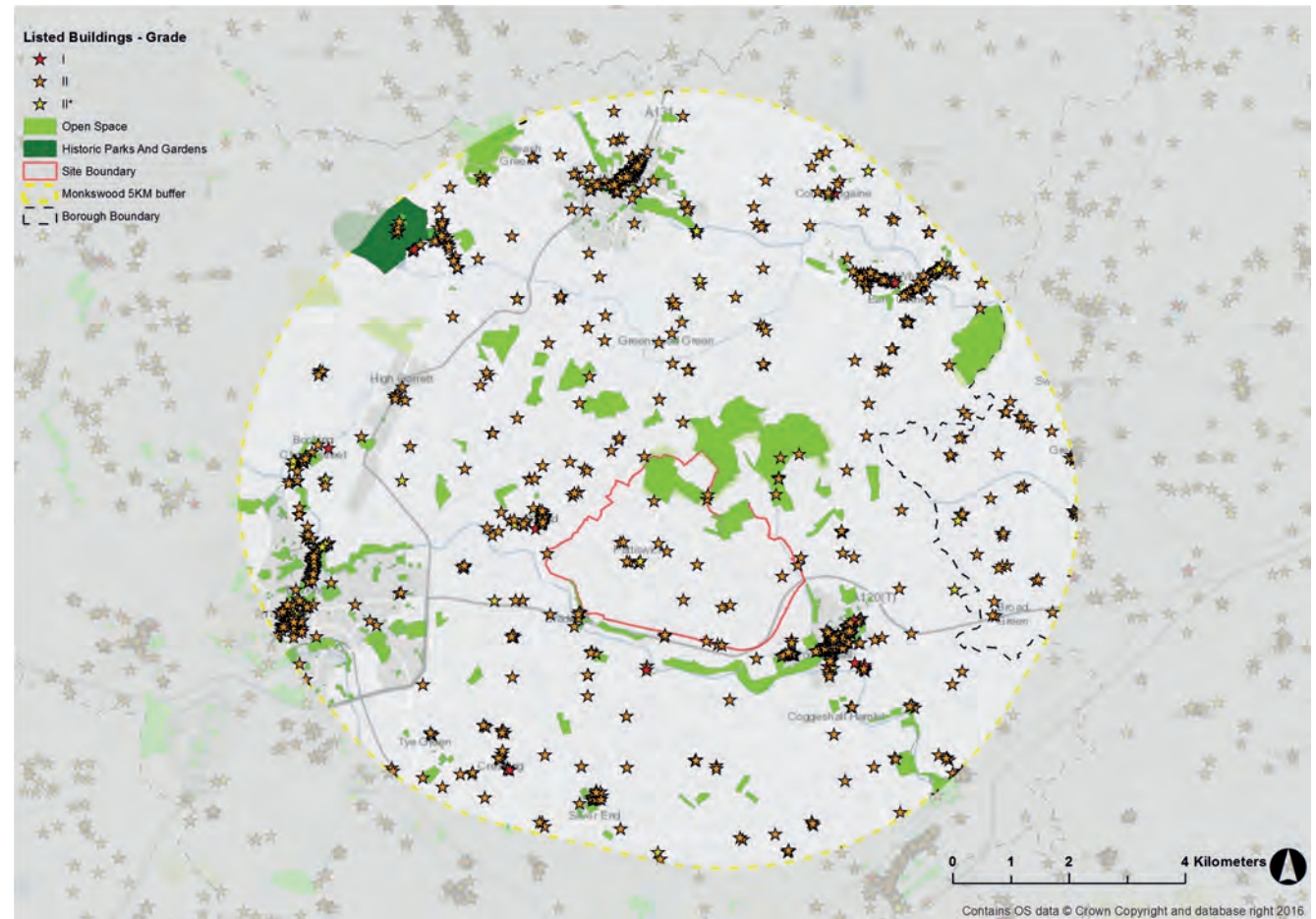


Ecological Designations Plan

Parks, Recreation and Historical Environment

Key findings

- There are a number of Grade II listed buildings and one Grade II* Listed Building located within the site study area. In general, these tend to have an agricultural / farmhouse relationship and are of architectural importance. The pepper-potting of listed buildings continue throughout the wider 5km buffer area. There are no Grade I listing within or adjacent to the study area.
- An important individual heritage asset is the Calvering's Farm Moat which is a Scheduled Monument located to the immediate north of the study area.



Open Spaces and Listed Buildings Plan

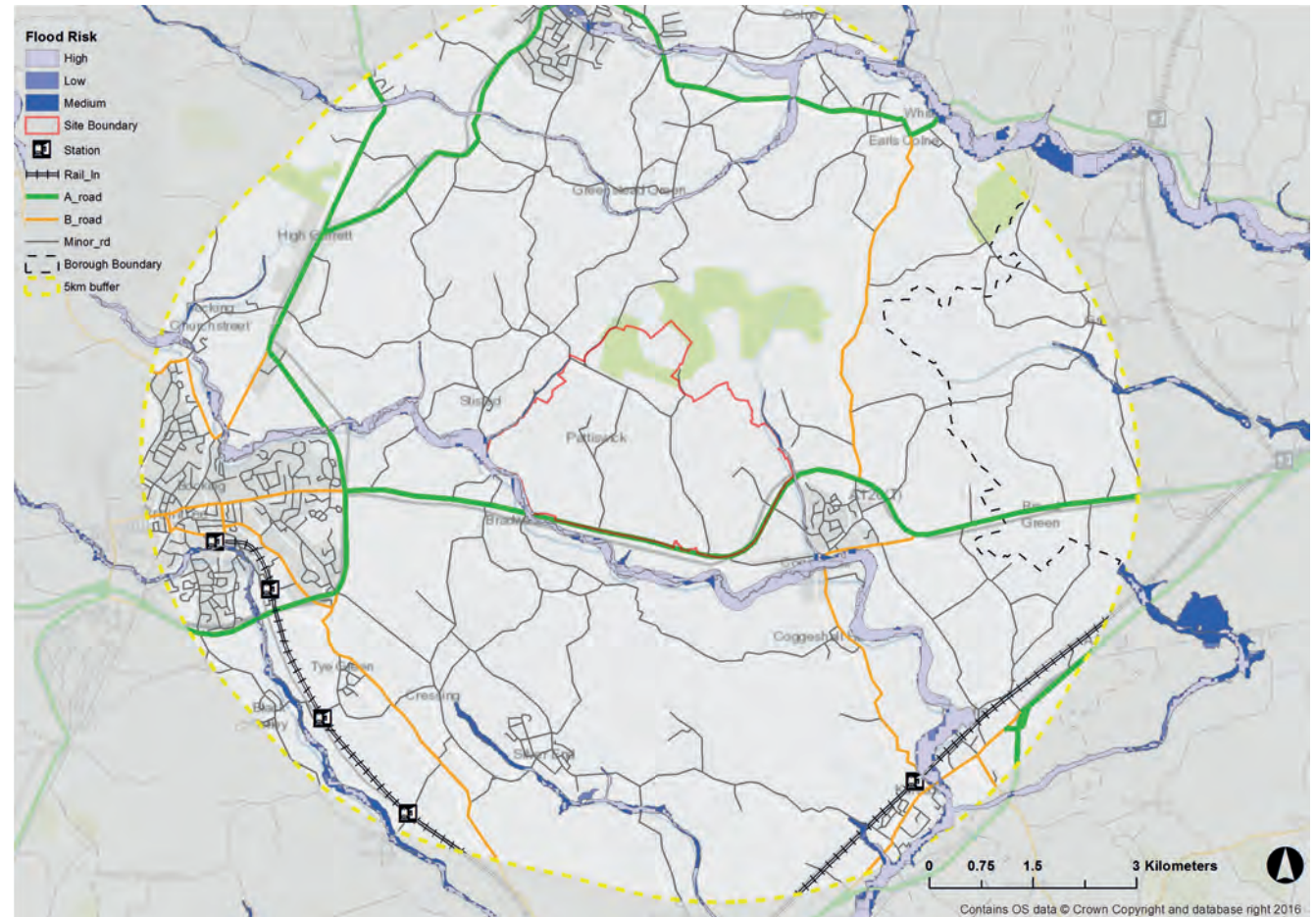
Sources

- Historic England
- Defra Magic datasets

Water Cycle

Key findings

- There are no main rivers running through the study area. The Blackwater River runs along the southern boundary of the study area and its tributaries do traverse the study area. Any development will need to deal with the surface water run off in a way that does not impose an additional load onto the system.
- The study area is located within Flood Zone 1, at least risk of flooding.
- The study area is located within a surface and groundwater nitrate vulnerability zone.
- There are no water abstract licence located within the study area. There are several licences operating within the 5km buffer.



Water Quality Plan

Sources

- Environment Agency
<https://flood-map-for-planning.service.gov.uk>

Utilities

Key findings

Electricity

- National Grid data confirms that a High Voltage 400kv line traverses the Monks Wood Strategic Site (north to south).
- Primary substation would need to be established early in the development phase. Connection to a high voltage line generate significant upfront costs. Opportunity to swap overhead line for underground line should be investigated as part of garden village masterplan.

Water Supply

- Anglian Water have previously conformed there is resource to support garden village growth along the A120 corridor.

Gas

- 62% of properties in Braintree District are connected to gas mains.
- Natural gas has higher CO2 emissions than nuclear and most renewable energy sources. Questions therefore arise about the role of gas within garden villages seek to move cost-effectively towards a low-carbon energy system.

Waste Water

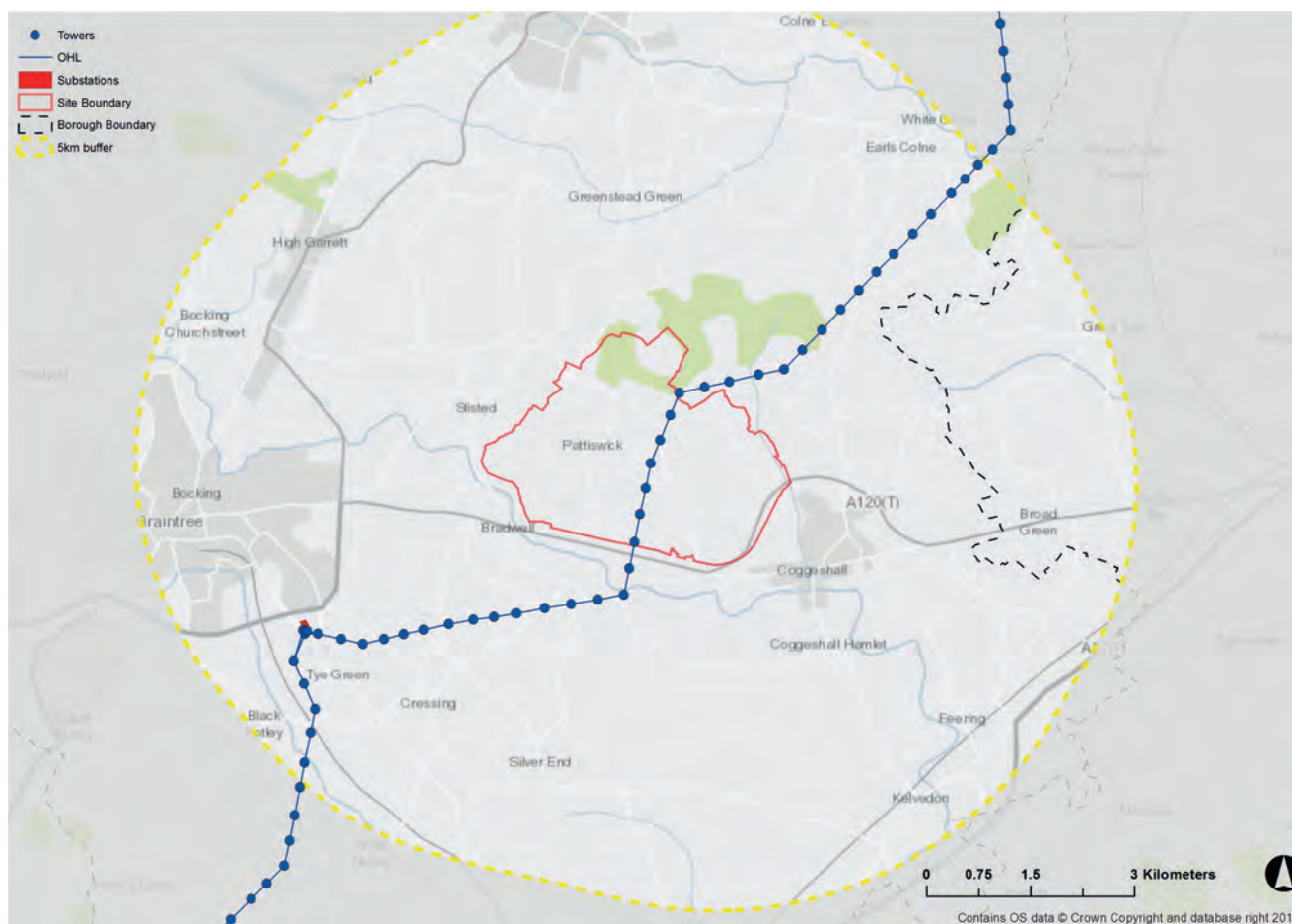
- Anglian Water have previously conformed there is resource to support garden village growth along the A120 corridor. Additional investigation will be undertaken.

Sources

- National Grid Transmission Maps
- Ofgem
- www.nongasmap.org.uk

Telecommunications

- Ofcom mapping data shows that broadband speed for Minks Woods strategic area is limited to 10Mbps. Superfast broadband is available at Bradwell.
- Ofcom mapping data suggests that outdoor 4G is likely to be reliable across the majority of the strategic site with indoor 4G hampered by occasional not spot.



Social Infrastructure - Education

Essex County Council has developed a Commissioning School Places in Essex 2015 to 2020, published in February 2016. Its role as Commissioner for school places provides information related to future pupil numbers and where further expansion will be required to meet housing demand.

Key findings

Primary

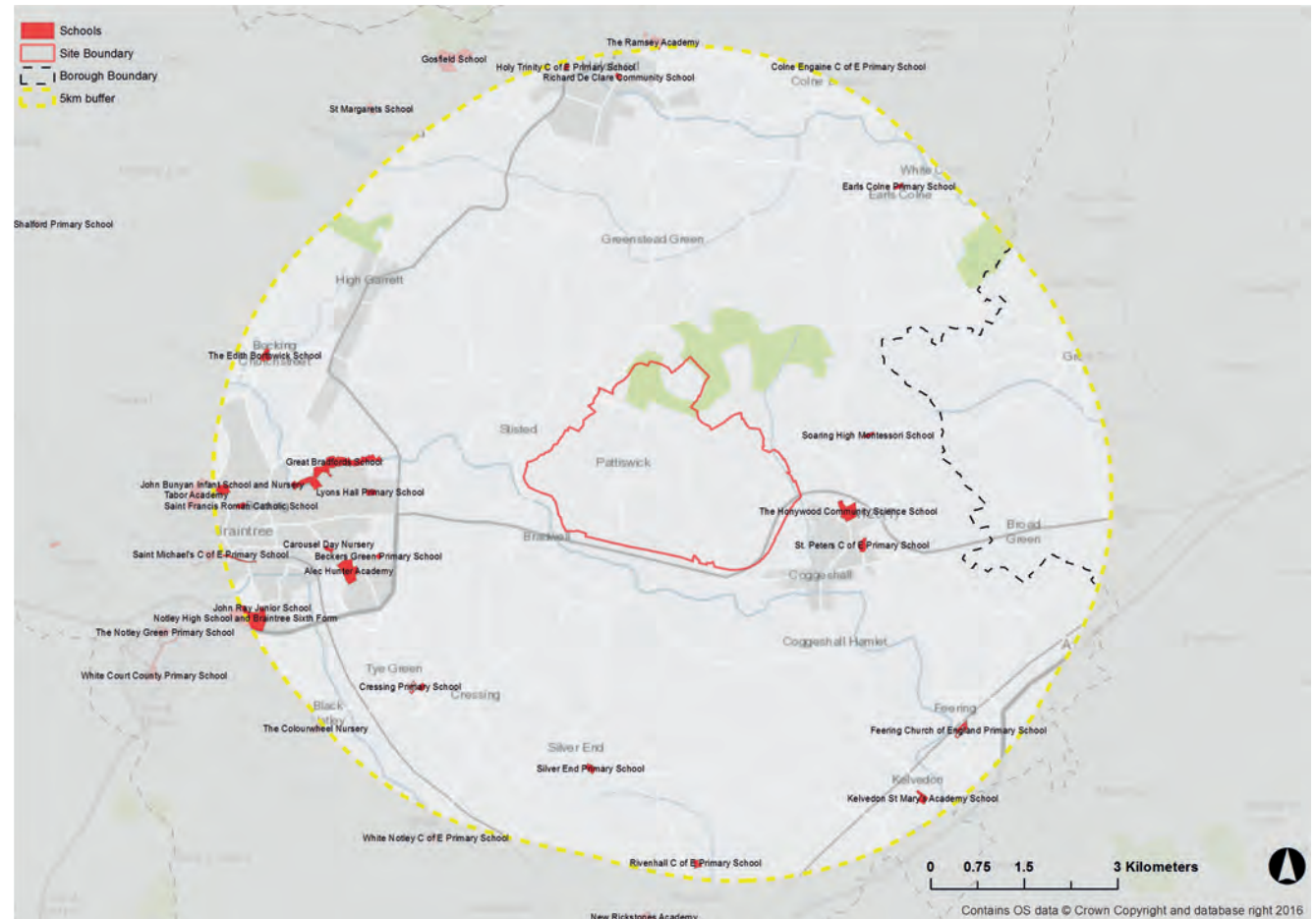
Situation within 5km Boundary (as at May 2016)

- There are 18 primary schools and 489 surplus spaces.
- There are no plans for immediate expansion within 5km of Monks Wood.

Secondary

Situation within 5km Boundary (as at May 2016)

- There are three secondary schools with 559 surplus spaces.
- There are no plans for immediate expansion of any secondary school within 5km buffer zone.



Schools Plan

Sources

- Department of Education, Edubase Portal
- Commissioning School Places in Essex 2015 to 2020

Social Infrastructure - Education

Primary School Capacity Analysis		
Primary School Name	Capacity	Surplus/Deficit
Holy Trinity Primary School	261	7
Earls Colne Primary School	379	57
Richard de Clare Community Primary School	450	47
Stisted Church of England Primary School	105	-3
St Peters CoE Primary School	330	6
Feering CoE Primary School	174	0
Silver End Primary School	420	111
Cressing Primary School	151	7
Rivenhall CoE Primary School	120	23
Beckers Green Primary School	370	59
Notley Green Primary School	420	21
St Michaels CoE Primary School	409	-12
John Ray Junior School	479	97
St Francis Catholic Primary School	210	7
John Bunyan Primary School	630	109
Lyons Hall Primary School	432	-46
Great Bradfords Infant School	270	2
Great Bradfords Junior School	351	-3
Total	5961	489

Secondary School Capacity Analysis		
Secondary School Name	Capacity	Surplus/Deficit
The Honywood Community Science School	1050	107
Tabor Academy	1050	126
Alec Hunter Academy	1143	326
Total	3243	559

Social Infrastructure - Health

Key findings

Current situation within 5km buffer (December 2016)

GP's

- There are 7 GP practices identified within 5km of Monks Wood. These facilities are predominantly located to the south of Monks Wood.
- There is an overall known deficit within the 5km buffer zone of 6,786 patient spaces.

Hospital

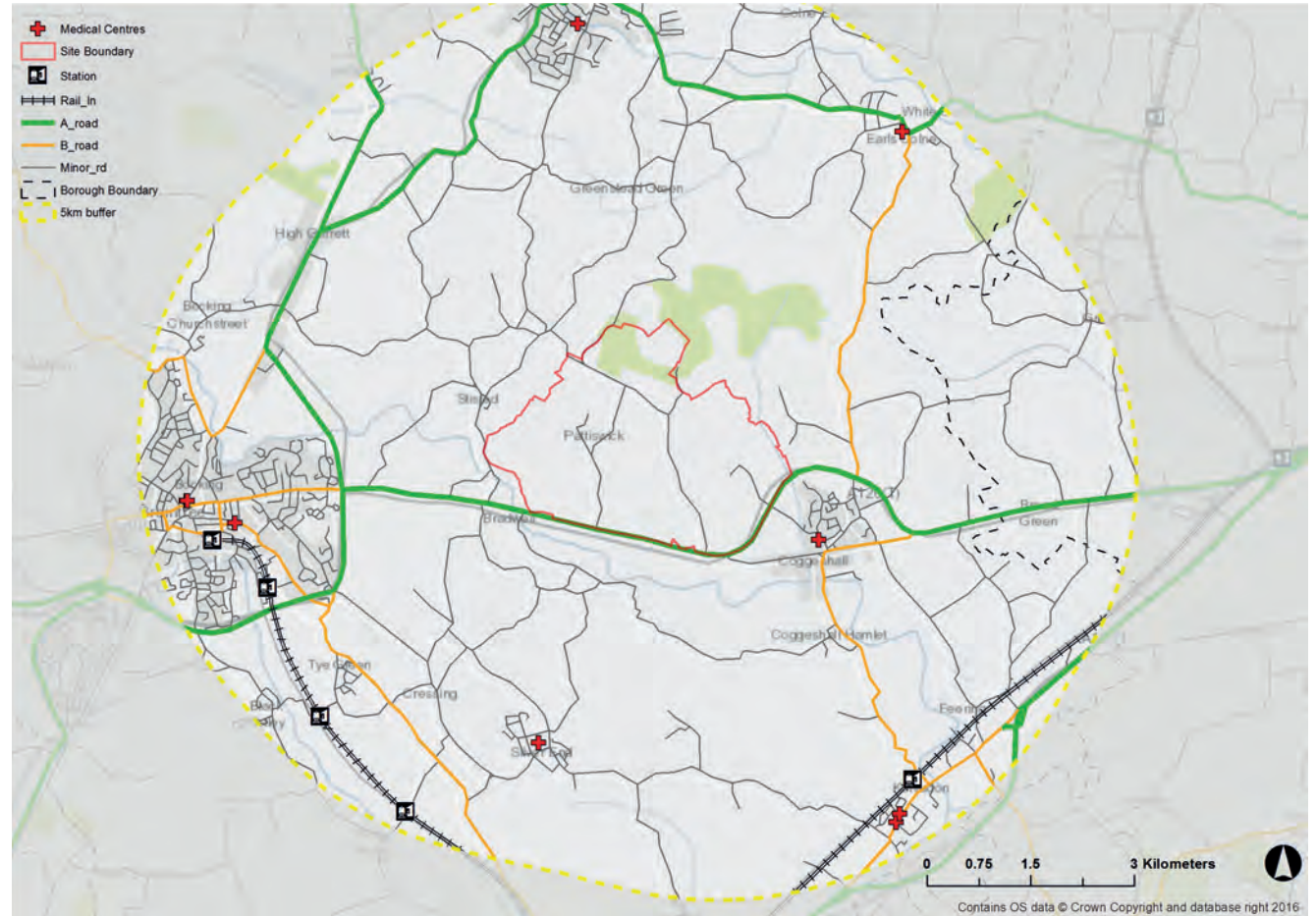
- There is a hospital at Braintree, which is located circa 10 mins drive from Monks Wood.

Committed Infrastructure

- There are no committed or planned infrastructure for healthcare within the 5km buffer zone.

GP Capacity Analysis

Practice Name	Registered	Surplus/Deficit
Elizabeth Courtauld Surgery	16168	Not known
The Pump House Surgery	7688	Not known
Coggeshall Surgery	5678	-2076
Kelvedon Surgery	2517	-717
Kelvedon & Feering Health Centre	5117	-1517
Silver End Surgery	3661	Not Known
Blyths Meadow Surgery	9964	-2,476
Total	50793	-6786



Health Plan

Sources

- NHS England, MyHNS Portal dataset
- AECOM baseline compendium



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Appendix vi



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NORTH ESSEX GARDEN COMMUNITIES

MONKS WOOD CONCEPT FEASIBILITY STUDY

VOLUME 2 - OPPORTUNITIES AND CONSTRAINTS

MARCH 2017

Opportunities and Constraints - Contents

Part 1	Part 2
Introduction	Monks Wood
1.1 Introduction	2.1 Area of Investigation
	2.2 Connectivity and Accessibility
	2.3 Landscape and Environment
	2.4 Market and Economy
	2.5 Utilities



01 Introduction

1.1 Introduction

1.1 Introduction

Braintree District Council, Colchester Borough Council and Tendring District Council are working together, alongside Essex County Council to identify and deliver an agreed approach to the allocation and distribution of large scale housing led mixed use development in the form of potential Garden Communities.

The Councils have already commissioned initial work assessing strategic sites that were nominated through the call for sites for garden villages. The evidence base is presented within a family of documents that comprise the AECOM North Essex Garden Communities Concept Feasibility Study. The outcome of this study is presented in three volumes, supplemented by a Garden Communities Charter.

1. Baseline Compendium
2. Opportunities and Constraints
3. Options and Evaluation

The previous study focused on the assessment of four strategic sites. This document is part of a three volume suite prepared by Lightwood Strategic that provide baseline synthesis and key findings associated with the promotion of an alternative strategic site at Monks Wood. For consistency, the methodology for the baseline assessment shadows the approach previously commissioned by the Councils.

This document presents the Opportunities and Constraints mapping; a synthesis of the key opportunities and constraints arising from the analysis and understanding of the evidence base presented in the Baseline Compendium.



Aerial of the site

Content of this report

Each area of investigation has been analysed in terms of opportunities and constraints that will affect suitability and capacity for development.

This analysis is presented as follows:

- Area of investigation- considering the constraints and opportunities that will limit the extent of each potential Garden Community.
- Connectivity and Accessibility - considering transport, access and movement issues affecting each potential Garden Community location.
- Landscape and environment- considering how landscape character, heritage, ecological designations, water and mineral extraction will affect the function and structure of each potential Garden Community;
- Market and Economy- The key existing employment centres in proximity to each potential Garden Community and how any future development may seek to respond to current and future market observations; and
- Utilities - documenting any known utility networks and any resulting impacts from each potential Garden Community.

Definitions

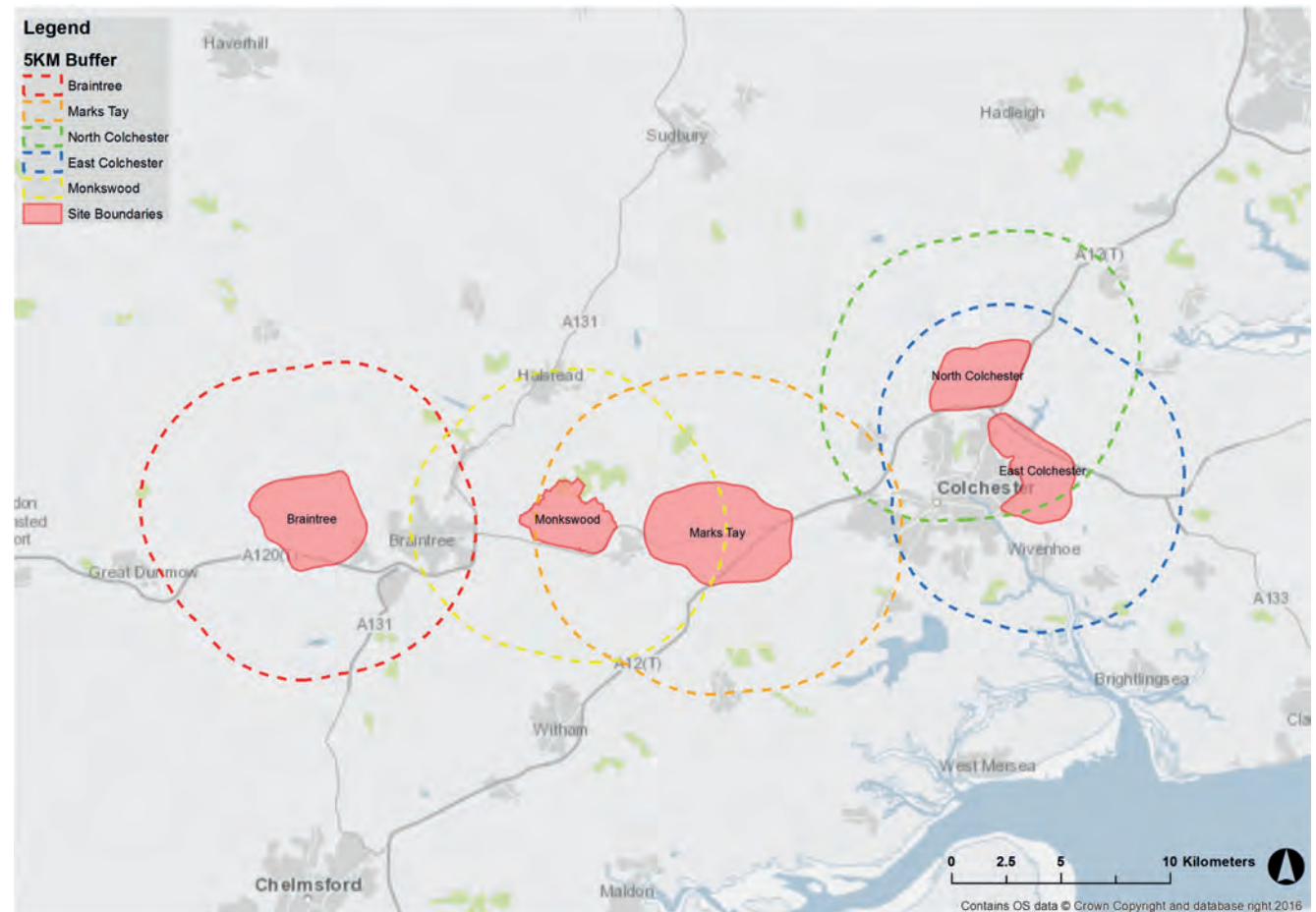
Throughout this Opportunities and Constraints report the following key terms and definitions are used when providing assessment of the four potential locations for a Garden Community.

Site Study Area:

Potential Garden Community locations identified by the Councils and informed by the Local Plan call-for-sites process as shown on Figure 2.

5km Buffer Zone:

This study area has been defined as a 5km buffer around the outer boundary of each area of investigation and shown on Figure 2.



Buffers

Opportunities

- Opportunities are positive features or aspects that may be of benefit to the future development of each site. These have been mapped where appropriate.

Constraints

- Constraints are issues that may have a negative impact on development potential. These have been mapped where appropriate.

Other issues to be taken into account

- Matters that need to be considered that are likely to have a neutral impact on development.

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02 Monks Wood

- 2.1** Area of Investigation
- 2.2** Connectivity and accessibility
- 2.3** Landscape and environment
- 2.4** Market and economy
- 2.5** Utilities

2.1 Area of Investigation

The area of investigation is located east of Braintree and comprises approximately 900 ha of agricultural land. The A120 and provides a defining southern boundary and part of the eastern boundary. Watercourses and woodland form strong boundary features elsewhere around the Pattiswick Estate.

Outer Boundaries

- 1 Southern Boundary – The Primary route of the A120 represents a defining southern boundary, with the village of Bradwell, agricultural land and the River Blackwater beyond. This boundary should be respected in setting a southern most limit with no further consideration of expansion south.
- 2a Eastern Boundary - The Primary route of the A120 as it bypasses Coggeshall, again represents a defining boundary to the east-south-east, with agricultural land and the village itself beyond.
- 2b Eastern Boundary - To the north east Robins Brook and associated areas of woodland forms the boundary of the Pattiswick Estate and sets a sensible physical growth limit so that any new settlement would not wrap around to the north of Coggeshall.
- 3a Western Boundary - the south western boundary is defined by the River Blackwater valley and associated flood risk zones 2 and 3. The proposed alignment of Essex County Council's route option A would create a new south western boundary on the 45m contour as it bypasses Bradwell.
- 3b Western Boundary - the north western boundary is defined by the valley of an unamend watercourse, and associated flood risk zones 2 and 3 with vegetation along its length.
- 4 Northern Boundary – Great Monks Wood and Bungate Wood form strong northern boundary features buffering the site from Markshall Park.

Internal Boundaries

- 5 Tertiary Road Network – The study area is divided in to three sections by two north-south orientated lanes, including Doghouse Road, which turns into Church Lane and Compass Road at Pattiswick Green (5a). In addition, Ambridge Road (5b) runs north west out of Coggeshall before turning into a byway leading to Bungate Wood. The routes are will assist in defining a strategic urban design response that retains a local character. Many of the lanes form part are protected in the Braintree Local Plan and therefore would form part of a new green infrastructure (cycling and walking network) and opposed to being upgraded to form part of a vehicular distribution network.
- 6 Field Pattern - At present much of the land has an irregular field pattern with medium to large arable fields common throughout. Hedgerows and related drainage ditches will be retained as part of the ecologic network and drainage system as a key structuring principle, offering a further layer of opportunity.
- 7 Woodland - woodland would require retention and be incorporated appropriately into future development. This should be treated as a positive asset.
- 8 Settlement - The Pattiswick Green area and its residents, would experience impact to their amenity and change to their landscape setting. However, this area could be targeted for strategic open space provision to restore historic landscaping space, which would help to limit impact on rural character.

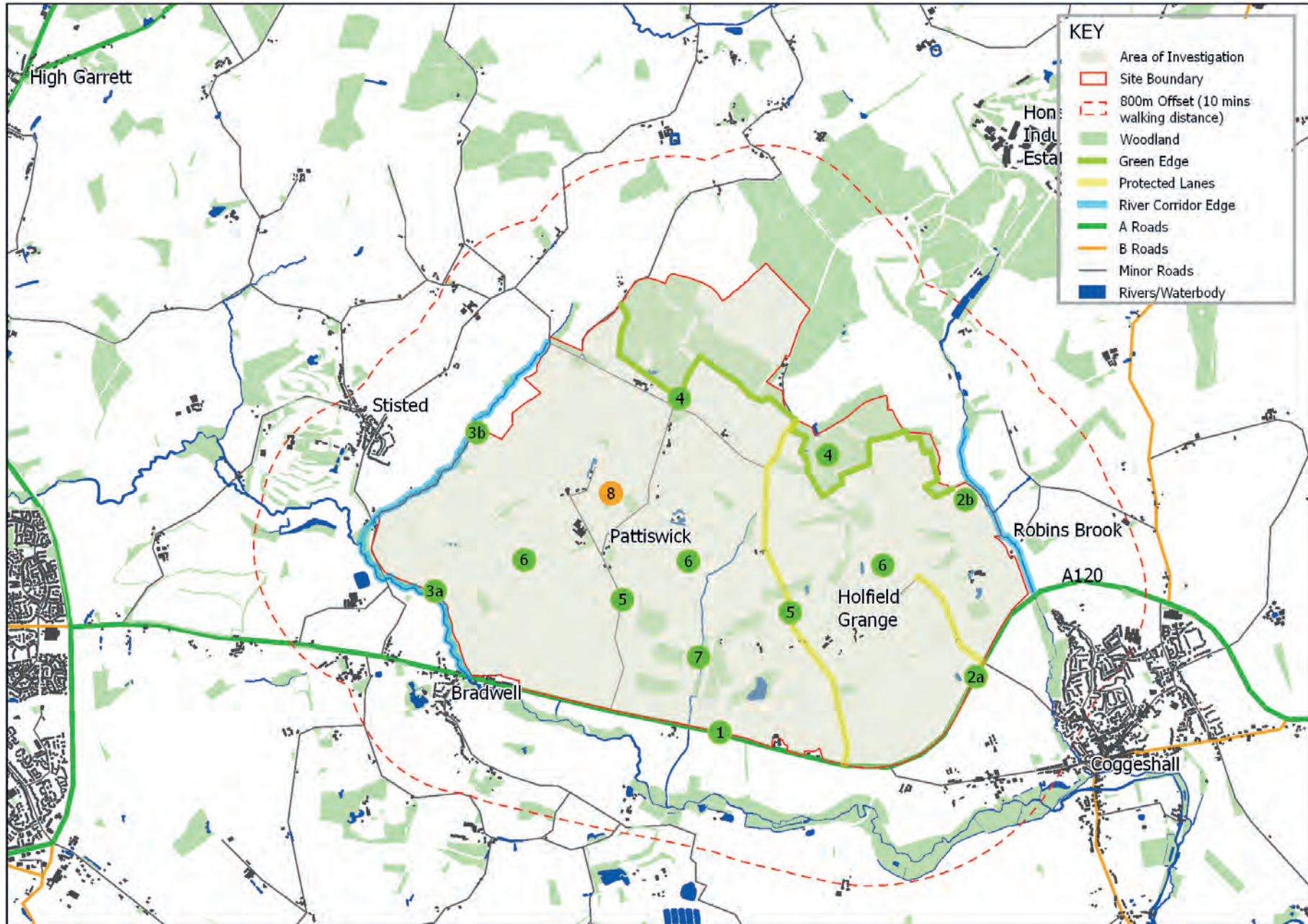


Figure 1: Monks Wood Edges and Boundaries Analysis

2.2 Connectivity and Accessibility

The location of the site bounded by the A120 to the south, offers direct east-west connectivity with the M11 and Stansted and the A12. Current congestion issues on the A120 mean connectivity along the A120 as a whole route to the east is likely to be constrained now and in the future without the proposed A120 improvement scheme. A strategic development on the site a ready mechanism to assist in the delivery of the necessary A120 upgrades.

The site promoters have published a spatial strategy for development between Braintree and Colchester that delivers the A120 upgrade as efficiently as cost effectively as can be achieved, whilst at the same time unlocking housing and economic development.

The site offers good synergy with the established settlement of Braintree by bus and with Colchester and Chelmsford by bus and park and ride train. The distances limit the case for active modes of transport. The rail stations at Kelvedon (or Marks Tey) provide the best frequency access to the mainline rail network.

A development here would not be car dependant. Bus route 70 can be aligned through the site and rail infrastructure links (bus and ride) can be enhanced. Pedestrian and cycle links are likely to need to be focused on movements within the site and to local employment centres within the site.

Active Modes (Walking & Cycling)

- 1 It is 5.3 miles (8km) from Holfield Grange, in the eastern part of the site, to the centre of Braintree meaning that accessibility by active modes is limited, being above the threshold 5km for cycling.
- 2 A settlement of the scale will generate on-site employment space and will afford the opportunity for internalised trips on the existing network of lanes if these form part of active movement only network.

- 3 The countryside environment to the north and west is highly permeable for leisure and recreational walks and cycles on the extensive PROW network
- 4 The A120 is a barrier to north-south walking and cycling connectivity, but this could be addressed in engineering the realignment of an upgraded route.
- 5 If A120 is realigned and upgraded the existing route would be less used by vehicular traffic and could be utilised a part of the strategic cycling network.

Rail

- 6 Braintree rail station lies approximately 8km west from the centre of the site, providing access to the Braintree branch line between Braintree and Witham (the interchange with the GEML). Given the location of the station in relation to the site, it will be a challenge to access to this interchange without a car. It is 4.2 miles (6.8km) to Kelvedon Railway station.
- 7 Parking at Braintree rail station is limited (approximately 160 spaces), whilst at Braintree Freeport, shopping parking is limited to a duration of 6 hrs which currently limits its use for commuters. There is little parking at Kelvedon, although there is land to the north of the station that could be utilised.
- 8 The Braintree route branchline currently offers a limited service frequency of 1tph in either direction. Whilst improvements to this line are anticipated, the service frequencies are only anticipated to rise to 2tph by 2043 through the provision of a loop mid-way towards Witham. Improving capacity on the line further is difficult due to the single-track alignment.
- 9 Kelvedon Station, although beyond a comfortable cycling distance provides a much more frequent mainline service to Colchester (13 mins), Chelmsford (15-17m) and London Liverpool Street (50 mins) and A good 'shuttle bus' service from the site via West Street (Coggeshall and the B1024 would present a sustainable package.
- 10 Rail connectivity and frequency is therefore viewed as being superior to the West of Braintree location.

Bus

- 11 The number 70 bus (First Essex) provides a 20-25 mins frequency service to Braintree (15-20 mins from Bradwell or Coggeshall). It is 45-50 mins to Colchester. The service could be routed through the site. Accessibility by bus is therefore good.

Road

- 12 It will be important to consider the right mix of uses on site to promote sustainable and short journey trips within the site itself and limit a dependency on movements between Braintree and Colchester area, which would lead to increased car trips both in terms of length and volume on the strategic highway network.
- 13 Opportunity for vehicular access via existing local and strategic road network in the form of the A120 – providing connectivity west toward Braintree and east toward Colchester, south toward Chelmsford and east toward Stansted.
- 14 The lack of existing road infrastructure to the north of the site results in dependency on access from the south, putting pressure on A120 and its junctions.
- 15 There are no identified congestion hotspots and accident hotspots along this stretch of the A120 Given the level of development anticipated in the area as whole, which based on Jacobs Local Plan modelling includes development on the West of Colchester site, it is forecasted that numerous junctions in and around Braintree will be overcapacity by 2032, impacting the quality and journey time in the area. This modelling is based on no improvements to the A120 between Braintree and Marks Tey.
- 16 The mix of local development traffic with strategic traffic on the A120 and their very different roles they play is an issue that will need to be addressed.
- 17 The impact and constraints at both ends of the A120 (M11 J8) and A120/A12 (junction 25) will to be assessed and addressed.
- 18 The site is crossed by Route Option A of Essex County's Councils early 2017 route upgrade consultation for the A120. Up to around 40% of this route option could pass through the site which could be gifted to smooth the deliverability of the improvements that are to needed to enable economic growth and further strategic housing development.

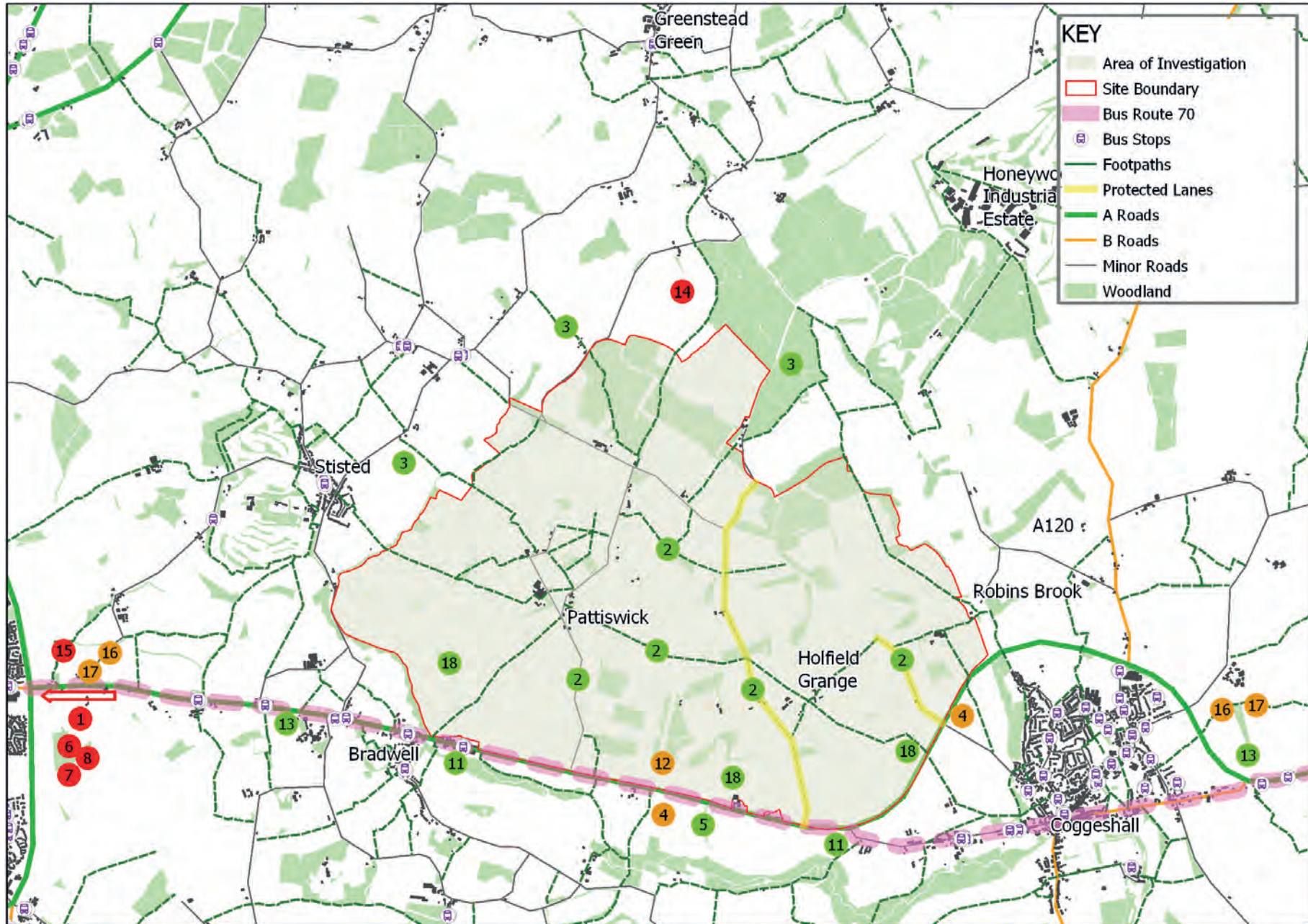


Figure 2: Monks Wood Connectivity and Accessibility Analysis

2.3 Landscape and environment

At present much of the land has an irregular field pattern with medium to large arable fields common throughout. Hedgerows and related drainage ditches as a result are fragmented. The opportunity should be taken to use existing landscape and key woodland assets and areas of heritage value such Captains Wood, Pattiswick Green and the Holfield Grange area to Garden community and establish an integrated green infrastructure network.

Landscape Character, Sensitivity and Condition

- 1 Development will result in the loss of Grade 2 Agricultural Land, which Natural England classify as 'Very Good' and is considered to be the best and most versatile farmland in England. However, Grade 2 land is a feature of much of the sub-region as a whole.
- 2 The open farmland plateaux with gently sloping topography to the south, east and west means that there are long distance views into/from the site into/from the surrounding rural areas, including a number of sensitive receptors e.g. example from Stisted Conservation Area to the west. There are internal sensitivities to masterplan around included Holfield Grange the Pattiswick Green Area.
- 3 The Blackwater Valley and its tributary and Robins Brook valley provides a natural edge to the potential development. Enhancement and active management of the vegetation in and around the watercourses could help to reinforce green corridors that both the ecological and water quality whilst providing flood protection and recreation opportunities.

Ecological Designations

- 4 There are a number of important areas of deciduous woodland, which is a priority habitat, within the site. Of particular importance are the significant areas of ancient woodland at Great Monks Wood and Bungate Wood on the northern boundary. There are concentrations of non-ancient deciduous woodland in the south central part of the site e.g. Captains Wood. These areas support potentially sensitive ecology which would be impacted upon by new development. Pond Pleece is a notable waterbody in the southern part of the site.
- 5 With the majority of the land in productive agricultural use; intensively farmed for arable crops, field size typically medium to large, and few watercourses within, overall the site is unlikely to have high levels of existing biodiversity.
- 6 Active management of existing woodland assets and creation of new areas of planting could create an attractive green network to enhance ecology, manage storm water and provide an attractive environment for the future settlement.

Parks, Recreation and Historic Environment

- 7 The area of Pattiswick Green includes a concentration of listed buildings. The need to respect their settings and the historic interest of this area could help to provide structure to the new settlement, presenting a logical location for a concentration of strategic open space/ green infrastructure. The Holfield Grange Estate would be inset from any development.

Water Cycle

- 8 River Blackwater Water Framework Directive performance re ecological status. Risk of deterioration from diffuse urban pollution associated with development.
- 9 Suitability for infiltration SUDS to be assessed. The northern part of the site comprises slowly permeable seasonally wet slightly acid base-rich loamy and clayey soils (soilscape category 18), the central part slightly acid loamy and clayey soils with impeded drainage (category 8) and the southern western parts, Freely draining slightly acid loamy soils (category 6).
- 10 The networks of drainage ditches provide the framework for a sustainable drainage network. The underlying geology and soil structure favour attenuation SuDS that could be used to create attractive ponds on site that could be both an ecological resource or used to store water for reuse on site.
- 11 The green infrastructure network could be used to provide the necessary improvements to run-off water quality before discharge. This would reduce the need for new surface water sewer infrastructure and pressure on the existing waste water networks. Alternative non-potable water supplies are likely to be increasingly important in this water scarce area.
- 12 The site is located in a Minerals Safeguarding Area for sand and gravel and the economic viability of prior extraction of minerals must be assessed. Should the viability of extraction be proven, there is an opportunity for the mineral to be worked in accordance with a scheme / masterplan as part of the phased delivery of the non-mineral development.

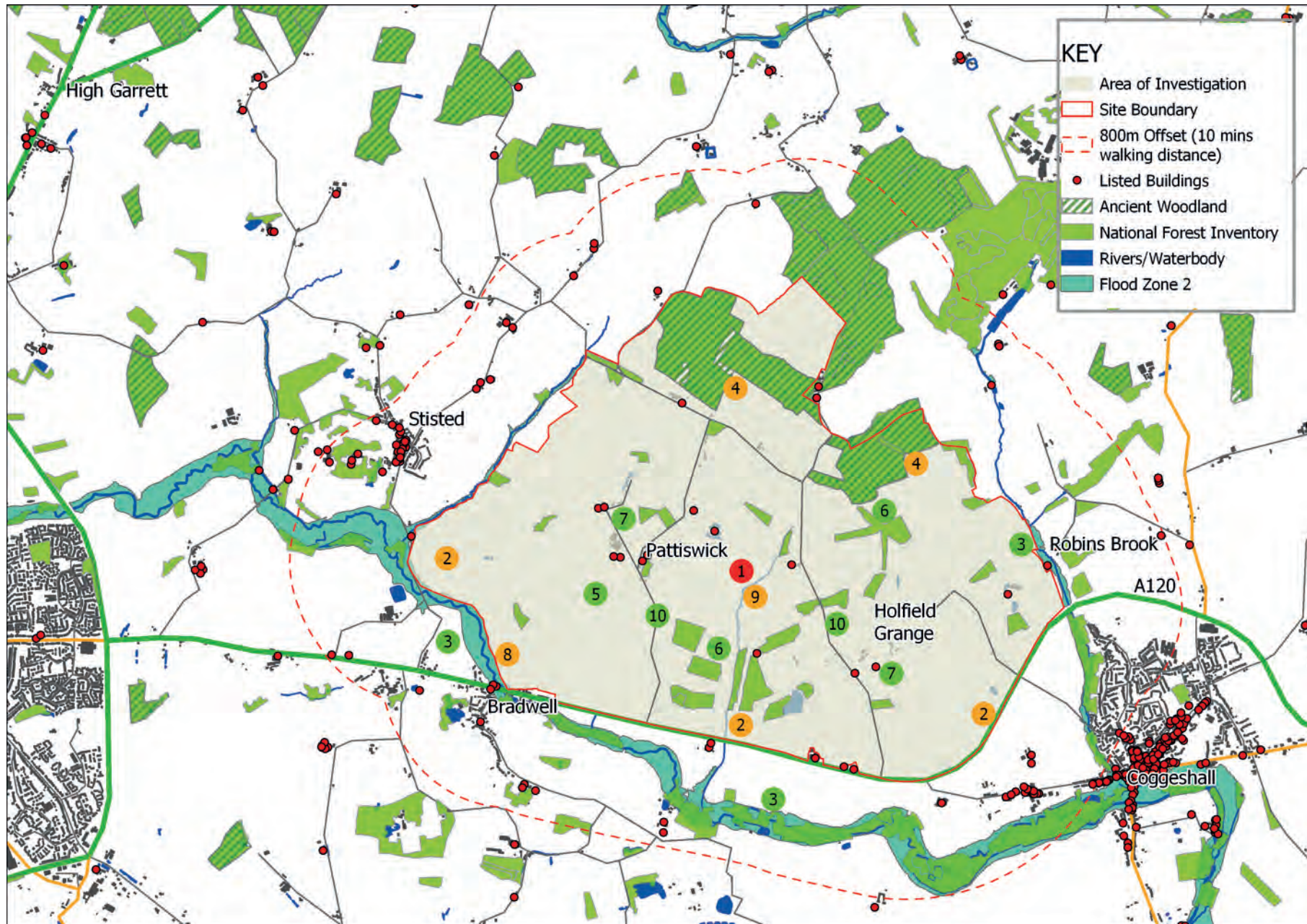


Figure 3: Monks Wood Landscape Sensitivity and Green Infrastructure Analysis

2.4 Market and economy

A garden community here would give good access to both Braintree and Colchester, with connecting links also available to Chelmsford via the main line railway at Kelvedon.

Residential

- 1 This location is relatively removed from existing urban areas and therefore able to create (and control) its own environment in order to maximise viability and long term sustainability.
- 2 Given the relatively untested market it is considered a new urban centre would be essential in order to support the values required and the overall sustainability of potential development.
- 3 The residential market in Braintree is to some extent limited by the poor rail connections and availability of public transport. The Monks Wood Location has better access to the more frequent mainlines services accessible from Kelvedon and Marks Tey.

Retail

- 4 It will be important for the Garden Community to develop an economic strategy that compliments Braintree Town Centre and Braintree Freeport, but which avoids the Garden Community itself becoming a dormitory residential suburb. Key requirements will likely be: provision of mixed retail, with a particular focus on convenience and associated A2/A3 uses incremental to housing growth, limited comparison retail, sustainable transport connectivity with Braintree Town Centre and Braintree Freeport, a focus on B1 and SME employment space, and the identification of other niche uses that help create vibrancy and a sense of community. Planned correctly the population of a garden community will both support Braintree town centre whilst having access to a suitably scaled centre(s) of its own.

Employment

- 5 This location is considered to have good potential access to local jobs, for example along the A120 between Braintree, Braintree Freeport and Colchester. These locations would be within easy commuting distance of the new Garden Community, but the challenge will be to ensure that they can be reached using modes of travel other than the car.
- 6 Although employment within the Garden Community is likely to be focussed towards smaller incubator and start up units that benefit from the proximity to major economic hubs but not necessarily able to base themselves within such centres, the connectivity provided by the A120 dual carriageway should be used to attract businesses, creating new localised employment opportunities. Direct access to a new duelled A120 means that logistics and distribution businesses could contribute to the employment opportunity of the Garden Community. These should be sited where their large bulk and form can be used positively in the development to buffer noise from the A120 corridor. And whilst they will create external road based transport movement, as employment destinations they should be sustainably connected with the wider Garden Community
- 7 Some evidence suggests Chelmsford's office market could be threatened if new office provision is delivered in Braintree although this is difficult to measure.
- 8 Witham, 8 miles to the South East of Braintree has recently been identified as a suitable location for an Enterprise Centre by Essex County Council. Although a smaller settlement, Witham has enhanced train links (4 trains to London / hour) compared to Braintree which has no direct London route. Witham is also on A12 road which links to Chelmsford and onto London giving added advantage. However, given the depth of the market for SMEs and Office space this is not considered a major threat.

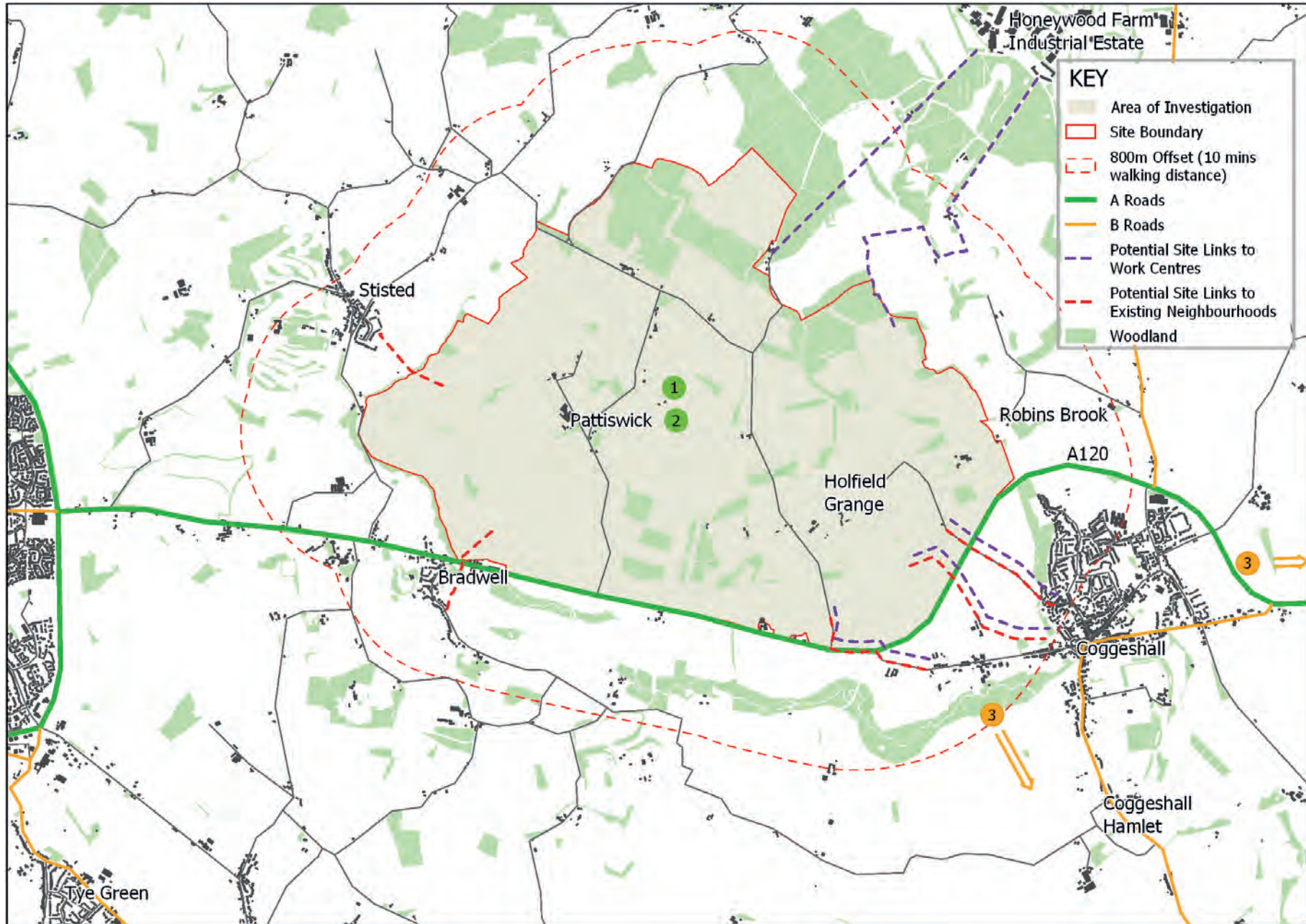


Figure 4: Monks Wood Economy and Employment Analysis

2.5 Utilities

Existing information for utilities is contained in the strategy reports submitted to the respective regulators for electricity (OFGEM) and water (OFWAT). The electricity report covers the period 2015 to 2023, while the water report covers the five years to 2020.

Electricity

A meeting was held with UKPN on Thursday 19 May to discuss issues relating to capacity of power available in the four original areas under consideration. These informal meetings are referred to as “surgeries” by UKPN and are designed to offer some headline advice ahead of any formal engagement.

UKPN advised that they expect a capacity demand somewhere between 5MW and 10 MW would trigger the need for a new primary substation.

The nearest primary substation is on the south east side of Braintree. Supplying areas west of Braintree will require long underground 11kV cable routes.

A new primary substation may need to be established early in the development phase. A 400kv overhead line High Voltage lines crosses the site.

Gas

The general advice from National Grid, as for the other areas, is that there is capacity in the medium pressure network in the region, but local low pressure upgrades will be required.

Telecommunications

There is no information on telecommunications.

Water Supply

Further discussions are required with Anglian Water.

Waste Water

It is understood that the water recycling centre (WRC) at Bocking would be able to accept waste water for development capacities up to 2032, but thereafter a new recycling plant will be required. The plant is a long way (approximate 6.34 miles) from Holfield Grange and infrastructure and pumping costs would be high. A better alternative would be to establish a new plant near the development. Water courses in and around the development area are too small to accept TSE discharges that would meet the Environment Agency (EA) requirements, so the TSE from the new plant would still have to be pumped to Bocking, but pumping costs would be much lower.

Surface Water Network

There is no information regarding the existing network capacity.

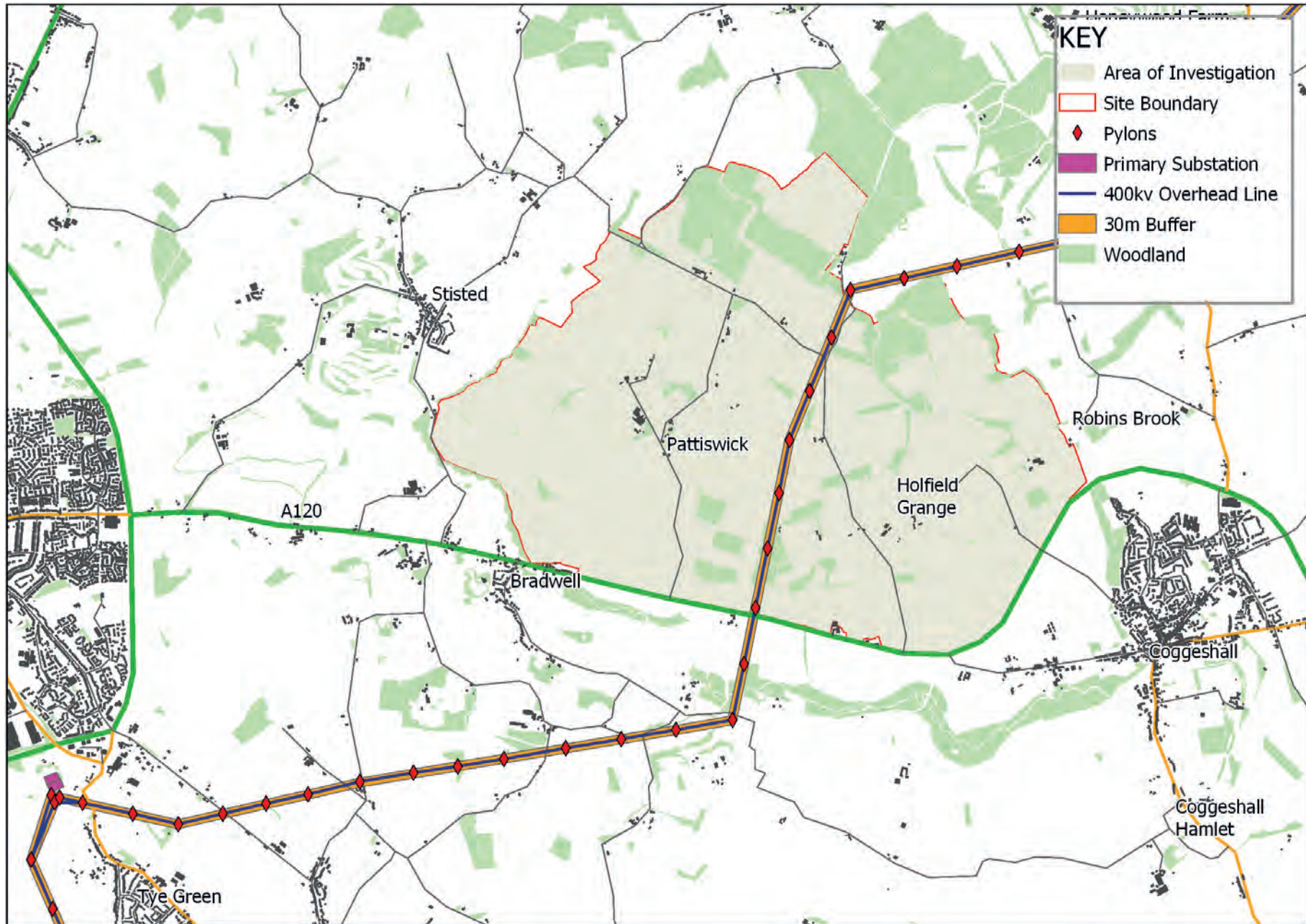


Figure 5: Monks Wood Utilities Analysis



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Appendix vii



LIGHTWOOD™

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NORTH ESSEX Garden Communities

CONCEPT FEASIBILITY STUDY

VOLUME 3 - Garden Communities CONCEPT OPTIONS & EVALUATIONS ADDENDUM

FEBRUARY 2017

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01 Introduction

1.1 Introduction

1.0 Introduction

Context

Colchester Borough Council, Braintree District Council and Tendring District Council are collaborating, alongside Essex County Council, to identify an agreed strategic approach to the allocation and distribution of large scale housing led mixed use development, including employment opportunities and infrastructure provision, in the form of potential "Garden Communities".

The four councils are in agreement that the Town and Country Planning Association's (TCPA) Garden City Principles provide a valuable initial framework for achieving new settlements that are inclusive and provide genuinely affordable, well designed homes, local jobs and schools, integrated transport systems, high standards of green infrastructure and promotion of health within and beyond the emerging local plan period for each authority of 2032/2033. In response the councils are exploring the potential to establish new settlements in the form of North Essex Garden Communities, for which four broad search areas were identified by the councils for further consideration.

As part of their investigation and analysis of the Garden Communities opportunity and its application and suitability to North Essex, the Councils commissioned AECOM to undertake a 'Garden Communities Concept Feasibility Study', which was completed in June 2016 and formed part of the Regulation 18 Draft Local Plan consultation.

Braintree District Council is currently considering the responses to the consultation of the Draft Local Plan and announced in January 2017 that the publication of the Submission Draft Local Plan would be delayed from February 2017 to June 2017. The publication of nine potential A120 routes released in December 2016 coincided with this decision to delay the plan, and Essex County Council's consultation on the alignment of the A120 concludes on March 11th 2017.

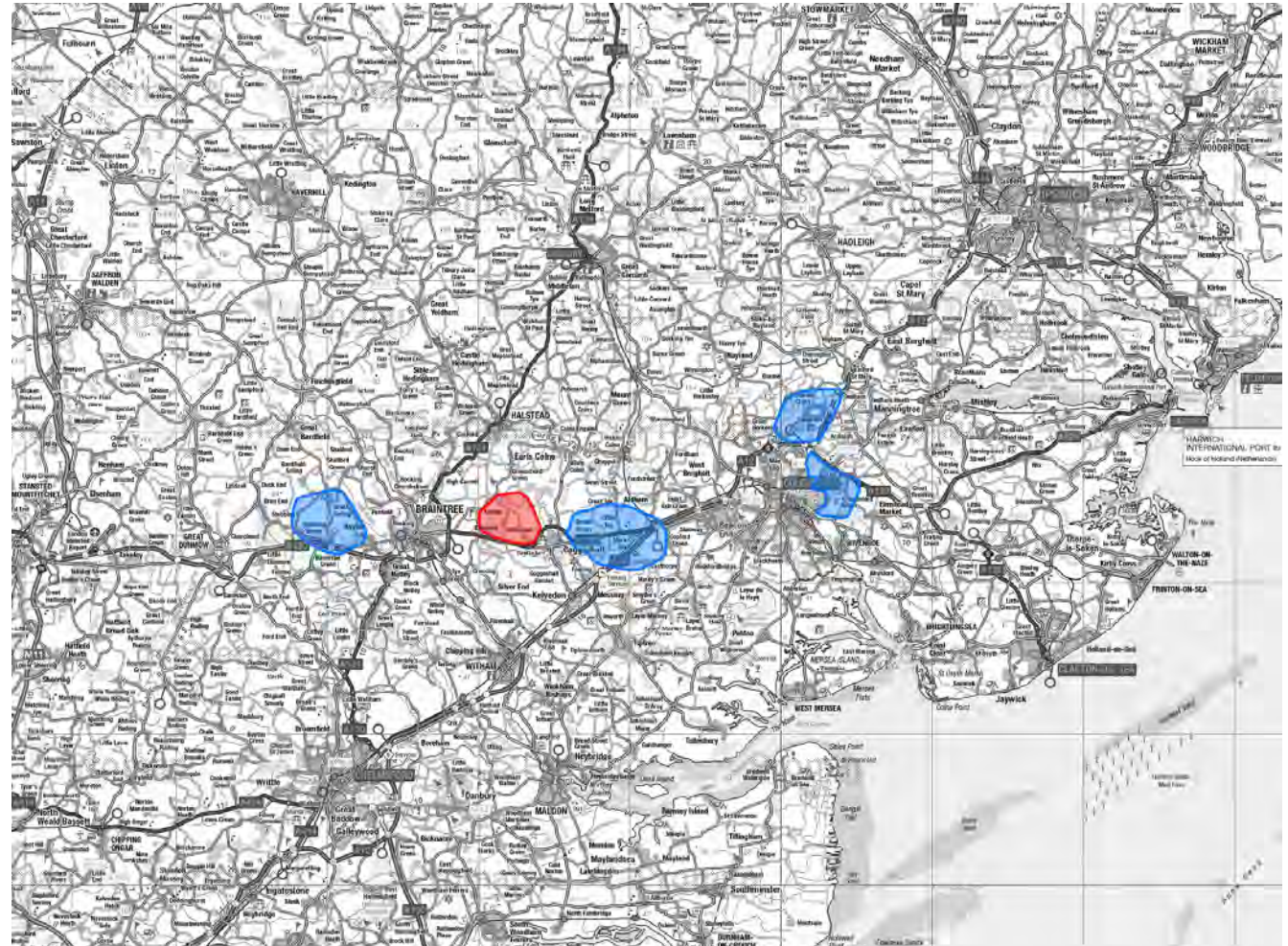


Figure 1: Study Area Context
The four broad search areas assessed by AECOM are shown in blue, Monks Wood is identified in red.

Purpose of the Document

Monks Wood is the proposed Garden Village name for the Pattiswick Estate which comprises a total site area of in excess of 900ha (2244 acres) and was made known to Braintree Council in March 2016. The land is in single ownership with Lightwood Strategic as the sole promoter which is unique to any of the other options in North Essex. The land is available and with very realistic land values. The simplicity of the promoter as sole operator and realistic minimum land values guarantees the deliverability of the scheme.

Despite being known to the Council in early March, the land was not presented publicly in the Regulation 18 phase of plan preparation conducted during the summer of 2016. It did not feature in the main consultation document, the evidence base, or notably the AECOM study of potential options. As a result, not all reasonable options were considered as part of the council's evidence base and therefore the resultant Local Plan fails to comply with the requirements under section 20(5) (a) of the Planning and Compulsory Purchase Act 2004.

This document has been produced by Lightwood Strategic as an addendum to the Volume 3 – Options and Evaluation report produced by AECOM. It replicates the format and development assumptions of the AECOM report to enable the local authority and examining inspector to undertake a comparative assessment of Monks Wood against those already considered.



Figure 2: Extent of Monks Wood single ownership

This Section sets the key assumptions and strategies that have informed development capacity and infrastructure requirements



02 Sites and Options: Key Assumptions

- 2.1** Calculating Developable Area and Development Capacities
- 2.2** Overarching Transport Strategy

2.1 Calculating Developable Area and Development Capacities

To identify the highlighted indicative development capacities for each of the 4 Site Options presented through the following sections of this report, a series of common development assumptions have been applied consistently. A breakdown of development capacities for each site option is provided at Appendix 1.

Developable Area

Developable Area represents the proportion of the overall site that in principle is available for physical development, including open space, built form and infrastructure. The total developable area has been derived from the identification of broad land parcels.

The exercise of defining or dividing the site option into broad land parcels is based on the outcome of the key opportunity and constraints analysis and principally a consequence of identifying areas not suitable for development such as ancient woodland, rivers, water courses, utility corridors and access routes etc. Within the 'Developable Area Diagrams', illustrated within sections 3 to 6 of this report, these features are presented as white space; the blue shading representing the indicative developable areas.

Although it is acknowledged that some constraints such as medium pressure gas pipes or minor infrastructure corridors may not necessarily divide the site in reality, it has been appropriate for this exercise (not having undertaken intrusive site surveys) to assume such areas are deducted from the developable area. Similarly, areas of woodland etc that have been excluded could, through an exercise of Masterplanning, be incorporated into a site wide green infrastructure strategy and contribute to the overall quantum of greenspace within the garden community.

Land Use Development Quantum

The developable area of each scenario has been split between the following land uses, with a number of related assumptions as specified. The assumptions are judgements based on experience of the consultant team, and have not been derived from undertaking a site specific masterplanning related detailed study or an iterative process of viability testing.

Open Space:

- Publicly accessible open space/allotments/children's' play/ SUDs/Ecological space)
- 20% of land parcel area applied as a standard (above normal developer led approach and consistent with Garden City Principles)

- Rising to 30% or above where a greater proportion of land parcel is considered more likely to be open space/green infrastructure – e.g. where rural edge/buffer is important or the location of a country park is known as a result of existing planning policy.

Roads and Pavements:

- 15% of land parcel area applied as a standard (below normal developer led approach and consistent with increased green infrastructure and using a more efficient block structure ; greater levels of permeability with cycling and walking enhanced.

Mixed Uses:

- Assumed to be all uses (retail/leisure/community/culture/education/primary health) that would be associated with creating local and neighbourhood centres, and the attainment of vibrant communities.
- Generally 1% or 2% of parcel land area applied, consistent with dispersal of uses throughout settlement to promote vibrant and walkable communities.

Residential Density

- Average residential density 30 dwellings per hectare (DpH) - allows for walkable environments and can support public transport.
- For the purpose of calculating GIA (Gross Internal Area)¹, an average unit size of 90sqm has been applied (3 Bed for 4 people) - based on Technical Housing Standards - Nationally described space standards March 2015, Department for Communities and Local Government, pg 5)
- Assuming that the majority of units will be houses, an efficiency ratio of 5% is added to the GIA to get GEA (Gross External Area)².

Employment Floorspace

1. 0-3% of parcel land area allocated to employment related to:

- a. A level of employment representation throughout the settlement area; dispersal and integration of uses.
- b. Areas of more focused employment concentration where comparative advantages for employment are considered to exist.

Achieving an overall employment GEA that is considered appropriate for each site/ options informed by:

- Experience and judgement of consultant team (Cushman & Wakefield and AECOM);
- Reference to employment/employment land evidence base , including councils employment land supply forecast;
- Local site context.

For simplicity a Floor Area Ratio (FAR)³ of 1 has been used because it facilitates diversity of density type and scale across the site.

Total Employment GEA has been proportioned between B1 and B2/B8 for the sites and consistently applied to each option.

- 1 GIA (Gross Internal Area) is the area of a building measured to the internal face of the perimeter walls at each floor level.
- 2 GEA (Gross External Area) is the total floor area contained within the building measured to the external face of the external walls.
- 3 FAR (Floor Area Ratio) is the ratio of a building's total floor area (Gross Floor Area) to the size of the piece of land upon which it is built. For the purposes of this commission, the FAR is principally being used as a guide to building floor area, in order to generate a gross external area of employment floor space, rather than being a guide to how much of the site or land parcel will be covered by a building.

Source: AECOM Volume 3- Garden Communities CONCEPT OPTIONS & EVALUATIONS

2.2 Overarching Transport Strategy

The transport infrastructure requirements/projects identified for each Option in the following sections have been informed by the following high-level overarching transport strategy. This common strategy is focussed on the need for the North Essex Garden Communities to achieve Sustainable Integrated Transport and a reduction in the use and dominance of the private car.

Analysis has highlighted a high proportion of internalisation of journey to work trips within the North Essex sub-region, but high car dependency. This suggests the opportunity exists for real change to existing transport patterns and behaviour, subject to an effective combination of infrastructure investment and policy implementation

The North Essex Garden Communities should seek to promote walking, cycling and low carbon public transport as the key modes for both short and longer journeys, especially for commuter (employment) related trips. To function appropriately, non-car mode choice needs to be enshrined at the design stage through appropriate provision of transport infrastructure both site-wide as well as the wider sub-region rather than, for example, relying solely on behavioural change through traditional travel planning measures (mode shift targets). Nevertheless, and in tandem, ambitious mode share targets for both internal trips and workplace commuting should be set.

Through the principle of bringing together mixed uses and varying levels of density, connected by complementary modes of transport for local and sub-regional mobility, the Garden Communities can help ensure the attractiveness of active modes and public transport.

Walking and cycling infrastructure should take the form of dedicated 'green way' corridors, utilising the favourable topography of the region by linking various parts of sites together whilst also creating links with external destinations through connections with the National Cycle Network and local trails. Greenways would also reduce severances created by both major road and rail axis by overpassing infrastructure at key locations using bridges / land bridges or similar, depending on location and spans. To ensure ease of use for cycling, cycle facilities (secure cycle hubs) could be located along routes with greenways integrated within the site wide public transport network in order to promote a clear sustainable transport corridor.

Site based public transport infrastructure should link to both local scale and subregional routes. Regional links could be facilitated by the expansion and re-purposing of the sub-regional inter-urban rail and bus networks to provide both short and longer distance connectivity, helping to achieve the targeted mode shares. Routes should be complemented by high-frequency services, well-planned public transport routes connecting key locations and taking advantage of current and future technological advancement and smart data accessibility. All parts of the sites should be accessible to a density dependant level of public transport - located within 800m, equivalent to a 10 minutes' walk of an interchange / stop. Additionally, the potential exists in each site to provide 'Transport Hubs' utilising the location of interchange between different public transport modes and corridors to provide a higher density built form, and a greater mix of employment, services and residential land uses and knowledge sharing, which together generate critical mass and user demand for transport interventions.

Whilst it is acknowledged that the desire to use the private car or a similar future equivalent will always exist to a degree, to minimise its impact, the desire must be planned for in the context of making walking, cycling and public transport the most attractive forms of local transport. Policy should primarily focus on site car parking and street design along with its capacity to serve development that is consistent with a modal choice away from the private car especially for local journeys whilst recognising the importance of connectivity to the wider strategic road network, but not at a cost to its function. In this context the current and potential future strategic road network capacity should be preserved through emphasis on investment in sustainable transport modes and the local road infrastructure should be viewed as one of a means of access to a site rather than the sole transport option available. Car parking policy must be radical in its intent to reduce car reliance. A clear grading of parking ratios based on public transport accessibility and housing/development density will be used as well as the promotion of car clubs or car sharing schemes, including peer to peer car sharing, as means of reducing private car ownership and providing a convenient option for longer distance car travel. This will seek to build on the concept of the sharing economy, and the environmental and community benefits that result. Additional parking capacity will be located at hubs to discourage site visitors to use parking via CPZ's. Robust and clear future proofing of provision for the anticipated take up of electric cars as part of a low carbon future within the NEGC will be provided. The required infrastructure such as charging points will be readily accessible within streets, car parks and the home.

In summary, the development of transport planning policy for the Garden Communities should consider the following:

Sustainable Mode Share

- Promote walking and cycling along with low carbon public transport
- Non-car mode choice needs to be enshrined in development

Target driven

(The proposed percentage mode shares are targets and will be solely reliant on wellplannedinfrastructure to succeed).

- 40% active modes for journeys typically < 2.5km
- 30% by public transport for journeys > 2.5km
- 30% private car > 2.5km (from current situation)

Focus on Sustainable Transport Orientated Development

- Bringing together mixed uses
- Varying levels of density
- Connected by complementary modes of transport for local and sub-regional mobility
- NEGC's will therefore require vital investment in key infrastructure

Walking and Cycling

- Promotion of active transport modes
- 'Green Spine' infrastructure corridors utilising the favourable topography of the region by creating safe cycling environments
- Link internal green spines with external destinations - National Cycle Network and trails
- Reduce severance by road and rail routes by overpassing infrastructure at key locations using bridge structures such as bridges / land bridges or similar, depending on location and spans

Public Transport

- Integrate public transport corridors with green spine alignment
- A clear hierarchical transport network based on density of development
- All development will have access to public transport within a 10 minute walk (800m)
- Ensure public transport use and appeal – design public transport routes within development / urban realm, connected within themselves, to neighbouring centres and regionally by a frequent public transport network
- Link NEGCs regionally via expansion and re-purposing of the inter-urban (subregional) rail and bus network to provide both short and long distance connectivity
- Creation of 'Journey Hubs' whereas locations with higher densities within the NEGC's and interchanges for multi-transport modes
- Making use of current and future technological advancement and smart data accessibility to provide real time and on-demand public transport timetabling

Source: AECOM Volume 3- Garden Communities CONCEPT OPTIONS & EVALUATIONS

Car Borne Movements

- The desire to use the car will always exist and must be planned for. However this should be planned in the context of making walking, cycling and public transport the most attractive forms of local transport.
- Road and street design along with its capacity to serve development that is consistent with a modal choice away from the private car especially for local journeys
- The current and potential future strategic road network capacity should be preserved through emphasis on investment in sustainable transport modes
- Road infrastructure should be viewed as one of the means to accessing a site, rather than the sole transport option available to a site to accommodate an ever increasing volume of development traffic
- Car parking policy will be radical in its intent to reduce car reliance
- Use of car clubs / car hire (private car sharing) as well as advancements in technology and changes in social habits
- Parking located at hubs to discourage site wide visitor parking via CPZ's
- Robust and clear future proofing of provision for the anticipated take up of electric cars as part of a low carbon future within the NEGC. The required infrastructure such as charging points should be readily accessible within streets, car parks and the home.

Limiting car use and therefore parking provision is entirely dependent on the local provision of employment and services accessible within walking or cycling distance or easily accessible within minutes of high quality public transport.

Trip Generation Analysis

The trip generation tables set out under the analysis for each of the sites and their respective development scenario options, illustrate a high-level estimate of the anticipated Am peak hour two-way person trip generation associated with the residential and employment land uses, and are based on the following assumptions:

- Mixed-uses are considered ancillary / complimentary to the development i.e. small retail units rather than retail destinations in their own right and therefore are anticipated to generate solely internalised / linked trips within the development, rather than trip attractors.
- Trip rates for residential and employment (business park) land uses have been extracted from the TRICS database from similar sites located in the UK.
- The sites used however are far smaller in scale than the proposed NEGCs. The proposed mode share targets have been used to provide an indication of the impact on peak hour person trips by targeting active modes and public transport rather than private car use.

The tables provide a theoretical maximum carrying capacities for the various proposed public transport solutions both within the sites and sub-regionally, the solutions depicted are dependent on the location of the site. Theoretical carrying capacity of the public transport infrastructure is based on estimated maximum capacities. Due to the level of detail under this assessment, it is assumed that the proposed public transport only accommodate site development trips. In reality the surrounding local settlements would also utilise these networks, thus reducing the carrying capacity. The persontrip demand assumes that, given the sheer scale of the sites (in some cases 3km wide) movement of people within a site is just as important as movements out i.e. at this stage of the work, it is not considered to be a valid methodology to remove residential and employment person trips from the assessment due to internalisation within the site and solely depict the impact on the external highway and public transport network.

The assessment also does not take into consideration the impact of person trips on the existing bus and rail network in relation to their current capacity; this level of assessment along with future highways modelling will require a further level of analysis as part of future assessment work.

The assessment seeks to demonstrate the level of public transport infrastructure and therefore investment in the region that might be required in relation to the volume and scale of development proposed, to accommodate the anticipated passenger demand and the movements of people both within the site and externally at a first principle level of assessment. With regard to active transport, the sheer scale of person movements will require large scale pedestrian and cycle route infrastructure and the location of employment and destinations within sustainable commuting distance of the new homes.

This Section provides concept options and associated infrastructure requirement for the Monks Wood Broad Search Area



03 Monks Wood

- 3.1** Broad Search Area
- 3.2** Options Overview
- 3.3** Option 1: Eastern Edge Land Focus
- 3.4** Option 2: East of Pattiswick
- 3.5** Option 3: Coggeshall Extended Buffer
- 3.6** Option 4: Maximum Land Take

3.1 Broad Search Area

Strategic Overview

The Monks Wood Broad Search Area is located adjacent to the A120 dual trunk road within the A120 Corridor; approximately 5km east of the centre of Braintree and 10km west of Colchester. It lies approximately 15km east of Stansted Airport and the M11 corridor, Stansted Airport can be accessed directly to the west along the A120. The search area is broadly defined by the historic village of Coggeshall to the east, the village of Stisted to the east, Great Monks Wood to the north and the A120 to the south which links Braintree and Marks Tey. Principal access into the search area is provided by the A120 which provides connectivity east to Colchester and beyond to the international sea ports of Harwich and Felixstowe.

The Pattiswick Estate is a working estate, the vast majority of the land is in productive agricultural use producing quality combination crops with a small number of detached residential properties, often associated with farming, located within the rural landscape. These are connected by a limited network of country lanes that pass through the search area centrally and to its periphery, connecting to settlements beyond.

The landscape is typically flat and open in character with medium to large fields divided by hedgerows and some areas of woodland copse, the most notable being Great Monks Wood in the north of the search area, which together with Bungate Wood, are the areas of highest ecological value. Earls Colne airfield is located to the north east of the search area. This is an operational private airstrip for small light aircraft. Opened in 1942, it was used by both the Royal Air Force and United States Army Air Forces. During the war it was used primarily as a combat bomber airfield. After the war it was closed and much of the airfield today is being used as a golf course.

The entirety of the land within this search area is located within the administrative boundary of Braintree District Council.

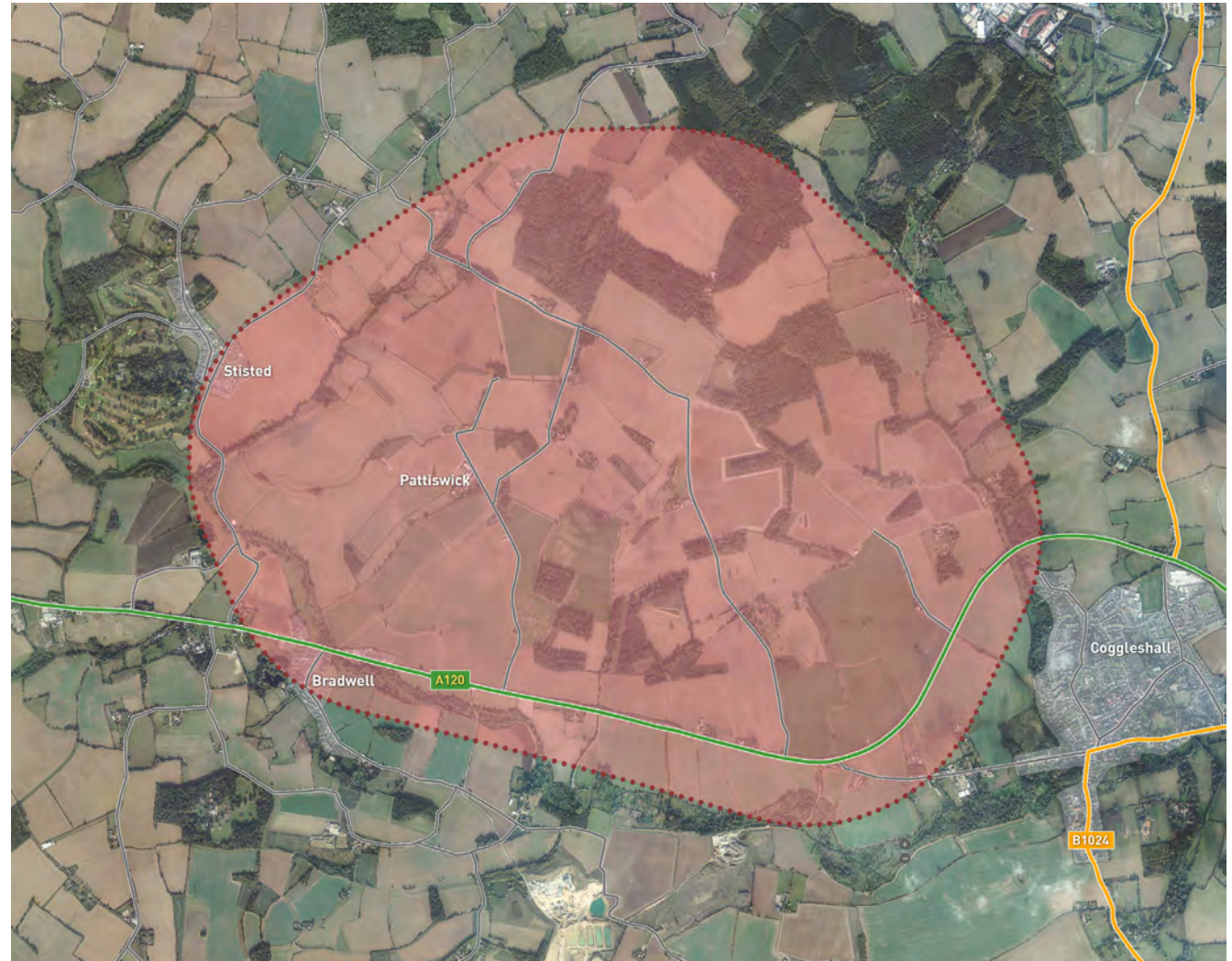


Figure 3: Broad Search Area Diagram

3.2 Options Overview

Option 1: Eastern Edge Land Focus



- Total Site Area: **248ha**
- Approximate Total Developable Area: **219ha**

Option 2: East of Pattiswick



- Total Site Area: **541ha**
- Approximate Total Developable Area: **436ha**

Option 3: Coggeshall Extended Buffer



- Total Site Area: **738ha**
- Approximate Total Developable Area: **627ha**

Option 4: Maximum Land Take



- Total Site Area: **845ha**
- Approximate Total Developable Area: **732ha**

3.3 Option 1: Eastern Edge Land Focus

Key Drivers

Overview

Option 1 seeks to focus the location of the Garden Community to the north east of the historic village of Coggeshall. The site is broadly defined by Robin's Brook to the east, Bungate Wood to the north, a series of field boundaries and hedgerows to the west and the A120 to the south. The extent of the land within this option was not included in the Braintree and Colchester Call-For-Sites process, but was identified to the council in early 2016. It is in single ownership and promoted by a sole developer.

Landuse

- The majority of the land is in productive agricultural use and undeveloped. It is entirely Grade 2 in classification.
- A couple of isolated/detached residential and farm related properties exist throughout the site area. The setting of these would inevitably change as a result of the Garden Community.
- Other than Bungate Wood to the north of the site which is classed as an ancient woodland the site is mostly free of ecological and physical constraints.
- The landscape is typically flat and open in character with medium to large fields divided by hedgerows and some areas of woodland copse
- The proximity of the A120, is a major feature of the site providing severance and permeability constraints.

Adjacencies

- The residential neighbourhood of Coggeshall is located beyond the eastern edge of the site along Robinsbridge Road, but physical separation is provided the A120. Nevertheless the opportunity to provide some form of pedestrian/ cycle connectivity between Coggeshall and the Garden Community.
- This option is considered to be located a sufficient distance from the centres of Braintree and Colchester to develop as a potential complimentary new urban settlement, especially because of the existing road connectivity and importantly the potential that this provides for the creation of an integrated sustainable transport system.

Connectivity

- The site is strategically well connected from the A120 which defines the southern boundary of the site. This provides connectivity into the wider area, including the international port of Harwich and the A12, connecting London, Ipswich and the Port of Felixstowe; providing potential economic advantages.
- Being located on the A120, the site is well located for direct access to Stansted Airport and Braintree to the west. The efficiency and speed of this connectivity is being reviewed by Essex County Council. A consultation exercise is currently being undertaken regarding a shortlist of route options to address the long term improvements to the A120 between Braintree and the A12. Route A of the consultation shortlist is shown dotted red on the adjacent plan.

- Overall these transport connections provide potential economic advantage; they are likely to be an attraction to a range of businesses in terms of location, and with appropriate investment and an integrated approach to transport and land use planning could provide the basis on which to develop a sustainable transport system for the Garden Community.

Transport Strategy

A combined pedestrian-cycle 'Greenway' running through the site, located alongside a potential segregated busway ensuring connectivity across the development could be provided. Southwards, externally to the site, a pedestrian/cycling bridge spanning the A120 could be provided creating links between the Greenway and the well-established village centre walking and cycling network, providing access to existing and future public transport interchanges.

A flexible solution for bus based site-wide connectivity, would allow multiple bus routes, both inter-urban and local to utilise the infrastructure. Two categories of stops could be used: transport hub stop located at high-density development with smaller scale bus stops located at lower density development throughout the site.

Major highway works would include upgrades to existing junctions and a number of new junctions to facilitate the level of development:

Based on the assumptions set out in Section 2.2, the following tables outline an estimate of the AM Peak hour trips generated by the residential and employment uses within the context of theoretical maximum carrying capacity of various public transport modes.

Table 1: Estimate AM peak hour trips generated by proposed residential and employment uses

Mode	Estimated AM Peak Hours Person Trip Generation (Two-Way)
Active modes (walking / cycling)	1911
Private Car	1418
Total Public Transport Trips	1418

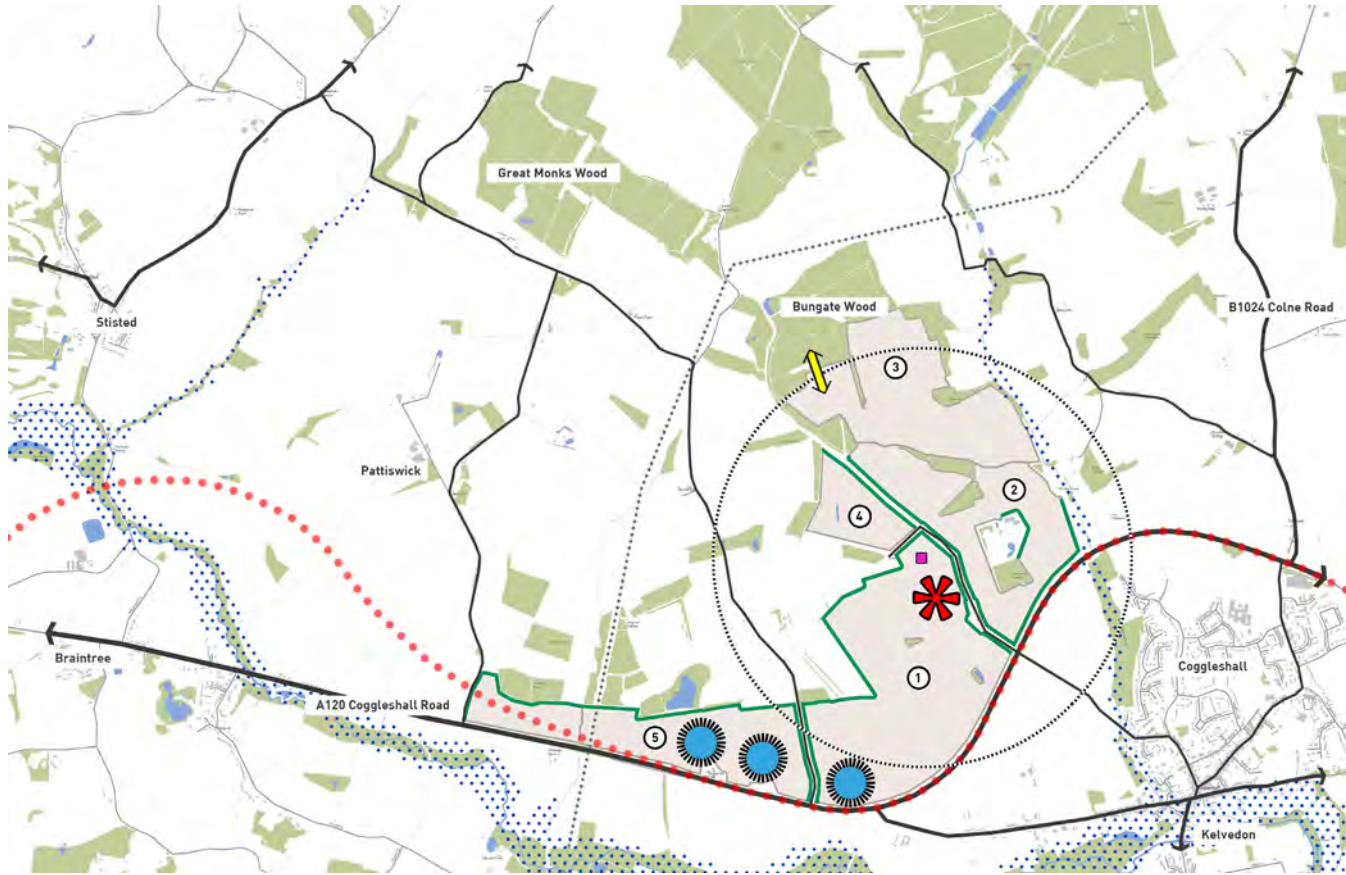
Table 2: Theoretical maximum carrying capacity of public transport modes

Public Transport Mode	No. Routes Assumed	Two-Way Frequency/ Hr	Theoretical Capacity/ Hr	Estimated Maximum Theoretical Peak Hr Carrying Capacity
Inter-Urban Bus (BRT)	2	12	200	2400
Local Bus	1	8	45	360
Total				2760



Figure 4: Indicative Transport Strategy Diagram

Indicative Spatial Representation Diagram & Development Capacities



KEY

- Environmental Assets (to be Protected/Integrated)
- Water Bodies
- Roads
- Railway
- Proposed Northern Option of A120
- Watercourse Corridor
- 33,000V Tower Line

- Developable Land
- Potential Green Buffer
- Key Severance to Mitigate/Stich
- Potential Employment Concentration
- Potential Neighbourhood Centre Development
- Potential Local Centres
- 800m Walking Distances

A breakdown of the high-level indicative landuses and related development capacities for each development parcel illustrated by the indicative developable area diagram is provided at Appendix 1.

248 ha Total Site Area	30 dph 4,070 homes
219 ha Total Developable Area	136 ha Residential Developable Area
2 ha Mixed-Use	44 ha Open Space
4 ha Employment Land	33 ha Roads, Footpath & Parking

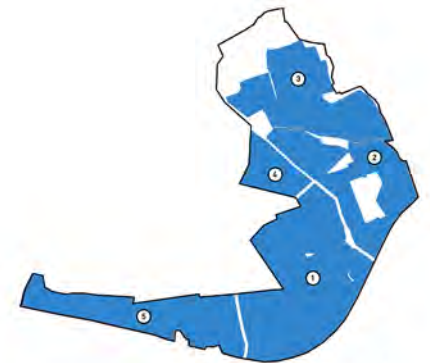


Figure 5: Indicative Developable Area Diagram



Monks Wood Option 1: Eastern Edge Land Focus

Project List

The following table identifies the key project requirements to support Monks Wood Option 1 as it relates to Social Infrastructure, Utilities and Transport. These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to

the transport strategy outlined above, the social infrastructure standards described at Appendix 2 and applied to the projected population, and utility infrastructure requirements. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification		
Education							
Primary Schools Form Entry	4.1	£7,500	£30,525,000	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon <i>The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016</i> .		
Secondary Schools Form Entry	3.8						
Early Year Facilities	5.2						
Healthcare & Community							
General Practitioners	5	£2,250	£9,157,500	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Calculated using AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2.		
Dentists	5						
Acute Hospital Beds	17						
Library Space (m ²)	289						
4 Court Sports Centre	0.62						
4 Lane Swimming Pool	0.42						
Open Space							
Outdoor Sport (ha)	13.26	£2,750	£11,192,500	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2.		
Children's Play Space (ha)	1.80						
Semi Natural Open Space (ha)	17.34						
Parks and Gardens (ha)	11.44						
Amenity Green Space (ha)	7.65						
Allotments (ha)	1.97						
Country Park Landscaping	-	-	£10,000,000	Phasing of country park to occur within development period and post development, according to the housing growth trigger			
Utilities - Scheme-wide Enabling Works							
Energy							
45No. 11kV to 400v distribution substations	39MW	Scheme Wide Enabling Works Cost/unit: £16,250	Scheme Wide Enabling Works Total Cost: £66,137,500	Phasing of energy infrastructure to occur within development and post development period, according to the housing growth triggers	Distribute end-user loads		
9no. 11kV ring circuits from primary to connect up to distribution substations	-						
Potable Water							
New network of distribution pipework	2,797 m ³ /day					Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	New connection to existing storage reservoirs
Waste Water							
1 No.3000m ³ /day pumping station	2,518 m ³ /day			Environment/ Sustainability/ Waste Cost/unit: £500	Environment/ Sustainability/ Waste Cost/unit: £2,035,000	Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	Raw sewage to existing treatment plants
Plot connections for all properties - waste water	2,518 m ³ /day						
Gas							
Plot connections for all properties - gas	-					Phasing of gas infrastructure to occur within development and post development period, according to the housing growth triggers	Connecting to end users

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
Primary Substation 132/11kV with 2 x 45MVA Primary Sub Station	39MW	-	£6,000,000	Initial Phase	Provide electrical power capacity for development
Potable Water					
5km trunk mains on primary routes and distribution mains to water supply	2,797 m³/day	-	£4,000,000	Initial Phase	Distribution of potable water to end users
Waste Water					
Upgrades for water course discharges	2,518 m³/day	-	£1,000,000	Initial Phase	Environmental enhancement / EA Regulation
2.5km connection to existing waste water treatment works - primary and secondary collection networks	2,518 m³/day	-	£2,000,000	Initial Phase	Sewage network connection and flow to small existing treatment plants in early phases, then pumped to Colchester WRC, or a new WRC provided
Gas					
Upgrade to low pressure distribution network	-	-	£2,000,000	Initial Phase	Gas supply to end users
Telecommunications					
Development of access chambers for BT Telecoms network and development of access chambers for private telecoms network throughout development	-	-	£1,300,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
New segregated busway through site to connect with wider bus/BRT network		-	£3,500,000	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Transport Hub (BRT) At Grade		-	£7,500,000	2031/2032	
New combined segregated pedestrian / cycle "Greenway" through site		-	£1,300,000	Initial Phase	To ensure non-car mode transit is embedded from the outset linking the local region
New pedestrian / cycle bridge over A120 providing a connection between the site and Robinsbridge Road at Coggeshall		-	£2,000,000	Initial Phase	
Upgraded pedestrian & cycle networks		-	£3,000,000	Up to Plan Period	
New at-grade junctions / accesses formed off Ambridge Road, three at-grade junctions on current A120 alignment, one at-grade access formed with a potential A120 by-pass, at-grade roundabout- No	£5,000,000 per junction	-	£15,000,000	Initial Phase	To facilitate vehicular connection to the site
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time		-	£3,459,500	Plan Period	To ensure non-car mode transit is embedded from the outset and ensure modal shift
Bus service subsidies & other public transport improvements - Straight Line Cost Over Time		-	£1,628,000	Plan Period	
Contribution to Strategic ("Sub-regional") Public Transport solution e.g. BRT		£1,500	£6,105,000		To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.

Total Cost £188,840,000

(Total Costs at February 2017 excluding Professional Fees and Design Development and Construction Contingency)

3.4 Option 2: East of Pattiswick

Key Drivers

The commentary provided against Option 1 is equally applicable to Option 2, but with the following additional points:

Overview

The East of Pattiswick option extends the Garden Community westwards towards Doghouse Road which is the access road to the Pattiswick Estate and northwards to the boundary with Great Monks Wood. The area is twice the size of Option 1 and accordingly has the potential to double the scale of the Garden Community potentially benefitting the viability and options for public transport. The site continues to remain in single ownership and promoted by a sole developer.

Landuse

- The additional land area includes a combination of productive farmland, woodland and an additional number of residencies and farm buildings,
- Whilst predominantly grade 2 in classification, the southern boundary is made up of grade 3 land and some non agricultural use around Great Monks Wood in the north.
- The inclusion of a number of copse and woodland slightly reduces developable land within this area of the site, but could be used positively within the development as part of the green infrastructure network and to provide intrinsic character to any new development.

Adjacencies

- Whilst placing a very large new settlement in closer proximity to the historic village of Coggeshall compared to the other Options, separation would be maintained by the A120, agricultural land, hedgerows and some topographic level changes.

Connectivity

- This option provides additional land adjacency to the A120 from which access could potentially be taken.

Transport Strategy

The solutions proposed for Option 1 are pertinent to this development scenario, however the alignment and resultant coverage of the combined greenway and transit spine alters. The larger site offers the opportunity to increase the length of the Greenway and segregated bus route to widen the site coverage.

Based on the assumptions set out in Section 2.2, the following tables outline an estimate of the AM Peak hour trips generated by the residential and employment uses within the context of theoretical maximum carrying capacity of various public transport modes.

Table 3: Estimate AM peak hour trips generated by proposed residential and employment uses

Mode	Estimated AM Peak Hours Person Trip Generation (Two-Way)
Active modes (walking / cycling)	3807
Private Car	2825
Total Public Transport Trips	2825

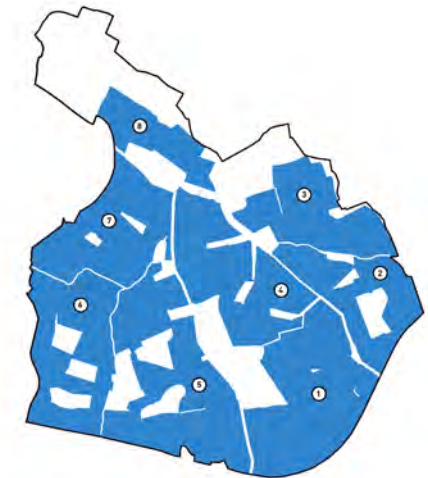
Table 4: Theoretical maximum carrying capacity of public transport modes

Public Transport Mode	No. Routes Assumed	Two-Way Frequency/ Hr	Theoretical Capacity/ Hr	Estimated Maximum Theoretical Peak Hr Carrying Capacity
Inter-Urban Bus (BRT)	2	12	200	2400
Local Bus	1	8	45	360
Total				2760

Figure 6: Indicative Transport Strategy Diagram



Indicative Spatial Representation Diagram & Development Capacities



KEY

- | | |
|--|--|
| Environmental Assests (to be Protected/Integrated) | Developable Land |
| Water Bodies | Potential Green Buffer |
| Roads | Key Severance to Mitigate/Stich |
| Railway | Potential Employment Concentration |
| Proposed Northern Option of A120 | Potential Neighbourhood Centre Development |
| Watercourse Corridor | Potential Local Centres |
| 33,000V Tower Line | 800m Walking Distances |

A breakdown of the high-level indicative landuses and related development capacities for each development parcel illustrated by the indicative developable area diagram is provided at Appendix 1.

Figure 7: Indicative Developable Area Diagram



Monks Wood Option 2: East of Pattiswick

Project List

The following table identifies the key project requirements to support Monks Wood Option 2 as it relates to Social Infrastructure, Utilities and Transport. These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to

the transport strategy outlined above, the social infrastructure standards described at Appendix 2 and applied to the projected population, and utility infrastructure requirements. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification		
Education							
Primary Schools Form Entry	8.1	£7,500	£60,810,000	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon <i>The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016</i> .		
Secondary Schools Form Entry	7.5						
Early Year Facilities	10.4						
Healthcare & Community							
General Practitioners	10	£2,250	£18,243,000	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Calculated using AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2.		
Dentists	10						
Acute Hospital Beds	34						
Library Space (m ²)	576						
4 Court Sports Centre	1.24						
4 Lane Swimming Pool	0.83						
Open Space							
Outdoor Sport (ha)	26.42	£2,750	£22,297,000	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2.		
Children's Play Space (ha)	3.59						
Semi Natural Open Space (ha)	34.54						
Parks and Gardens (ha)	22.80						
Amenity Green Space (ha)	15.25						
Allotments (ha)	3.92						
Country Park Landscaping	-	-	£10,000,000	Phasing of country park to occur within development period and post development, according to the housing growth trigger			
Utilities - Scheme-wide Enabling Works							
Energy							
80No. 11kV to 400v distribution substations	39MW	Scheme Wide Enabling Works Cost/unit: £16,250	Scheme Wide Enabling Works Total Cost: £131,755,000	Phasing of energy infrastructure to occur within development and post development period, according to the housing growth triggers	Distribute end-user loads		
18no. 11kV ring circuits from primary to connect up to distribution substations	-						
Potable Water							
New network of distribution pipework	3,649 m ³ /day					Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	New connection to existing storage reservoirs
Waste Water							
1 No.3248m ³ /day pumping station	3,248 m ³ /day			Environment/ Sustainability/ Waste Cost/unit: £500	Environment/ Sustainability/ Waste Cost/unit: £4,054,000	Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	Raw sewage to existing treatment plants
Plot connections for all properties - waste water	3,248 m ³ /day						
Gas							
Plot connections for all properties - gas	-					Phasing of gas infrastructure to occur within development and post development period, according to the housing growth triggers	Connecting to end users

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
Primary Substation 132/11kV with 2 x 66MVA Primary Sub Station	53MW	-	£17,000,000	Initial Phase	Provide electrical power capacity for development
Potable Water					
5km trunk mains on primary routes and distribution mains to water supply	3,649 m³/day	-	£4,000,000	Initial Phase	Distribution of potable water to end users
Waste Water					
Upgrades for water course discharges	3,248 m³/day	-	£1,000,000	Initial Phase	Environmental enhancement / EA Regulation
5km connection to existing waste water treatment works - primary and secondary collection networks	3,248 m³/day	-	£4,000,000	Initial Phase	Sewage network connection and flow to small existing treatment plants in early phases, then pumped to Colchester WRC, or a new WRC provided
Gas					
Upgrade to low pressure distribution network	-	-	£2,000,000	Initial Phase	Gas supply to end users
Telecommunications					
Development of access chambers for BT Telecoms network and development of access chambers for private telecoms network throughout development	-	-	£2,000,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
New segregated busway through site to connect with wider bus/BRT network		-	£5,500,000	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Transport Hub (BRT) At Grade		-	£10,000,000	2031/2032	
New combined segregated pedestrian / cycle "Greenway" through site		-	£2,300,000	Initial Phase	To ensure non-car mode transit is embedded from the outset linking the local region
New pedestrian / cycle bridge over A120 providing a connection between the site and Robinsbridge Road at Coggeshall		-	£2,000,000	Initial Phase	
Upgraded pedestrian & cycle networks		-	£4,250,000	Up to Plan Period	
New at-grade junctions / accesses formed off Ambridge Road, three at-grade junctions on current A120 alignment, one at-grade access formed with a potential A120 by-pass- 5 No	£5,000,000 per junction	-	£25,000,000	Initial Phase	To facilitate vehicular connection to the site
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time		-	£6,891,800	Plan Period	To ensure non-car mode transit is embedded from the outset and ensure modal shift
Bus service subsidies & other public transport improvements - Straight Line Cost Over Time		-	£3,243,200	Plan Period	
Contribution to Strategic ("Sub-regional") Public Transport solution e.g. BRT		£1,500	£12,162,000		To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.

Total Cost £348,506,000

(Total Costs at February 2017 excluding Professional Fees and Design Development and Construction Contingency)

3.5 Option 3: Coggeshall Extended Buffer

Key Drivers

The commentary provided against Option 2 is equally applicable to Option 3, but with the following additional points:

Overview

The Coggeshall Extended Buffer option extends the Garden Community further westwards to the River Blackwater. However the eastern edge has been pulled back away from the historic village of Coggeshall to create an extended landscape buffer. Under this option an additional 3000 new homes could be developed as part of the Garden Community, potentially increasing the overall housing number close to 12,000. The simplicity of the land ownership and developer relationship remains consistent with the previous options.

Landuse

- As with Options 1 and 2 the land area of this site is predominantly in productive agricultural use.
- Whilst predominantly grade 2 in classification, the southern boundary is made up of grade 3 land and some non agricultural use around Great Monks Wood in the north.
- The additional land is impacted minimally by woodland and copse maximising the developable land within this area of the site.

Adjacencies

The commentary provided against Option 2 remains applicable to Option 3, with the following additional point:

- This option seeks to retain a substantial green buffer (agricultural land) between the edge of the Garden Community and the neighbouring village of Coggeshall.

Connectivity

- This option provides additional land adjacency to the A120 from which access could potentially be taken.
- The proposed Route A of the A120 extends northwards away from Bradwell and runs through the south western quadrant of the site area. This potentially facilitates the development of a larger neighbourhood or town centre destination to be created more centrally or west of centre within the Garden Community.

Transport Strategy

The solutions proposed for Option 2 are pertinent to this larger development scenario with the addition of the following key infrastructure in order to accommodate the considerable increase in development and site coverage:

- The larger site offers the opportunity to increase the length of the Greenway and segregated bus route to widen the site coverage.
- Whilst many of the highway access options outlined in Option 2 remain pertinent, a new at-grade junction on the proposed A120 alignment would likely to be required.

Based on the assumptions set out in Section 2.2, the following tables outline an estimate of the AM Peak hour trips generated by the residential and employment uses within the context of theoretical maximum carrying capacity of various public transport modes.

Table 5: Estimate AM peak hour trips generated by proposed residential and employment uses

Mode	Estimated AM Peak Hours Person Trip Generation (Two-Way)
Active modes (walking / cycling)	5477
Private Car	4064
Total Public Transport Trips	4064

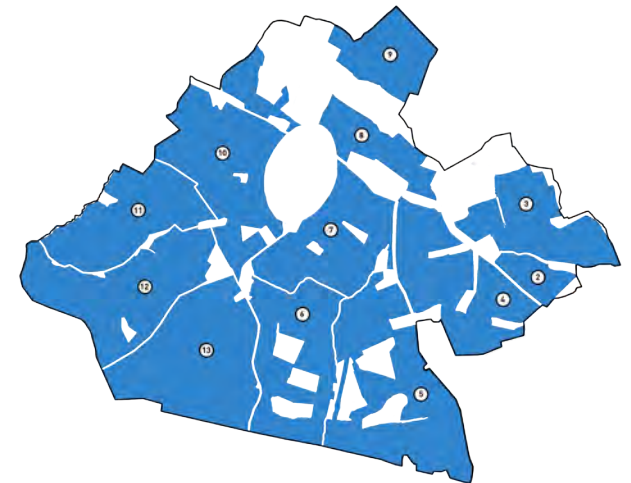
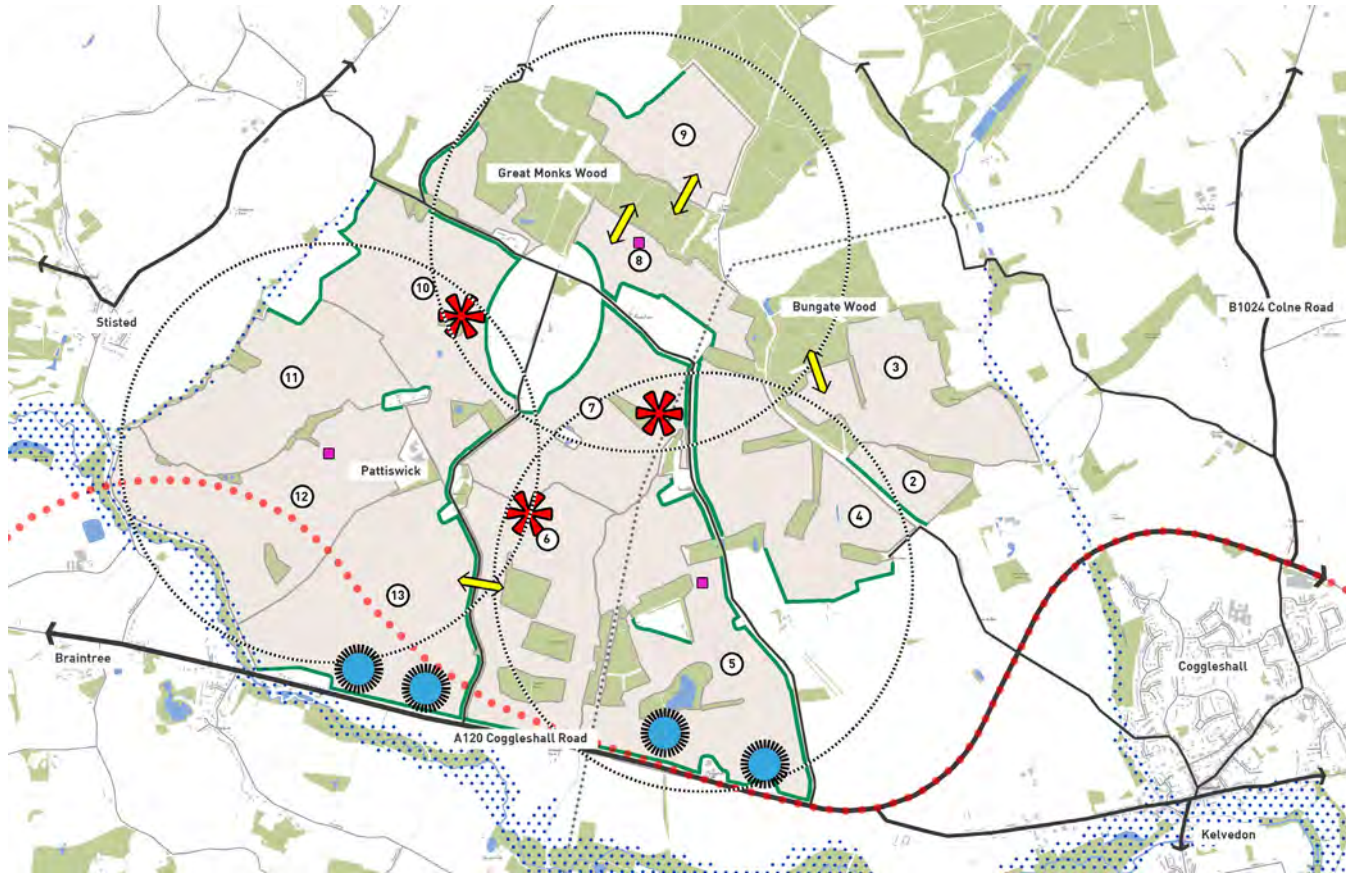
Table 6: Theoretical maximum carrying capacity of public transport modes

Public Transport Mode	No. Routes Assumed	Two-Way Frequency/ Hr	Theoretical Capacity/ Hr	Estimated Maximum Theoretical Peak Hr Carrying Capacity
Inter-Urban Bus (BRT)	2	16	200	3200
Local Bus	1	8	45	360
Total				3560

Figure 8: Indicative Transport Strategy Diagram



Indicative Spatial Representation Diagram & Development Capacities



KEY

- | | |
|---|--|
|  Environmental Assets (to be Protected/Integrated) |  Developable Land |
|  Water Bodies |  Potential Green Buffer |
|  Roads |  Key Severance to Mitigate/Stich |
|  Railway |  Potential Employment Concentration |
|  Proposed Northern Option of A120 |  Potential Neighbourhood Centre Development |
|  Watercourse Corridor |  Potential Local Centres |
|  33,000V Tower Line |  800m Walking Distances |

A breakdown of the high-level indicative landuses and related development capacities for each development parcel illustrated by the indicative developable area diagram is provided at Appendix 1.

Figure 9: Indicative Developable Area Diagram



Monks Wood Option 3: Coggeshall Extended Buffer

Project List

The following table identifies the key project requirements to support Monks Wood Option 3 as it relates to Social Infrastructure, Utilities and Transport. These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to

the transport strategy outlined above, the social infrastructure standards described at Appendix 2 and applied to the projected population, and utility infrastructure requirements. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification		
Education							
Primary Schools Form Entry	8.1	£7,500	£60,810,000	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon <i>The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016</i> .		
Secondary Schools Form Entry	7.5						
Early Year Facilities	10.4						
Healthcare & Community							
General Practitioners	10	£2,250	£18,243,000	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Calculated using AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2.		
Dentists	10						
Acute Hospital Beds	34						
Library Space (m ²)	576						
4 Court Sports Centre	1.24						
4 Lane Swimming Pool	0.83						
Open Space							
Outdoor Sport (ha)	26.42	£2,750	£22,297,000	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2.		
Children's Play Space (ha)	3.59						
Semi Natural Open Space (ha)	34.54						
Parks and Gardens (ha)	22.80						
Amenity Green Space (ha)	15.25						
Allotments (ha)	3.92						
Country Park Landscaping	-	-	£10,000,000	Phasing of country park to occur within development period and post development, according to the housing growth trigger			
Utilities - Scheme-wide Enabling Works							
Energy							
80No. 11kV to 400v distribution substations	39MW	Scheme Wide Enabling Works Cost/unit: £16,250	Scheme Wide Enabling Works Total Cost: £131,755,000	Phasing of energy infrastructure to occur within development and post development period, according to the housing growth triggers	Distribute end-user loads		
18no. 11kV ring circuits from primary to connect up to distribution substations	-						
Potable Water							
New network of distribution pipework	3,649 m ³ /day					Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	New connection to existing storage reservoirs
Waste Water							
1 No.3248m ³ /day pumping station	3,248 m ³ /day			Environment/ Sustainability/ Waste Cost/unit: £500	Environment/ Sustainability/ Waste Cost/unit: £4,054,000	Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	Raw sewage to existing treatment plants
Plot connections for all properties - waste water	3,248 m ³ /day						
Gas							
Plot connections for all properties - gas	-					Phasing of gas infrastructure to occur within development and post development period, according to the housing growth triggers	Connecting to end users

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
Primary Substation 132/11kV with 2 x 66MVA Primary Sub Station	53MW	-	£17,000,000	Initial Phase	Provide electrical power capacity for development
Potable Water					
5km trunk mains on primary routes and distribution mains to water supply	3,649 m³/day	-	£4,000,000	Initial Phase	Distribution of potable water to end users
Waste Water					
Upgrades for water course discharges	3,248 m³/day	-	£1,000,000	Initial Phase	Environmental enhancement / EA Regulation
5km connection to existing waste water treatment works - primary and secondary collection networks	3,248 m³/day	-	£4,000,000	Initial Phase	Sewage network connection and flow to small existing treatment plants in early phases, then pumped to Colchester WRC, or a new WRC provided
Gas					
Upgrade to low pressure distribution network	-	-	£2,000,000	Initial Phase	Gas supply to end users
Telecommunications					
Development of access chambers for BT Telecoms network and development of access chambers for private telecoms network throughout development	-	-	£2,000,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
New segregated busway through site to connect with wider bus/BRT network		-	£5,500,000	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Transport Hub (BRT) At Grade		-	£10,000,000	2031/2032	
New combined segregated pedestrian / cycle "Greenway" through site		-	£2,300,000	Initial Phase	To ensure non-car mode transit is embedded from the outset linking the local region
New pedestrian / cycle bridge over A120 providing a connection between the site and Robinsbridge Road at Coggeshall		-	£2,000,000	Initial Phase	
Upgraded pedestrian & cycle networks		-	£4,250,000	Up to Plan Period	
New at-grade junctions / accesses formed off Ambridge Road, three at-grade junctions on current A120 alignment, one at-grade access formed with a potential A120 by-pass- 5 No	£5,000,000 per junction	-	£25,000,000	Initial Phase	To facilitate vehicular connection to the site
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time		-	£9,915,250	Plan Period	To ensure non-car mode transit is embedded from the outset and ensure modal shift
Bus service subsidies & other public transport improvements - Straight Line Cost Over Time		-	£4,666,000	Plan Period	
Contribution to Strategic ("Sub-regional") Public Transport solution e.g. BRT		£1,500	£17,497,500		To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.

Total Cost £462,330,000

(Total Costs at February 2017 excluding Professional Fees and Design Development and Construction Contingency)

3.6 Option 4: Maximum Land Take

Key Drivers

The commentary provided against Option 3 is equally applicable to Option 4, but with the following additional points:

Overview

Option 4 seeks to maximise the potential development scale available within the Monks Wood Search Area totalling approximately 732 hectares. The additional scale of this option has been achieved by including the land previously excluded in Option 3 as the visual buffer. Consequently, it has a theoretical capacity to provide close to 14,000 new houses as part of a mixed community, in line with the upper threshold of Garden Villages. It is in single ownership and promoted by a sole developer, a unique and simple relationship compared to all other option previously considered by AECOM.

Landuse

- As with the previous options the land area of this site is predominantly in productive agricultural use.
- Whilst predominantly grade 2 in classification, the southern boundary is made up of grade 3 land and some non agricultural use around Great Monks Wood in the north.

Adjacencies

- Whilst placing a very large new settlement in closer proximity to the historic village of Coggeshall compared to the other Options, separation would be maintained by the A120, agricultural land, hedgerows and some topographic level changes.

Connectivity

The commentary provided against Option 3 remains applicable to Option 4.

Transport Strategy

The solutions proposed for Option 3 are pertinent to this larger development scenario with the addition of the following key infrastructure in order to accommodate the considerable increase in development and site coverage:

- The larger site offers the opportunity to increase the length of the Greenway and segregated bus route to widen the site coverage.

- Whilst many of the highway access options outlined in Option 2 remain pertinent, a new at-grade junction on the proposed A120 alignment would likely to be required.

Based on the assumptions set out in Section 2.2, the following tables outline an estimate of the AM Peak hour trips generated by the residential and employment uses within the context of theoretical maximum carrying capacity of various public transport modes.

Table 7: Estimate AM peak hour trips generated by proposed residential and employment uses

Mode	Estimated AM Peak Hours Person Trip Generation (Two-Way)
Active modes (walking / cycling)	6395
Private Car	4746
Total Public Transport Trips	4746

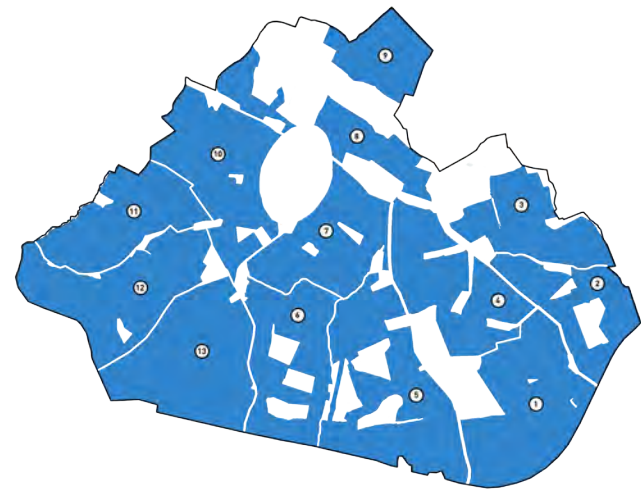
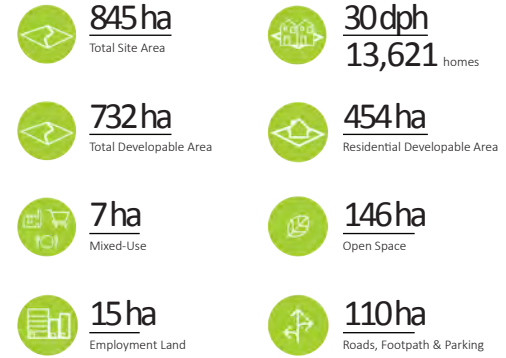
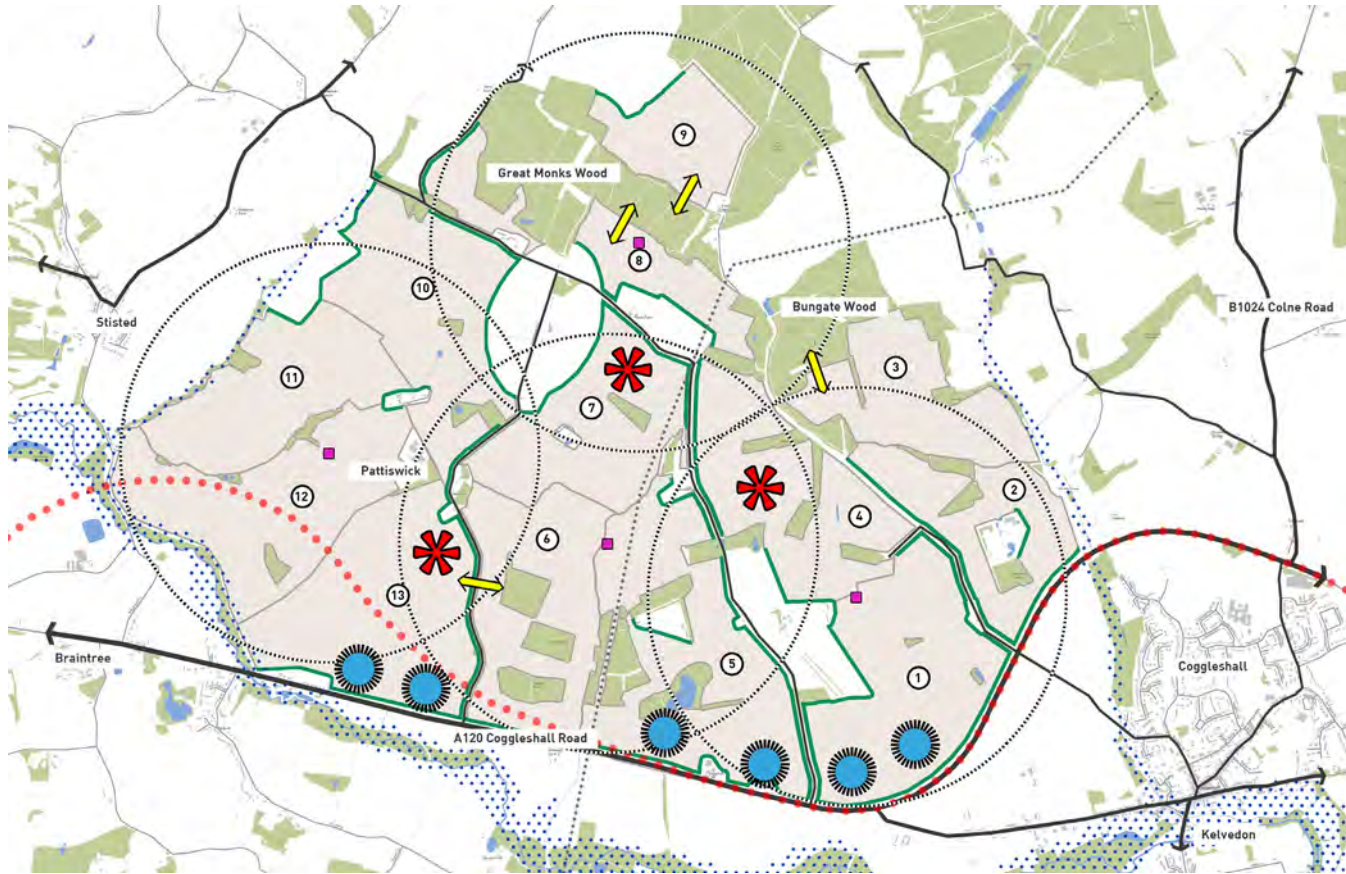
Table 8: Theoretical maximum carrying capacity of public transport modes

Public Transport Mode	No. Routes Assumed	Two-Way Frequency/ Hr	Theoretical Capacity/ Hr	Estimated Maximum Theoretical Peak Hr Carrying Capacity
Inter-Urban Bus (BRT)	2	16	200	3200
Local Bus	1	8	45	360
Total				3560

Figure 10: Indicative Transport Strategy Diagram



Indicative Spatial Representation Diagram & Development Capacities



A breakdown of the high-level indicative landuses and related development capacities for each development parcel illustrated by the indicative developable area diagram is provided at Appendix 1.

- KEY**
- | | |
|--|--|
| Environmental Assests (to be Protected/Integrated) | Developable Land |
| Water Bodies | Potential Green Buffer |
| Roads | Key Severance to Mitigate/Stich |
| Railway | Potential Employment Concentration |
| Proposed Northern Option of A120 | Potential Neighbourhood Centre Development |
| Watercourse Corridor | Potential Local Centres |
| 33,000V Tower Line | 800m Walking Distances |

Figure 11: Indicative Developable Area Diagram



Monks Wood Option 3: Maximum Land Take

Project List

The following table identifies the key project requirements to support Monks Wood Option 4 as it relates to Social Infrastructure, Utilities and Transport. These projects are based on a high level assessment of the infrastructure requirements for the development option and the growth (housing and employment) envisaged. It is assumption based only and related either to

the transport strategy outlined above, the social infrastructure standards described at Appendix 2 and applied to the projected population, and utility infrastructure requirements. They are indicative only and are not based on a masterplanning exercise.

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification		
Education							
Primary Schools Form Entry	13.6	£7,500	£102,157,500	Phasing of education infrastructure to occur within development period and post according to the housing growth triggers	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Education costs and calculations based upon <i>The Essex County Council Developers' Guide to Infrastructure Contributions - Revised Edition 2016</i> .		
Secondary Schools Form Entry	12.7						
Early Year Facilities	17.4						
Healthcare & Community							
General Practitioners	16	£2,250	£30,647,250	Phasing of healthcare infrastructure to occur within development period and post development, according to the housing growth triggers for each facility	Minimum requirement, assuming off-site mitigation and no account of existing surplus/deficit in existing surrounding facilities. Calculated using AECOM Social Infrastructure Modelling (SIF) standards as set out in Appendix 2.		
Dentists	16						
Acute Hospital Beds	57						
Library Space (m ²)	967						
4 Court Sports Centre	2.09						
4 Lane Swimming Pool	1.39						
Open Space							
Outdoor Sport (ha)	44.39	£2,750	£37,457,750	Phasing of open space infrastructure to occur within development period and post development, according to the housing growth triggers for each type	Minimum requirement based on standards as set out in Appendix 2.		
Children's Play Space (ha)	6.03						
Semi Natural Open Space (ha)	58.03						
Parks and Gardens (ha)	38.30						
Amenity Green Space (ha)	25.62						
Allotments (ha)	6.59						
Country Park Landscaping	-	-	£10,000,000	Phasing of country park to occur within development period and post development, according to the housing growth trigger			
Utilities - Scheme-wide Enabling Works							
Energy							
80No. 11kV to 400v distribution substations	62MW	Scheme Wide Enabling Works Cost/unit: £16,250	Scheme Wide Enabling Works Total Cost: £221,341,250	Phasing of energy infrastructure to occur within development and post development period, according to the housing growth triggers	Distribute end-user loads		
18no. 11kV ring circuits from primary to connect up to distribution substations	-						
Potable Water							
New network of distribution pipework	5,410 m ³ /day					Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	New connection to existing storage reservoirs
Waste Water							
3 No.2,000m ³ /day pumping station	4,869 m ³ /day	Environment/ Sustainability/ Waste Cost/unit: £500	Environment/ Sustainability/ Waste Cost/unit: £6,810,500	Phasing of waste water infrastructure to occur within development and post development period, according to the housing growth triggers	Raw sewage to existing treatment plants		
Plot connections for all properties - waste water	4,869 m ³ /day						
Gas							
Plot connections for all properties - gas	-			Phasing of gas infrastructure to occur within development and post development period, according to the housing growth triggers	Connecting to end users		

Infrastructure	Demand Arising from Development Option	Cost per Unit (£)	Total Cost (£)	Phasing	Justification
Utilities - Off-Site Requirements					
Energy					
Primary Substation 132/11kV with 2 x 66MVA Primary Sub Station	62MW	-	£17,000,000	Initial Phase	Provide electrical power capacity for development
Potable Water					
10km trunk mains on primary routes and distribution mains to water supply	5,410 m³/day	-	£4,000,000	Initial Phase	Distribution of potable water to end users
Waste Water					
Upgrades for water course discharges	4,869 m³/day	-	£1,500,000	Initial Phase	Environmental enhancement / EA Regulation
10km connection to existing waste water treatment works - primary and secondary collection networks	4,869 m³/day	-	£8,000,000	Initial Phase	Sewage network connection and flow to small existing treatment plants in early phases, then pumped to Colchester WRC, or a new WRC provided
Gas					
Upgrade to low pressure distribution network	-	-	£3,000,000	Initial Phase	Gas supply to end users
Telecommunications					
Development of access chambers for BT Telecoms network and development of access chambers for private telecoms network throughout development	-	-	£3,000,000	Initial Phase	ICT and data networks to end users
Transport - On-Site / Off-Site Requirements					
New segregated busway through site to connect with wider bus/BRT network		-	£7,000,000	Up to Plan Period	To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.
Transport Hub (BRT) At Grade		-	£10,000,000	2031/2032	
New combined segregated pedestrian / cycle "Greenway" through site		-	£3,150,000	Initial Phase	To ensure non-car mode transit is embedded from the outset linking the local region
New pedestrian / cycle bridge over A120 providing a connection between the site and Robinsbridge Road at Coggeshall		-	£2,000,000	Initial Phase	
Upgraded pedestrian & cycle networks		-	£5,500,000	Up to Plan Period	
New at-grade junctions / accesses formed off Ambridge Road, three at-grade junctions on current A120 alignment, one at-grade access formed with a potential A120 by-pass, at-grade roundabout- 7 No	£5,000,000 per junction	-	£35,000,000	Initial Phase	To facilitate vehicular connection to the site
Travel plan measures (smarter choices, car clubs, charging points, etc) - Straight Line Cost Over Time		-	£11,577,850	Plan Period	To ensure non-car mode transit is embedded from the outset and ensure modal shift
Bus service subsidies & other public transport improvements - Straight Line Cost Over Time		-	£5,448,400	Plan Period	
Contribution to Strategic ("Sub-regional") Public Transport solution e.g. BRT		£1,500	£20,431,500		To ensure non-car mode transit is embedded from the outset and to connect with the sub-regional transport connectivity solutions.

Total Cost £545,022,000

(Total Costs at February 2017 excluding Professional Fees and Design Development and Construction Contingency)

**This Section sets out the Site Option
and Performance Review against
each option**

Two thin black lines intersect on the left side of the page. One line is vertical, and the other is diagonal, sloping downwards from left to right.

04 Site Options & Performance Review

- 4.1** Criteria
- 4.2** Summary Review

4.1 Criteria

Introduction

A qualitative assessment of the Sites and Options has been undertaken using selection criteria based upon Sustainability Objectives for Colchester, Tendring and Braintree alongside TCPA Garden City Principles. This has not been informed by any specific masterplanning exercise and instead the assessments are professional judgements only made in the context of a high level understanding of the sites and the concept of a Garden Community.

This assessment, alongside the viability assessment and supporting technical documentation, is considered to provide sufficient evaluation to inform further testing including feeding into the Councils' own Sustainability / SEA Appraisal Framework.

1. Physical Limitations

There are physical limitations which may be difficult to mitigate or will likely require significant time and investment to be overcome.

There are some physical limitations which require mitigation in order to maximise development potential.

There are no or very limited physical limitations to development.

2. Impacts

Development may have a detrimental and negative impact upon areas of value and importance.

Development would require mitigation in order to ensure its impact on surrounding areas of value and importance is not at the detriment to their current status.

Impacts on surrounding areas of value and importance would be limited and acceptable.

3. Environment / Amenity

Development may cause an unacceptable impact upon the occupiers of existing properties and neighbouring areas / towns.

Development would require mitigation to ensure an acceptable impact upon the occupiers of existing properties and neighbouring areas / towns.

Development would likely have an acceptable relationship on occupiers of existing properties and neighbouring areas / towns, and the impact may be positive.

4. Transport

There is very limited potential to achieve integrated and accessible sustainable transport systems.

There is potential to achieve integrated and accessible sustainable transport systems, but this is likely to require significant on and off site investment.

There is existing access to sustainable transport systems or relative ease to establish an integrated and accessible transport system.

Scale of Performance



5. Resilience

Development may have a detrimental impact on surrounding town centres, regeneration / development priority areas or established institutions.

Development may impact on surrounding town centres, regeneration / development priority areas or established institutions, although this impact could be mitigated.

Development would likely make a positive contribution to surrounding town centres, regeneration / development priority areas or established institutions.

6. Housing

There is limited potential to secure a provision of a mix of tenures and housing types

The ability to secure a mixed tenure and housing type development would likely require significant grant funding / developer support

There is likely to be strong potential to provide a mix of housing types and tenure within the development.

7. Employment Opportunities

Development may not be able to support enough, or is not located close enough to existing centres, to secure a wide range of local jobs on site or in easy commuting distance of new houses.

It is likely to be possible to provide a wide range of jobs within the development, but providing sustainable transport access to local jobs in the wider area may be difficult.

It is likely to be possible to provide a wide range of jobs within the development, with good sustainable transport potential to local jobs in the wider area.

8. Mixed -Use Opportunities

There is limited opportunity to ensure the inclusion of cultural, recreational and shopping facilities in walkable, vibrant, sociable neighbourhoods.

There is potential to ensure the inclusion of cultural, recreational and shopping facilities in walkable, vibrant, sociable neighbourhoods.

There are existing cultural, recreational and shopping facilities within the site or in very close proximity which may have a positive effect on the development of community; with potential for new services that will ensure high levels of sustainability.

9. Environment Quality and Sustainability

There are identified constraints that may limit the potential to incorporate areas of publicly accessible open space, allotments/food productions areas, biodiversity gains, SUDs and / or implement zero carbon/energy positive technology.

There are some constraints that may limit the potential to incorporate areas of publicly accessible open space, allotments/food productions areas, biodiversity gains, SUDs and / or implement zero carbon/energy positive technology.

There are no constraints that limit the potential to incorporate areas of publicly accessible open space, allotments/food productions areas, biodiversity gains, SUDs and / or implement zero carbon/energy positive technology. And existing landscape features exist which may assist provision.

10. Developability & Deliverability

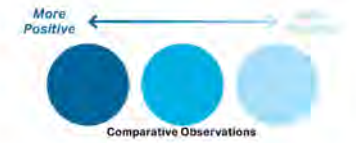
All or the majority of the potential development area is not currently available, nor will it become available within the emerging local plan period (to 2032). And/or some of the land ownership is currently unknown or fragmented, with no current knowledge of the prospect of an appropriate delivery mechanism being agreed that will enable a proportion of the land value created to be used to fund delivery of infrastructure, community assets and long term stewardship needed for a garden community.

All or the majority of the potential development area is currently available or can become available in time for meaningful development to commence within the emerging local plan period (to 2032); initial analysis suggests development should be capable of being commercially viable, but infrastructure requirements and investments are likely to be comparatively high. There is considered to be a good prospect of an appropriate delivery mechanism being agreed that will enable a proportion of the land value created to be used to fund delivery of infrastructure, community assets and long term stewardship needed for a garden community.

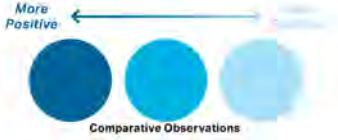
All or the majority of the potential development area is currently available or can become available in time for meaningful development to commence within the emerging local plan period (to 2032); initial analysis suggests development should be capable of being commercially viable, and infrastructure requirements and investments are likely to be comparatively lower. There is considered to be a good prospect of an appropriate delivery mechanism being agreed that will enable a proportion of the land value created to be used to fund delivery of infrastructure, community assets and long term stewardship needed for a garden community.

4.2 Summary Review

	East Colchester / West Tendring			North Colchester		West of Colchester / Marks Tey				West of Braintree		Pattiswick Estate			
	Option 1 - Southern Land Focus	Option 2 - A133 to Colchester-Ipswich Rail Line	Option 3 - North to South wrap	Option 1 - East of Langham Lane Focus	Option 2 - Maximum Land Take	Option 1 - North and South of A12 / Rail Corridor Focus	Option 2 - South of A120 and North of Marks Tey Existing Settlement	Option 3 - South of A120 Focus	Option 4 - Maximum Land Take	Option 1 - Braintree DC Only	Option 2 - Braintree DC and Uttlesford DC Land	Option 1 - Eastern Edge Land Focus	Option 2 - East of Pattiswick	Option 3 - Coggeshall Extended Buffer	Option 4 - Maximum Land Take
1. Physical Limitations	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2. Impacts	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3. Environment / Amenity	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4. Transport	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5. Resilience	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
6. Housing	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●



	East Colchester / West Tendring			North Colchester		West of Colchester / Marks Tey				West of Braintree		Pattiswick Estate			
	Option 1 - Southern Land Focus	Option 2 - A133 to Colchester-Ipswich Rail Line	Option 3 - North to South wrap	Option 1 - East of Langham Lane Focus	Option 2 - Maximum Land Take	Option 1 - North and South of A12 / Rail Corridor Focus	Option 2 - South of A120 and North of Marks Tey Existing Settlement	Option 3 - South of A120 Focus	Option 4 - Maximum Land Take	Option 1 - Braintree DC Only	Option 2 - Braintree DC and Uttlesford DC Land	Option 1 - Eastern Edge Land Focus	Option 2 - East of Pattiswick	Option 3 - Coggeshall Extended Buffer	Option 4 - Maximum Land Take
7. Employment Opportunities	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
8. Mixed-Use Opportunities	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
9. Environment Quality and Sustainability	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
10. Developability	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●





APPENDIX 1

**Indicative Development Capacity
Schedules**

Monks Wood

The following tables provide the high level breakdown of land use by parcel for each option consistent with the assumptions described in this Report. They have not been developed through an exercise of concept masterplanning. They are intended only to contribute to an initial understanding of viability to help inform judgements relating to option potential as part of the Councils' wider considerations of planning for strategic growth in the development of the emerging local plans.

Pattiswick Estate: Scenario 01

Total Site Area	Total Site Area
m ²	ha
2,484,140	248

Zone No	Developable Area (m ²)	Developable Area (Ha)	Open Space %	Mixed Use %	Employment %	Roads, Footpaths and Parking %	Residential %	100% Check	Open Space m ²	Mixed Use m ²	Employment m ²	Roads, Footpaths and Parking m ²	Residential m ²	Residential Developable Area (Ha)	Density / Capacity		GIA 2b App ¹ (79m ² GIA)	Efficiency 5%	GEA m ²	Percentage Split		GEA		
															DpHa	Dwellings				B1 %	B2/BB %	B1	B2/BB	
1	760,132	76.01	20%	1%	2%	15%	62%	100%	152,026	7,601	15,203	114,020	471,282	47	30	1414	111693.8	5584.7	117278.5	50%	50%	7601.32	7601.32	
2	395,637	39.56	20%	1%	2%	15%	62%	100%	79,127	3,956	7,913	59,346	245,295	25	30	736	58134.9	2906.7	61041.6	50%	50%	3956.37	3956.37	
3	485,564	48.56	20%	1%	2%	15%	62%	100%	97,113	4,856	9,711	72,835	301,050	30	30	903	71348.8	3567.4	74916.2	50%	50%	4855.64	4855.64	
4	138,142	13.81	20%	1%	2%	15%	62%	100%	27,628	1,381	2,763	20,721	85,648	9	30	257	20298.6	1014.9	21313.5	50%	50%	1381.42	1381.42	
5	408,644	40.86	20%	1%	2%	15%	62%	100%	81,729	4,086	8,173	61,297	253,359	25	30	760	60046.1	3002.3	63048.5	50%	50%	4086.44	4086.44	
Total	2,188,119	219							437,624	21,881	43,762	328,218	1,356,634	136		4070	321522.2		337598.3		50%	50%	21881.19	21881.19
									44ha	7ha	4ha	53ha	136ha				57ha		34ha				7ha	2ha

Pattiswick Estate: Scenario 02

Total Site Area	Total Site Area
m ²	ha
5,411,170	541

Zone No	Developable Area (m ²)	Developable Area (Ha)	Open Space %	Mixed Use %	Employment %	Roads, Footpaths and Parking %	Residential %	100% Check	Open Space m ²	Mixed Use m ²	Employment m ²	Roads, Footpaths and Parking m ²	Residential m ²	Residential Developable Area (Ha)	Density / Capacity		GIA 2b App ¹ (79m ² GIA)	Efficiency 5%	GEA m ²	Percentage Split		GEA		
															DpHa	Dwellings				B1 %	B2/BB %	B1	B2/BB	
1	760,132	76.01	20%	1%	2%	15%	62%	100%	152,026	7,601	15,203	114,020	471,282	47	30	1414	111693.8	5584.7	117278.5	50%	50%	7601.32	7601.32	
2	395,637	39.56	20%	1%	2%	15%	62%	100%	79,127	3,956	7,913	59,346	245,295	25	30	736	58134.9	2906.7	61041.6	50%	50%	3956.37	3956.37	
3	485,564	48.56	20%	1%	2%	15%	62%	100%	97,113	4,856	9,711	72,835	301,050	30	30	903	71348.8	3567.4	74916.2	50%	50%	4855.64	4855.64	
4	611,826	61.18	20%	1%	2%	15%	62%	100%	122,365	6,118	12,237	91,774	379,432	38	30	1138	89901.7	4495.1	94396.8	50%	50%	6118.26	6118.26	
5	804,477	80.45	20%	1%	2%	15%	62%	100%	160,895	8,045	16,090	120,672	498,776	50	30	1496	118209.9	5910.5	124120.3	50%	50%	8044.77	8044.77	
6	515,415	51.54	20%	1%	2%	15%	62%	100%	103,083	5,154	10,308	77,312	319,557	32	30	959	75735.1	3786.8	79521.8	50%	50%	5154.15	5154.15	
7	547,085	54.71	20%	1%	2%	15%	62%	100%	109,417	5,471	10,942	82,063	339,198	34	30	1018	80388.7	4019.4	84408.1	50%	50%	5470.85	5470.85	
8	238,939	23.89	20%	1%	2%	15%	62%	100%	47,788	2,389	4,779	35,841	148,142	15	30	444	35109.7	1755.5	36865.2	50%	50%	2389.39	2389.39	
Total	4,359,075	436							871,815	43,591	87,182	658,861	2,702,627	270		8108	640522.5		672548.6		50%	50%	43590.75	43590.75
									87ha	4ha	9ha	65ha	270ha				64ha		67ha				4ha	4ha

Pattlowick Estate: Scenario 03		
Total Site Area	Total Site Area	Total Site Area
m ²	ha	
7,381,821	738	

Zone No	Developable Area (m ²)	Developable Area (Ha)	Open Space %	Mixed Use %	Employment %	Roads, Footpaths and Parking %	Residential %	100% Check	Open Space m ²	Mixed Use m ²	Employment m ²	Roads, Footpaths and Parking m ²	Residential m ²	Residential Developable Area (Ha)	DpHa	Dwellings	2b Appl (79m ² GIA)	%	m ²	B1 %	B2/BB %	B1	B2/BB
1	0	0.00	20%	1%	2%	15%	62%	100%	0	0	0	0	0	0	30	0	0.0	0.0	0.0	50%	50%	0	0
2	104,623	10.46	20%	1%	2%	15%	62%	100%	20,925	1,046	2,092	15,693	64,866	6	30	196	15,373.3	768.7	16,142.0	50%	50%	1046.23	1046.23
3	485,560	48.56	20%	1%	2%	15%	62%	100%	97,112	4,856	9,711	72,834	301,047	30	30	903	71,348.2	3,567.4	74,915.6	50%	50%	4855.6	4855.6
4	611,800	61.18	20%	1%	2%	15%	62%	100%	122,360	6,118	12,236	91,770	375,316	38	30	1138	89,897.9	4,494.9	94,392.8	50%	50%	6118	6118
5	804,470	80.45	20%	1%	2%	15%	62%	100%	160,894	8,045	16,089	120,671	498,771	50	30	1496	118,208.8	5,910.4	124,119.3	50%	50%	8044.7	8044.7
6	515,400	51.54	20%	1%	2%	15%	62%	100%	103,080	5,154	10,308	77,310	319,548	32	30	959	75,732.9	3,786.6	79,519.5	50%	50%	5154	5154
7	547,080	54.71	20%	1%	2%	15%	62%	100%	109,416	5,471	10,942	82,062	339,190	34	30	1018	80,887.9	4,019.4	84,907.3	50%	50%	5470.8	5470.8
8	238,900	23.89	20%	1%	2%	15%	62%	100%	47,780	2,389	4,778	35,835	148,118	15	30	444	35,104.0	1,755.2	36,859.2	50%	50%	2389	2389
9	291,130	29.11	20%	1%	2%	15%	62%	100%	58,226	2,911	5,823	43,670	180,501	18	30	542	42,778.6	2,138.9	44,917.6	50%	50%	2911.3	2911.3
10	764,100	76.41	20%	1%	2%	15%	62%	100%	152,820	7,641	15,282	114,615	473,742	47	30	1421	112,276.9	5,613.8	117,890.7	50%	50%	7641	7641
11	510,300	51.03	20%	1%	2%	15%	62%	100%	102,066	5,103	10,207	76,545	316,386	32	30	949	74,988.0	3,749.4	78,737.4	50%	50%	5103	5103
12	644,200	64.42	20%	1%	2%	15%	62%	100%	128,840	6,442	12,884	96,630	399,404	40	30	1198	94,659.7	4,732.9	99,392.7	50%	50%	6442	6442
13	754,184	75.42	20%	1%	2%	15%	62%	100%	150,836	7,542	15,084	113,127	467,592	47	30	1403	110,819.8	5,541.0	116,360.8	50%	50%	7541.8	7541.8
Total	6,271,743	627							1,254,349	62,717	125,435	940,761	3,888,481	389		11,665	921,569.9		967,648.4			62717.43	62717.43
									125ha	6ha	13ha	94ha	389ha				92ha		97ha			6ha	6ha

Pattlowick Estate: Scenario 04		
Total Site Area	Total Site Area	Total Site Area
m ²	ha	
8,448,080	845	

Zone No	Developable Area (m ²)	Developable Area (Ha)	Open Space %	Mixed Use %	Employment %	Roads, Footpaths and Parking %	Residential %	100% Check	Open Space m ²	Mixed Use m ²	Employment m ²	Roads, Footpaths and Parking m ²	Residential m ²	Residential Developable Area (Ha)	DpHa	Dwellings	2b Appl (79m ² GIA)	%	m ²	B1 %	B2/BB %	B1	B2/BB
1	760,112	76.01	20%	1%	2%	15%	62%	100%	152,026	7,601	15,203	114,020	471,282	47	30	1414	111,693.8	5,584.7	117,278.5	50%	50%	7601.32	7601.32
2	395,637	39.56	20%	1%	2%	15%	62%	100%	79,127	3,956	7,913	59,346	245,295	25	30	736	58,134.9	2,906.7	61,041.6	50%	50%	3956.37	3956.37
3	485,564	48.56	20%	1%	2%	15%	62%	100%	97,113	4,856	9,711	72,835	301,050	30	30	903	71,348.8	3,567.4	74,916.2	50%	50%	4855.64	4855.64
4	611,826	61.18	20%	1%	2%	15%	62%	100%	122,365	6,118	12,237	91,774	375,332	38	30	1138	89,901.7	4,495.1	94,396.8	50%	50%	6118.26	6118.26
5	804,477	80.45	20%	1%	2%	15%	62%	100%	160,895	8,045	16,090	120,672	498,776	50	30	1496	118,209.9	5,910.5	124,120.3	50%	50%	8044.77	8044.77
6	515,415	51.54	20%	1%	2%	15%	62%	100%	103,083	5,154	10,308	77,312	319,557	32	30	959	75,735.1	3,786.8	79,521.8	50%	50%	5154.15	5154.15
7	547,085	54.71	20%	1%	2%	15%	62%	100%	109,417	5,471	10,942	82,063	339,193	34	30	1018	80,888.7	4,019.4	84,908.1	50%	50%	5470.85	5470.85
8	238,939	23.89	20%	1%	2%	15%	62%	100%	47,788	2,389	4,779	35,841	148,142	15	30	444	35,109.7	1,755.5	36,865.2	50%	50%	2389.39	2389.39
9	291,130	29.11	20%	1%	2%	15%	62%	100%	58,226	2,911	5,823	43,670	180,501	18	30	542	42,778.6	2,138.9	44,917.6	50%	50%	2911.3	2911.3
10	764,108	76.41	20%	1%	2%	15%	62%	100%	152,822	7,641	15,282	114,616	473,747	47	30	1421	112,278.0	5,613.9	117,891.9	50%	50%	7641.08	7641.08
11	510,331	51.03	20%	1%	2%	15%	62%	100%	102,066	5,103	10,207	76,550	316,405	32	30	949	74,988.0	3,749.4	78,737.4	50%	50%	5103.31	5103.31
12	644,204	64.42	20%	1%	2%	15%	62%	100%	128,841	6,442	12,884	96,631	399,406	40	30	1198	94,659.3	4,733.0	99,392.3	50%	50%	6442.04	6442.04
13	754,184	75.42	20%	1%	2%	15%	62%	100%	150,837	7,542	15,084	113,128	467,594	47	30	1403	110,819.8	5,541.0	116,360.8	50%	50%	7541.84	7541.84
Total	7,323,032	732							1,464,606	73,230	146,461	1,098,455	4,540,280	454		13,621	1,076,046.3		1,129,848.6			73230.32	73230.32
									146ha	7ha	15ha	110ha	454ha				108ha		113ha			7ha	7ha

Two thin black lines intersect on the left side of the page. One line is vertical, and the other is diagonal, sloping downwards from left to right.

APPENDIX 2

**Development Assumptions and
Standards**

Social Infrastructure Requirements

Social infrastructure will form an integral part of any future Garden Community. The provision of recreation, culture, health, education and community facilities ensures that residents' well-being is enhanced and walkable, vibrant and accessible communities created. As such, an indicative understanding of the likely social infrastructure requirements of the Garden Community is important to determine with respect to generating a cost estimation for use in the viability assessment. For this exercise AECOM's Social Infrastructure Model (SIF) was used (with the exception of education calculations), with the following assumptions and standards applied.

The following household and tenure assumptions have been applied to assess the population impacts of the proposed housing growth across each site and option.

Housing Tenure Mix

Housing tenure mix was determined based on a review of the housing mix assumptions from policy or evidence base of each local authority.

Market Owned	65%
Affordable	35%

Social Rented Affordable	70%
Private Rented	30%

Housing Size Mix

Assumption that 80% of future dwellings would be houses and 20% flats – reflecting current ratio in Essex County.

To determine the housing size mix, a review of the SHMA for Colchester and Braintree allowed for the identification of a target tenure. The average between both local authorities was utilised to determine final housing mix.

	Flats (No. of beds)				Houses (No. of beds)			
	1	2	3	4+	1	2	3	4+
Market Owned	7%	6%	5%	2%	28%	24%	20%	8%
Social Rented Affordable	7%	6%	6%	1%	29%	23%	24%	4%
Private Rented	7%	8%	4%	2%	28%	32%	14%	6%
All Units	7%	6%	5%	2%	28%	24%	20%	8%

Average Household Size by Unit Type

The average household size was determined by utilising the 2011 Census data by collating all three local authorities, to ensure appropriate proportions of households and population are accounted for.

Market Housing		Social Rented Housing		Intermediate Housing	
Flat - 1 bed	1.27	Flat - 1 bed	1.27	Flat - 1 bed	1.18
Flat - 2 bed	1.59	Flat - 2 bed	1.59	Flat - 2 bed	2.18
Flat - 3 bed	2.03	Flat - 3 bed	2.03	Flat - 3 bed	2.78
Flat - 4 bed	2.83	Flat - 4 bed	2.83	Flat - 4 bed	2.39
House - 1 bed	1.49	House - 1 bed	1.49	House - 1 bed	1.32
House - 2 bed	1.75	House - 2 bed	1.75	House - 2 bed	2.04
House - 3 bed	2.39	House - 3 bed	2.39	House - 3 bed	3.14
House - 4 bed	2.97	House - 4 bed	2.97	House - 4 bed	4.24

Social Infrastructure Standards

The Household tenure, size and mix assumptions have been used to inform the population profiles of each site and development option. These have been assessed against the following bespoke list of planning standards from a list of national and local resources.

Topic	Standard	Ref
Early Years	early year demand per 2 bed + Flat	0.045
	early year demand per 2 bed + House	0.09
	places per nursery	56
	Sq m per 56 place nursery	337
Primary Schools **	Pupil Demand per 2 bed + Flat	0.15
	Pupil Demand per 2 bed + House	0.30
	Primary School Pupils in 1 Form Entry	210
Secondary Schools **	Pupil Demand Per 2 bed + Flat	0.10
	Pupil Demand per 2 bed + House	0.20
	Secondary School Pupils in 1 Form Entry	150
Sixth Form	Proportion of 16-17 year olds in Sixth Form	32%

Topic	Standard	Ref
Primary Health Centre	People per GP	1,800
Dental Practice	People per Dentist	1,760
Acute Hospital	People per Bed	510
Library Space Based on brance	sq.m per 1,000 person	30
Police Station	Population per Station	25
Fire Station	Population per Station	1180
Ambulance Station	Population per Station	65
Indoor Sports Facility (4 court hall)	Facility per 1000 person	0.072
Swimming Pool (4 lanes)	Facility per 1000 person	0.048
Natural Green Space	ha per 1,000 person	2
Outdoor Space	ha per 1,000 person	1.53
Perks and Gardens	ha per 1,000 person	1.32
Amenity Green Space	ha per 1,000 people	0.883
Allotments	ha per 1,000 people	0.277
Children's Playspace (Informal)	ha per 1,000 people	0.208
Children's Playspace (formal)	ha per 1,000 people	0.142
Green Corridor	ha per 1,000 people	0.75

People Movement

– The level of assessment within all transport sections of the reports are a high level study and will therefore require further levels of assessment to be defined in future

Identified Site Based Transport Infrastructure

– Identified infrastructure is based on a logical spatial assessment of the sites and their constraints, their location in the wider region, a review of assessments produced under the call for sites exercise and assumptions drawn from the AECOM baseline review.

