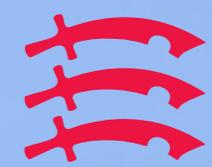


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# North Essex Garden Communities

Movement and Access Study – 23 May 2017



## Document Control Sheet

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## **Disclaimer**

These plans reflect a point in time reached during the evolution of the related Concept Frameworks for each of the Garden Communities. It must be noted that these plans will change as the Concept Frameworks evolve and develop further.

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# 1 Headlines



# 1.1 Purpose

Jacobs and Ringway Jacobs are supporting Essex County Council, Braintree District Council, Colchester Borough Council and Tendring District Council with the analysis of the concept of ‘Garden Communities’ for their emerging Local Plans. These are settlements based on the ethos of ‘Garden Cities’ promoted by the Town and Country Planning Association (<https://www.tcpa.org.uk/garden-city-principles>) and Government but tailored to the needs and character of North Essex.

AECOM has undertaken a detailed baseline review and multi-criteria analysis of various options, identifying three broad locations at West of Braintree, Marks Tey and East of Colchester in Tendring District for further master planning ([https://www.braintree.gov.uk/info/200130/about\\_braintree\\_district/992/north\\_essex\\_garden\\_communities](https://www.braintree.gov.uk/info/200130/about_braintree_district/992/north_essex_garden_communities)). These locations are considered to be the most sustainable option for the future development of Garden Communities in North Essex and provide a major opportunity for high quality, cohesive and distinctive mixed use development.

Of important consideration is how each of the Garden Communities can positively internalise journeys within their developments and maximise their integration and connectivity with the rest of North Essex via high quality modern public transport. Meeting this ambition will help to avoid unsustainable travel patterns and mitigate otherwise adverse impacts associated with the performance of the local and strategic highway network.

### The Key Objectives of the Study are as follows:

- Review and understand high level performance (congestion and service provision) of existing transport network (highways, bus, rail, cycling) in vicinity of the proposed Garden Communities and emerging issues from current local plan work
- Review constructively the high level transport proposals in AECOM (June 2016): North Essex Garden Communities – Feasibility Study associated with the following sites and emerging work from the Concept Framework Consultants: AECOM, David Lock Associates and Peter Brett Associates in terms of their interim December 2016 draft reports and engagement through January and February 2017. It is noted that these studies will continue to evolve in spring 2017, and the basis of our study is the development quanta and interim concept frameworks as advised of February 2017.
  - o West Tendring / Colchester Borders (mainly Tendring DC) – up to 10700 homes.
  - o Colchester / Braintree Borders (West Marks Tey) (mainly Colchester BC) – up to 25500 homes.
  - o West Braintree / Uttlesford Borders (mainly Braintree DC) – up to 8000 homes.

It must be noted that the plans within this Report will change as the Concept Frameworks evolve and develop further.

## ***Garden Communities – Movement & Access Study – May 2017***

- Carry out an evidence based review of AM peak (0800-0900) trip rates, internalisation of trips and mode shares and comment on the infrastructure and behavioural measures required to support these assumptions.
- Review at a high level likely destinations of AM peak trips, external to/from the Garden Communities with cognisance of existing sub-regional travel patterns (including use of A12, A120 and A131) and local plan allocations.
- Provide a high level review of the key corridors of movement to link the Garden Communities with the surrounding network.
- Investigate what PT measures to/from the garden communities and principal trip attractors will be required to accommodate 30% of all trips (50% of external trips) by public transport.
- Carry out a high level review of access arrangements and which junctions and links should be improved and which junctions and links can be improved as a consequence of the Garden Communities.
- Provide a summary of the phasing of mitigation measures over the plan period.
- Provide high level indicative costing of schemes identified.
- Provide a high level summary report to tie in with Local Plan timescales.

**This report reflects the known issues, opportunities and development quantum at this stage of the process. The plans within this report reflect a point in time reached during the evolution of the related Concept Frameworks for each of the Garden Communities. It must be noted that these plans will change as the Concept Frameworks evolve and develop further.**

**It is suggested that summary maps of each of the Garden Communities and the North Essex sub-region are produced at the conclusion of the three Concept Frameworks to integrate those studies and this report.**

## 1.2 Structure of this Report

The remainder of **Chapter 1** provides the reader with an overview of the:

- **Section 1.3 - Ambition of the North Essex Garden Communities in relation to transport and place making**, and what makes this different to what has gone before. This is a summary of **Chapter 2 – Ambition and Objectives**.
- **Section 1.4 to 1.6 - Findings and recommendations** for each site in turn with details of initial requirements during the Local Plan Period, including early phases, and subsequent infrastructure post 2033. This is a summary of **Chapters 6 to 9** with a focus on active modes, rapid transit and car based solutions.

**Chapter 2** describes how the Ambition and Objectives for transport have been defined and applied in our analysis.

**Chapter 3** describes our methodology to calculate external travel demand. The results of which have been used at a high level to inform our recommendations, undertake rapid transit analysis (**Chapter 4**), and also to provide trip rates for sensitivity tests within the Local Plan modelling.

**Chapter 4** describes the results of our rapid transit analysis with ‘spider maps’ of key external rapid transit routes for each Garden Community.

**Chapter 5** describes how infrastructure requirements have been defined and costed at a high level. These figures have then been used in NEGC’s evolving viability assessments for each site.

**Chapters 6** provides high level detail of sustainable land use and transport policy and travel plan measures that could be implemented at all sites.

**Chapters 7 to 9** provide details on the recommended external infrastructure requirements for West Braintree / Uttlesford Borders, Colchester / Braintree Borders (West Tey), and West Tendring / Colchester Borders in turn.

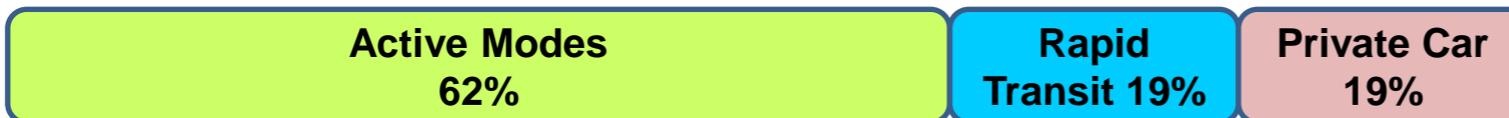
## 1.3 The Ambition

- The ambition is for an exemplar series of communities along the principles of the Garden Cities promoted by the TCPA, but tailored to the character of North Essex. This means exemplar both in terms of ‘place’, and the way that people can travel, with each element contributing to the successful achievement of the other. A settlement that favours active modes and rapid transit will provide the best possible opportunity to create a distinctive and attractive public realm, with a reduced amount of land set aside for car based infrastructure and instead more land for green space, development and useful amenities. Likewise a series of attractive, safe and accessible public and green places and the walking and cycling links between them creates the conditions by which a healthy new development can prosper. In turn this helps the achievement of the ambitious mode targets for all journeys within and to/from each Garden Community, as identified below.



**Modal Split Targets for all journeys (weighted average).**

- These modal split targets will be most readily achieved by enabling as many of people’s journey needs to be made within each Garden Community (internalisation of trips). Future residents and companies based within each Garden Community will likely make a conscious decision to live and work in the Garden Communities based on the unique blend of characteristics which the Garden Community has to offer. This includes the promise of being able to walk and cycle to jobs, leisure and the full range of services, and where this is not possible through high quality, modern rapid transit as the default. These journeys will be shorter and will be made almost entirely on new sustainable infrastructure provided by the Garden Community. Supported by appropriate place making, land use planning and travel plan measures, the modal split of these ‘local’ journeys would look something like the following:



**Modal Split Targets for local journeys within the Garden Community.**

## Garden Communities – Movement & Access Study – May 2017

- Moving beyond the Garden Communities themselves and including journeys to/from the neighbouring hinterland (typically less than 5 miles) of the nearby towns of Braintree and Colchester the realistic opportunity for active modes will still be strong, albeit lower than the ‘global’ average for the Garden Community as a whole. This will include green links to the surrounding countryside, and cycling links for all levels of ability to nearby towns of Colchester and Braintree.
- Rapid transit will need to play an integral role to the movement of people external to the Garden Community, with a higher mode share than the 30% average. This will involve the provision of higher land use densities along rapid transit corridors. These routes will be characterised by a step change in quality, frequency and connectivity to surrounding towns as a whole, alongside easy interchange between active modes, local rapid transit and regional transit options to the wider North Essex region and beyond.



***Modal Split Targets for journeys within the immediate hinterland of the Garden Community, with an equal split between rapid transit and private car for longer distance trips still.***

- The timeframe to support this ambition of residents, businesses and visitors with real alternatives to the private car will need to be immediate and constant. The priority must be to provide high quality, internal and external infrastructure for active modes and rapid transit that is integrated with immediate and future land use. This also must have a directness, journey time and convenience benefit over the private car from the very beginning to realise this potential.
- Related to this, travel plans should be developed for each of the Garden Communities from the outset in accordance with Essex County Council’s Sustainable Modes of Travel Strategy – 2016 (<http://www.essex.gov.uk/Environment%20Planning/Development-in-Essex/Pages/Sustainable-Travel.aspx>). Exemplar levels of funding for travel plan measures and personalised travel planning will represent real ‘value for money’ in terms of optimising the potential for residents and businesses to make the most of the active mode and rapid transport infrastructure provided, and minimise the amount of land and expense to be devoted to the car.
- We now provide headlines in terms of the infrastructure requirements and phasing for each of the three communities in turn.



## 1.4 West Braintree / Uttlesford Borders

The following is a summary of findings for this Garden Community. Further detail can be found in the following sections of the report:

- **Sections 3.3 and 3.4** – External Vehicle Trip Generation and **Section 4.4** – Rapid Transit Results
- **Chapter 7** for individual schemes, and **Chapter 6** for possible land use and transport policy and travel plan initiatives.

### 1.4.1 Key Findings / Recommendations – Initial Phases (continued over page)

- This is based on an assumption of the first phases of development close to the A120 / B1256, suggested as most likely by AECOM in February 2017 (subject to other constraints).
- From the very beginning there needs to be a clear focus on the provision of infrastructure that is able to provide a useful function for the long-term good of the Garden Community, with appropriate flexibility, future proofing and contribution to the place making and sustainable transport ambition of this unique Garden Community.
- **Clear support for a comprehensive travel plan product** using exemplar levels of contribution per each new home is also required to meet the ambition, applying the framework set out in Essex County Council's Sustainable Modes of Travel Strategy – 2016, and applying ideas from **Chapter 6**, also summarised in **Section 1.7**.

#### Active Modes

- **Rayne Road and Flich Way Do Minimum Cycle Improvements** to provide a ready link between Braintree, Rayne and West of Braintree for active modes both in terms of utility and leisure journey purposes. Improvements to the B1256 / Blake End junction and the alignment / facilities of The Street will also provide for active modes to at least minimum Essex standards, as defined within the Essex Cycling Strategy – 2016.
- Examine the capture funding opportunities from future Tarmac Quarry Section 106 contributions for the Rayne community to support the provision of these active mode links, subject to other Rayne community objectives.



### Rapid & Regional Transit

- **Revenue support for strengthened services** to primary and secondary schools (Great Dunmow, Rayne and Braintree), key economic nodes and rail stations is essential, given the absence of these facilities at the beginning. **A strengthened route '133' bus service** in terms of frequency (at least half hourly) and capacity (including an express variant) to Braintree and Stansted Airport with revenue support from the developer is recommended. It is important to recognise that Stansted is more than just a transport hub, with its role as a major employer with other nearby emerging developments such as the Tri-Sail Business Park contributing to its attraction.
- **Development of a modular transit hub** that is well located in the south of the site to enable its use by regional coach services, where time diverted off the A120 is at a premium. This necessitates the provision of new slip roads early on in the development's life to provide for all possible movements between the A120 and B1256.
- **Consider an interim Park and Ride service to Stansted Airport** making use of car parking that could be shared at a later date with employment / retail / leisure land uses to boost demand for the public transport service and enhanced frequency. The intention would be to still provide that Park and Ride function in the future (although not necessarily in the exact same location).
- **A new A120/B1256 Western Junction** with westbound on slip and eastbound off slip to allow all possible movements to be made between the A120 and the B1256 in the vicinity of the site by rapid and regional transit modes. It is suggested that as a minimum the westbound on-slip is limited to rapid transit and HGVs (for construction and quarry traffic) to provide a head start for public transport, provide a viable diversion for regional coach and express services to call at the site, and remove HGVs from the B1256.

### Highways

- **New A120/B1256 Western Junction** (as described above), with just the eastbound off slips to be used for all vehicles from the beginning. The westbound on slip will be constructed with passive provision for all vehicle lanes to be provided at a defined trigger post 2033 (or as an alternative to the delivery of the Interim A120/B1256 Eastern Junction improvement described for the Local Plan Period on the following page).
- **Improvements to B1256 / Blake End Junction** (roundabout or traffic signals) and The Street's alignment and facilities (walking and cycling) to service the initial plots of the Garden Community.
- With the related **Tarmac Quarry** Planning Application, examine the potential to future proof its junction access and its potential re-use post excavation and restoration.



### 1.4.2 Key Findings and Recommendations – Local Plan Period (2500 homes)

- Travel demand analysis (see **Sections 3.3** and **3.4**) demonstrates both the importance of achieving the ambitious mode share and also successfully internalising trips within the development, by providing as many services that people need locally (e.g. education, health). Internalising trips gives the greatest potential for people to use active modes as the journeys are shortest and will be facilitated by a dense network of high quality walking and cycle links for all abilities. It also means that should these be made by car, these would not impact on the performance of the surrounding highway network.
- The difference in typical highway peak hour (0800-0900 and 1700-1800) two-way car trips at the southern boundary of the site for the ambitious mode share scenario (700) compared to a scenario of behaviours akin to the 2011 Census (1,275), demonstrates the need to provide for both active modes and rapid transit as the default choice for residents and visitors.

#### Active Modes

- **'Flagship' cycle routes** following busway infrastructure throughout the site supported by a network of **'quietways'** to cater for all journey types and confidence levels. Proposed examples include 'quietways' along Queenborough Lane and Shalford Road. These should be developed in accordance with the Essex Cycling Strategy – 2016.
- **An internal cycle network density of 250m** alongside permeable and accessible neighbourhood centres and town centre within the Garden Community.
- **Further expansion of green links** and conversion of selected public rights of way (PROW) to routes suitable for all active modes.

#### Rapid & Regional Transit (continued over page)

- **Busway infrastructure** incrementally built out within the site to provide a coherent and operable network, with a dedicated rapid transit / cycle only road to connect with new development in NW Braintree at Springwood Drive and Panfield Lane towards the end of the Local Plan Period. This will provide an attractive congestion free route into another growing part of Braintree, serving key employment sites, and likewise supporting connectivity from Braintree to the Garden Community by sustainable modes.
- **Rapid transit lanes** external to the site on the B1256 to provide priority to rapid transit services at junctions with the B1256 and A120 to make the service as attractive as possible to reduce car demand to/from the site.
- **Guided Bus** - Services running on to a Braintree – Witham Guided Bus Link at Freeport would provide residents and businesses with choice of high frequency, high quality services to London via Witham and Stansted Airport (subject to business case and other funding streams) with a transformative appeal to existing and new residents, providing a real door-to-door alternative to rail-heading by car.



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### Rapid & Regional Transit (continued)

- **Crossing Passing Loop** - If the rail service is retained with enhanced frequency to Chelmsford and London through the delivery of the Crossing passing loop, then both Braintree Freeport and Stansted Airport will provide the opportunity for high quality interchange to rail services as well as meet other journey purposes (retail, leisure and employment). Braintree Freeport station's facilities will need enhancement for this purpose to make the interchange as seamless and quick as possible.
- **New express services** to Chelmsford and Colchester and regional services to Cambridge, supported by the delivery of rapid transit lane infrastructure and priority, such as on the A131 between Great Leighs and Chelmer Valley Park and Ride.
- **Realise Rapid and Regional Transit opportunities from the A120 Braintree to A12 Improvement** - This new road provides the opportunity for express limited stop services on the capacity relieved old A120 to Colchester / Braintree Borders Garden Community and Colchester. The new road's tie-in to the existing A120 in the vicinity of Braintree Freeport also presents a opportunity for dedicated rapid transit links to the A120 from Braintree Freeport station either through guided bus or as a high quality rapid transit / rail interchange.

### Highways

- **Interim A120/B1256 Eastern Junction** upgrade with passive provision for the full junction upgrade.



### 1.4.3 Key Findings and Recommendations – Post 2033

#### Rapid & Regional Transit and Highways

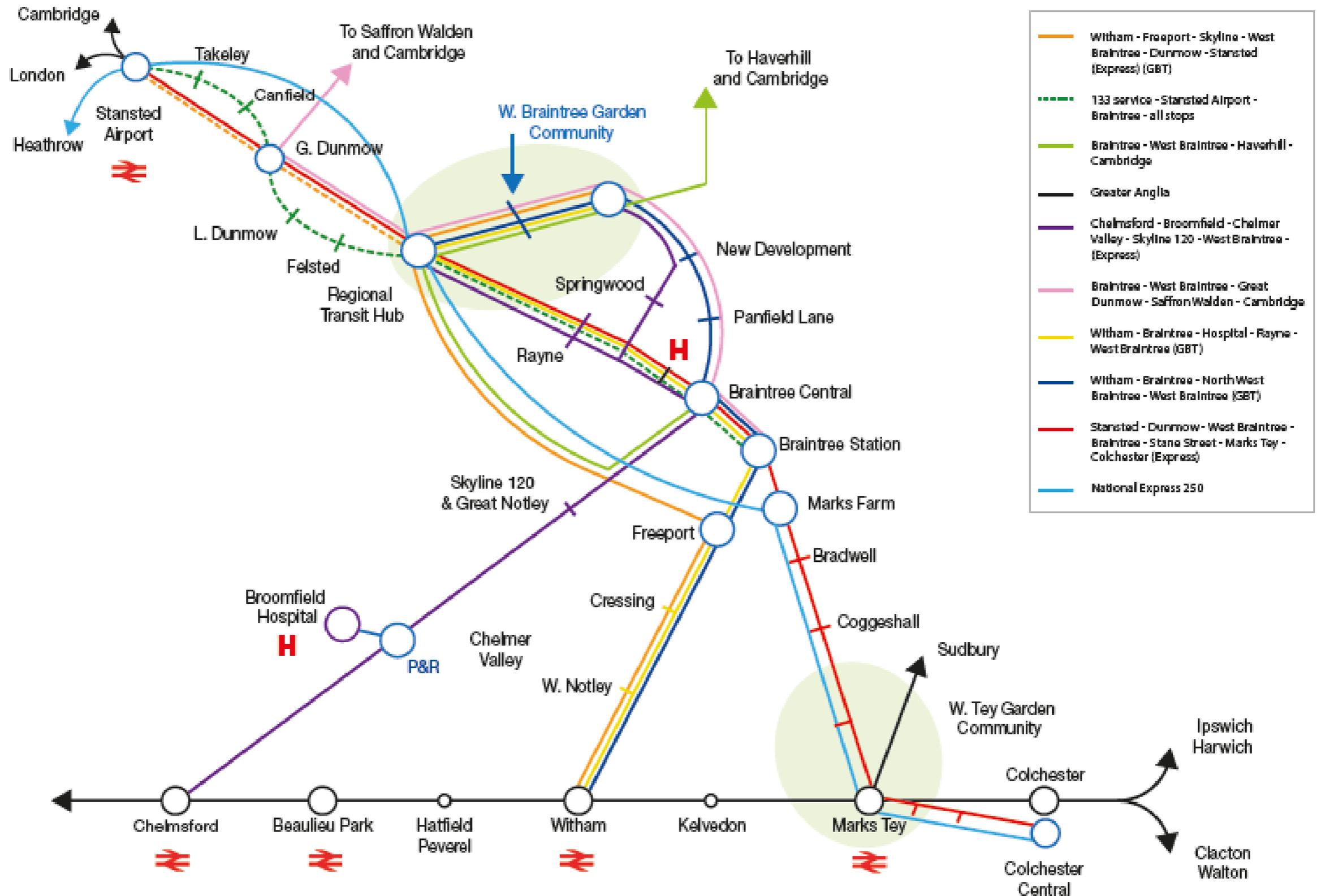
- Vehicular travel demand (1,600 two way trips in the peak hour at the south of the site) associated even with the ambitious mode share and internalisation of trips requires significant highway infrastructure for 8,000 homes, alongside continued investment in rapid transit services and proactive enhancement of frequencies to cater for demand.
- Measures to spread the traffic for east and west trips on to the A120 will be effective with two junctions for vehicular traffic.
- **A120 / B1256 Western Junction** slip roads to be upgraded to allow all vehicle access at a defined trigger point, with appropriate monitoring.
- **A120/B1256 Eastern Junction** – delivery of the full scheme with an Eastern Access Boulevard incorporating dedicated rapid transit lanes and all vehicles lanes. It is currently assumed that this full upgrade is not possible until the quarry is exhausted adjacent to the junction and provided for restoration. It is recommended that the rapid transit lanes are provided at the outset for the Eastern Boulevard with the additional vehicle lanes provided at a further defined trigger point to be monitored. This will again help to reinforce the use of rapid transit services as the default for external journeys to and from the Garden Community.
- The suggested rapid and regional transit network is shown on the following page.



West of Braintree

# Garden Communities – Movement & Access Study – May 2017

## West Braintree / Uttlesford Borders Rapid and Regional Transit Network





## 1.5 Colchester / Braintree Borders (West Marks Tey)

The following is a summary of findings for this Garden Community. Further detail can be found in the following sections of the report:

- **Sections 3.3 and 3.4** – External Vehicle Trip Generation and **Section 4.5** – Rapid Transit Results
- **Chapter 8** for individual schemes, and **Chapter 6** for possible land use and transport policy and travel plan initiatives.

### 1.5.1 Key Findings and Recommendations – Local Plan Period

- From the outset there needs to be a clear focus on the provision of infrastructure that is able to provide a useful function for the long-term good of the Garden Community, with appropriate flexibility, future proofing and contribution to the place making and sustainable transport ambition of this unique Garden Community.
- **Clear support for a comprehensive travel plan product using exemplar levels of contribution** per each new home is also required to meet the ambition, applying the framework set out in Essex County Council’s Sustainable Modes of Travel Strategy – 2016, and applying ideas from **Chapter 6**, also summarised in **Section 1.7**.
- Based on the North Essex Garden Communities Peer Review, 2017 (<https://www.braintree.gov.uk/negckerslakereport>) recommendations, it is assumed that little development will take place before the outcomes to be delivered by the ‘A120: Braintree to A12 Improvement’ scheme in the Marks Tey area are realised. It is expected that the A120 would be delivered following the A12 Chelmsford-Marks Tey widening given their respective status in the Roads Investment Strategy (RIS) programme.

### Active Modes and Public Realm (continued over page)

- **Immediate build out of a dense internal network of high quality walking and cycling infrastructure, and great public spaces for people** - from the outset, the emphasis on active modes and local trips as the default for all journeys needs to be supported by a coherent network of walking and cycling links and public realm, with an internal cycle network density of 250m, and accessible and permeable village centres and town centre. This is to provide dense connectivity both within the constituent villages of the Garden Community to key trip attractors, between each of them, and with the surrounding hinterland, in an environment that is conducive to active movement for all ages and levels of confidence. This will further help realise the ‘place’ ambition of the Garden Community.
- Cycling provision will include both ‘**quietways**’ and ‘**flagship**’ based continental style routes. These should be developed in accordance with the Essex Cycling Strategy – 2016.



### Active Modes and Public Realm (continued)

- **Expansion of green links** and conversion of selected public rights of way to routes suitable for all active modes and users.
- **Remove severance caused by the A12 and Great Eastern Mainline (GEML)** - The GEML and potentially the A12 (dependent on its future location following the RIS1 widening scheme) acts as a potential barrier to some of this movement and activity. Further work on the Concept Framework and subsequent masterplans will need to determine the location and scale of further grade separated crossing points to meet key desire lines (over and above improvements identified within this report at the Marks Tey interchange). Significant investment should be dedicated to providing this permeability by active modes.
- **Improved active mode accessibility to Marks Tey station** – this will still be the main railway station for the Garden Community in the majority of if not all of the Local Plan Period. Hence improved connections by active modes to/from **Church Lane** and **London Road** from the existing Marks Tey community and initial phases of development in this area will help unlock access to the existing Marks Tey station alongside ‘Access for All’ station improvements should these not be delivered in the interim.
- **Repurposing the existing Marks Tey Interchange** with improved public realm and connectivity by active modes and public transport is integral to this goal. This would incorporate reconfiguration of the slip roads to focus their use on rapid transit and local traffic only. This can be delivered following the provision of the A120 Braintree to A12 Improvement.
- The scale of transformation at this location can range from a high quality and wide walking / cycling bridge with integrated public realm enhancement to a full land bridge akin to what has been achieved elsewhere, notably on sections of the A406 North Circular Road and ‘air rights’ developments over sections of the rail network in London at Liverpool Street. The affordability of latter solutions would need to be determined alongside potential opportunities from the A12 Junctions 19 to 25 widening scheme, and ‘air rights’ development, before a final decision is taken.



### Rapid and Regional Transit

- **Marks Tey station platform accessibility** – it is understood that there is a local campaign to provide lifts and an improved footbridge given the interchange role of this station to allow it to meet the needs of all users. The Garden Community further supports the need for this enhancement as an early outcome, if not delivered earlier through ‘Access for All’ or similar funding.
- **Enhanced train frequencies and destinations** - It will be important to work closely with Network Rail and Greater Anglia to examine opportunities to increase train frequencies from the existing half hourly service (being mindful of other Great Eastern Mainline objectives) and maximise the potential of the Gainsborough Line (Sudbury Branch) and its proposed extension to Colchester and potentially further east. By doing so this will help to make rail an attractive option for journeys to Colchester as well as longer distance locations, and reduce reliance on the private car or rail heading via the A12. This could include the provision of a passing loop on the Sudbury Branch subject to business case and feasibility.
- **Rapid transit services to Colchester** via the A12 and Cymbeline Way (minimum of 4 services per hour with 4000 homes); and via Stanway and the B1022 Shrub End Road (minimum of 3 services per hour with 4000 homes) will help to provide a strong basis for sustainable transport to/from major origins and destinations in Colchester and Stanway. These will provide a step change in quality, image, frequency and speed, to reduce reliance on the car for external trips, and meet the ambitious mode share targets. This will be alongside existing bus services (route 70 and 71) that will still operate between Chelmsford, Braintree/Witham and Colchester, and still have a role to play for a full range of journeys including links to local secondary schools.
- **Phased build out of rapid transit only roads** - The above services will use rapid transit/cycle only roads within the Garden Community to be built out incrementally, whilst still providing a logical and economical service to operate. The provision of car parking at a defined stop could provide additional Park and Ride (to the Garden Community) demand to anchor the service. It is envisaged within the supporting Concept Framework that these rapid transit corridors within the development will be the focus of higher density development, and rapid transit use could be further supported by car free sites along these corridors, with ready access to car club services where the car is required. These rapid transit only roads may incorporate tram tracks embedded in the road surface as found on other networks to enable the dual usage of these roads by bus and tram based technologies. Precise mode and technology solutions will have been determined by this phase of the project.



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### Highways (continued on next page)

- As noted above it is currently assumed that little development will take place prior to the delivery of the A120 Braintree to A12 Improvement. However in this context we recommend some thought is given to whether proposed infrastructure for the Garden Community could be built early and form an interim function that delivers the desired traffic relief outcomes for the Marks Tey community – this is the Western Parkway Distributor which we now describe.
- **Provision of a Western Parkway Distributor Road**
  - David Lock Associates' December 2016 Draft Concept Framework describes this road as performing a distributor road function within the Garden Community during its mature state. We suggest that a single carriageway 'Parkway' be delivered alongside the A12 widening to link the old A12 (if an off line option is chosen) or a new local road alignment (if an online option is chosen) to the A120 east of Coggeshall to provide an interim relief of Marks Tey.
  - Crucially this would need to be designed and delivered in such a way that its future form and function within the Garden Community can be facilitated. The road would be delivered under the full understanding that a final A120 scheme would be delivered in the near term. Its sole purpose at this stage is to provide the opportunity to unlock housing a few years earlier in the Local Plan Period.
  - It is recommended that a second lane in each direction is grassed over and provided upon reaching a defined trigger point following the Local Plan Period.
- **Capitalising on the opportunities presented by the A12 widening, A120 Braintree to A12 schemes and Western Parkway Distributor Schemes**
  - The task is to capitalise on the capacity unlocked to encourage the use of active modes and rapid transit and create a new enhanced sense of place before the road space is otherwise swallowed up by local vehicular traffic.
  - An offline A12 option provides the opportunity to convert the existing A12 alignment to a boulevard function through the Garden Community with one carriageway repurposed for rapid transit and active modes.
  - Should an online A12 option be pursued then a similar local distributor route function should be provided. The intention is that the Western Parkway Distributor connects to either the old A12 alignment or the new local road, with onward connections to a new 'all movements' junction with the A12 at a location to be defined in conjunction with Highways England. This could include a location to the south of Marks Tey to also meet development aspirations in the Kelvedon area.



### Highways (continued)

- Regardless of the future A120 alignment (which will be a strategic road for strategic journey purposes), a Western Parkway Distributor helps remove traffic from the core of the site and provide the opportunity for it to be reconfigured for active and sustainable modes, and create an enhanced sense of place in accordance with the Garden Community principles.
- **Indirect local distributor roads** – master planning should make active use of less direct distributor roads within the site so that Stane Street (the existing A120 alignment) is returned to the local community, with provision for active modes and rapid transit services that are more direct than car based alternatives. Again this will provide the impetus for residents and visitors alike to use these modes as the default and contribute to the achievement of the mode share ambition.
- **Peak period access control points** enforced by Automatic Number Plate Recognition (ANPR) technology should be considered for Stane Street close to the existing Marks Tey station for defined time periods to provide bus priority and remove traffic. The ability exists to manage access for defined areas and users to mitigate any impacts on the existing community.

### 1.5.2 Key Findings and Recommendations – Post 2033

- **There should be a clear focus on active modes and rapid transit as the default modes of choice**, supported by high quality sustainable infrastructure, place making, appropriate land use density / rapid transit integration and sustainable travel policies to instil their use. This is necessary in the context that 6,500 vehicle trips would otherwise look to leave the Garden Community in an AM peak hour in 2047 with a focus on traditional infrastructure and policy measures alone. Infrastructure requirements include:
- **New West Tey Town Centre railway station** - delivered at a defined housing trigger point, and when it can demonstrate value for money. The station should receive at least a train every 15 minutes to/from London and Colchester. It is assumed that the existing Marks Tey station would still be retained performing a local and Gainsborough Line interchange role, much as it does today.
- **Full build out of the rapid transit network** with links through to the West Tendring / Colchester Borders Garden Community. The precise mode (guided bus, tram-train or other options) and routing will have been determined by this stage. The system should be of high quality and frequency to realise the ambitious mode share targets for public transport based modes. The suggested network (with the precise mode and technology to be determined) is shown on the following page.
- **Further highway improvements** would still be needed. Even with an ambitious mode share and a high degree of internalisation of trips achieved, a Western Parkway Distributor from Stane Street to the A12 would still receive 1,750 two way vehicle trips in the typical AM peak (0800-0900) at full development build out. The Western Parkway Distributor should initially be built as a single carriageway with additional all vehicle lanes grassed over. These would be converted for use upon meeting a defined trigger point.



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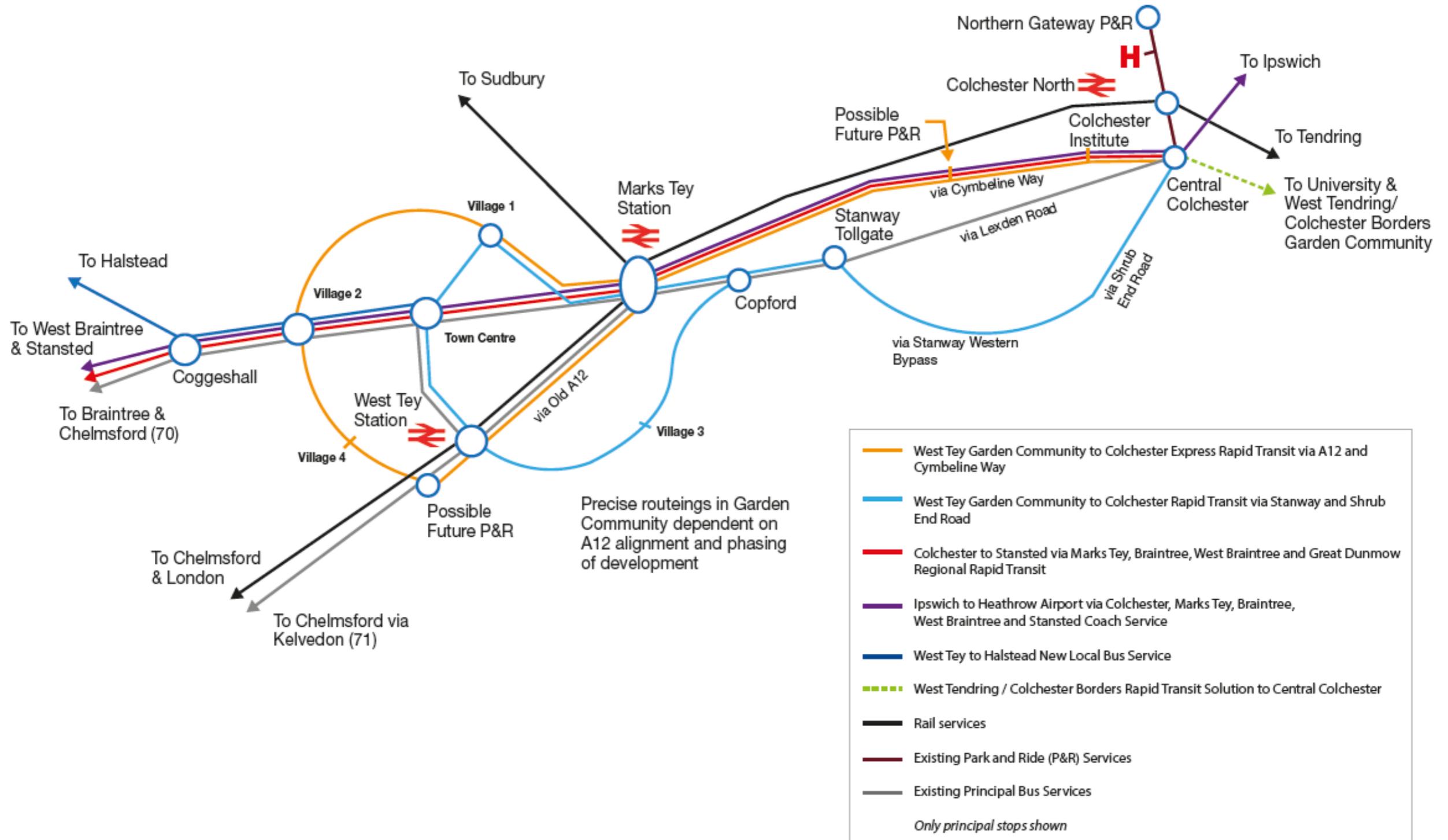
Essex County Council



West  
Marks Tey

# Garden Communities – Movement & Access Study – May 2017

## Colchester / Braintree Borders (West Tey) Rapid and Regional Transit Network





## 1.6 West Tending / Colchester Borders

The following is a summary of findings for this Garden Community. Further detail can be found in the following sections of the report:

- **Sections 3.3 and 3.4** – External Vehicle Trip Generation. Further work on the Rapid Transit network for this Garden Community can be found in the following report: Jacobs, 2016: East of Colchester Rapid Transit Study.
- **Chapter 9** for individual schemes, and **Chapter 6** for possible land use and transport policy and travel plan initiatives.

This allocation is best treated as three separate sites based on the Draft Concept Framework provided by David Lock Associates:

- the main Garden Community associated with the A133 Elmstead Road, the University and a new A120-A133 Link Road, currently described as a series of neighbourhoods with green buffer areas.
- the Garden Village associated with a defined area of Crockleford Heath by Bromley Road.
- the Urban Extension of North Colchester.

### 1.6.1 Garden Community – Key Findings and Recommendations – Initial Phases

- From the outset there needs to be a clear focus on the provision of infrastructure that is able to provide a useful function for the long-term good of the Garden Community, with appropriate flexibility, future proofing and contribution to the place making and sustainable transport ambition of this unique Garden Community.
- **Clear support for a comprehensive travel plan product using exemplar levels of contribution** per each new home is also required to meet the ambition, applying the framework set out in Essex County Council's Sustainable Modes of Travel Strategy – 2016, and applying ideas from **Chapter 6**, also summarised in **Section 1.7**.

#### Active Modes (continued on next page)

- **Immediate build out of a dense internal network of high quality walking and cycling infrastructure, and great public spaces for people** - from the outset, the emphasis on active modes and local trips as the default for all journeys needs to be supported by a coherent network of walking and cycling links and public realm, with an internal cycle network density of 250m, and permeable and accessible neighbourhood centres and town centres. This is to provide dense connectivity both within the constituent neighbourhoods of the Garden Community to key trip attractors, between each of them, and with the surrounding hinterland, in an environment that is conducive to active movement or all ages and levels of confidence. This will further help realise the 'place' ambition of the Garden Community.



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### Active Modes (continued)

- Cycling provision within the garden Community will include both ‘**quietways**’ and ‘**flagship**’ based continental style routes. These should be developed in accordance with the Essex Cycling Strategy – 2016.
- **University of Essex and River Colne Links** - Connectivity should be provided to nearby trip attractors from the outset, such as these. This will be a combination of routes within the Garden Community and connections to existing walking and cycle links, best satisfying people’s desire lines. This will include links to the recently delivered Wivenhoe Cycle Route, Knowledge Gateway and enhanced walking and cycling facilities within the University of Essex grounds. Improvements to the “**Zig-Zag**” bridge over the Colchester-Clacton railway line in the University area should also be considered at this time to reduce journey times and accessibility for walking and cycling.
- **Enhanced cycle links to central Colchester** – strengthening of existing routes to the town centre in terms of capacity and quality should be an early requirement – the proximity of the town centre to the Garden Community means that it is a realistic mode choice for residents and visitors alike, with quality provision in line with the Essex Cycling Strategy – 2016.

### Rapid Transit

- **Rapid transit services to Colchester** – delivery of early phases of rapid transit priority measures, such as links between Elmstead Road and Greenstead Road to improve journey times and reliability for routes via the University of Essex. These should be provided in such a way that does not prejudice the delivery of a range of rapid transit mode options between the Garden Community and Central Colchester, whether guided bus or tram based.
- **Park and Ride as an anchor of a high frequency, high quality rapid transit service from the outset** – a potential eastern Park and Ride site from an interim location close to the A133 would help intercept trips into central Colchester, and help provide demand to enable a high frequency service to the University, Hythe and Colchester town centre and nearby schools that is attractive to new residents and businesses and boost its viability. This will provide people with a real alternative to the private car from the beginning, and aid the ambitious mode share desired. This could be paired with the existing Colchester Northern Park and Ride service to provide a cross-town link to the main railway station, hospital and future leisure opportunities at the Northern Gateway.
- To help create a **high quality sense of place**, this Park and Ride site could be designed in such a way with dual usage (with future mixed uses) given their different peak times, to minimise the area devoted to parking within the Garden Community. This could be supplemented by a further Park and Ride site in the northeast of the site as the Garden Community develops to intercept trips from the A120.



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### Highways

- **A120-A133 Link Road** – we suggest that this is initially provided as single carriageway but with an additional carriageway grassed over outside of the junctions. Such an approach future proofs its capacity, but manages it in such a way that it does not over encourage the use of cars, and neither does it allow the full capacity to be swallowed up early in the Local Plan period. This will help cater for construction traffic, road access to development outlets and provide some relief of the A133 into Colchester associated with traffic from the University of Essex, Wivenhoe and Brightlingsea ultimately destined for or originating from locations accessed via the A12 or A120.

## 1.6.2 Garden Community – Key Findings and Recommendations – Local Plan Period (2500 Homes)

### Active Modes

- **Further delivery of multi-purpose Green Links** - Delivery of upgrades to the Salary Brook Trail, Brookside Path and connections to Welshwood Park for access to schools and leisure in North Colchester alongside the development of a country park within this part of the Garden Community.
- **Further provision of a dense network of walking routes, ‘quietways’ and ‘flagship’ based continental style cycle routes** within the constituent neighbourhoods and between each one to reinforce active modes as the default choice for all journey purposes, ages and confidence levels.
- **A133 to B1027/B1028 Cycle Link** - delivery of cycleway infrastructure alongside a future B1027/B1028 to A133 link road.

### Rapid Transit

- **Phased build out** of further rapid transit network infrastructure within the site and into Central Colchester and potentially beyond. By now a decision will have been made as to whether guided bus, tram or tram-train technology will be adopted, and the connections with the Colchester / Braintree Borders (West Tey) Garden Community.
- **Park and Ride facility at the north east of the site** should be considered to intercept traffic from the A120 and A12 to complement the A133 site provided at the southeast of the Garden Community during the early phases of the Local Plan Period, both for travel to the Garden Community for those external connections where public transport is not a viable option, as well as to destinations within the University of Essex and Central Colchester. Precise delivery during the Local Plan Period or post 2033, will depend on the location of development plots.



### Highways

- **A133-B1027/B1028 Link Road** - extension of the A120-A133 Link Road to the south to the B1027 and / or B1028 to further relieve the A133 adjacent to the Garden Community of through traffic, and better meet journey needs of residents, businesses and visitors of Wivenhoe, Alresford, Thorrington and Brightlingsea. This would aid potential reallocation of road space and provision of further priority for rapid transit and active modes between the Garden Community, the University of Essex and Central Colchester.

## 1.6.3 Garden Community – Key Findings and Recommendations – Post 2033

### Rapid Transit

- **Continued build out of rapid transit network infrastructure** within the site and within the Greater Colchester area. The suggested rapid transit network in relation to the Garden Community, Garden Village and Urban Extension is shown at the end of this chapter, following section 1.6.5.

### Highways

- **A120-A133 Link Road Second Lanes** – Provision of second lane in each direction on meeting defined trigger points. The delay of providing this extra capacity will have encouraged the use of active modes and rapid transit alternatives as the default for a full range of internal and external journeys to the hinterland of the Garden Community.



## 1.6.4 Key Findings and Recommendations – The Garden Village

### Rapid Transit

- Provision of a supplementary rapid transit service from Colchester via the University that terminates at the Garden Village, complementing existing bus services that currently use Bromley Road to Tending district and Colchester.

### Highways

- Internal road links within the Garden Community from the Garden Village to the A120-A133 Link Road junction (south of the A120) would help relieve any pressure on Bromley Road. The focus would be on the 'long way round' for cars to make this less attractive than rapid transit and active modes.
- Related to this consideration should also be given to access control points (at least for peak periods) to limit access to Bromley Road for travel into Central Colchester from just the Garden Village. This would support a 'monitor and manage' approach to highway capacity, and only result in the upgrade of the A137 / Bromley Road junction if and when required.



### 1.6.5 Key Findings and Recommendations – The Urban Extension

#### Active Modes

- Upgrades to existing public rights of way and new greenway opportunities provides the opportunity for a continuous largely off-road link between the Ipswich Road (connecting with existing and planned cycle routes), the University via Salary Brook, Garden Village and Garden Community.

#### Rapid Transit

- Provision of a rapid transit loop service up either Ipswich Road or Harwich Road to serve the site and the neighbouring Betts Factory development site already developed, with high quality and sustainable transport. This potential route is shown on the rapid and regional transit network on the following page.

#### Highways

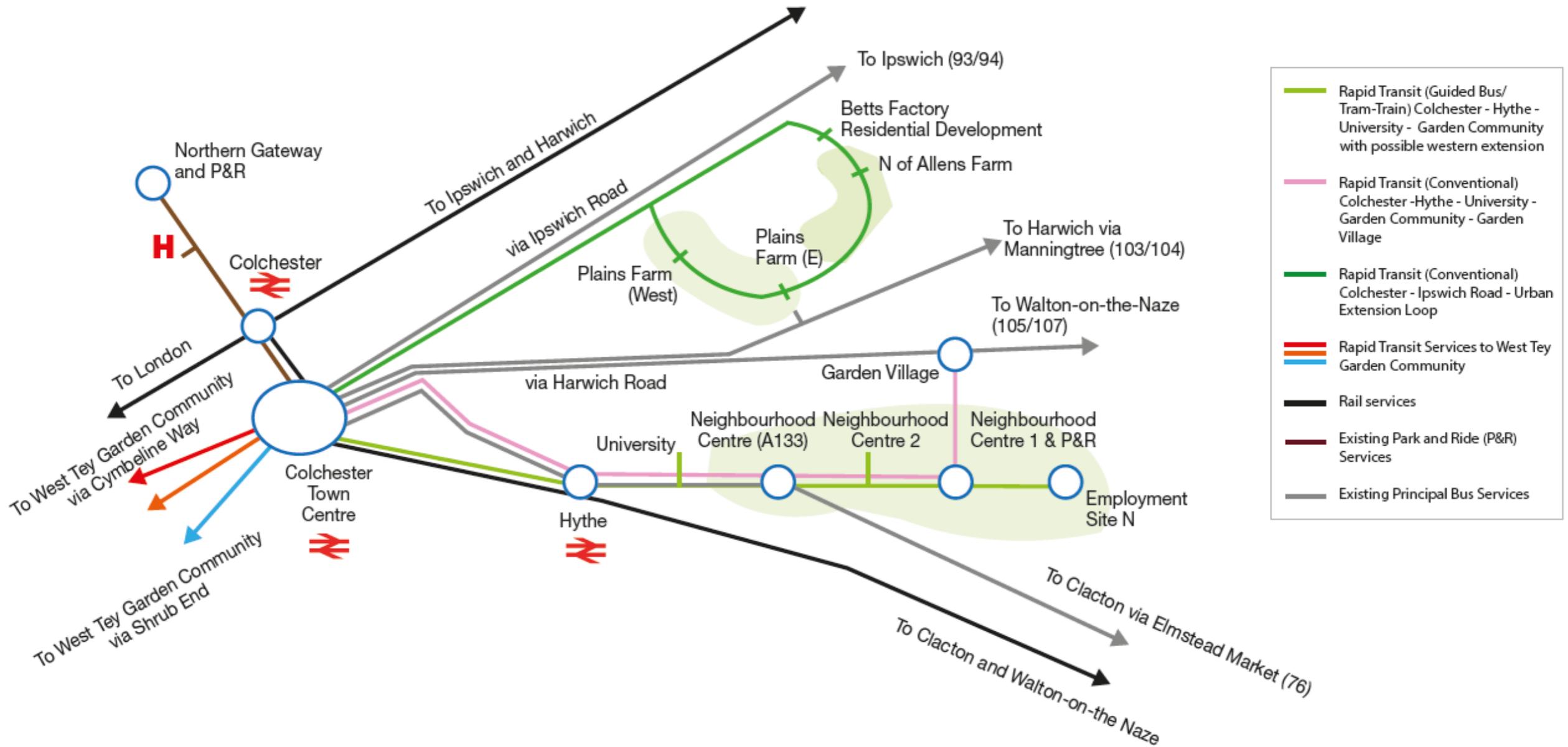
- There is a need for careful tie-ins to the highway network given presence of schools on St John's Road and residential areas around Plains Farm Close.
- Our suggestion is a development in three distinct segments that has no through car route between all three (at peak periods at least through the use of ANPR access control points), but with rapid transit and active modes accessibility at all times that makes these attractive to residents. This would help to spread the load on to the highway network, minimise expenditure on junction capacity enhancements and supports sustainable / active modes as the default mode of choice.

# Garden Communities – Movement & Access Study – May 2017

## West Tending / Colchester Borders Rapid and Regional Transit Network



West Tending /  
East of Colchester





All  
Sites

## 1.7 Policy / Travel Plan Options for all sites

Alongside the infrastructure measures described for each of the Garden Communities, there should be active consideration of policy options that either generate much needed revenue for sustainable travel or facilitate innovative delivery of services. Examples described in high level detail in Chapter 6 include:

- Active consideration of housing association type developers for initial phases of ‘Exemplar Development’ as implemented in Bicester Northwest Ecotown to allow reinvestment of profits from homes for sale back into sustainable transport measures. Affordable housing is more likely to be the type of housing that would be affordable to local employees and would help with the internalisation of trips within the Garden Communities.
- Actively partner with innovative organisations for radically different approaches to the delivery of employment, retail, health and even transport (such as mobility as a service).
- Actively partner with universities and research institutes for research and funding into emerging transport and connected trends.
- Embrace ‘Healthy New Towns’ or similar initiatives.

Exemplar levels of travel plan contributions and then their targeted use to build up the critical market for sustainable travel measures - such as car clubs and cycle hire – and thereby reduce their long-term dependency on these contributions is integral to the overall ambition. Various options for travel plan measures can be found in **Chapter 6** of this report.

# 2 Transport Ambition and Objectives



## 2.1 Ambition and Transport Objectives

An early task in this study was the development of a series of transport objectives on which to inform our development of both policy and scheme interventions across all modes. These were designed to reflect the ambition of the Transport Working Group that these were not just a typical development, well reflected in the North Essex Garden Communities Peer Review, 2017, (<https://www.braintree.gov.uk/negckerslakereport>).

***“It is also clear that this is not just a housing project. The project team have the ambition to create the community infrastructure, economic and employment opportunities that a new community will need, and to explore new technologies and approaches to managing community assets. This is place-making in its widest sense.”***

Objectives were deliberately derived from a select group of documents given the work that has already gone into the Garden Communities Charter and the three District / Borough Councils Local Plan process. These were shared with members of the Transport Working Group and Concept Framework Consultants with their views incorporated into a revised set that has been used as the basis of participants in developing ideas for this study.

1. An exemplar community for active and sustainable travel, achieving mode shares of 40%, 30%, 30% for active travel, public transport and private car modes respectively
2. Timely delivery of sustainable transport
3. Smart solutions that enable travel behaviours to respond positively to changing technology opportunities
4. Support the efficient use of land to foster sustainable travel patterns and viable forms of sustainable transport
5. Inclusive, affordable and sustainable access to education, skills, jobs, retail, healthcare, community and transport hubs in the locality
6. Active modes highly connected with planned and existing green infrastructure
7. Healthy, safe and secure environments which promote health and wellbeing, improve quality of life and aid community cohesion
8. Creation of a high quality place with a sense of place
9. Value and maximise the Garden Community’s internal and surrounding natural environment, natural and geological resources and cultural heritage assets
10. Supports lower carbon emissions associated with transport
11. A prosperous and sustainable economy that maximises employment, innovation and skills assets
12. Modern, frequent and reliable public transport access to surrounding major towns and cities from the Garden Communities to minimise travel by car
13. Support the function and effective operation of local and strategic transport networks.

### 2.2 Appraisal

We used our transport objectives defined above to appraise the long menu of interventions included in the Interim Draft Report (December 2016) and others derived from the interim reports of the Concept Framework Consultants (2016) and other ideas that emerged through workshops with Essex County Council, the Borough / District Councils and the Concept Framework Consultants in January / February 2017. Jacobs then took these ideas and evaluated these in internal collaborative sessions in February 2017.

The evaluation took place using a five point red amber green (RAG) scale (similar to that used in the Sustainability Appraisal and Strategic Environmental Assessment of the Local Plans Part 1).

Schemes were also considered in terms of deliverability, feasibility and affordability in broader RAG terms. This has allowed us to pick a portfolio of interventions that we recommend should be pursued either during the Local Plan Period or at a later date as the developments mature in size.

**+2 Large beneficial**

+1 Beneficial

0 Neutral

-1 Adverse

+2 Large adverse

### 2.3 Further Details

Further details of the Objectives and their Strategic Fit can be found in Ringway Jacobs (20 November 2016): Garden Communities Transport Objectives (Rev 2.1). Principal documents referred to in the production of the Objectives include:

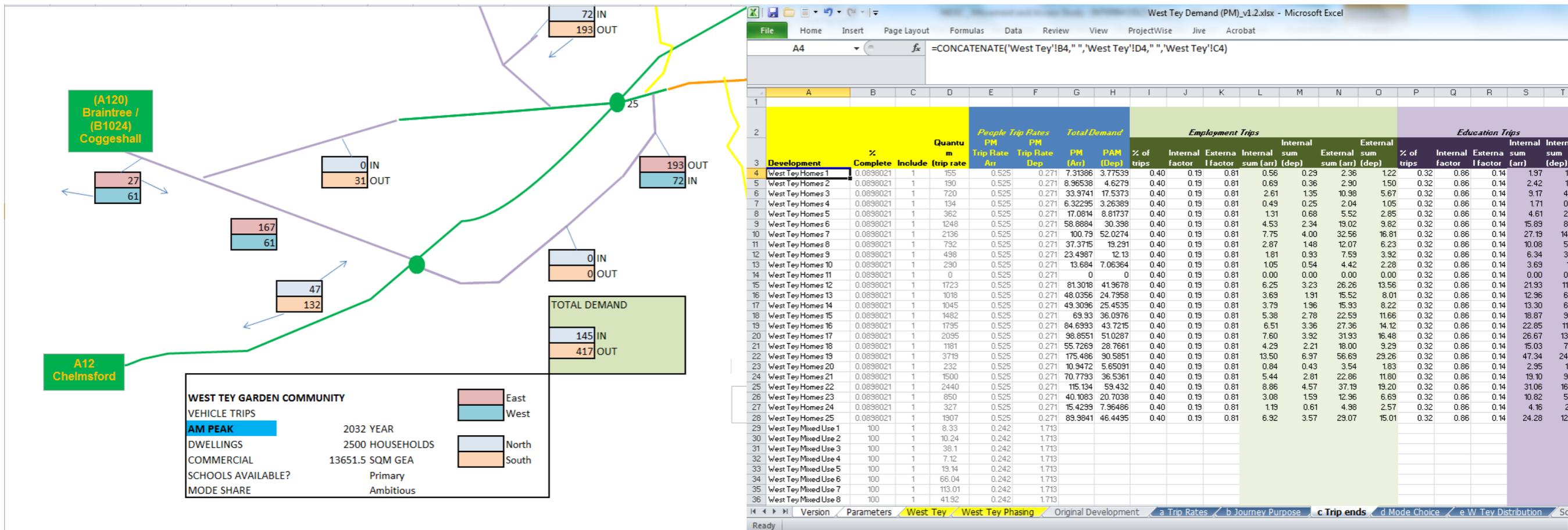
- AECOM (June 2016): North Essex Garden Communities, Volume 4 – Garden Communities Charter
- Communities and Local Government (2012): National Planning Policy Framework
- DfT (2007): Manual for Streets
- DfT (2010): Manual for Streets 2
- DfT Circular 02/13 (September 2013): The Strategic Road Network and the Delivery of Sustainable Development
- Essex County Council (February 2011): Development Management Policies
- Essex County Council (June 2016): North Essex Authorities – Common Strategic Part 1 for Local Plans Sustainability Appraisal (SA) and Strategic Environmental Assessment (SEA), Environmental Report – Preferred Options
- NHS (2015): The Forward View into Action: Registering interest to join the healthy new towns programme
- [www.visions2030.org.uk](http://www.visions2030.org.uk)

# 3 Methodology & Key Assumptions



# 3.1 Introduction

We have created a simple transport ‘demand tool’ for each of the Garden Communities. This is a spreadsheet that pulls together various forms of data to allow users to quickly change parameters and at a high level understand impacts of changes of development quantum, transport provision (reflected in modal share) on travel demand to provide the user with data that can either be used in transport models, high level cost / revenue assessment or used manually for cross reference with other datasets. For instance data from this has been used in sensitivity tests associated with ambitious mode share targets in the Colchester Local Plan Model.



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## 3.2 Methodology and Key Assumptions

This section provides a summary of key assumptions. Travel Demand is essentially a function of the following process that is further defined over the following pages:

- a. Development Quantum (initially based on the AECOM June 2016 numbers, further defined by AECOM for the West Braintree / Uttlesford Borders site, and PBA/DLA for the Colchester / Braintree Borders and West Tending / Colchester Borders sites).
- b. Trip Rates (based on TRICS® - a long established national trip rate database system).
- c. Journey Purpose – why do people want to travel (based on an analysis of the National Travel Survey for East of England).
- d. Internalisation – what proportion of each journey purpose can realistically be satisfied by facilities and trip attractors in the Garden Community (based on evidence from a range of sources including the Census, ECC School data, Local Plan Retail Studies and data from the National Health Service).
- e. Trip Distribution - Where do people want to go (based on the same internalisation datasets and desktop review of key attractors) for each journey purpose.
- f. Mode of Transport – How will they make their journey (based on both the Working Group’s stated ambition of 40% Active Modes, 30% Sustainable Transport and 30% Car; and also a realistic if pessimistic view of what happens now all too often from the Census).
- g. Trip Assignment – Which routes will they use, based on an objective view of likely routeings from Google Maps, the County Route Hierarchy and logic.

The Demand Tool created provides easy functionality to change the above assumptions, such as testing intermediate Census mode shares from major cities rather than Essex, or changing the amount of housing development.

The resultant trip totals for the Local Plan period and full build out is shown in **Section 3.3**.

### 3.2b Trip Rates

Ringway Jacobs' Harmonised Local Plan Trip Rates dataset from analysis of TRICS was used to determine appropriate trip rates for the land uses currently defined for the three Garden Community sites. People trip rates were calculated in all cases, and only sites outside of Ireland and Greater London, surveyed since 2008 have been used.

#### **Residential**

This is a collated average of the following residential categories within TRICS for those areas classified by TRICS as either located in Neighbourhood Centres, Suburban areas or Edge of Town areas.

- Housing – Private (a development that is >75% houses)
- Housing – Mixed Private (a development that is neither predominantly houses or flats)
- Housing – Mixed Private / Affordable Housing (a development that is neither predominantly houses or flats, nor predominantly homes for private sale or affordable housing).

#### **Employment**

Trip rates have been analysed for B1 Business Park, B2 Industrial Estate and B8 Warehousing with separate trip rates defined for B1 and B2/B8. The ratio of employment space between B1 and B2/B8 for each site from AECOM's June 2016 report was used for this interim phase. It is understood that Cambridge Economics have been commissioned in November 2016 to undertake an Employment Land Study. Its conclusion will allow this to be revisited and demand forecasts to be updated as appropriate.

#### **Mixed Use**

Precise detail on the mix of land use between retail (convenience), education, health is not yet at a granular enough detail. Given the ethos of the Garden Community it is expected that the retail offer will primarily be geared to internal residents and workers. Precise plans for education catchments in the area and the role of new education facilities in the Garden Communities are not yet known. Given this uncertainty no trip rate has been applied to the mixed use facilities at the Garden Communities. Travel demand is however captured for people within the Garden Community going to mixed use destinations outside of the Garden Community through the residential trip rate.

## Applied Trip Rates

Development Type	08:00-09:00 Arrivals	08:00-09:00 Departures	AM Total	17:00-18:00 Arrivals	17:00-18:00 Departures	PM Total
Housing Development (per household)	0.190	0.716	<b>0.906</b>	0.525	0.271	<b>0.797</b>
Employment B1 only Development (per 100 m <sup>2</sup> GFA)	1.799	0.260	<b>2.059</b>	0.242	1.713	<b>1.974</b>
Employment B2/B8 Development (per 100 m <sup>2</sup> GFA)	0.472	0.275	<b>0.747</b>	0.131	0.389	<b>0.520</b>

## 3.2c Journey Purpose

The demand tool is segmented by the following journey purposes:

- Home to Work (Garden Community resident population and Garden Community workplace population).
- Home to Education (Garden Community resident population only).
- Home to Mixed Use (Retail & Health) (Garden Community resident population only).

### Journey Purpose Split (all locations) for residential (people)

Time Period	Employment	Education	Mixed Use	Mixed Use Component	
				Retail & Other	Health
AM (0800-0900)	40%	32%	28%	13%	15%
PM (1700-1800)	32%	2%	66%	45%	21%

**Source Data: Bespoke analysis of the National Travel Survey - East of England commissioned by Jacobs**

## 3.2d Internalisation

It is recognised by many development planning consultants that TRICS can overestimate trip rates for large sites. The majority of housing sites in the TRICS database are below 500 homes and as such they capture the vast majority of trips from each individual household to key trip attractors by all modes. This is because many of these sized housing sites will not have local retail, employment and mixed use facilities which are instead located in adjacent areas.

Suitable internalisation factors have been derived for the following sources for each journey purpose:

- **Home to work** – analysis of 2011 Census data for various settlements based on population and age of the settlement.
- **Home to education** – analysis of Essex school census data. In Colchester 96% of primary school children go to a local school, whereas 70% of secondary school children go to a local school. In Braintree 92% of primary school children go to a local school, whereas only 52% of secondary school children go to a local school.
- **Home to mixed use** – based on a weighted average of retail, health and other (leisure) land uses.
  - Retail (Convenience) – based on Nathaniel Lichfield & Partners Cambourne Retail and Employment Study (2013) for South Cambridgeshire District Council suggested an internalisation factor of 75%.  
(<https://www.scambs.gov.uk/sites/default/files/documents/Cambourne%20Retail%20and%20Employment%20Study.PDF>)
  - Health – based on our analysis of NHS data on annual visits by people to GPs, Dentists and Hospitals with the assumption that only those involving hospitals should be external to a settlement – resulting in an internalisation figure of 72%.
  - Other – a broad assumption of 50% of trips would be external.
  - The resulting internalisation factor for home to mixed use varies by time period reflecting the different journey purposes defined by the NTS, varying between 65% in the AM peak to 62% in the PM peak.

## 3.2e Trip Distribution (Home to Work)

Trip distribution for all journey purposes has used the Census Medium Super Output Areas (MSOAs) in the immediate districts and Districts and regions as we have moved further away. 2011 Census journey to work data has been applied. The following MSOAs have been used as a proxy for the new developments:

- **West Braintree / Uttlesford Borders:** Rayne, Springwood and West Braintree, Stebbing & Felsted.
- **Colchester / Braintree Borders (West Tey):** Marks Tey, Stanway and Colchester Business Park. A lower weighting was applied to the latter given its relative distance from the site. It was considered appropriate to include this in the weighting given the strategic nature of employment which may be replicated at West Tey.
- **West Tending / Colchester Borders:** Wivenhoe, Parsons Heath and Colchester Business Park. As with West Tey, a lower weighting was applied to the latter given its relative distance from the site. It was considered appropriate to include this in the weighting given the strategic nature of employment which may be replicated at West Tending.

Importantly each of the other garden communities was added to the census origin and destination matrix manually by factoring the proxy MSOAs by comparing the resident population with that proposed when the Garden Communities are fully built out.

At this stage other development sites have not been added to the origin and destination matrix.

This approach was replicated for both employment journeys to/from new homes in the Garden Community, and employment journeys to/from workplaces in the Garden Community. The same dataset was used, however the residential and workplace locations were flipped round to reflect the likelihood of a different distribution for those who live at the Garden Community to those who work at the Garden Community.

## 3.2e Trip Distribution (Education)

Anonymised postcode data from the Essex Sustainable Modes of Travel Strategy – Schools (SMoTS) Audits has been analysed to determine likely destinations of primary and secondary education in the early years of each of the Garden Communities. It is also recognised that even with high quality provision in the Garden Communities there is an element of choice in our education system, and as shown by the internalisation figures for primary and secondary schools, there will be some travel to other locations which better meet the needs of that child's education. Principal destinations from the data for locations acting as a proxy for each of the Communities is shown over the following four pages.

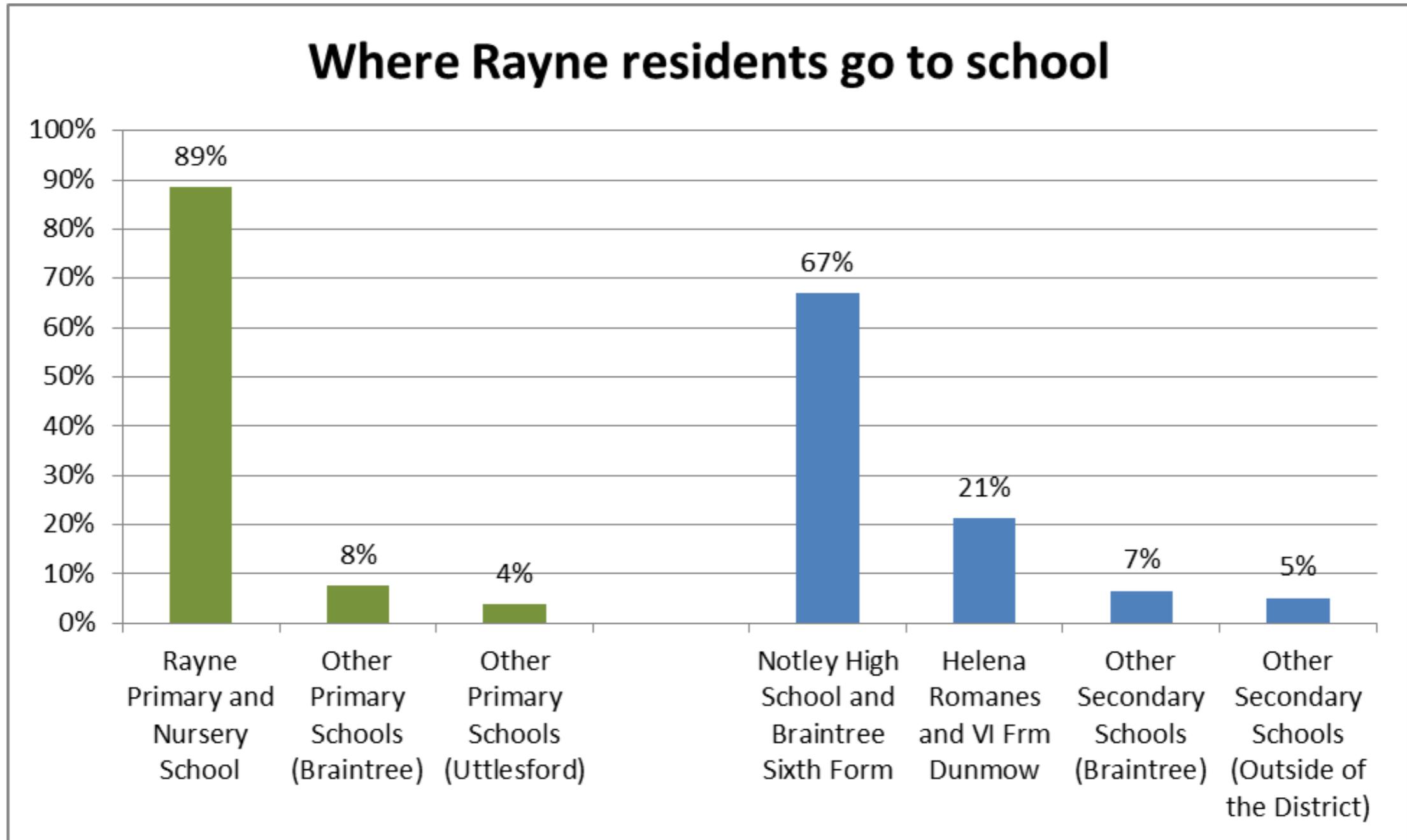
Subject to pupil capacity, then the key corridors of movement that need to be satisfied are as follows:

- **West Braintree / Uttlesford Borders** – Stane Street Corridor to Rayne (Primary), Braintree and Great Dunmow (Secondary).
- **Colchester / Braintree Borders (West Tey)** – Stane Street Corridor to both Coggeshall and Stanway – utilising the 70 bus service with enhancements in capacity.
- **West Tendring / Colchester Borders** is complicated by the provision of effectively three communities, with the bulk of the development to the east of Colchester and up to 900 homes as an urban extension to the north-east of the existing built up area.

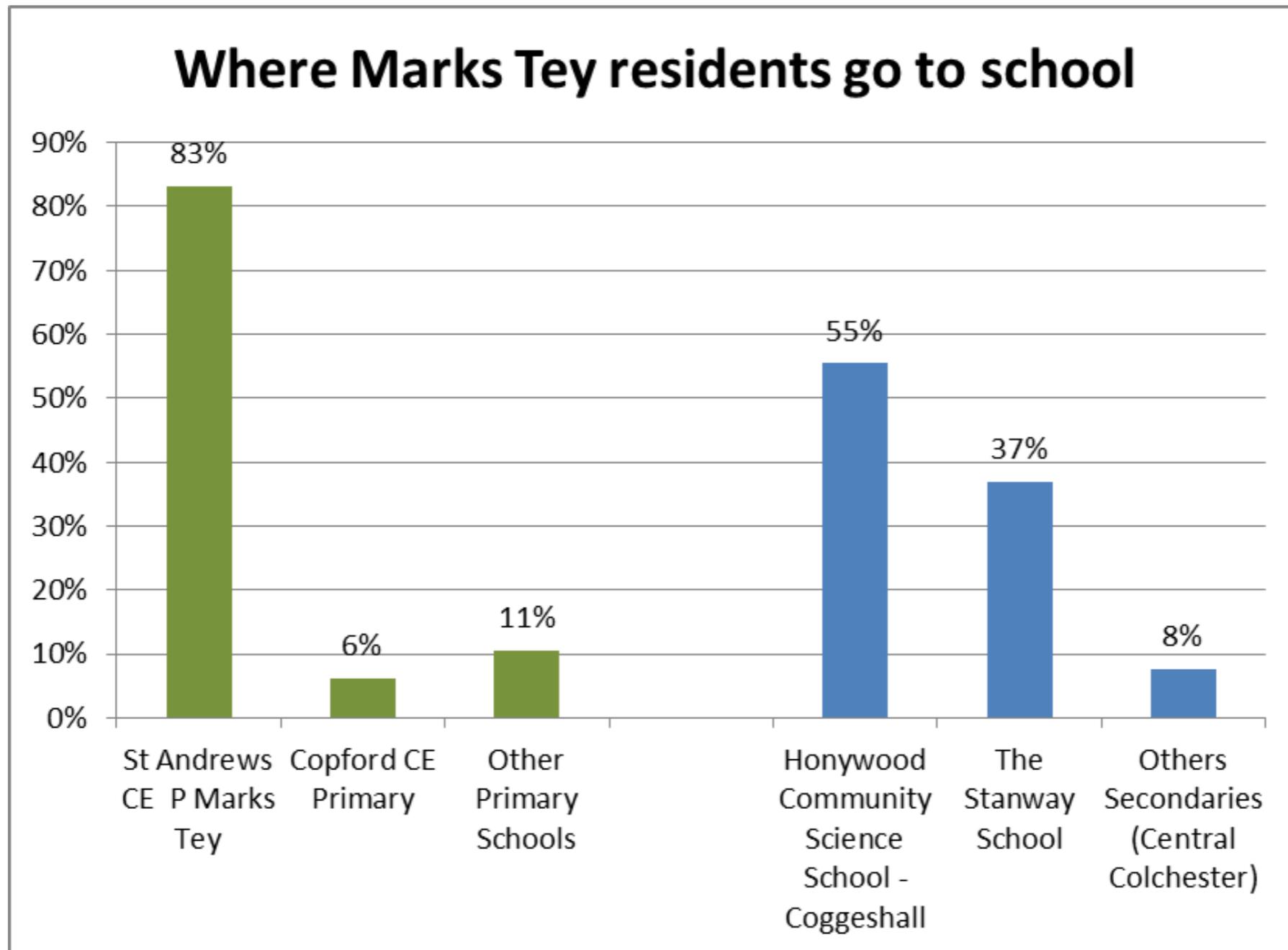
The findings for East Colchester residents suggest the need to provide strong provision for active modes to:

- Greenstead – Salary Brook trail and links alongside the A133.
- Parsons Heath – Salary Brook trail and links to the A137 at Welshwood Park.
- Friars Grove, St Johns Primary Schools and the Gilbert School – provision of active mode links to St Johns Rd and quietway routes east of Ipswich Road proposed in the current ECC Colchester Cycling Action Plan to complement existing off road and on road provision west of Ipswich Road.
- Supported by public transport with residual public transport provision for a range of schools in Colchester (Lexden Road area) and in Tendring (Manningtree and Brightlingsea).

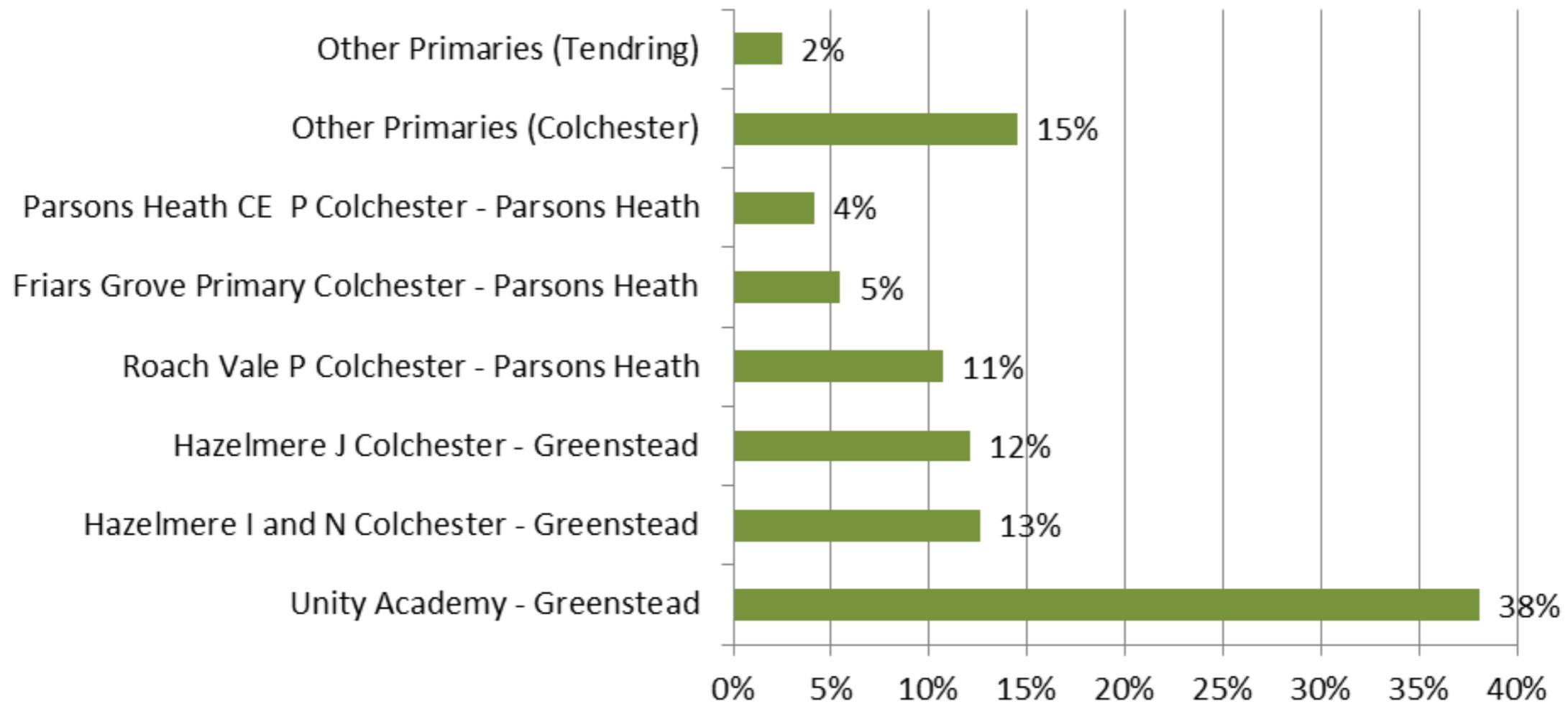
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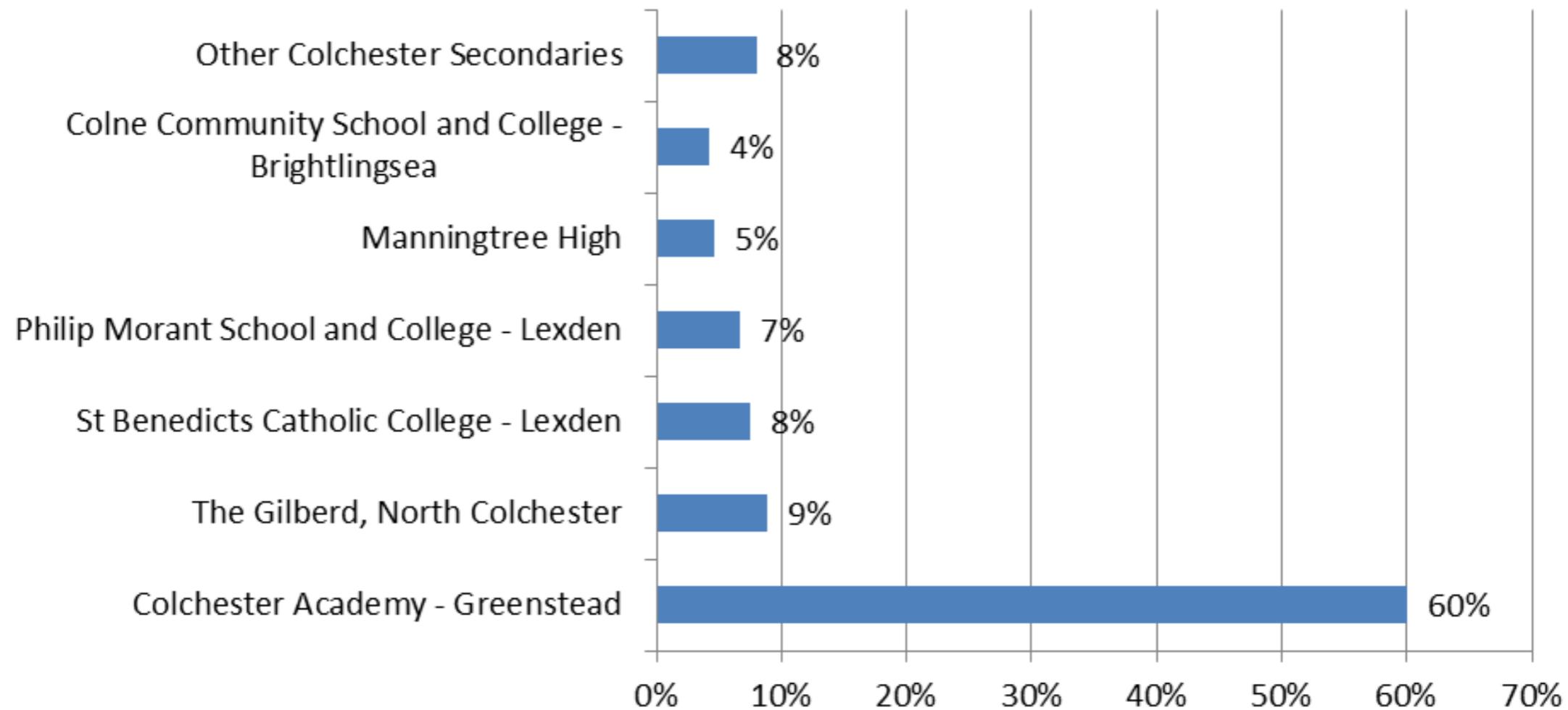
## Garden Communities – Movement & Access Study – May 2017



## Where East Colchester residents go to primary school



## Where East Colchester residents go to secondary school



## 3.2e Trip Distribution (Mixed Use)

We have analysed the retail studies (Braintree District Council Retail Study, 2015 & Colchester Borough Council Retail and Town Centre Uses Study, Retail Update, 2013) commissioned in support of the Local Plan process to determine where residents in the Garden Communities would be likely to shop for their convenience shopping if they did not shop locally. As previously noted we have assumed a high degree of internalisation based on evidence from Cambourne in Cambridgeshire.

We have not considered retail comparison shopping as this is not typically a major journey purpose during highway peak hours during the working week.

Health trips external to the network have been considered based on the Primary Care Trust responsible for each of the areas. For the West Braintree / Uttlesford Borders Garden Community, journeys are split between Braintree Community Hospital and Broomfield Hospital based on frequency of visits to the Primary Care Trust's local and regional hospitals in 2015. For the Garden Communities east and west of Colchester, it has been assumed that these trips are just to Colchester Hospital.

'Other' trips have been given the same distribution as retail for simplicity.

## 3.2f Mode Choice

We have defined separate mode shares for different journey lengths to reflect the higher potential of active modes to be local trips. This has been calculated for both an Ambitious Scenario of 40% Active Modes, 30% Public Transport and 30% Car across all journeys, and then one based on the 2011 Census for the specific area. The latter figure could be varied in future to test slightly lower mode shares for car based on the performance of larger settlements or those with smarter choices programmes, such as Peterborough.

### **‘Ambitious’**

- Internal trips within the Garden Community: Active Modes 62%, Public Transport and Cars 38%.
- Hinterland trips (<5 miles): Active Modes 24%, Public Transport 38%, Car 38%.
- Longer distance trips: Public Transport 50%, Car 50%.

These percentages were calculated from analysis of journey to work data to work out the proportion of external trips that were to the hinterland and which were further afield to ensure a weighted average resulted in the 40%, 30%, 30% mode share.

### **‘Census’ (West Braintree)**

- Hinterland Trips (<5 miles): Active Modes 23%, Public Transport 6%, Car 71%.
- Longer distance trips: Public Transport 15.5%, Car 84.5%.

### **‘Census’ (West Tey and West Tending)**

- Hinterland Trips (<5 miles): Active Modes 11%, Public Transport 13%, Car 75%.
- Public Transport 17%, Car 83%.

### 3.3 External Vehicle Trips per Site (AM Peak: 0800-0900)

Development Site	Scenario	AM peak departures	AM peak arrivals *
West Braintree / Uttlesford Borders	Local Plan – 2,500 homes (Ambitious), 2032	481	294
	Local Plan – 2,500 homes (Census), 2032	854	532
	Full – 8000 homes (Ambitious), 2047	1145	700
	Full – 8000 homes (Census), 2047	2026	1263

Development Site	Scenario	AM peak departures	AM peak arrivals *
Colchester / Braintree Borders (West Tey)	Local Plan – 2,500 homes (Ambitious), 2032	417	145
	Local Plan – 2,500 homes (Census), 2032	756	265
	Full – 25,500 homes (Ambitious), 2047	3616	1436
	Full – 25,500 homes (Census), 2047	6494	2630

Development Site	Scenario	AM peak departures	AM peak arrivals*
West Tendring / Colchester Borders	Local Plan – 2,500 homes (Ambitious), 2032	397	175
	Local Plan – 2,500 homes (Census), 2032	635	293
	Full – 10,700 homes (Ambitious), 2047	1444	605
	Full – 10,700 homes (Census), 2047	2261	996

\* Excludes external demand (arrivals) for mixed use and education (to be determined during master planning).

Full build out development quantum indicative based on the draft Concept Frameworks, December 2016 and engagement with Concept Frameworks in February 2017.

## 3.4 External Vehicle Trips per Site (PM Peak: 1700-1800)

Development Site	Scenario	PM peak departures	PM peak arrivals *
West Braintree / Uttlesford Borders	Local Plan – 2,500 homes (Ambitious), 2032	330	318
	Local Plan – 2,500 homes (Census), 2032	582	576
	Full – 8000 homes (Ambitious), 2047	843	864
	Full – 8000 homes (Census), 2047	1490	1556

Development Site	Scenario	PM peak departures	PM peak arrivals *
Colchester / Braintree Borders (West Tey)	Local Plan – 2,500 homes (Ambitious), 2032	199	300
	Local Plan – 2,500 homes (Census), 2032	356	536
	Full – 25,500 homes (Ambitious), 2047	1696	2637
	Full – 25,500 homes (Census), 2047	3027	4704

Development Site	Scenario	PM peak departures	PM peak arrivals*
West Tendring / Colchester Borders	Local Plan – 2,500 homes (Ambitious), 2032	198	263
	Local Plan – 2,500 homes (Census), 2032	349	465
	Full – 10,700 homes (Ambitious), 2047	698	973
	Full – 10,700 homes (Census), 2047	1233	1721

\* Excludes external demand (arrivals) for mixed use and education (to be determined during master planning).

Full build out development quantum indicative based on the draft Concept Frameworks, December 2016 and engagement with Concept Frameworks in February 2017.

# 4 Rapid Transit Services



## 4.1 Introduction

The study has built on the initial June 2016 work from AECOM and then used the input of the following :

- Public transport, highways and development planning professionals from Jacobs, Ringway Jacobs, AECOM, PBA, DLA
- Transport Working Group Members
- ECC's Project Manager for the Colchester & Chelmsford Bus City Project
- Greater Anglia
- Network Rail.

This has been achieved through a combination of collaborative workshops, 1-2-1 meetings and Transport Working Group Meetings to define primary external facing rapid transit networks and potential infrastructure for each of the Garden Communities. Where possible cognisance has been taken of other developments to maximise connectivity opportunities.

This does not preclude the provision of internal public transport, demand responsive, taxi and ride hailing services.

The outcome of this is a series of rapid transit route diagrams, cost / benefit analysis for selected routes and appraised infrastructure schemes (in **Chapters 7 to 9**).

## 4.2 Rapid Transit Network Spider Diagrams

These are provided for the following networks in turn:

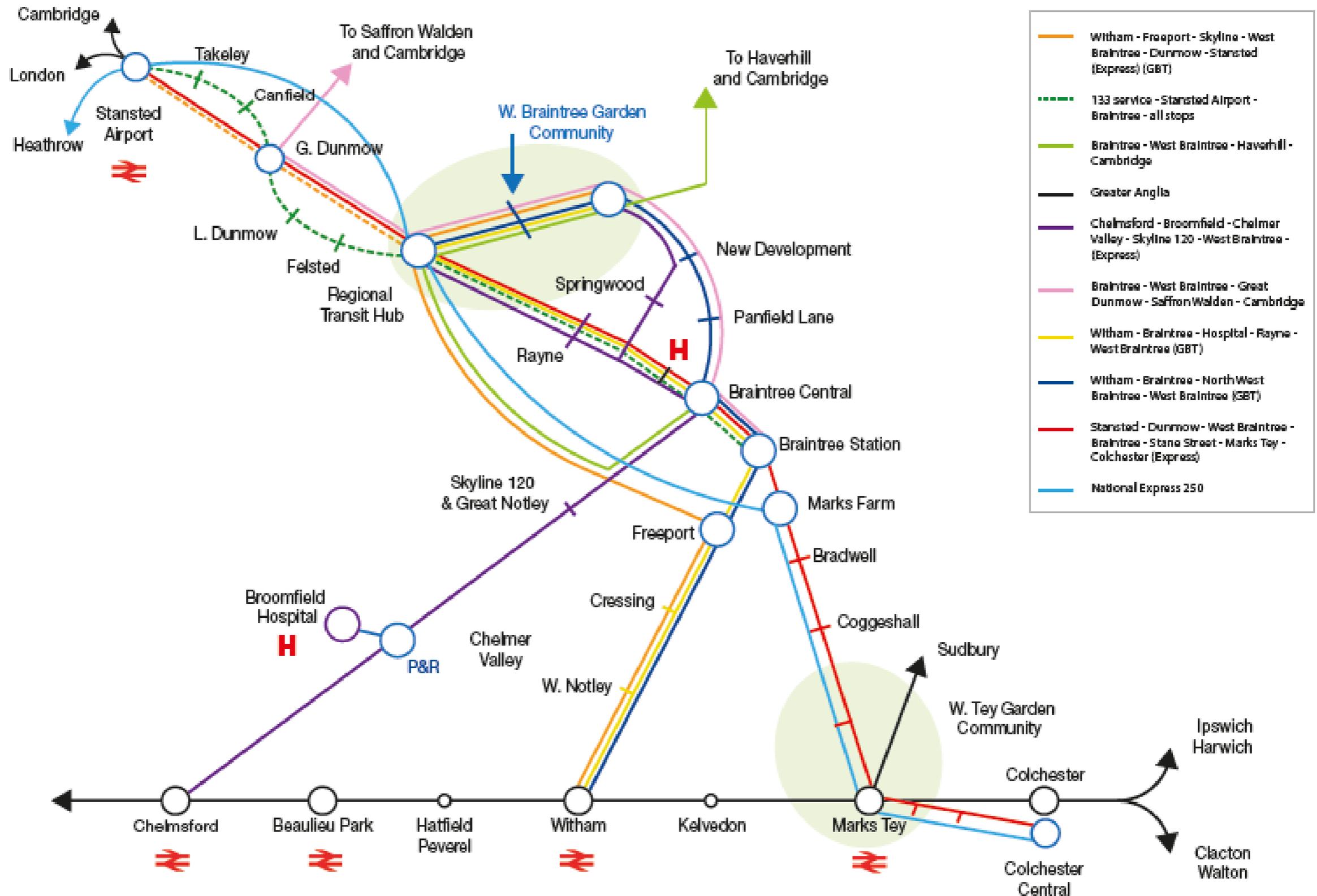
- West Braintree / Uttlesford Borders with interfaces to Colchester / Braintree Borders (West Tey)
- Colchester / Braintree Borders (West Tey)
- West Tendring / Colchester Borders.



West of Braintree

# Garden Communities – Movement & Access Study – May 2017

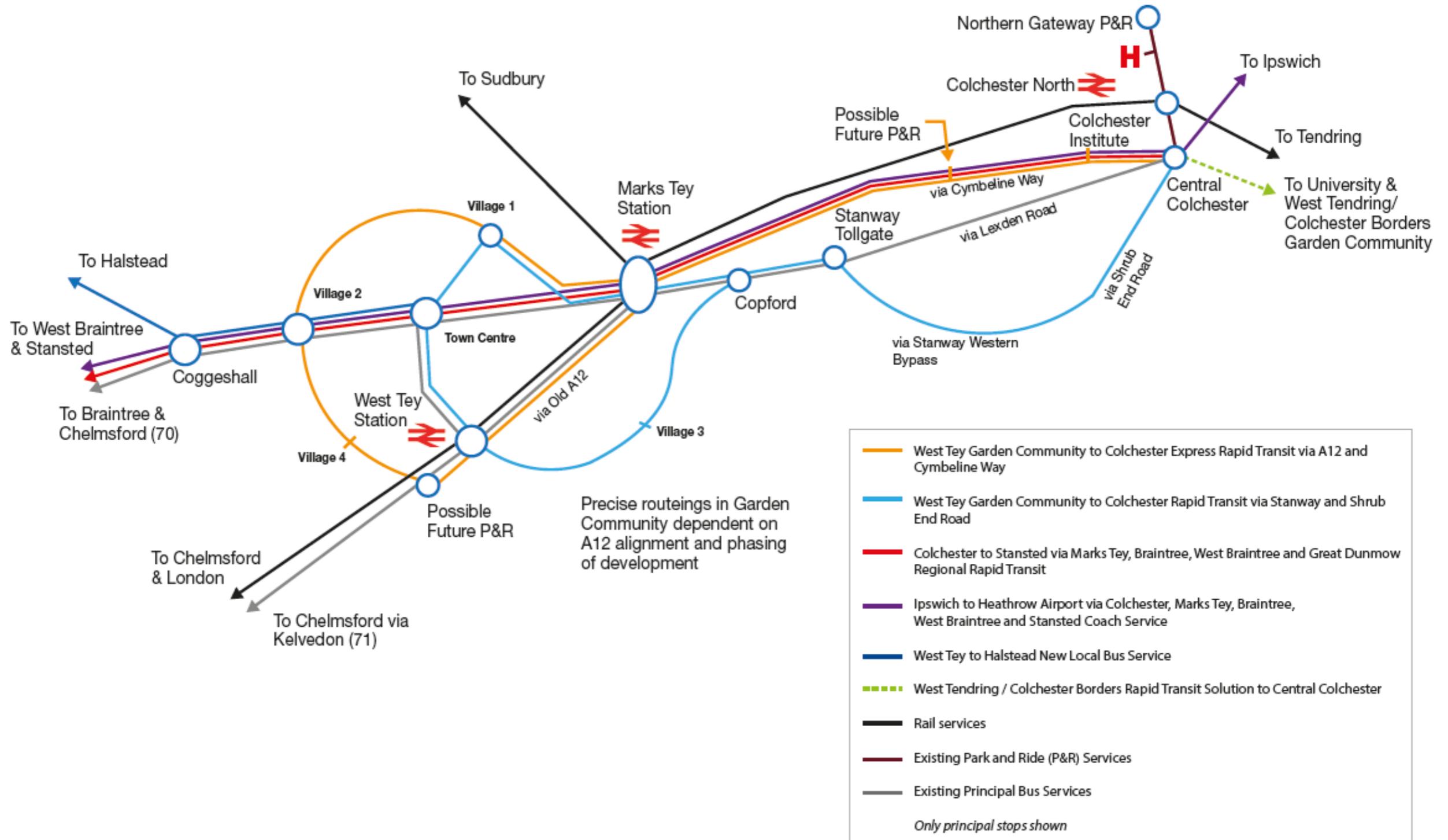
## West Braintree / Uttlesford Borders Rapid and Regional Transit Network





# Garden Communities – Movement & Access Study – May 2017

## Colchester / Braintree Borders (West Tey) Rapid and Regional Transit Network

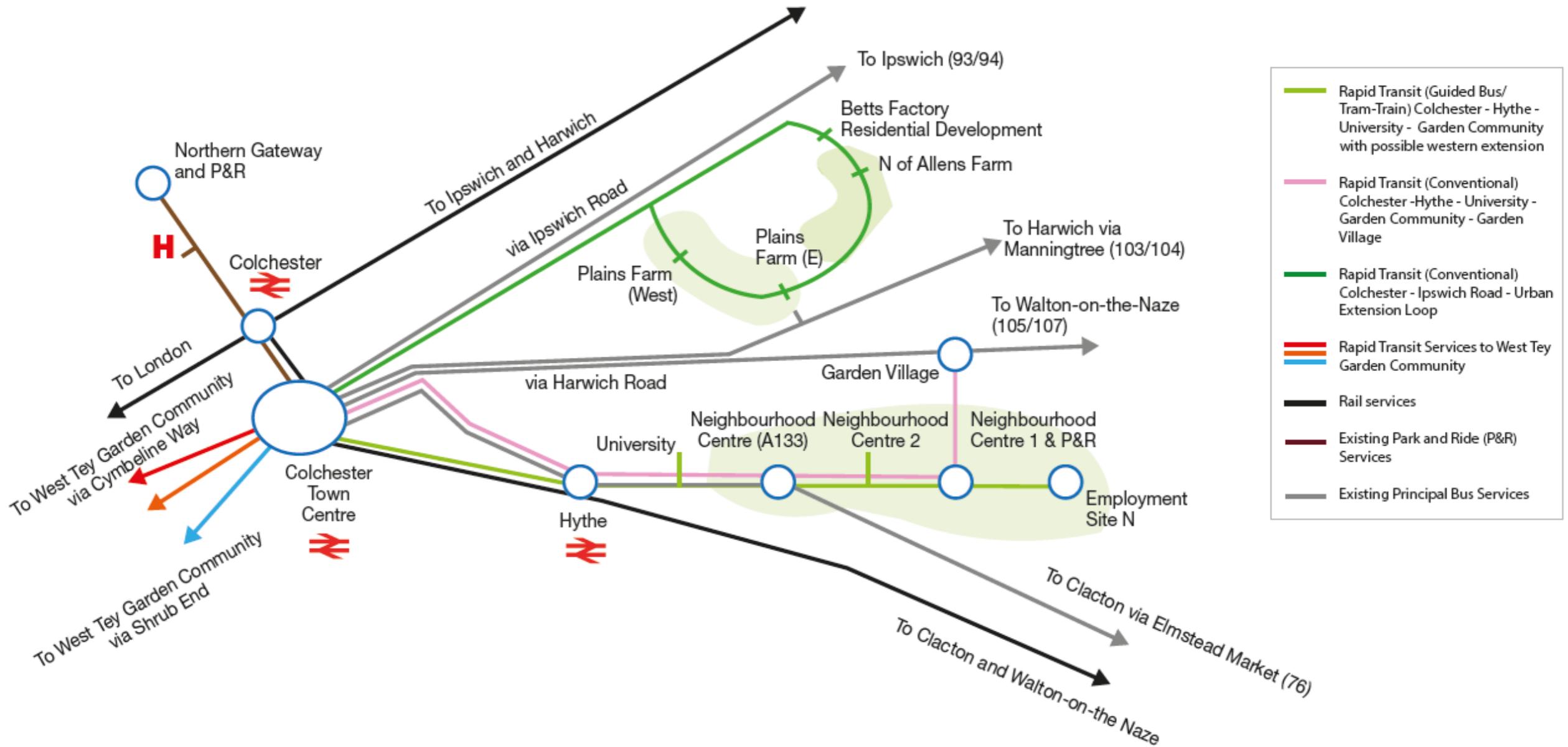


# Garden Communities – Movement & Access Study – May 2017

## West Tending / Colchester Borders Rapid and Regional Transit Network



West Tending /  
East of Colchester



## 4.3 Cost and Revenue Forecasts

We have undertaken cost and revenue analysis for the following routes using the forecast demand from the spreadsheet tool for various housing projections for 2032 and 2047.

- Chelmsford – Chelmer Valley P&R (for Broomfield Hospital) – Great Notley / Skyline 120 – Braintree – West Braintree
- Witham – Braintree – West Braintree
- Stansted – Great Dunmow – West Braintree – Braintree – Marks Tey – Colchester
- Strengthened frequency for route 70 from Marks Tey to Colchester
- Strengthened frequency for route 71 from Marks Tey to Colchester
- P&R express service from West Tey to Colchester via the A12 and A133 Cymbeline Way
- Stopping premium rapid transit service from West Tey to Colchester via Stanway and B1022 Shrub End Road.

Indicative bus routes for West Braintree and West Tey are shown overleaf with graphs of some of the findings. The modelling assumed a minimum level service of a bus every 30 minutes for each route from early morning to 2400, with further frequency dependent on demand. Scenario testing is based on different fare levels (although no elasticity of demand has currently been assumed given the demand is based on ambitious mode scenarios). It was assumed that buses used were of the high quality specification procured by First Bus for their X10 and X30 to Stansted, recent double decker purchases in London or articulated buses where higher capacity was needed on a Guided Bus route.

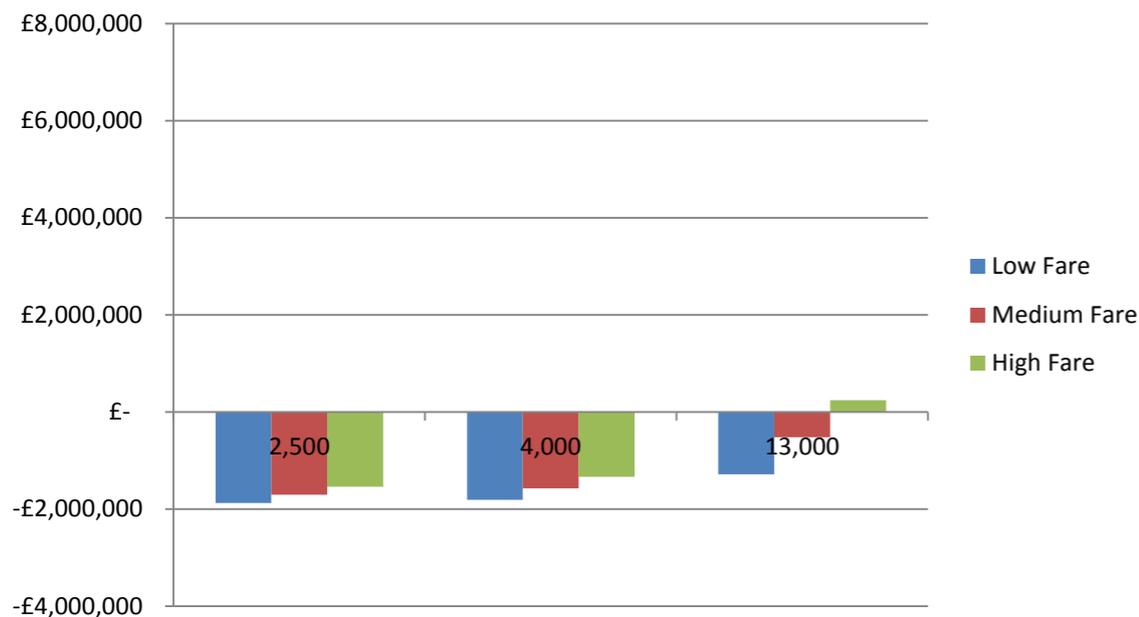
Work on East Colchester Rapid Transit was previously undertaken by Jacobs in September 2016 for the East Colchester Rapid Transit Study. It is understood that further work on the business case and feasibility of tram-train to serve the West Tendring / Colchester Borders site, and rapid transit connections to Colchester / Braintree Borders and West Braintree / Uttlesford Borders is to be commissioned for completion later during 2017.

## 4.4 West Braintree / Uttlesford Borders Results

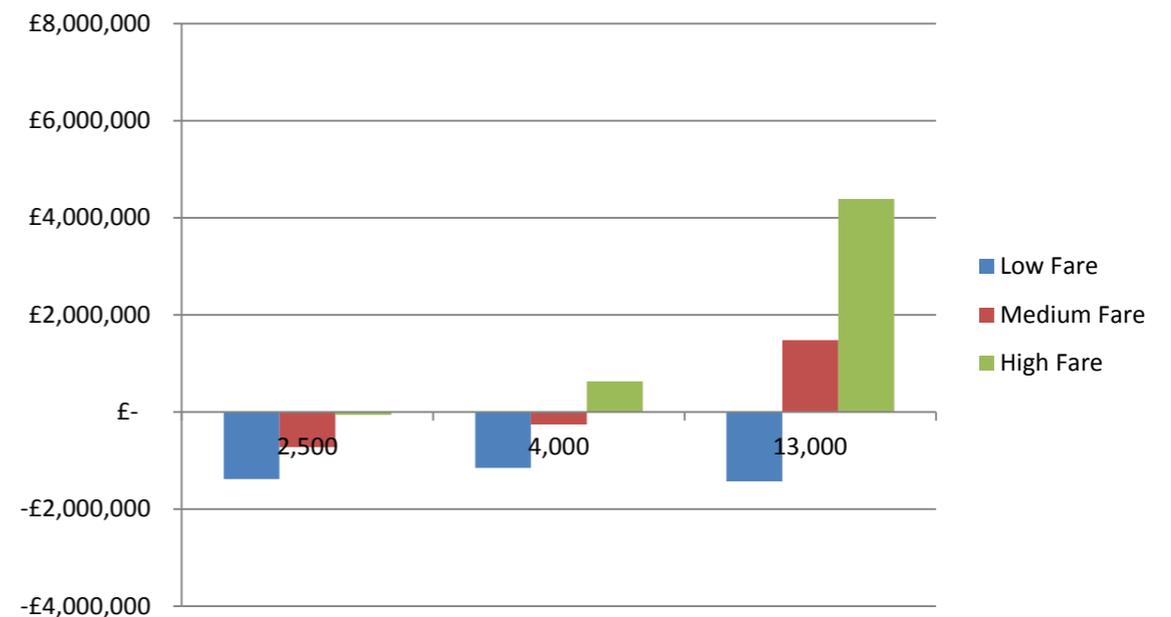
The following results show indicative profit / loss for operators for three core routes to the Garden Community and how the number of homes, mode share assumptions and fare levels affect this. Key findings:

- Chelmsford – West Braintree appears profitable in 4,000 and 13,000 home high fare scenarios for the Ambitious scenario, with the equivalent 2,500 home scenario making a small loss. With a typical census profile, the route is only profitable for 13,000 homes, and only within this with a high fare.
- The scenarios include potential demand from Great Notley and Skyline 120 to / from Chelmsford / Broomfield.

Chelmsford - West Braintree GC (Census)

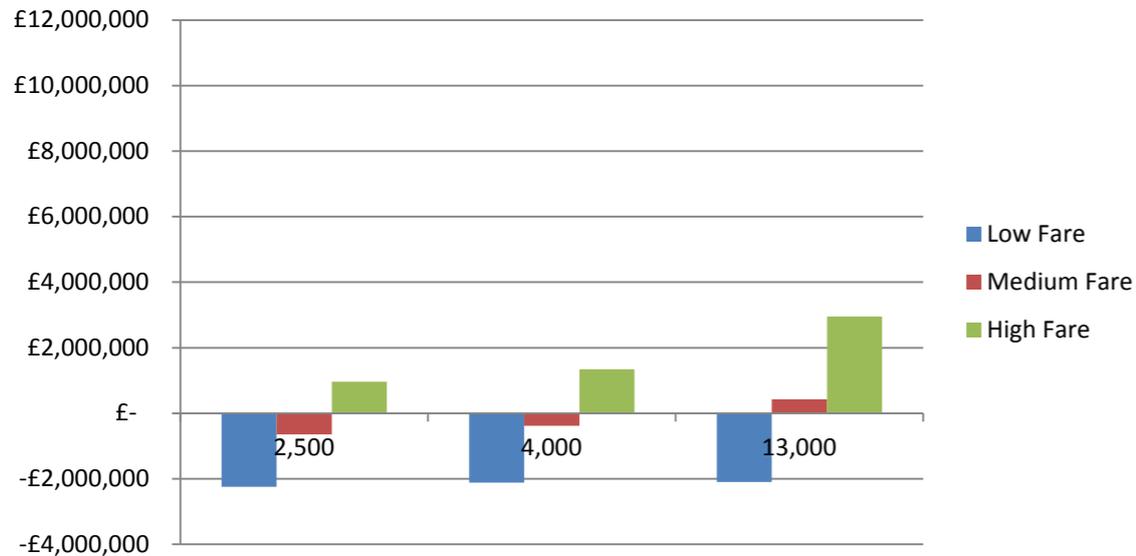


Chelmsford - West Braintree GC (Ambitious)

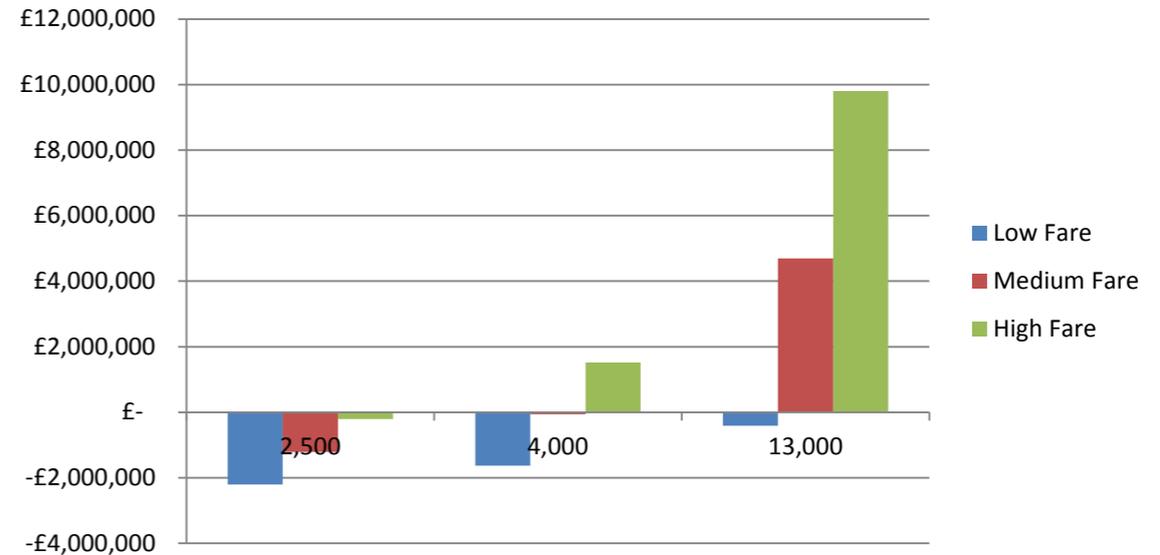


## Garden Communities – Movement & Access Study – May 2017

**Braintree branch to West Braintree GC  
(Census)**



**Braintree branch to West Braintree GC  
(Ambitious)**

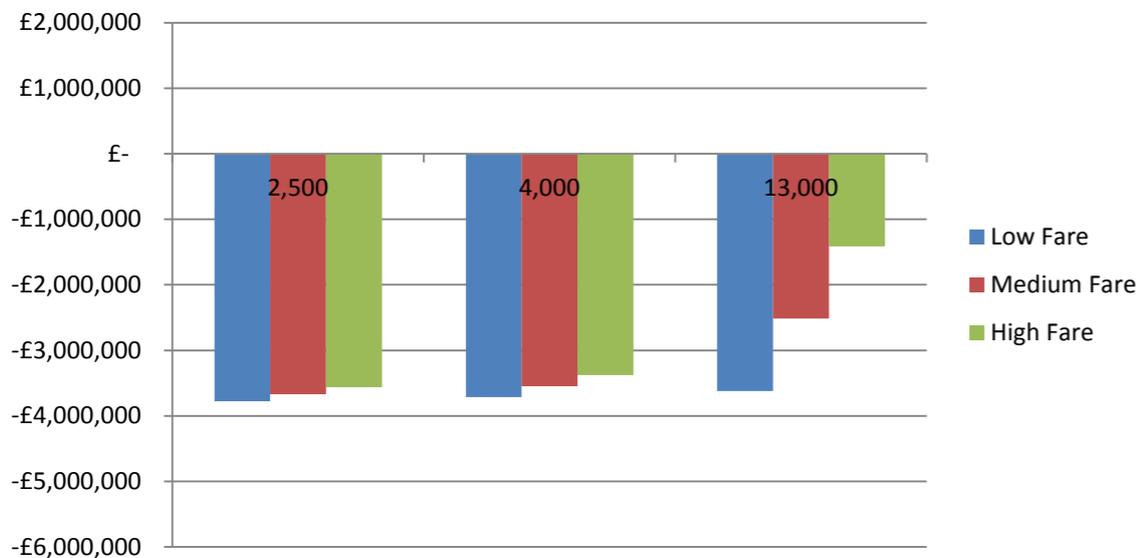


- Witham-Braintree demand includes apportion of current rail demand based on high level ORR figures for Braintree, Cressing and White Notley although no allowance is made for latent demand or rail-heading that happens currently with the unreliable service.
- In the 13,000 home scenarios with articulated vehicles, a service is provided every 6 mins in the peak with every other service running short from Witham and terminating at Braintree (assumed to be using articulated buses with 120 person capacity).
- Witham to Garden Community appears profitable at high fares and medium fares for 13,000 homes (how the revenues of through trips to rail destinations are apportioned is a finer detail to be potentially evaluated).
- This could be further evaluated as part of the separate rapid transit commission.

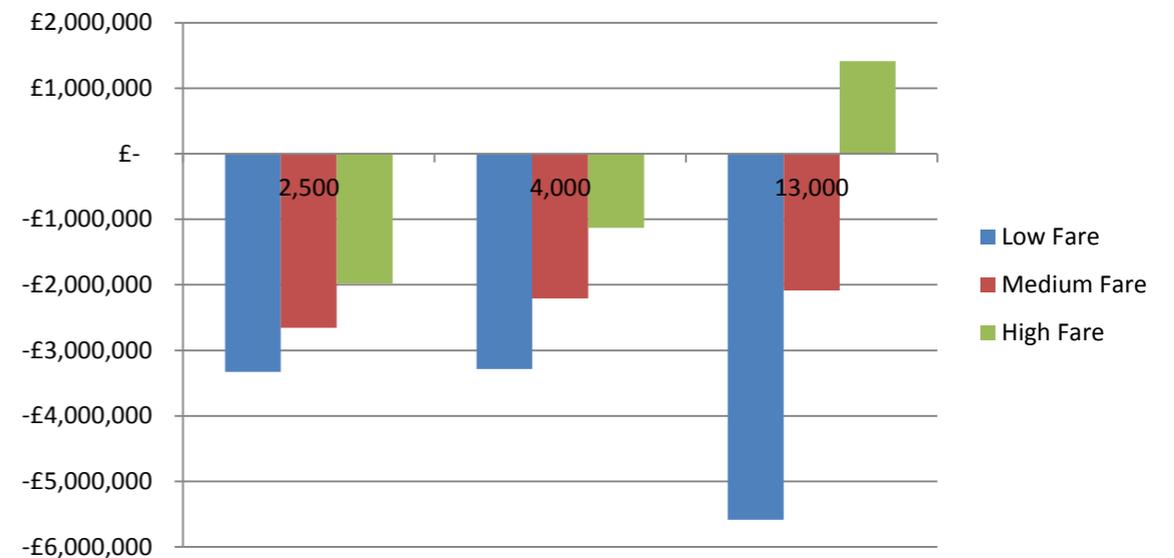
## Garden Communities – Movement & Access Study – May 2017

- The Stansted Airport–Colchester service includes demand from both West Braintree and West Tey. It suffers from the long distance and high vehicle requirement meaning that farebox revenues are unable to cover costs for most scenarios.
- The 13,000 home high fare scenario with ambitious demand is the only scenario that generates an operating profit.
- It is noted that the current '133' bus service from Stansted to Braintree used to run along this route albeit on the old A120, and now curtails at Braintree.
- This would compete with the existing limited stop and 2 hourly National Express service between Heathrow Airport / Stansted Airport and Colchester / Ipswich.
- A service that runs just from West Braintree or Braintree to Stansted may be more appropriate and could even be a variation on a guided bus service from Witham to provide pan east-west connectivity to the rail network.

**Express - Stansted Airport to Colchester  
(Census)**



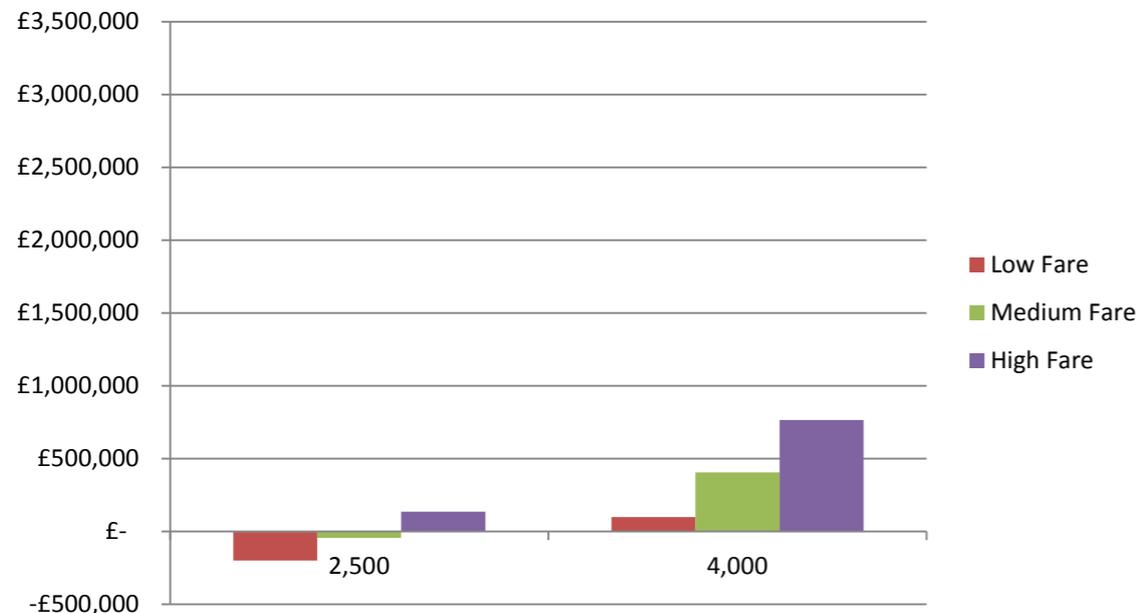
**Express - Stansted Airport to Colchester  
(Ambitious)**



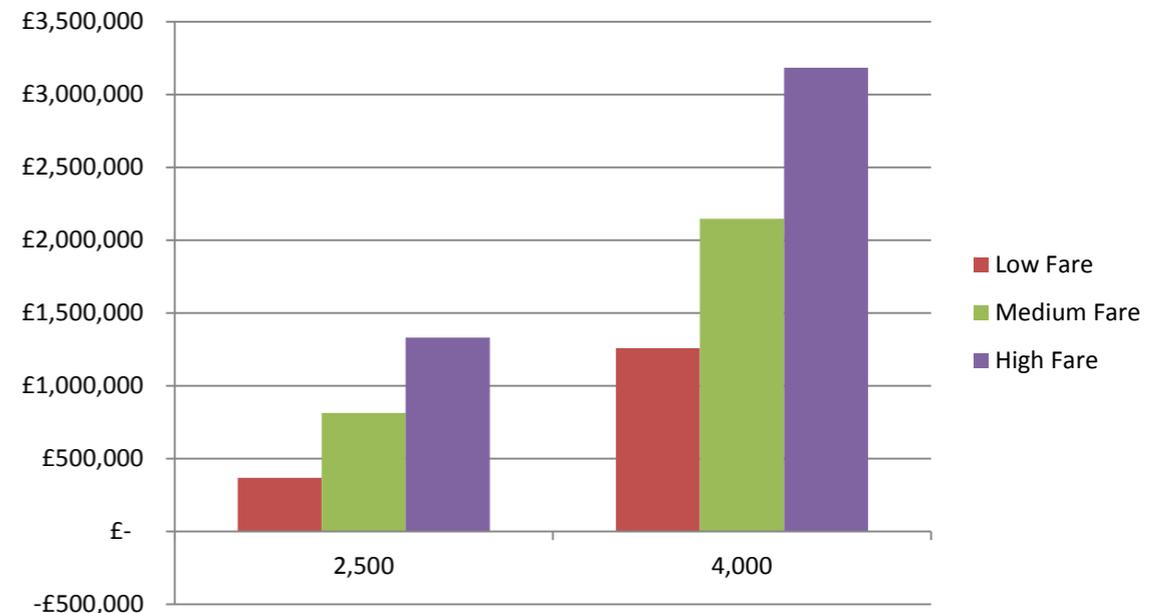
## 4.5 Colchester / Braintree Borders (West Tey) Results

- An express service from the West Tey Garden Community to Colchester via the A12 and A133 Cymbeline Way (incorporating bus priority measures) would result in the following profit and loss in the Local Plan Period of the development. It is assumed that by using it to operate as an interim Park and Ride service from the west for the Garden Community as well as an express service to serve both the Garden Community and Colchester that additional demand and revenue could be realised over and above that calculated below to make this more profitable.
- This would have to be carefully modelled given that this could abstract from the current northern Park and Ride if used by longer distance customers. However the primary intention of the Park and Ride function is to support customers wishing to travel to the Garden Community from locations where public transport will not be feasible and help make a recommended workplace parking strategy deliverable (see **All Sites Scheme P5**).

Express (West Tey P&R) (census)

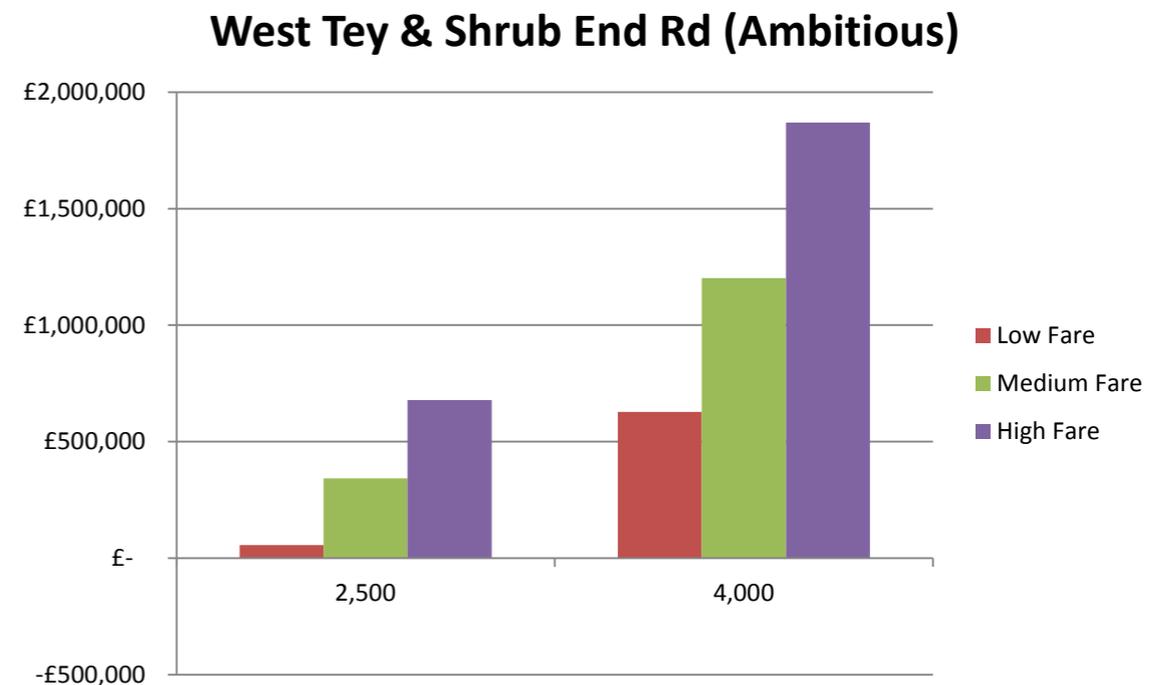
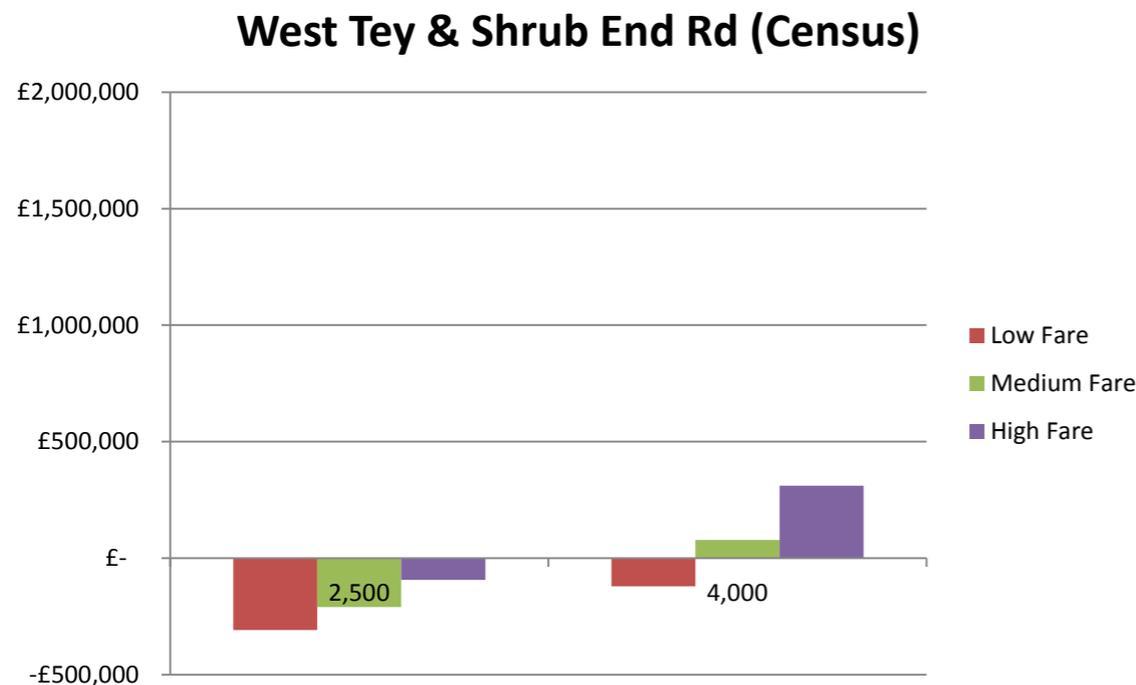


Express (West Tey P&R) (ambitious)



## Garden Communities – Movement & Access Study – May 2017

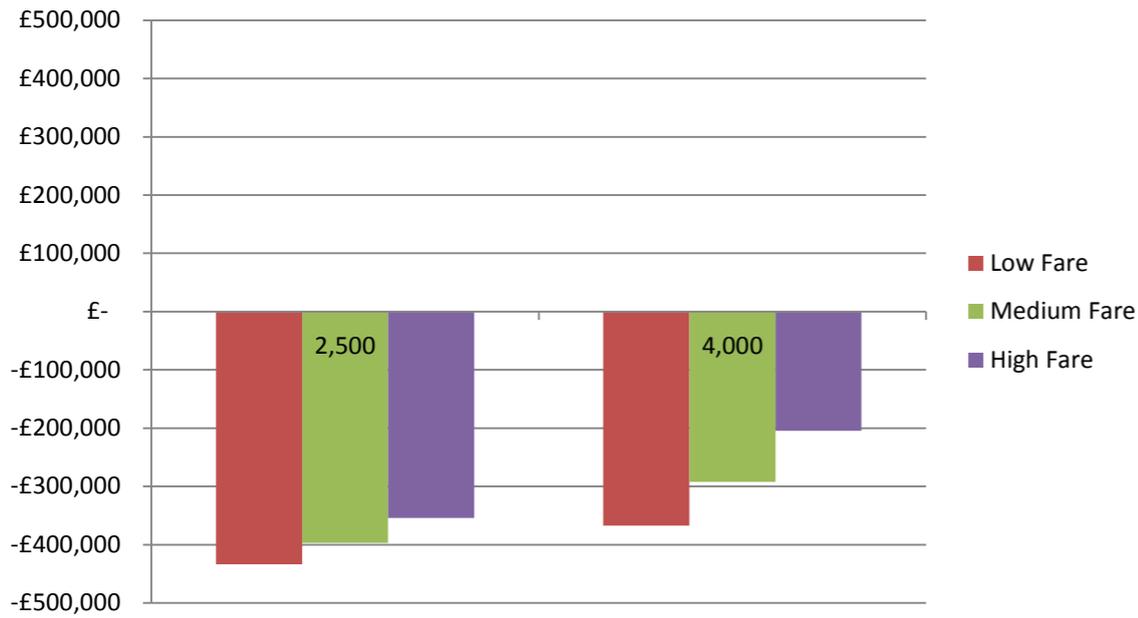
- Running an additional stopping premium service via Stanway and a new bus only road to Shrub End Road (B1022) into Colchester appears to be profitable with 4000 homes medium and high fares with the Census scenario, and in all cases profitable with the Ambitious Scenario. This benefits from the existing bus priority measures on the final stretch of B1022 Maldon Road into Colchester.



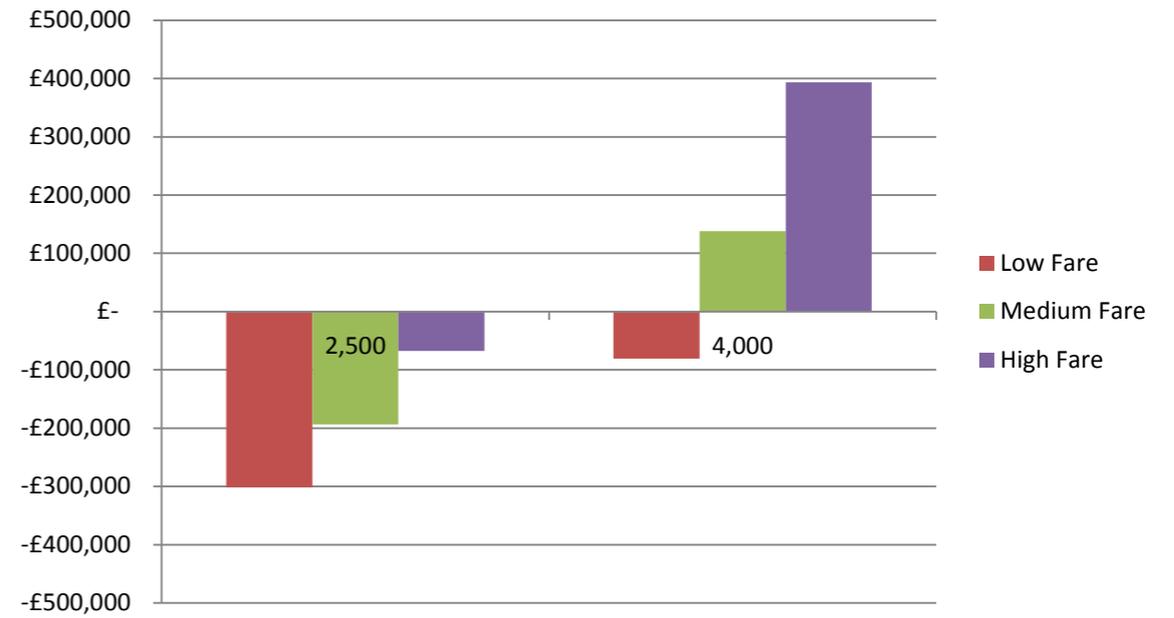
- Running additional stopping services on the 70 and 71 routes from Colchester to West Tey appear to be profitable with 4000 homes and medium or high fares in the Ambitious Scenario. It is assumed that these are supplementary to existing services that will run the whole route from Colchester to Chelmsford via Coggeshall / Braintree or Kelvedon / Witham and serve elements of the Garden Community regardless.
- It should be noted that our modelling has apportioned demand between the various routes rather than assign all demand to each route. This demonstrates the complementary nature of the various services to do different things in the ambitious scenario early into the delivery of up to 25,500 homes as well as provide a resilient service level to Colchester.

# Garden Communities – Movement & Access Study – May 2017

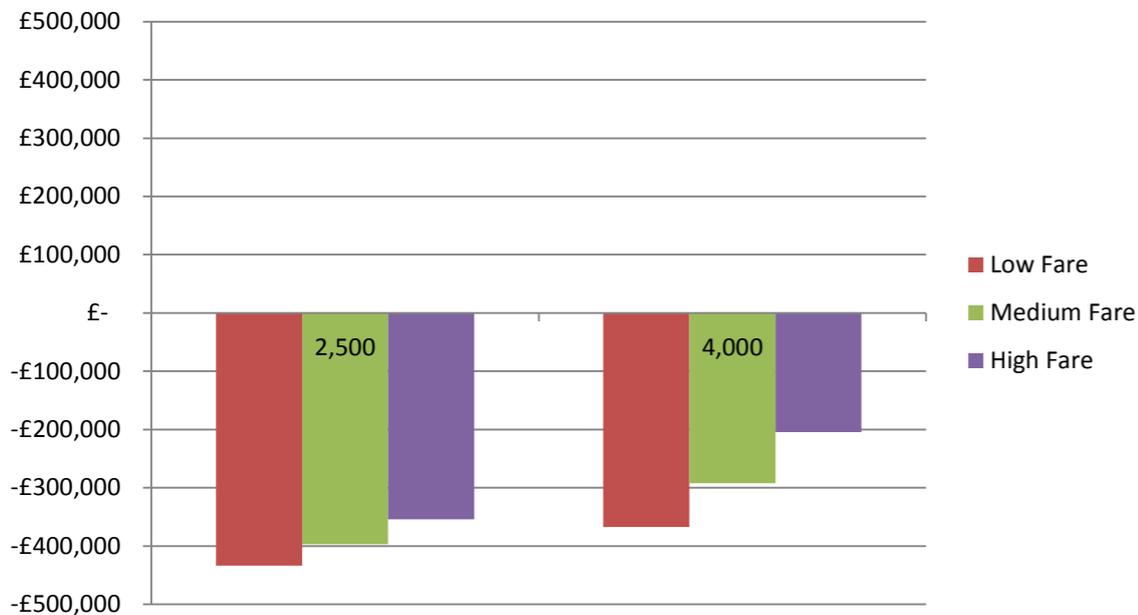
## Route 70 (census)



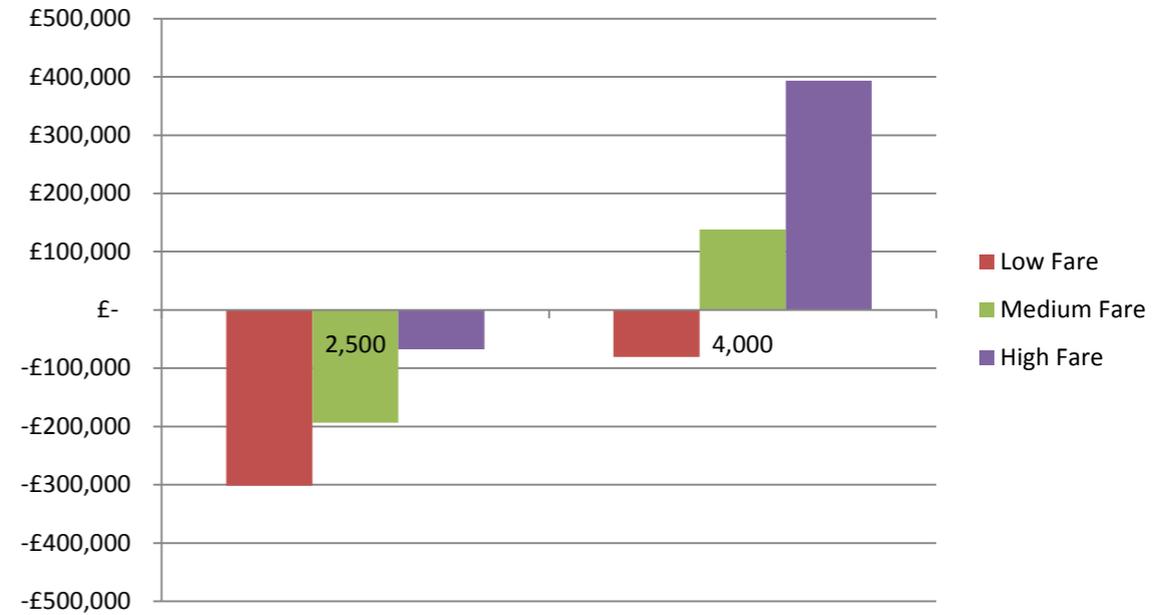
## Route 70 (ambitious)



## Route 71 (census)



## Route 71 (ambitious)



# 5 Definition of Scheme and Policy Interventions



## 5.1 Development of External Schemes

We have defined our suggested interventions through a combination of desktop analysis, site visits, internal and external workshops, and at all times trying to provide a balanced consideration of ideas that best complement the Transport Objectives noted in Section 2.

We collated readily available information on current and proposed (where in the public domain) transport network and performance to align with the expected corridors of movement to/from and external to the Garden Communities. These included:

- Analysis of AECOM's June 2016 proposals
- Trafficmaster hotspot maps as a proxy for congestion at both a link and junction level
- Issues and schemes emerging from the Local Plan modelling to date
- Public Transport routes, capacities and planned improvements
- Network Rail's Anglia Route Strategy and initial feedback on the Local Plans
- Cycle routes and current Cycle Action plans including the final mile to/from key destinations for the Garden Communities
- Discussion with the Concept Framework Consultants on some of their emerging ideas through meetings and workshops
- Environmental constraints
- Google Street View, Ordnance Survey and Google Maps.

Overlaying these sources of information allowed us to highlight gaps and constraints for exploration in workshops as to what can and should be achieved.

During the study Ringway Jacobs held a workshop in Chelmsford on 2 November 2016 attended by lead representatives from our Highways, Structures, Advance Design and Transportation teams to provide a sense check on the initial AECOM proposals which were fed back to the Transport Working Group. This has been consolidated with further workshops in November 2016, January and February 2017 involving multiple disciplines for each of the three Garden Communities, and representation from ECC's public transport and cycling teams, the Transport Working Group and the Concept Framework Consultants.

## 5.2 Costs

Costs are largely a function of applying unit costs from similar schemes (such as the Cambridgeshire and Luton-Dunstable Guided Busways, schemes in the SELEP portfolio or cycle routes designed as part of the Chelmsford Growth Strategy) or the experience of outturn costs from Ringway Jacobs Advance Design Group. No design work or surveys have been undertaken.

It was noted that the costs provided by AECOM in June 2016 exclude professional fees, design development and construction contingency. These exclusions also apply to our figures unless otherwise stated (e.g. where this was built into the ready reckoner cost).

Typically for schemes in early stages of development a figure of 44% optimism bias would be applied to highway scheme costs and 66% for bridges and rail links to reflect the uncertainty. It is not clear whether AECOM's costs included optimism bias. Our initial sense check figures in November 2016 did include an allowance for optimism bias, but where we have some great uncertainty during our revisit in February 2017 (such as guided bus, a new station or a brand new alignment with particular unknowns) we have applied these to the ready reckoner costs from comparable schemes.

## 5.3 Sifting of Schemes

A longer menu of options was initially presented to the Transport Working Group in the Draft Interim Report. Through feedback, workshops, analysis and appraisal, schemes that did not fit the objectives well or had particularly challenging deliverability or feasibility issues have not been retained.

In some cases such as rapid transit solutions, further work is needed on defining the rapid transit modal solution (such as tram-train, guided bus, high quality conventional bus) and so at this stage no recommendation is made on the suitability of either, except to say that the connectivity corridor is essential for the Garden Community.

## 5.4 Next Steps

**These plans reflect a point in time reached during the evolution of the Concept Frameworks. It must be noted that these plans will change as the Concept Frameworks evolve and develop further.**

Likewise current consultation and subsequent design for the emerging A120 improvement and A12 widening schemes in and around Marks Tey will likely have an impact on the Concept Framework for Colchester / Braintree Borders (current broad options are shown in Section 5.5 and 5.6). There are also potential impacts for West Braintree / Uttlesford Borders through the tie-in to the existing A120 in the Galleys Corner / Braintree Freeport area. This could provide both potential opportunities for a potential conversion of the Braintree – Witham branch line to guided bus discussed in **Chapter 6**.

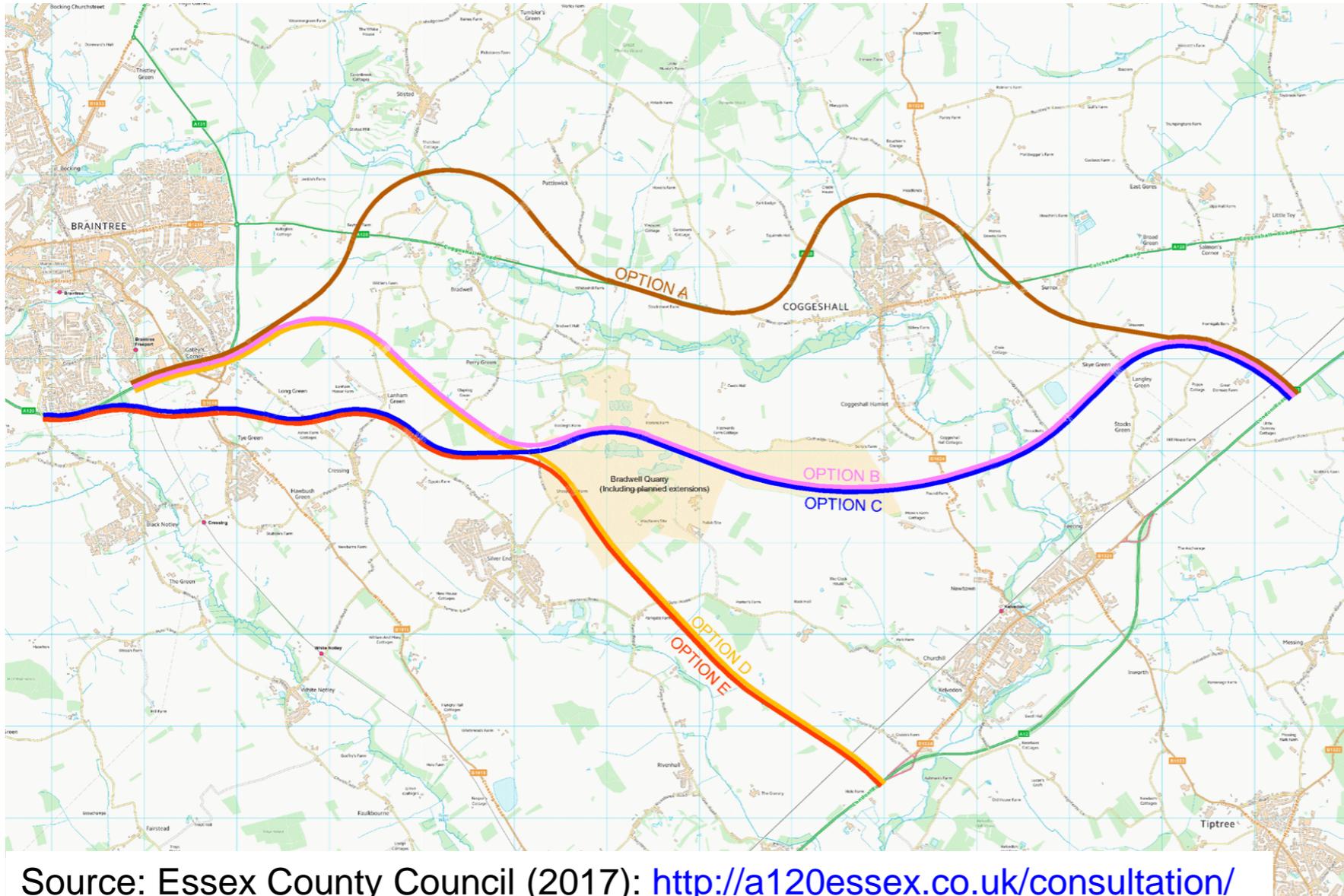
**Sections 6 to 9** now present our recommended ideas for all sites, and then the three sites in turn.

We have identified where possible the sequencing of schemes in so far as to whether they should be pursued in the Local Plan period or beyond 2033. We have also sought to identify schemes where other parties would need to be a major contributor to their cost, rather than just North Essex Garden Communities Ltd. In addition options should be explored to maximise funding avenues such as the Local Growth Fund and Housing Infrastructure Fund to unlock early exemplar housing schemes.

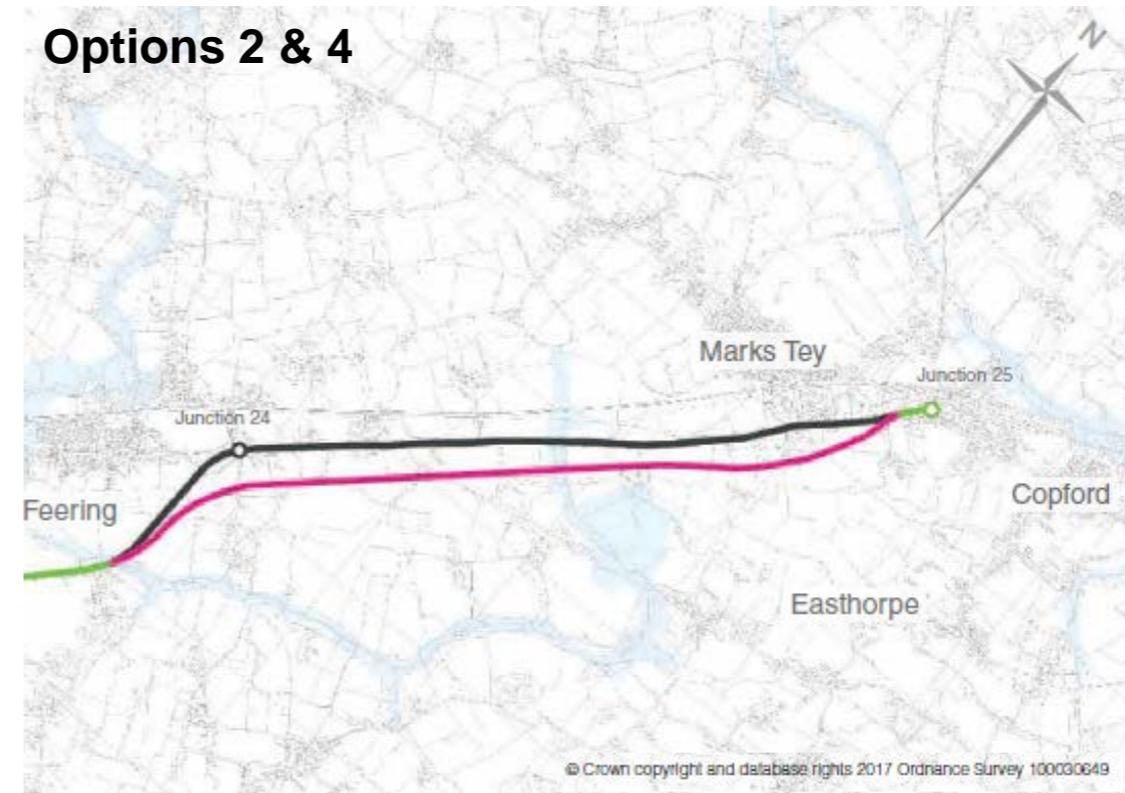
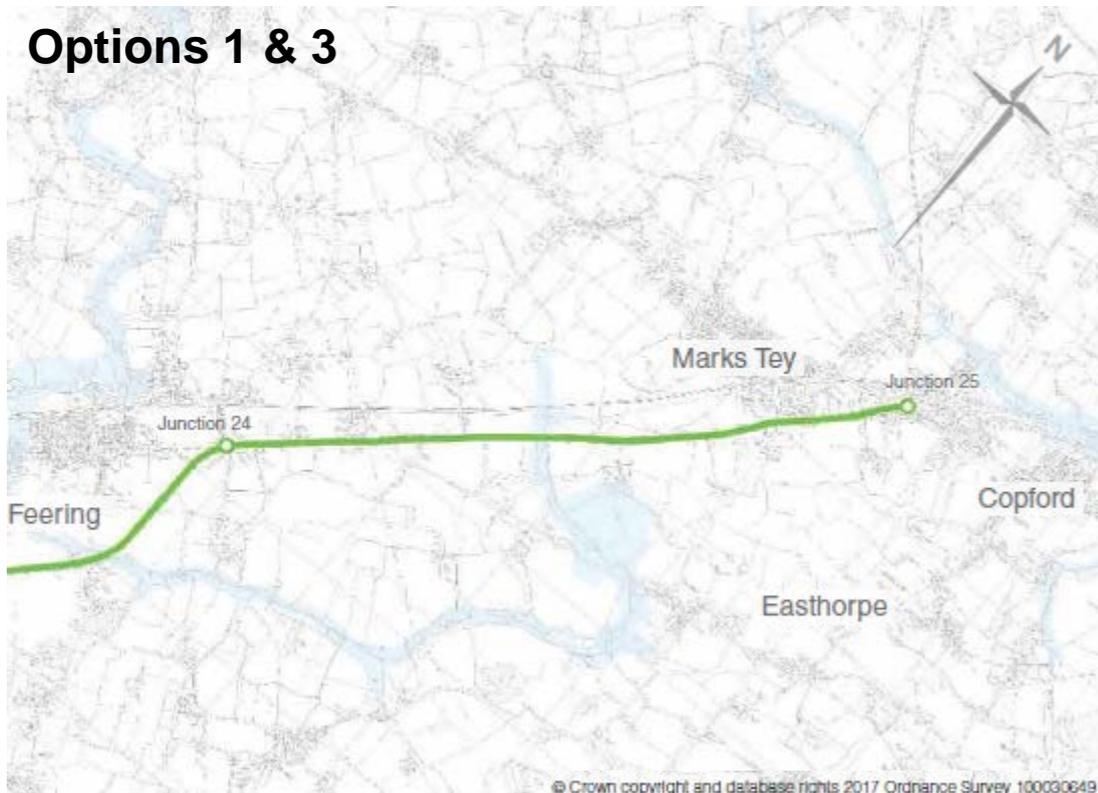
## 5.5 Internal Links

Furthermore it should be noted that the portfolio of schemes presented does not include details or costing of internal links within each of the Garden Communities (unless otherwise noted). These will be defined at a high level through the emerging Concept Frameworks and subsequent Masterplans – with this particularly important where a series of Garden Villages are proposed rather than one contiguous development. A coherent, high quality, dense network of internal walking and cycling links that is well integrated with rapid transit links, land use planning (including densities) and a sustainable travel policy (making use of the **All Sites Schemes** recommendations) will both help make these modes the norm for local trips and make short journeys the default for every reason why people wish to travel. In so doing this will help achieve the ambitious mode share targets set by the North Essex Garden Communities Transport Working Group.

## 5.5 A120 Braintree to A12



## 5.6 A12 Widening (Chelmsford to Marks Tey)



**Legend**

- Widening of existing A12
- New bypass
- Current A12

Source: Highways England (2017): [A12 Chelmsford to A120 Widening Public Consultation](#)

# 6 Menu of Policy Interventions (all sites)



## 6.1 Menu of Policy Interventions

- The following pages provide a series of policy interventions that could be trialled at one or more sites. These are designed to align with the Garden Community ethos, especially in encouragement of active and sustainable modes. It is also based on a realisation that early decisions such as the choice of development partners both in terms of residential and employment will make a big difference to the trajectory of the Garden Community. These are not exhaustive and in some cases may not be right for a particular site, given the distinctive character of each location.
- Related to this, Travel Plans should be developed for each of the Garden Communities from the outset in accordance with Essex County Council's Sustainable Modes of Travel Strategy – 2016 (<http://www.essex.gov.uk/Environment%20Planning/Development-in-Essex/Pages/Sustainable-Travel.aspx>) to articulate what is appropriate for each site, how they will be implemented and then monitored. Exemplar levels of funding for travel plan measures and personalised travel planning will represent real 'value for money' in terms of optimising the potential for residents and businesses to make the most of the active mode and rapid transport infrastructure provided, and minimise the amount of land and expense to be devoted to the car.
- **The plans within this report reflect a point in time reached during the evolution of the related Concept Frameworks for each of the Garden Communities. It must be noted that these plans will change as the Concept Frameworks evolve and develop further.**

# North Essex Garden Communities Movement and Access Study



All Sites

P1

## Campus Development Partner

### Summary

The overall development (or part of the development) could utilise a 'campus' type approach whereby a key overall ethos of the scheme would be that a large proportion of staff working in the employment area would live in the adjacent housing. This would thus facilitate large volumes of residents being able to travel to work on foot and by bicycle.

The approach has been in existence in various forms for some time, with examples including Silver End associated with Crittalls, Bourneville with Cadburys in Birmingham with more recent examples overseas such as Dubai Investment Park.

Given the significant quantum of land available and the 'blank canvas' available at present, the site can be tailored to the needs of a particular employer with sustainable credentials and looking to invest in the A120 Haven Gateway. It would require the support of INVEST Essex, ECC's inward investment activity to promote land parcels in tandem with NEGC.

### Cost

N/A

### Timescale / Trigger

Concept Stage

### Delivery Agency

NEGC / INVEST Essex to facilitate interest

### Funded

N/A

### Assumptions

Requires a development partner who subscribes to the Garden Community ethos – assessment based on this perspective. Requires a financially sustainable business

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



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# North Essex Garden Communities Movement and Access Study



All Sites

P2

## Autonomous Vehicle Passive Provision

### Summary

Autonomous vehicle technology for personal use currently forms one of main areas of research in the field of transport . Given the relatively early stage of the technology at present it is difficult to foresee any 'future proofing' that may be required to incorporate into the design of Garden Communities. As vehicles will have to be able to operate within the wider streetscape environment any adaptations are likely to be relatively minor. As in Greenwich and Milton Keynes, ECC and the NEGC could partner with TRL and/or a car manufacturer to test technology. A partnership with the University of Essex or University of Cambridge could be useful, with a defined area of one of the Garden Communities available for testing. Trials have so far been relatively successful with driverless pods navigating around Milton Keynes Station and Business Park while in Greenwich, preparation has been undertaken ahead of public trials in 2017.

### Cost

<£10M

### Timescale / Trigger

Design Stage

### Delivery Agency

Research and innovation grants should be maximised  
ECC / NEGC / Car Manufacturer(s) / TRL

### Funded

No

### Assumptions

TRL is leading a £8M pilot in Greenwich involving autonomous 'pod' vehicles. Autonomous vehicles could lead to a 'car-sharing' economy and be a sustainable mode of transport

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				



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# North Essex Garden Communities Movement and Access Study



All Sites

P3

## Housing Developer Business Models

### Summary

The early stage of the development proposals would provide the option of considering alternative business models of developers.

The NW Bicester Ecotown development is being led by A2Dominion, a Housing Association based across London and southern England. The business model provides greater scope for the 're-investment' of profits back into the development. This allows them to be able to fund interventions such as sustainable travel measures dependent on revenue funding, which may otherwise be unaffordable under more usual developer business models.

NW Bicester Ecotown is also developing an initial 'exemplar' part of the development where a small quantum of housing for sale is constructed prior to the remainder of the site coming forward. This approach provides a number of advantages including potentially a source of funds if upfront infrastructure is required as well as allowing the 'trailing' of the design for a small proportion of the site before the full development comes forward.

### Assumptions

Subject to externalities and incentives to meet targets – provides the opportunities for early investment in timely sustainable transport

### Cost

Self funding

### Funded

N/A

### Timescale / Trigger

Concept Stage

### Delivery Agency

NEGC

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



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# North Essex Garden Communities Movement and Access Study



All Sites

P4

## Residential Parking Strategy (page 1)

### Summary

The parking strategy for the residential elements of the development will play a key role in determining the overall car usage at the site. The Bicester NW development looked to provide substantially less parking than the relevant parking standards, however a comprehensive set of travel alternatives was put in place to provide alternatives. Options would include a combination of restrictions and incentives.

Defined areas of the development (such as those close to transit hubs and high frequency PT networks) could have zero or very limited private parking spaces, such as examples in London and Cambridge. Easy access to a car club (see P14) would however also be essential as mitigation.

Design of residential dwellings could also incorporate features to discourage car usage including removing the traditional driveway in favour of communal parking areas with parking permits (similar to typical provision for flats).

Defining the whole area as a Controlled Parking Zone (although sensitively designed / enforced) with parking permits (charged for) could be pursued.

### Cost

N/A

### Funded

N/A

### Timescale / Trigger

Masterplan and design  
**GC Essentials**

### Delivery Agency

NEGC

### Assumptions

None.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				



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# North Essex Garden Communities Movement and Access Study



All Sites

P4

## Residential Parking Strategy (page 2)

### Summary

This would thus remove some of the convenience of the car as well as providing control over the number of vehicles per household.

Positive measures to provide people with a choice will include:

- Free membership of a Car club (see **P14**) (for the first two years) to provide access to a vehicle if required. Support of a car club or 'mobility as a service' partner will be essential.
- Mechanisms to encourage uptake of more sustainable vehicles (e.g. electric vehicles receiving free permits). Support of a car manufacturer or local dealership of electric vehicles for free trials could also be pursued.
- Looking further ahead to the 2030s there is the potential for autonomous vehicles that take someone to work to then be utilised by others during the day – could operate as a taxi service or as part of a car club.

### Cost

N/A

### Funded

N/A

### Timescale / Trigger

During occupation and throughout Local Plan Period

**GC Essentials**

### Delivery Agency

NEGC

### Assumptions

Support of a car club or 'mobility as a service' partner.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P5

## Workplace Parking Strategy

### Summary

Full consideration should be given to a Workplace Parking Strategy which could include some of the following:

- Parking charges.
- Workplace parking levy as used in Nottingham, features include:
  - Employers are charged if they provide over 10 spaces.
  - Money raised is put towards major transport improvements.
  - Employers can choose to reclaim costs from employees.
- Sharing workplace parking with other uses to optimise use of land. These could include retail or park and ride, since the employment areas will be little used in most retail peaks.
- Some firms already use dynamic parking management (e.g. RBS' HQ at Edinburgh).

### Cost

Potentially revenue generating

### Funded

No

### Timescale / Trigger

On occupation. Consider during masterplanning and design

**GC Essentials**

### Delivery Agency

NEGC

### Assumptions

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P6

## Employment and Innovation Hub

### Summary

Internalisation of trips will depend on the ability of people to work from third places within each Garden Community both on an *ad hoc* and longer-term basis. Typical measures could include:

- Ensuring that high speed broadband facilities are available.
- ECC Essex Innovation Programme, Garden Community or SELEP investment in third places such as employment and innovation hubs, where small businesses can rent work space and meeting rooms on a 'pay as you' go or longer-term contractual basis, providing spin off benefits in terms of agglomeration and collaboration from similar firms. Examples elsewhere include Business Central Darlington and the Eastern Enterprise Hub at the Knowledge Gateway in Colchester.

### Cost

Minimal

### Funded

N/A

### Timescale / Trigger

Design

### Delivery Agency

Essex Innovation Programme, Garden Community or SELEP

### Assumptions

Opportunity to work with the Eastern Enterprise Hub

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P7

## Homeworking

### Summary

Internalisation of trips will also depend on the level of homeworking within each Garden Community. The level of homeworking of residents will vary according to a number of external factors. The design of the site can however facilitate and encourage homeworking as an option. Typical measures could include:

- Ensuring that high speed broadband facilities are available.
- Designing residential dwellings to include provision of a room which is easily identifiable as a study . This could be reinforced by showing this room as a study in sales demonstration houses.
- Specifying a certain amount / percentage of housing that is Business Start compatible including workshops and office type accommodation.

### Cost

Minimal

### Funded

N/A

### Timescale / Trigger

Design

**GC Essentials**

### Delivery Agency

Developers

### Assumptions

Need to specify via Design Codes

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P8

## Electric Vehicle Trials

### Summary

Part of the travel planning measures to be implemented at the NW Bicester Ecotown development included a partnership with a local car dealership to provide all residents with a free trial of an electric vehicle and discounts if it was then purchased.

The measure delivered a number of benefits to all parties and by providing the trial period for residents any uncertainties on the reliability or function of electric vehicles could be answered. It also helped Bicester meet its sustainable mode share targets (which included electric cars)

Given that a lack of demand can be a barrier to installing electric vehicle charging infrastructure in the wider area, the positive promotion of electric vehicles at the site could form a catalyst for the wider roll out of electric vehicle charging points, thus allowing existing residential areas outside of the Garden Communities to benefit from the initiative and deliver spin off benefits in terms of air quality.

### Cost

Likely to be minimal

### Funded

No

### Timescale / Trigger

From occupation of dwellings

### Delivery Agency

Developers / ECC / local car showrooms

### Assumptions

Cost covered within AECOM's Travel Plan allowances per household.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				

# North Essex Garden Communities Movement and Access Study



All Sites

P9

## Electric Vehicle Charging Infrastructure

### Summary

The measure would install charging infrastructure for electric vehicles. A strategy for electric vehicles would be required but could include provision for all residents and visitor parking areas as well as a substantial proportion for all parking provision for the employment elements of the site.

The provision of a 'critical mass' of electric vehicle usage at the development could form a catalyst for the wider role out and uptake in other areas outside of the Garden Community with spinoff benefits in terms of air quality.

The type and availability of charging infrastructure is likely to improve in the intervening period before construction and the implementation will need to consider features such as the lifespan and speed of charging based on the available technology. Locations such as park and ride sites or business parks could use slower speed charging technology given the length of time vehicles would be based there.

### Cost

Unknown

### Funded

No

### Timescale / Trigger

From outset

**GC Essentials**

### Delivery Agency

Developers / NEGC / UKPN

### Assumptions

Work with UKPN to ensure sufficient Power Capacity is available, and specify with design codes

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				

# North Essex Garden Communities Movement and Access Study



All Sites

P10

## Drone Delivery Proactive Passive Provision

### Summary

A focus for considerable investment at present is the use of drones for the delivery of goods to homes and businesses.

The future requirements for this emerging technology are uncertain at present. Given that drone deliveries would need to operate within existing urban environments, it is unlikely that much 'futureproofing' will be required although the provision of 'clear spaces' (e.g. larger gardens, balcony areas for flats) is likely to be beneficial to provide space for deliveries, as well as being in keeping with the wider Garden Community ethos.

### Cost

Minimal

### Funded

N/A

### Timescale / Trigger

Design and on occupation

### Delivery Agency

NEGC and Developers

### Assumptions

Consider requirements in design codes  
Dependent on wider Government regulations

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
N/A	N/A		N/A	N/A				

# North Essex Garden Communities Movement and Access Study



All Sites

P11

## Freight / Online Delivery Consolidation

### Summary

Options include:

- Delivery hubs e.g. companies such as Doodle – places where residents can go to pick up deliveries in centrally located, easily accessible sites.
- Large hub(s) using internet delivery firm type robots to deliver packages to Garden Community residents. At a location such as Marks Tey the centre could be well located to receive goods from the A12 or A120, minimising impacts on the Garden Community with subsequent final mile deliveries using robots or electric vehicles.
- Lockers at local facilities e.g. Rail Station, Transit Hub, Food store.
- Potential co-location with Post Office / superstore distribution facilities

This would provide choice and flexibility for residents, however further consideration would be required as to how this could be managed, and whether there are incentives for residents to use this rather than have normal home delivery

### Cost

Unknown

### Timescale / Trigger

Local Plan Period

### Delivery Agency

NEGC / Developers

### Funded

No

### Assumptions

Work with the market to persuade them of the business value  
Sensitive location chosen for consolidation centre that does not have adverse impacts on the natural environment and sense of place.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P12

## Guided Parking

### Summary

Depending on the nature of the development and parking provision a range of options would be available including:

- Variable Messaging Signs (VMS) where multiple parking areas are provided directing users to locations with details of available parking provided on the main approach routes to the site;
- Websites, apps and in car technology which can reserve a parking space or direct a user to where parking space is available (including on-street provision could be provided for visitors (similar to a system currently in place in San Francisco – see right); or
- If large individual parking areas are to be provided then guidance systems within a carpark could be provided to direct users to available parking spaces (e.g. as in place at some car parks in Heathrow Airport).

Such an approach would allow optimisation of land use and avoid over provision of car parking.

### Assumptions

Increase in take up in connected vehicles

### Cost

Unknown

### Funded

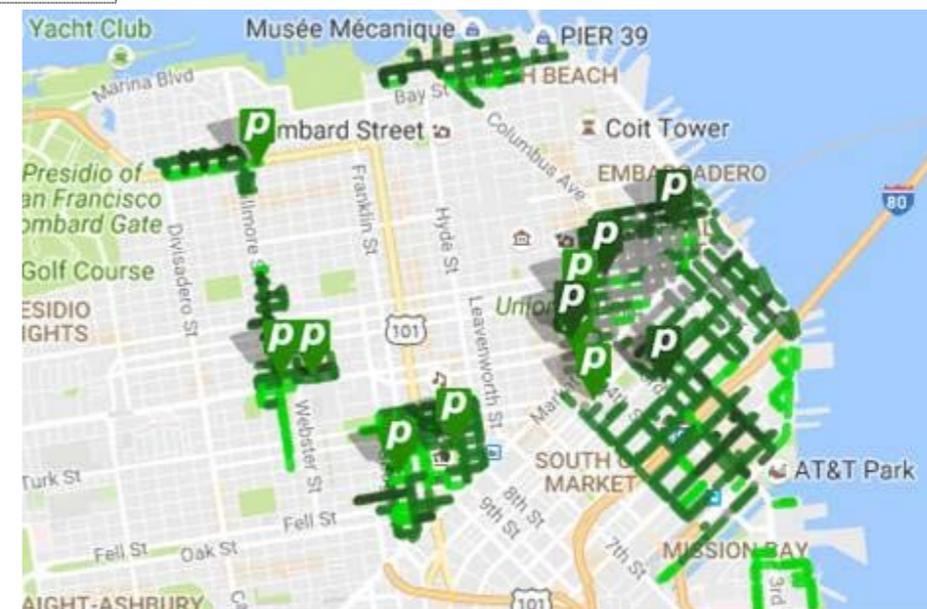
No

### Timescale / Trigger

Masterplanning and design

### Delivery Agency

NEGC / Developers



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
					N/A	N/A	Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				
				N/A					



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P13

## Access Control Points via ANPR Technology (page 1)

### Summary

Many local authorities have replaced rising bollards or gates with Automatic Number Plate Recognition (ANPR) technology to effectively manage access to sensitive urban areas or deliver their transport policies, such as bus lane enforcement. For example Cambridgeshire County Council have recently installed this technology on some of the routes to its City Centre (e.g. right) to prevent through traffic. Likewise this technology is in use by Essex County Council for bus lane enforcement.

Unauthorised vehicles crossing the access control point are fined. The camera technology captures the registration of vehicles and checks that they are authorised to travel past. Vehicles such as emergency vehicles, buses and taxis will have a smooth journey through these points as they do not have to stop. This is a lower cost option for maintenance and operation.

### Cost

<£250k

### Funded

No

### Timescale / Trigger

Local Plan Period – defined roads and times of day

### Delivery Agency

ECC



### Assumptions

Source of photo: Cambridgeshire County Council

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
							Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				
	N/a			N/A					



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P13

## Access Control Points via ANPR Technology (page 2)

### Summary

It is easier to put or remove vehicles onto the system as this is simply putting a registration onto a database rather than installing an expensive transponder onto the vehicle. This would allow access to be maintained for specific local streets (e.g. existing communities) or those with blue badges. There would be clear signage showing the operating times of the bus gates at each location. Other signs will also be placed on the approaches to the control points, indicating a route that drivers can take to avoid the enforcement cameras. This would still enable delivery vehicles and residents to still access homes and businesses from an alternative direction – the intention being to remove through traffic and make vehicle journeys less attractive than active and sustainable modes, rather than not feasible at all.

They also do not have to be operational all the time, allowing access at off peak times.

### Cost

<£250k

### Funded

No

### Timescale / Trigger

Local Plan Period – defined roads and times of day

### Delivery Agency

ECC

### Assumptions

Cost will vary depending on the location as to the amount of civils (e.g. a turning circle). Oxfordshire CC spent £1.5M just on 50 ANPR cameras in 2009 for its City Centre Access Control Points (although civils infrastructure was already in place).

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/a			N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P14

## Car Clubs

### Summary

The provision of a car club scheme allows access to a shared vehicle for car club members. The measure forms a key part of the transport strategy for the NW Bicester and Bordon developments. A number of schemes have also operated in existing residential areas across the UK such as major cities with varying degrees of success. In some developments residents are given free membership for a defined period (e.g. 2 years).

The availability of a shared car for trips may encourage residents not to see the purchase of a car (or a second car) as a necessity and use a car club vehicle for trips that may be difficult using public transport. The pricing structure of the club normally deters the car being used for commuting (i.e. the vehicle would be unused and unavailable for a large portion of the day).

Early engagement with potential partners and definition of dedicated car club parking space standards in both residential areas and other parts of the community will be essential. This could be part of a mobility as a service package.

### Cost

<£150 per home

### Funded

Yes

### Timescale / Trigger

Occupation of homes  
**GC Essentials**

### Delivery Agency

Developers / ECC / Car Club Partner



### Assumptions

Costed within AECOM's Travel Plan Assumptions

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A	N/A			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P15

## Cycle Hire Scheme

### Summary

A further opportunity for enhancing the proportion of residents and employees travelling by sustainable modes could be the implementation of a cycle hire scheme.

The type of cycle hire scheme could vary considerably. Options include

- 'day hire' schemes which could be based at a centralised point within the site (e.g. similar to Bicester Bike Loan) where the user would hire the cycle for use for longer periods and return after several days.
- Shorter term cycle hire schemes (e.g. similar to the London cycle hire scheme, and lower cost facilities in cities such as Liverpool and Glasgow) would require far more extensive infrastructure investment.
- Availability of electrically assisted bikes could also be considered.

### Cost

Variable

### Funded

No

### Timescale / Trigger

From occupation

**GC Essentials**

### Delivery Agency

Developers / ECC / Cycle Hire Partners



### Assumptions

None.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A				

# North Essex Garden Communities Movement and Access Study



All Sites

P16

## Garden Community App (including Travel Information)

### Summary

In order to remove lack of knowledge as a key barrier to using sustainable modes, the Garden Communities could work with ECC, app developers and public transport providers through the use of their open data to provide residents and businesses with a range of information including:

- Community information.
- Links to local journey planners and bus timetables.
- Real time information showing the physical location of rapid transit and rail services .
- Availability of car club vehicles / bike hire.
- Availability of car parking spaces.

Opportunities for incorporating further information are likely to emerge as technology evolves, and could be part of a package associated with a mobility as a service provider.

**Cost** Included in TP Allowance

**Funded** Yes

### Timescale / Trigger

On occupation  
**GC Essentials**

### Delivery Agency

Developers

### Assumptions

Cost covered within AECOM's Travel Plan allowances per household

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P17

## Personalised Travel Planning Advisers

### Summary

Personalised travel planning should be a major part of the travel planning for each Garden Community, focussing on homes, workplaces and mixed uses. Its job is to optimise the use of investment in travel plan measures, active modes and rapid transit infrastructure provided at each site.

Research (Smarter Choices – Changing the Way we Travel, 2004) shows that travel planning can reduce car driver trips by up to 15% amongst the target population and can form an effective means of promoting alternatives to the car and uptake of active / sustainable modes.

This would build on successful experiences and expertise within Essex County Council, such as:

- Colchester Station Travel Plan – part of the National Station Travel Plan Pilot Programme, and the forerunner at Benfleet station.
- Personalised travel planning as part of Colchester Cycle Town.
- Personalised travel planning successes in Basildon and Harlow.

**Cost** Included in TP Allowance

### Timescale / Trigger

Upon occupation

### Delivery Agency

ECC / NEGC

### Funded

No

**GC Essentials**

### Assumptions

Covered by AECOM's assumptions for Travel Plan Contributions per household. Travel planners would need to be employed by ECC or NEGC and funded through the travel plan contributions.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
N/A	N/A			N/A	N/A			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P18

## Smart Ticketing and Automatic Sustainable Travel Pass Enrolment

### Summary

As part of the development, dedicated high quality rapid transit services are required. To remove a key barrier to the use of public transport, a smart ticketing initiative could be implemented to remove the need to pay for the service when boarding.

To encourage the uptake of these services, as a minimum taster tickets' could be provided, however this idea could be extended by exploring alternative models. Given the potential size of the development, active consideration should be given to automatic sign up of households for annual passes to the rapid transit services. This would effectively make the bus service free at the point of use and likely greatly encourage uptake.

The bus / rapid transit pass cost could potentially be 'bundled' with other services (in partnership with a mobility as a service partner) and implemented in a form similar to a service charge payable for a typical home.

### Cost

£450 per resident

### Funded

No

### Timescale / Trigger

Upon occupation

### Delivery Agency

NEGC / local bus companies

### Assumptions

Arriva's Essex Annual Pass cost £450 per person in December 2016.

Its costs would effectively be recouped through service charges. Greater uptake of services or specification of its use for services within just the Garden Community and the immediate town hinterland could result in a lower cost per resident.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P19

## Free Travel Zone

### Summary

Parts of the rapid transit system in the Garden Communities could be subject to a free travel zone, as employed in cities such as Melbourne, Australia and Portland, Oregon to encourage use. Travel outside of a defined zone would be chargeable. This could be considered as an alternative to P19 and further remove incentives for short local journeys by car. This could be particularly useful to people working at the Garden Community wishing to make short journeys to mixed use facilities at lunch time or after work.

### Cost

Unknown

### Funded

No

### Timescale / Trigger

Upon establishment of rapid transit network

### Delivery Agency

ECC / Rapid transit operator

### Assumptions

Map courtesy of Public Transport Victoria



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
					N/A	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
	N/A					

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



All Sites

P20

## Rapid Transit Vehicle Specification

### Summary

In order to improve the attractiveness of the service, rapid transit vehicles should be high specification and should include:

- Wifi and Charging points both on vehicles (as on the X10 bus service from Basildon to Stansted) and transit hubs (as is now being rolled out at Greater Anglia stations).
- Leather seats (e.g. Bicester to Oxford S5 service).
- Real time information screens (e.g. showing the next trains departing)
- Hybrid and /or electric vehicles.
- Transponder equipment to allow the location of the vehicle to be tracked so that users can be confident about when the vehicle will arrive (e.g. Abellio bus tracker app in Surrey).
- System similar to iBus in London describing the next stop.
- Making data freely available and partnering with the Universities of Essex and Anglia Ruskin could also allow the creation of useful apps.

### Assumptions

Specify in contracts

### Cost

Increment on tendered contracts

### Funded

No

### Timescale / Trigger

Design

**GC Essentials**

### Delivery Agency

ECC / Rapid Transit operators

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P21

## Healthy Rapid Transit Stops

### Summary

Every person is likely to be within approximately 400m of a rapid transit stop to provide easy access to public transport for all.

Every rapid transit stop can have a defibrillator fitted and therefore every person is within 400m of a heart defibrillator in case of emergency.

Public defibrillators guide the user through operation and will not shock if the person who has fallen ill is not in cardiac arrest or if it has not been properly administered.

This has been implemented at Bicester NW Ecotown and is part of their Healthy Towns Commitment and promotes a 'walkable' towns initiative.

### Cost

Minimal

### Timescale / Trigger

Upon delivery

### Delivery Agency

ECC / NEGC

### Funded

No

### Assumptions

None

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							

# North Essex Garden Communities Movement and Access Study



All Sites

P22

## Provision of Cycle Equipment

### Summary

To encourage uptake of cycling, all homes could be provided with cycle equipment to ensure all residents have the potential to be able to travel by bicycle. Similar measures were included in the Borden and NW Bicester developments and included the following:

- Provision of cycles / folding / electric bikes or vouchers for cycles;
- Cycle parking installed within the home;
- Helmets, panniers and safety equipment;
- Branded waterproofs;
- Free bike locks; and
- Free bike servicing.

### Cost

<£750 per home

### Funded

Yes

### Timescale / Trigger

Upon occupation

### Delivery Agency

Developers



### Assumptions

Assumed to be funded within the Travel Plan sums proposed by AECOM

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P23

## Quietways and Flagship Cycle Routes (page 1)

### Summary

The *Essex Cycling Strategy* (<http://www.essexhighways.org/Getting-Around/Cycling/cycle-strategy.aspx>), November 2016, notes the importance of coherent, high quality and planned cycle networks that connect key destinations, support a network of recreational routes and cater for all users and abilities.

To help fulfil this objective the Essex Cycling Strategy recommends the provision of both continental standard cycling facilities (with a working title of 'Flagship' routes) and 'Quietways' through our urban areas (examples shown right). Flagship route features include:

- Segregation from vehicles and pedestrians using one-way cycle tracks and Dutch, Danish or light type segregation depending on the context.
- New signalling options, such as low-level cycle signals and pre-greens
- Cycle friendly roundabout options in some situations.

### Assumptions

Assumed to be funded through allocations for internal road and active mode links.

### Cost

N/A

### Funded

Yes

### Timescale / Trigger

Initial phases of development onwards  
**GC Essentials**

### Delivery Agency

NEGC Ltd / ECC



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



All Sites

P23

## Quietways and Flagship Cycle Routes (page 2)

### Summary

Quietways are networks of interconnected cycle routes on quiet residential streets where priority is given to cyclists and pedestrians over motorised traffic, helping to target less confident cyclists whilst also providing for existing cyclists. Features include, as appropriate:

- Wider use of coloured surfacing for on-carriageway 'patch' symbols to help with navigability and route awareness – a coloured surface route is much easier to follow through a complex urban area than just conventional cycle route signage.
- High quality, 'Quietway' branded signage.
- 20mph speed limits.
- Cycle/pedestrian only access.
- Traffic free routes through green spaces and along waterways.

### Assumptions

Assumed to be funded through allocations for internal road and active mode links.

### Cost

N/A

### Funded

N/A

### Timescale / Trigger

Initial phases of development onwards  
**GC Essentials**

### Delivery Agency

NEGC Ltd / ECC



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
							Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				



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# 7 Menu of Policy Interventions (West Braintree / Uttlesford Borders)



## 7.1 West Braintree / Uttlesford Borders Infrastructure Summary

The following is a current summary of total external transport infrastructure costs where the Garden Community could be expected to fund a significant proportion (identified as **GC essentials** on each scheme). Costs of converting the Braintree-Witham Line to Guided Bus are identified separately from the headline totals, given that this needs evaluation against the provision of the Crossing Loop. **These figures do not include costs associated with internal walking, cycling and road infrastructure (unless otherwise stated) which would be defined during subsequent master planning.**

	GC Essentials	
	Low range	High range
Active Modes & Public Realm	£5.5M	£9M
Rapid Transit (excluding Guided Bus / Crossing Loop – see below)	£20.5M	£29.5M
Road	£17M	£26.5M
Travel Plan Measures (@£1,500 per home) – 8,000 homes	£12M	£12M
<b>Total</b>	<b>£55M</b>	<b>£77M</b>
<b>Guided Bus and Freeport Transit Hub</b>	<b>£115M</b>	<b>£152 M</b>
<b>Crossing Loop and Freeport Transit Hub</b>	<b>£15M</b>	<b>£22M</b>

- Travel Plan measures (inclusive of bus service subsidies) are from the AECOM June 2016 report. The interventions can be found on the pages in turn. In some cases costs are not yet known or can be given realistically given the stage of the project. **All costs will need further review through masterplanning and feasibility studies where relevant.**
- The plans within this report reflect a point in time reached during the evolution of the Concept Framework. It must be noted that these plans will change as the Concept Framework for West of Braintree / Uttlesford Borders evolves and develops further.

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

A1

## Flitch Way (Do Minimum)

### Summary

The Flitch Way provides a well used leisure trail from Braintree station towards the west. Apart from a short section in the Braintree urban area (to Pods Brook Road bridge) the surface is not an all weather material and hence unsuitable for anything other than mountain bikes in winter. The route is also not lit which prevents its use as a commuting trail except in summer.

It is recognised that there is strong local interest in retaining the rural value of the route with potential nature reserve designation pending and so two options are suggested for discussion depending on that outcome.

- (i) All weather surfacing from Pods Brook Bridge to River Brain Footpath only and upgrade of River Brain Footpath to Springfields (for Rayne Road – **scheme A2**) - 600m widening and surfacing connection.
- (ii) Provision of low level or user activated sensitive lighting along this section. The Flitch Way west of this point would remain as it is currently.

### Assumptions

Trials of luminous cement or other innovative materials could help mitigate impact in future. For further details see (<https://www.scientificamerican.com/article/glow-hard-luminous-cement-could-light-roads-structures/>). Costs of £500k to £1M per km for off-road sections where drainage etc. more likely. Source: NEGC Cost Review.

### Cost

£300K - £600K

### Funded

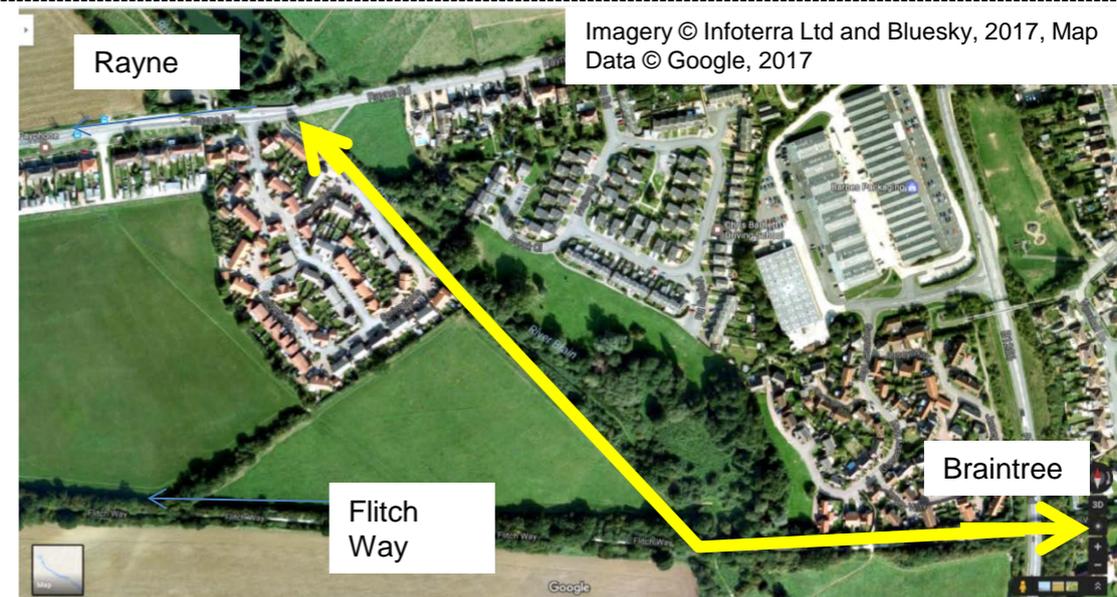
No

### Timescale / Trigger

Initial Phases of Development  
**GC Essentials**

### Delivery Agency

Consider use of any S106 funds from Tarmac quarry site  
GC Contribution



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		Potentially					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
			N/A	N/A	N/A			



integrated expertise



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# North Essex Garden Communities Movement and Access Study



West of  
Braintree

A2

## Rayne Road Shared Use Cycleway

### Summary

Provision of a shared use footway / cycleway – 3m where possible (current ECC Minimum standard) through widening of footway to take verge.

Sections would include:

- River Brain to Rayne Village to connect with link to Flitch Way (**Scheme A1**) and quietway routes to improved all-weather bridleways accessed via Shalford Road
- Rayne Village and Garden Community at the Blake End junction - note active Quarry frontage which would require careful design at this junction, or its provision post quarry exhaustion.

This is approximately 4km in length

It is likely that this would be best provided on the northern side of the road given that a continuous footpath is already in existence for the length of the route. On road cycling would likely be required in Rayne village itself.

### Cost

£1.5M

### Funded

No

### Timescale / Trigger

Local Plan Period  
First phase of homes  
**GC Essentials**

### Delivery Agency

Consider use of any S106 funds from Tarmac quarry site  
Otherwise ECC / GC to fund



### Assumptions

£280k per km for unlit section including contingency based on recent Chelmsford Growth Strategy cycle routes. This involves the use of verge rather than changes to kerb lines. Toucan crossing for the River Brain link and potentially at quarry junction represent another £160k each at 2016 prices.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A				



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# North Essex Garden Communities Movement and Access Study



West of Braintree

A3

## Queenborough Lane Quietway

### Summary

Queenborough Lane provides access from Rayne to Skyline 120 and Great Notley. It is potentially used as a 'rat-run' given it allows motorists to avoid the A120/A131 junction, and the demand for this movement may increase with development at the West of Braintree Garden Community. The proposal is to restrict access to the road at one end of its length to cycles and local residents (to be defined but suggested as those currently resident in Queenborough Lane or the south of Rayne village). This would be managed and monitored via an access control point with ANPR technology as used in Cambridge (see **All Sites P13**). Vehicles not registered would be subject to a fine via a TRO. Access for deliveries would be via the other end of Queenborough Lane. This would help this road to perform a 'quietway' function for active modes from West of Braintree to Great Notley Country Park and Skyline 120 from the Flich Way, Shalford Road (**Scheme A4**) and Rayne Road **Scheme A2**).

### Assumptions

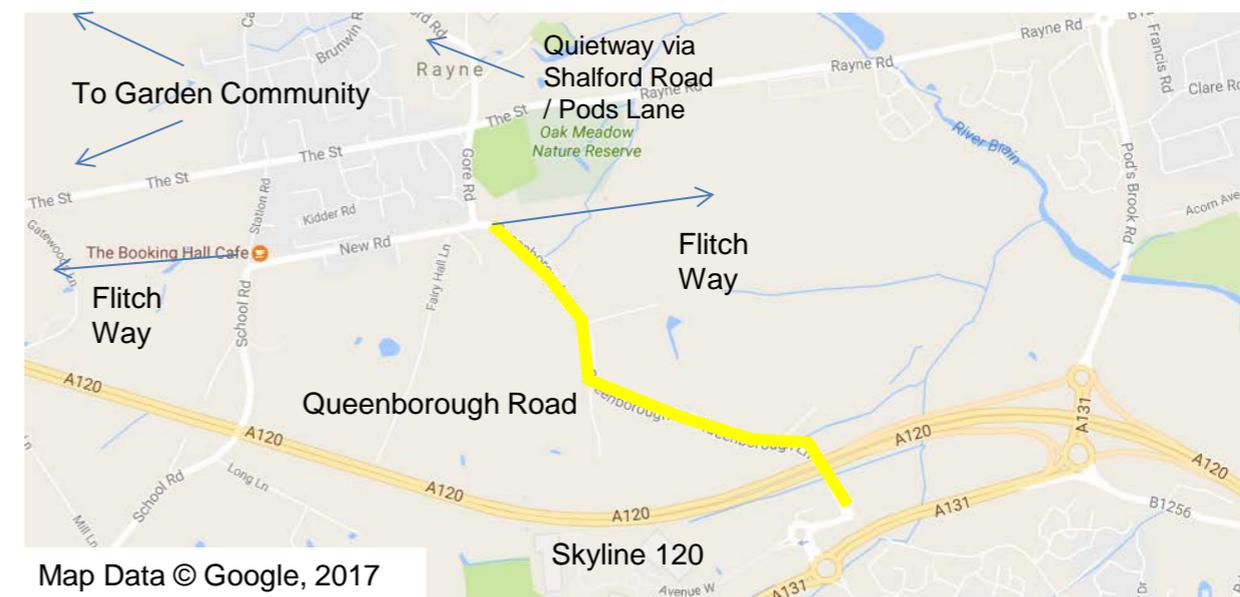
Requires ANPR technology and minor civis. Fosters green links to Great Notley Country Park in conjunction with the current Flich Way.

**Cost**  
<£250K

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
**GC Essentials**

**Delivery Agency**  
ECC to deliver  
GC to fund / LSTF?



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
		N/A				
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
			N/A	N/A		

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

**A4**

## Shalford Road / Pods Lane Quietway

### Summary

This scheme involves designating this road as a 'quietway' function for cycling / horse riding from West of Braintree to Rayne with links to **schemes A2 and A3** as well as the Fritch Way. The 'quietway concept' is described in the Essex Cycling Strategy – November 2016.

This will include as appropriate the use of:

- on-carriageway 'patch' symbols,
- high quality quietway branded signage
- 20mph speed limits

Care would be applied in the protected Pods Lane

This supports a range of journeys to leisure, education, retail and employment destinations in the Braintree area.

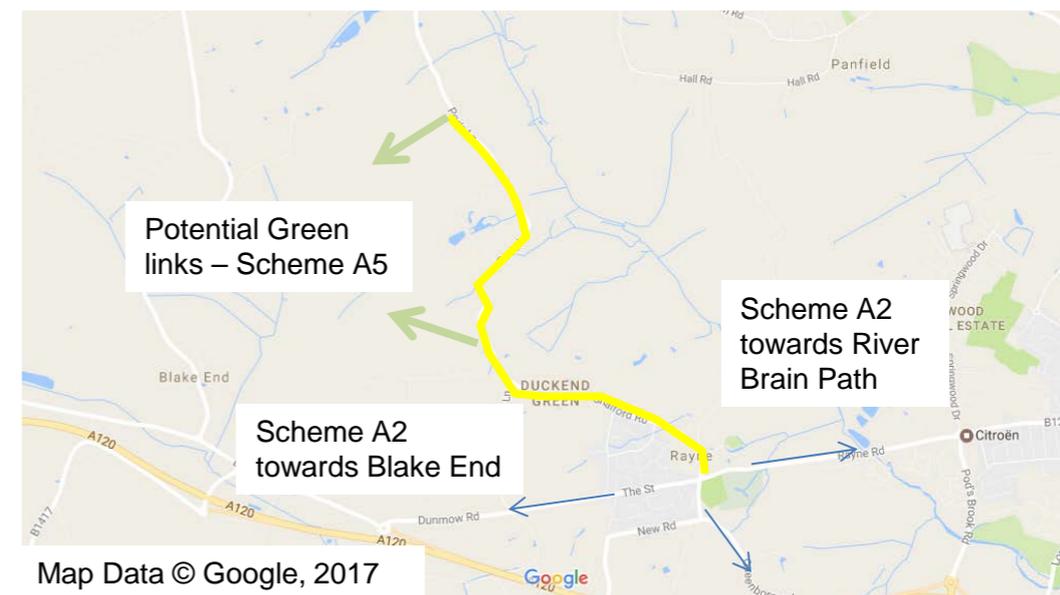
**Cost**  
<£250K

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
**GC Essentials**

**Delivery Agency**  
ECC to deliver  
GC to fund / LSTF?

### Assumptions



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
		N/A				
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
			N/A	N/A		

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

**A5**

## Conversion of footpaths to bridleways / cycleways

### Summary

Conversion of various Public Rights of Way to bridleways and cycleway status to allow improved access to the countryside for active modes and those with mobility impairment from the Garden Community. These would be a mixture of off road and all-weather materials.

We have assumed there to be approximately 6km of cycleway / bridleway for conversion

A connection from Pods Lane to Park's Farm and The Street to the north of the Quarry site would be a priority route to provide an attractive leisure route for residents of the Garden Community, and would help to provide a safe, traffic free route away from quarry related traffic on Rayne Road and the B1256

### Cost

£3M - £6M

### Funded

No

### Timescale / Trigger

Both Plan Periods

**GC Essentials**

### Delivery Agency

GC to fund and deliver  
Consider use of Quarry  
S106 funds

### Assumptions

£500k to £1M per km for off road cycleway conversion / creation. Source: NEGC Cost Review. The routes would need to be walked to confirm that they could be converted and designed sensitively around environmental habitats.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
			N/A	N/A	N/A			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

A6

## Garden Community to Felsted Link

### Summary

An adequate surfaced bridge already exists over the A120 to provide access to Straits Farm as a PROW from the B1256 in the vicinity of the Garden Community. This route then continues as a bridleway to the B1417 for a further 800m. It is therefore theoretically possible to already use the route as a cycle route, although invariably limited to daytime outside of winter.

South of where the bridleway joins the B1417 it is possible in parts to provide a footpath / cycleway but this would not be continuous without land take.

Instead it is suggested that a quietway cycle route is signed to Felsted via Porters Hall Road and Stebbing Road that takes people away from the B1417 and new junctions for the A120 and B1256. This would require minimal expenditure.

### Cost

Minimal

### Funded

No

### Timescale / Trigger

Local Plan Period

### Delivery Agency

ECC to deliver



Map Data © Google, 2017

### Assumptions

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A	N/S				Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A		N/A	N/A	N/A			

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

**PT1  
(Op 1)**

## Witham-Braintree Branch Line (Guided Bus) – page 1

### Summary

Conversion of the existing Witham to Braintree single track branch line to guided bus technology. The line was only constructed as a single track railway with passing loops at Cressing and Braintree (now lifted).

The service suffers from poor reliability, with delays on the mainline often resulting in curtailment of the branch service. The line is also characterised by low line speed and low frequency (typically 1 train per hour). As a result there is considerable rail heading to other stations such as Witham.

The proposal includes the following features:

- Conversion of 10.3km permanent way to guided bus with connections to the road network at Braintree station.
- Provision of a combination of single track and double track (where possible) to provide opportunity for a high frequency service, supported by a signalling system. Indicative demand assessment suggests that a 7.5 minute frequency of service may be necessary to cater for demand based on Garden Community and existing Braintree rail patronage.

### Assumptions

Network Rail's plans for a 4 track loop north of Witham / south of Colchester could still be delivered given the indicative plans in the Anglia 2016 Route Strategy. Allows the current Braintree service to be diverted at Witham to provide enhanced frequency for Marks Tey and beyond.

### Cost

£110M - £140M

### Funded

No

### Timescale / Trigger

Local Plan Period

### Delivery Agency

ECC / Network Rail to deliver  
SELEP funding required  
alongside GC and Developer  
contributions



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

**PT1  
(Op 1)**

## Witham-Braintree Branch Line (Guided Bus) – page 2

### Summary

Services to be operated by a combination of high quality single deck and articulated buses - marketed as part of the Greater Anglia franchise with through tickets and branding. Services would operate early morning until midnight.

Creation of a transit hub at Witham station on part of site of current car park.

Conversion of the current Braintree branch platform to a terminal siding for terminating trains from London.

Provision of a segregated walkway and safety features from the northern island platform to the new transit hub. Alternatively a more costly structure could be provided between the transit hub and both platforms if through running to Colchester and the proposed loop line was retained.

This would need further technical evaluation and feasibility assessment to determine viability (width of alignment, Network Rail interfaces) and the business case. Requires a Transport and Works Act Order. Closure of rail line to Braintree requires statutory procedures as specified in Railways Act 2005. The investment case for conversion must demonstrate that the replacement services represents better value for money than existing rail service.

### Cost

£110M - £140M

### Funded

No

### Timescale / Trigger

Local Plan Period

### Delivery Agency

ECC / Network Rail to deliver  
SELEP funding required  
alongside GC and Developer  
contributions



### Assumptions

Costs based on the following at this stage: Cambridgeshire and Luton-Dunstable guideway costs (£6M to £7.5M) x 10.3km, transit hub at Witham (£5M-£7M) + Optimism Bias 66% given various unknowns. Excludes provision of rail replacement service during construction.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	Feasibility
							Affordability	Reasonable fit with Objectives?
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

**PT1  
(Op 2)**

**Witham Braintree Branch Line Rail Enhancement  
(Crossing Loop)**

## Summary

Current proposals to enhance the frequency of the Braintree branch to every 30 minutes through the provision of a new passing loop at Crossing station.

A study to assess the feasibility and business case is currently in progress for reporting in 2017.

This should be evaluated alongside Option 1 as part of the forthcoming Rapid Transit study reporting in the spring of 2017. Should rail be retained then interchange with rapid transit services from the Garden Community will be needed at Braintree and / or Braintree Freeport stations using variations on the proposed Rapid Transit Route Diagram provided in this report.

## Cost

£10M

## Funded

Potentially

## Timescale / Trigger

2020s

## Delivery Agency

New Homes Bonus Budget?  
Network Rail to deliver

## Assumptions

Cost source: Braintree and Witham Times, 2014

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal
					N/A	N/A	Deliverability – TBC
							Feasibility – TBC
							Affordability – TBC
							Reasonable fit with Objectives?
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation		
N/A	N/A						

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

PT2

Millennium Way Slip roads

## Summary

The proposed Millennium Way slip roads scheme would provide relief to the A120/(B1018) Galleys Corner junction by allowing traffic to/from the west to join the B1018 via new slip roads, improving access to Braintree Freeport. Associated with PT1, there is an option to allow guided bus services to run in traffic on the A120 and use the proposed slip roads and internal roads in the Freeport development to access the Guided Bus Network at Braintree Freeport station with access ramps. As an addition, widened slip roads that provide dedicated bus priority could be required. However it is understood that the land acquisition for the present scheme was difficult enough and hence the deliverability of additional lanes is problematic. The overall appraisal score is for the PT use rather than the current highways scheme. Should Options A or B be chosen for the A120 Braintree to A12 scheme then this may provide the opportunity for a standalone tie-in with a converted Braintree branch line for guided buses.

**Cost**  
£12M - £14M

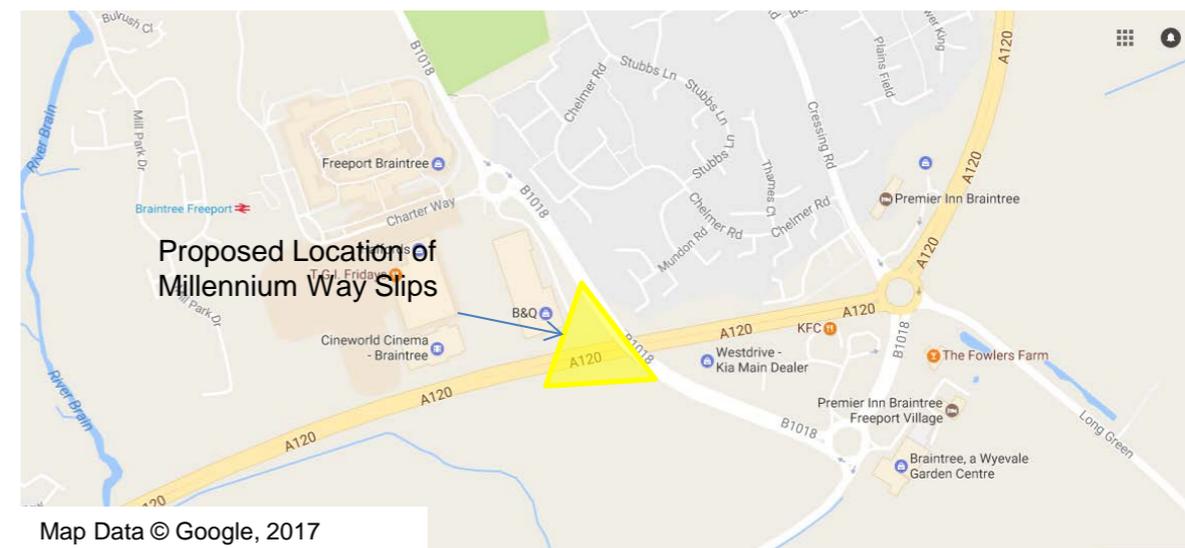
**Timescale / Trigger**  
2021

**Delivery Agency**  
Highways England

**Funded**  
No

## Assumptions

Cost source: ECC, March 2017.  
Detailed design ongoing, and may be funded by Highways England.



## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
		N/A				
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

PT3

## Braintree Freeport Interchange Facilities

### Summary

Braintree Freeport is a basic station with footbridge with pedestrian ramps down from the Freeport development. The proposal is associated with PT1 (Option 1) only and involves the provision of a higher quality transit hub building to cater for higher patronage and interchange with local buses and cycling, and access ramps to the guided bus line.

Further work would be required to determine the feasibility of access arrangements given the site's topography.

### Cost

£5M - £12M

### Funded

No

### Timescale / Trigger

Scheme PT1  
(Option 1)

### Delivery Agency

ECC / Network Rail to deliver  
SELEP funding required  
alongside GC and Developer  
contributions

### Assumptions

Cost for transit hub as per other schemes with additional 66% optimism bias applied to the upper figure given the unknowns associated with the site topography.



Imagery © Infoterra Ltd and Bluesky, 2017, Map Data © Google, 2017

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



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Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

**PT4**

**A131 / A130 Bus Lane (Great Leighs to Chelmer Valley)**

## Summary

Provision of a dedicated southbound bus lane on the A131 from Great Leighs to Chelmer Valley Park and Ride. There appears to be space within the highway boundary to deliver with generally wide verges and hatched centre line.

This complements current proposals associated with the SELEP funded Chelmsford to Braintree Route Based Strategy that includes the provision of a dedicated left turn filter lane from the A131 to A130 Essex Regiment Way and the full provision of a bus lane from the Chelmer Valley Park and Ride to Nabbots Farm roundabout at North Springfield.

This also complements the provision of a bus lane on the A1016 from Lawn Lane to the University that is part of the Chelmsford Growth Strategy.

## Cost

£6.5M - £9.5M

## Funded

No

## Timescale / Trigger

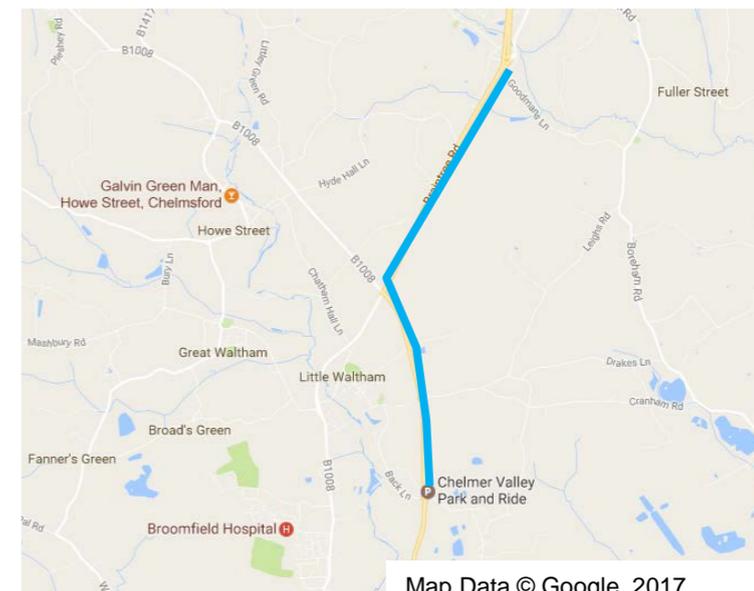
Local Plan Period

**GC Essentials**

## Delivery Agency

ECC to deliver

Some GC and other Developer funding / ECC / SELEP funding?



## Assumptions

Based on costs for the A1016 University to Lawn Lane Bus Lane (£2M for circa 1 mile – distance from Chelmer Valley P&R to Great Leighs is 3.2 miles) + optimism bias of 44% for range. Assumed can be delivered within highway land

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West of Braintree

**PT5**

## Rapid Transit and Flagship Cycle Route within the Garden Community

### Summary

Within the Garden Community itself it is proposed that a rapid transit only road with adjacent flagship cycle route infrastructure based on the Fastrack Model (£1.2M to £1.5M per km) would be appropriate providing the opportunity for a full range of rapid transit and local public transport vehicles to use the infrastructure. This can also be used by cyclists. This option could be used by autonomous vehicles in the future.

With the intention to deliver PT6 during the later phases of the Local Plan Period, to provide high quality connectivity to Braintree and other development, the full infrastructure would need to be delivered in a phased approach including crossing later phases of the development which will not be built out at that stage. A good example of this is Fastrack, where the full Fastrack A route through the Bridge site was provided at the outset of the development.

### Cost

£4.5M - £5.5M

### Funded

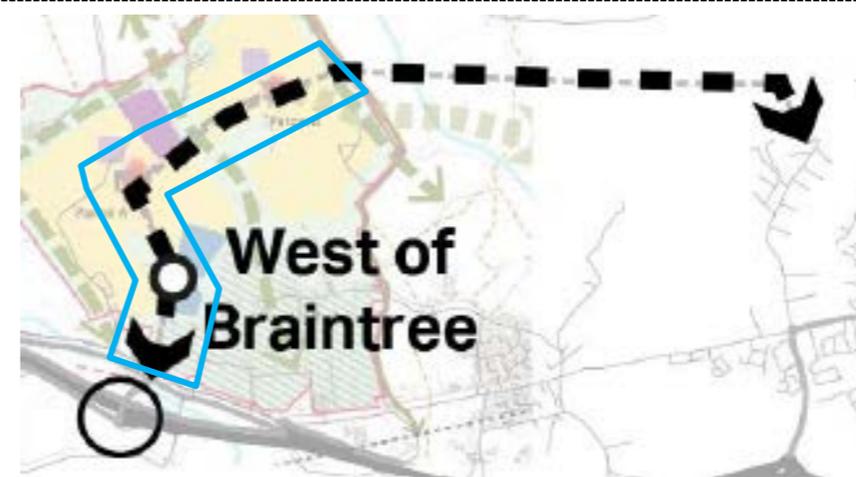
No

### Timescale / Trigger

Local Plan Period –  
phased delivery  
**GC Essentials**

### Delivery Agency

ECC/ NEGC Ltd to deliver  
GC to fund



Source: AECOM 9/2/17: West of Braintree Movement and Access Study All Modes – presented to ECC and Jacobs

### Assumptions

Assumed that there is 3.6km of route within a fully built out development based on approximate measurement of plans (+15% curve factor) in AECOM's working documents for this Concept Framework This does not include a connection to NW Braintree which is covered in PT6. Cost assumptions detailed in NEGC Cost Review, November 2016.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N.A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West of Braintree

**PT6**

## Rapid Transit and Flagship Cycle Route – NW Braintree Link

### Summary

3.6km link from the northern part of the site to link up with planned development in the NW part of Braintree. We envisage that this would be a rapid transit only link with a complementary flagship cycle route, with the ability for the route to be used by emergency vehicles as and when required. For this reason it cannot be specified as a guided bus route.

Access would be controlled through ANPR technology (see All Sites P13) at Pods Lane and NW Braintree.

It is assumed that this would be a conventional road, albeit it is crossing land not within the Garden Community control resulting in a higher cost typical of an all purpose road rather than that expected for PT6.

This provides the opportunity to run services in a loop from Braintree town centre to the Garden Community via Rayne Road and new development in NW Braintree including Springwood Industrial Area. The infrastructure could be used by a range of longer distance rapid transit and regional bus services from the likes of Witham, Chelmsford and Cambridge.

### Assumptions

Assumed that development plans for NW Braintree by Mersea Homes Ltd & Hills Residential Ltd enable this link to connect on to the “Panfield Link” for Springwood Drive and Panfield Lane. Internal RJ Review (27/02/17) of potential costs with 44% optimism bias on upper range given need for brook crossing and other potential unknowns.

### Cost

£4.5M - £7.5M

### Funded

No

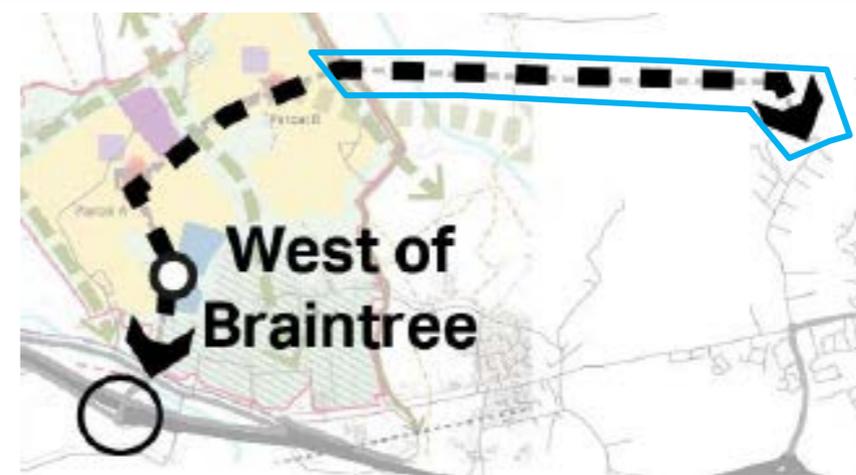
### Timescale / Trigger

Local Plan Period  
(later stages)

**GC Essentials**

### Delivery Agency

ECC / NEGC Ltd to deliver  
GC / other developers / LGF  
to fund



Source: AECOM 9/2/17: West of Braintree Movement and Access Study All Modes – presented to ECC and Jacobs

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
Green	Yellow	Yellow	Yellow	Green	Green	Green	Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
Green	Yellow	Green	Green	Green	Green			



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# North Essex Garden Communities Movement and Access Study



West of  
Braintree

PT7

## Transit Hub (Garden Community)

### Summary

Located in the southern portion of the site to allow its use for passing coaches and strategic public transport routes on the A120 and to act as the interchange for local services, cycling and walking in the Garden Community. Given its strategic location, the site also offers the potential to act as a Strategic Coachway / Park and Ride (on the Handy Cross and Milton Keynes model) with car parking for people wishing to use services to Stansted, Chelmsford, Braintree and Colchester. This would be attractive to residents in surrounding villages and pass-by traffic on the A120.

Potential volumes and locations require analysis to assess whether this would be desirable from a local junction capacity perspective.

The facility could be designed in a modular fashion to be easily expanded in size to cater for growth without incurring unnecessary operational expenditure in early years. This could result in a lower initial upfront cost, such as the £3.4M outturn for the Colchester Park and Ride that opened in 2015 (Source: ECC).

### Cost

£5M - £7M

### Funded

No

### Timescale / Trigger

Local Plan Period

**GC Essentials**

### Delivery Agency

GC to fund / ECC / NEGC Ltd to deliver

### Assumptions

Does not include any further enhancements to junctions required as a result of a Strategic P&R function. However this could solve junction and link problems elsewhere on the strategic and local network.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



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Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

R1

## A120 / B1256 New Western Junction

### Summary

The achievement of ambitious mode shares and internalisation also requires significant highway infrastructure for 8000 homes. In such scenarios measures to spread the traffic for east and west trips on to the A120 will be effective with two junctions for vehicular traffic with traffic to/from the west using the B1256/Blake End junction with traffic from the east and B1417 predominantly using the B1256/B1417 Eastern Boulevard junction in R1 (Final State)

We suggest that this new all vehicles limited movements junction serving the west end of Garden Community is constructed during the Local Plan Period with a new B1256 roundabout, eastbound off slips and westbound on slips connecting to this access. This will require a new structure across the A120 to provide the westbound access. The westbound on slip could be provided as rapid transit and HGV only in the interim phases to encourage public transport use with an all vehicles lanes grassed over and to be provided at a defined trigger.

### Assumptions

RJ Internal review (27/02/17) provided a range of £5M to £6M with a 44% optimism bias sum applied to the upper figure. There is a need to gain height quickly given the flat lie of the land and the A120 height relative to the B1256.

### Cost

£5M - £9M

### Funded

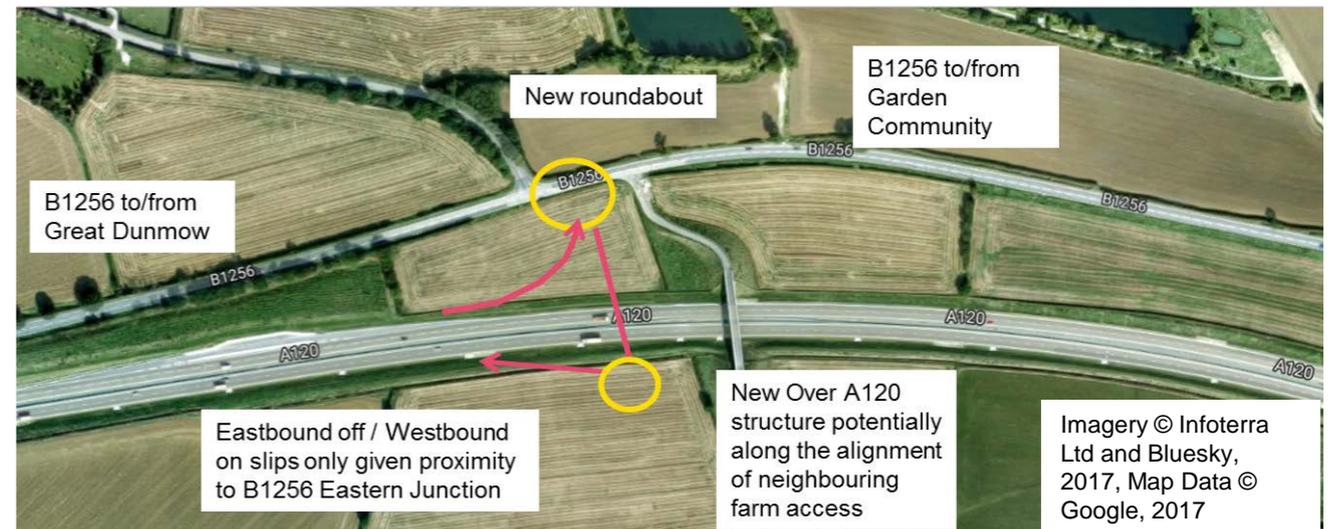
No

### Timescale / Trigger

Local Plan Period  
**GC Essentials**

### Delivery Agency

HE / ECC to deliver  
GC to fund



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A			Deliverability
								Feasibility
								Affordability
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation		Reasonable fit with Objectives?	



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Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

R2

## B1256 Blake End Junction

### Summary

The current access junction to the site from the B1256 consists of a:

- Priority triangular give-way junction with the Street at Blake End
- Local Plan Improvements subject to defined triggers
- B1256 / Blake End Junction upgrade as traffic signals or roundabout with consideration to the 'place' making aspect and needs of all modes.
  - Safety and alignment Improvements to road and provision of walking and cycling facilities on The Street between the B1256 and development access point

### Cost

£2M - £2.5M

### Funded

No

### Timescale / Trigger

Local Plan Period –  
Initial Phases

**GC Essentials**

### Delivery Agency

NEGC to fund  
ECC to deliver



Imagery © Infoterra Ltd and Bluesky, 2017, Map Data © Google, 2017

### Assumptions

£2M-2.5M cost for Blake End junction improvement – RJ Internal Review (27/02/17)

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



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Essex County Council

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

R3a

## A120 / B1256 East Junction Improvements (INTERIM)

### Summary

The current eastern access junction to the site from the A120 consists of a:

- Westbound off slip – parallel diverge from the A120 with a roundabout junction with the B1417 and bridge over the A120 ending at a give-way priority junction with the B1256.
- Eastbound on slip – parallel merge to the A120 from a roundabout junction with the B1256

Local Plan Improvements subject to defined triggers

- Increased capacity for off slip access junction including new on slip
- B1256 / B1417 junction improvements including left filter for rapid transit
- c.1 mile of new bus lane through the B1256 / B1417 junction and B1256 / Rayne Road junction – wide verge east of B1417 junction, although pinch point between Blake End and B1417 defines its end.

Capacity improvements and left filter costs included in the Final Junction Estimate.

### Assumptions

£2M for 1 mile of bus lane (Chelmsford Growth Strategy unit cost) with application of 44% optimism bias for range at this location

### Cost

£2M - £3M

### Funded

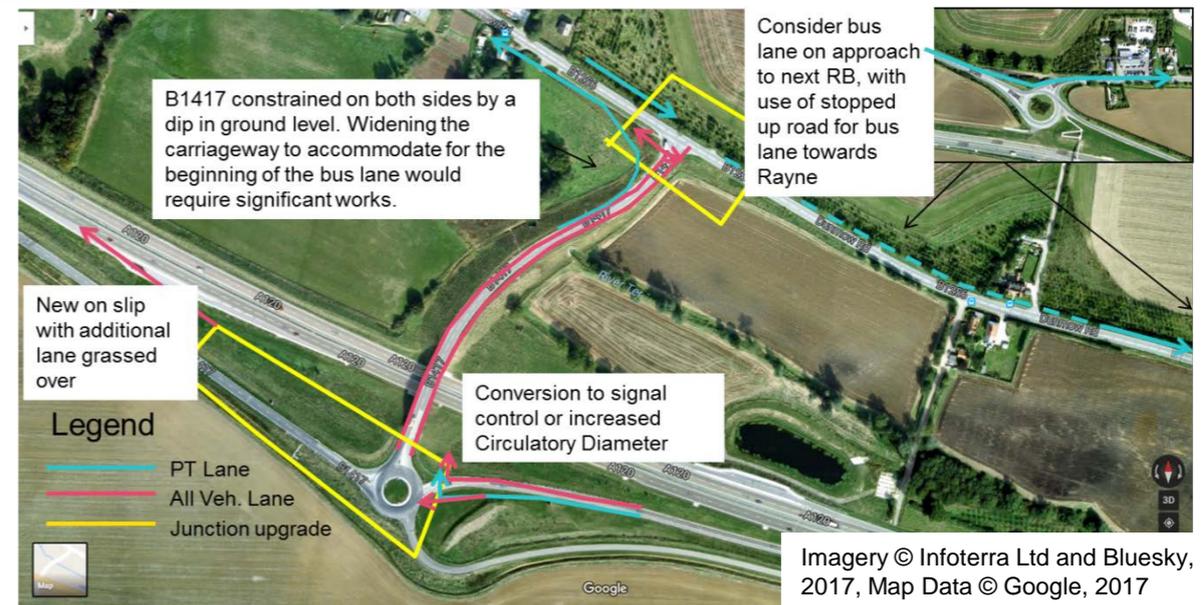
No

### Timescale / Trigger

Local Plan Period  
Can be built out incrementally  
**GC Essentials**

### Delivery Agency

NEGC to fund  
ECC / HE to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A			Deliverability
								Feasibility
								Affordability
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation		Reasonable fit with Objectives?	



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# North Essex Garden Communities Movement and Access Study



West of  
Braintree

R3b

## A120 / B1256 East Junction Improvements (FINAL)

### Summary

A direct link from the A120 / B1256 eastern junction to the Garden Community would help spread traffic impacts. The full junction improvement can only be delivered once the 15 years of mineral extraction is complete. Depending on the extraction undertaken and restoration proposed this may or may not be possible at this location.

Should an eastern access point be available then a junction arrangement such as the following could be implemented:

- Traffic signal Control crossroads between the B1256, B1417 and Eastern Entry boulevard with bus priority for left turning movements.
- Dualling of structure across the A120 (this could be delivered earlier with just a bus lane provided on one of the lanes as suggested in the interim)
- Consideration should be given to access arrangements for the Tarmac Quarry site and whether a junction for that could be repurposed for the Garden Community at a later date.

### Assumptions

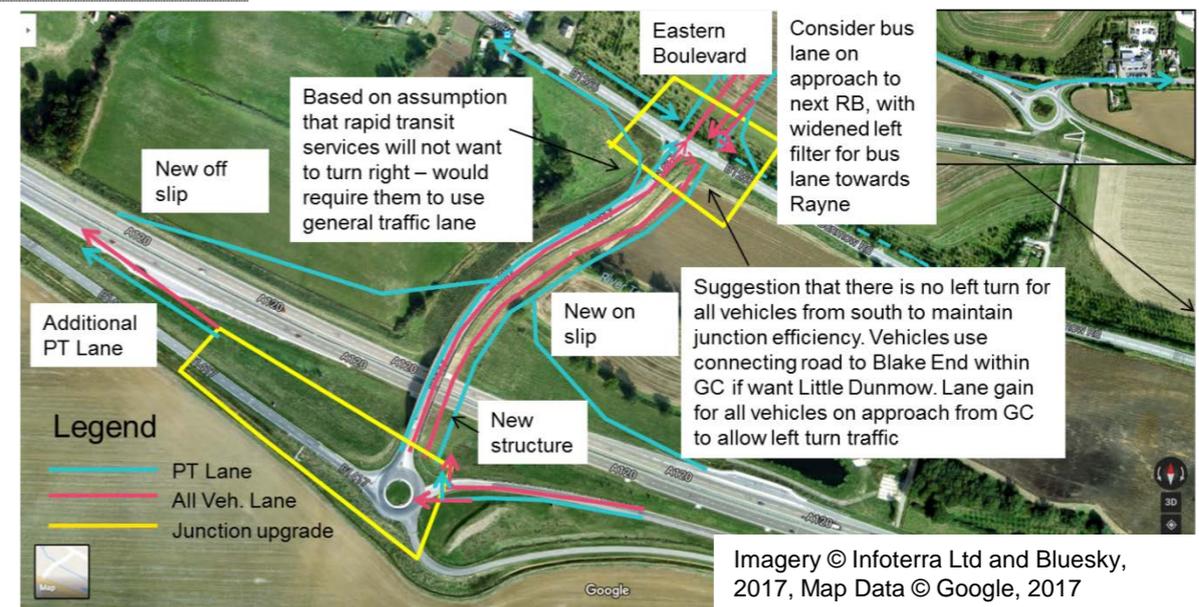
Full junction could only be potentially delivered following completion of mineral extraction and dependent on the nature of the restoration. Merge / diverge requirements needs analysis of future A120 flows and balance of demand between an eastern and western access junction (subject to development location). Cost from RJ Internal review (27/02/17) – does not include any costs for Eastern Boulevard into Garden Community. Based on assumption that new structure is built offline. £12.4M out turn costs for A12 J28 (2010) also provides another proxy for similar consideration.

**Cost**  
£8M - £12M

**Funded**  
No

**Timescale / Trigger**  
Tarmac site restoration  
**GC Essentials**

**Delivery Agency**  
NEGC to fund  
Tarmac S106?  
HE / ECC to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
					N/A	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West of  
Braintree

R3

## Panfield Lane & Springwood Drive Links

### Summary

New single carriageway road links from Springwood Drive (Industrial area) and Panfield Lane are planned to connect new development in NW Braintree. This will provide alternative access arrangements for the industrial area which is prone to delays in peak periods, as well as serve new development.

We recommend that with appropriate safeguarding this link road could be extended and dedicated to rapid transit / cycles only to the Garden Community to facilitate a wider range of public transport services and connections to Braintree town centre, which would also benefit this planned residential, commercial and mixed use development in NW Braintree.

### Assumptions

It is assumed that the scheme will be delivered and it is feasible for additional road links to be incorporated to the Garden Community.

### Cost

N/A

### Funded

Yes

### Timescale / Trigger

Development in NW Braintree

### Delivery Agency

Developers



# 8 Menu of Policy Interventions (Colchester / Braintree Borders – West Tey)



## 8.1 Colchester / Braintree (West Tey) Borders Infrastructure Summary

The following is a current summary of total infrastructure costs where the Garden Community could be expected realistically to fund a significant proportion although not necessarily all (identified as **GC essentials** on each scheme). This is split by type. It is noted that this heavily variable depending on the A12 and A120 schemes, and whether a guided bus or tram option is pursued. **These figures do not include costs associated with internal walking, cycling and road infrastructure (unless otherwise stated) within what is a large site. These would be defined during subsequent master planning.**

	GC Essentials	
	Low range	High range
Active Modes & Public Realm	£31M	£40M
Public Transport ~	£66M	£83M to £401M
Road *	£13M	£22M
Travel Plan Measures (@£1,500 per home) – 25,500 homes	£38M	£38M
<b>Total * ~</b>	<b>£148M</b>	<b>£183M to £501M</b>

- All totals are rounded.
- Travel Plan measures (inclusive of bus service subsidies) are from the AECOM June 2016 report.
- **\* Excludes New A12 Southern Junction for Garden Community and potentially Kelvedon, subject to A12 and A120 options – indicative range is £15M based on A12 Junction 28 to £68M for M11 Junction 7A.**
- ~ Guided bus results in an increase of £95M for full conversion and tram results in a increase of £160M for full conversion excluding rolling stock and depots. A new station at West Tey would add a further £145M to £158M based on current costs of a similar new station on the GEML at Beaulieu Park. The additional tram and station costs are included in the higher range.
- The interventions can be found on the pages in turn. In some cases costs are not yet known or can be given realistically given the stage of the project. **All costs will need further review through masterplanning and feasibility studies where relevant.**
- **The plans within this report reflect a point in time reached during the evolution of the Concept Framework. It must be noted that these plans will change as the Concept Framework for Colchester / Braintree Borders evolves and develops further.**

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

A1

## Coggeshall Bypass Walking and Cycling Crossing

### Summary

The Essex Way currently crosses the A120 with no effective provision to mitigate severance. To the north a country lane intersects the A120.

The potential A120 Major Scheme provides the opportunity to repurpose parts of the old road for active and sustainable modes. The potential for funding from Highways England as part of A120 Corridor Sustainable Transport Measures associated with the A120 Major Scheme is currently unknown.

Coggeshall is likely to be both a trip generator and attractor for the Garden Community given its historic centre.

The suggested scheme would include safe crossing facilities of the Coggeshall Bypass and a short section of footway / footpath given that the Essex Way and Tey Road are 200m apart.

Enhances connectivity from the Essex Way and rural lanes between Coggeshall and Garden Community for active modes.

### Cost

£250K - £400K

### Funded

No

### Timescale / Trigger

A120 Major Scheme

### Delivery Agency

Highways England / Essex County Council to fund / deliver



### Assumptions

Does not impact a small development of 10 homes also planned in this area. Assumes c. 200m of footway at £500k-£1m per km, and toucan crossing on high speed road with high friction surfacing of £160k. Scheme dependent on alignment of A120 Improvement.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A						Deliverability
								Feasibility
								Affordability
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation		Reasonable fit with Objectives?	
N/A	N/A		N/A	N/A	N/A			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

A2

## Active Mode Connections to Rural Hinterland

### Summary

The Garden Community is expected to have a green buffer with the existing countryside. This provides an excellent opportunity to provide walking, cycling and horse-riding links to nearby tranquil country lanes, without providing access to the car.

As the Garden Community is built out, active consideration should be given to enhancing existing public rights of way and providing new links to places such as Easthorpe, Copford Green, Aldham, Great Tey, Coggeshall and Feering.

This could include upgrading footpaths to bridleways, and in some cases providing all-weather trails with appropriate signing, maps and promotional leaflets.

### Cost

£<1M

### Funded

No

### Timescale / Trigger

Local Plan and Post 2033

**GC Essentials**

### Delivery Agency

NEGC to fund  
ECC / NEGC to deliver

### Assumptions

None

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A		N/A	N/A	N/A			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

A3

## Active Modes link (Church Lane to Marks Tey station)

### Summary

The current Marks Tey station is likely to remain the principal rail station for residents of the Garden Community at least during the Local Plan Period. Our current understanding of the location of the first development phases is that these will include development close to Marks Tey village and station.

Marks Tey station includes platforms that extend towards the village on the Colchester bound side and a curved platform for the Sudbury service. There also appears to be old railway land in between these platforms.

The proposal includes a sensitively lit walking / cycling route from Church Lane alongside two fields to the railway land to act as a second entrance. It is suggested that this would incorporate ticket machines and barriers.

### Cost

£250K - £500K

### Funded

No

### Timescale / Trigger

Local Plan Period –  
First new homes in  
Marks Tey village  
**GC Essentials**

### Delivery Agency

NEGC to fund  
NEGC to deliver on land  
outside of railway control  
with NR / GA interfaces



### Assumptions

Depends on use of private land to link Church Lane to the station. It is assumed that this will be possible given its future allocation within the Garden Community. Assumes no environmental constraints with old rail land. £500k to £1M per km for offroad walking / cycling links from NEGC November 2016 Cost Review

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

A4

## Cycle Links to Stanway and Colchester

### Summary

With improvement to the streetscape at the Marks Tey junction (Scheme PR1), there exists a greater potential to encourage cycling for more confident users along the B1408 London Road. This is the most direct route for residents of the Garden Community wishing to access the services in Stanway, as well as Colchester town centre. Likewise for residents of Stanway this provides access to Marks Tey station and the employment and mixed use services at the Garden Community.

However the road is of inconsistent width preventing the ability to provide mandatory width cycle lanes throughout and opportunities for segregated provision with narrow footways in places is also limited. Options include going through a Local Plan development potentially allocated the north of London Road, or using innovative solutions on the B1408 such as traffic calming measures, advisory cycle lane with centre line removed to make conditions more attractive for cycling. Church Lane can be signed as a 'Quietway' (see All Sites P23 for specification) with its bridge over Stanway Western Bypass.

### Assumptions

c. £500k provides a broad budget for treatment recognising the inability to provide a consistent segregated route or mandatory width cycle lanes throughout. Colchester BC advised of route through potential Local Plan allocation March 2017.

### Cost

<£500k

### Funded

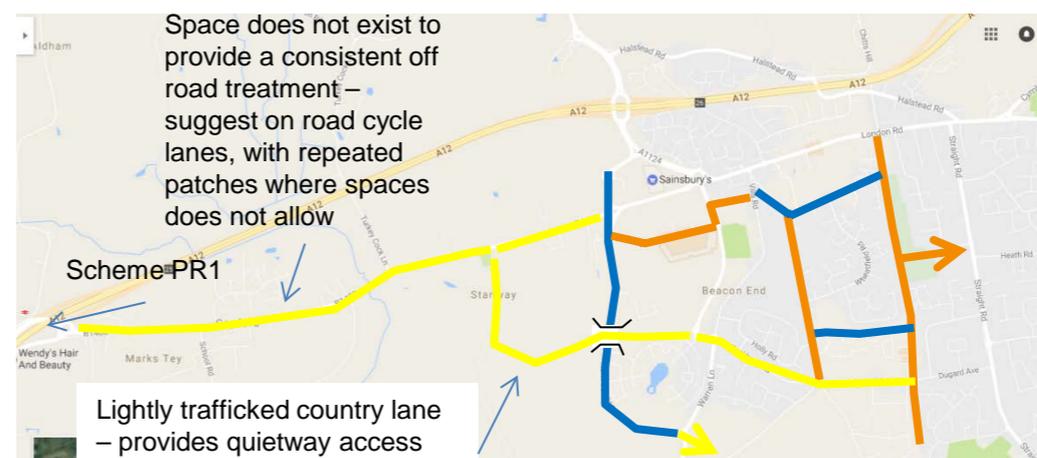
No

### Timescale / Trigger

Local Plan Period  
**GC Essentials**

### Delivery Agency

NEGC / wider development /  
ECC to fund  
ECC to deliver



Suggested On road / Quietway provision via Church Lane

Routes in Colchester Cycle Action Plan Pipeline

Existing Routes

Map Data © Google, 2017

Potential links to cycle routes on Shrub End Road via PT11

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
		N/A				
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
	N/A		N/A	N/A		

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

A5

## GEML and A12 Foot / Cycle Bridges

### Summary

The GEML and the A12 on its current alignment will require frequent safe, high quality, grade separated crossing points (at least 4 metres wide) for active modes to meet the ambition of the Garden Community. Recent improvements in Marks Tey include the provision of a new Network Rail steel fabricated cycle / footbridge at Long Green catering for all users. Similar provision elsewhere within this Garden Community will help make these active modes the default for all journey types between Village 3 to the south-east and Village 1, the town centre, and Village 4 to the west, employment sandwiched between the A12 and GEM, and surrounding green spaces.

Taking central Milton Keynes as an example (where the A5 and West Coast Mainline (WCML) otherwise act as a barrier to movement), there are 4 segregated active modes / unclassified road crossings of the A5 and WCML over a 2km section north of the town centre to Wolverton. Using a similar 500m average distance between crossing points would result in the need for a minimum of 2 new crossings of the GEML and 4 crossings of the A12 between Long Green and Domsey Chase. This is in addition to a land bridge carrying the rapid transit and active modes associated with **Scheme PT1a,b or c.**

**Cost**  
£12M - £18M  
(for 6 crossings)

**Funded**  
No

**Timescale / Trigger**  
Local Plan and Post  
2033 – staggered  
provision  
**GC Essentials**

**Delivery Agency**  
NEGC to fund  
Network Rail / Highways  
England to deliver

### Assumptions

The precise location and number will depend on Highways England widening plans for the A12, the final concept framework plan, and subsequent master planning to best match desire lines. Currently based on the land use suggested in the DLA's draft Concept Framework, December 2016. Suggested range of £2M to £3M, with the upper limit of cost per crossing based on NEGC Cost Review, November 2016 of other potential foot/cycle bridges.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
			N/A	N/A				



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Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PR1

## Marks Tey station and junction package (page 1)

### Summary

Reallocation of road space and junction priorities at the existing Marks Tey interchange post construction of the new A120 to improve public realm and provision for active modes and sustainable transport.

This is based on the recognition that the existing station will be the primary focus for rail services for the Garden Community at least in the Local Plan Period. The current unwelcoming environment for active modes, given the traffic volumes, road space, air and noise pollution is a barrier to movement.

Early development in the Garden Community may be progressed on both sides of the A12, reinforcing the need for strong links by active modes.

If the opportunity to remove traffic from the area post the construction of the A120 is not grasped early in the Garden Community's life then traffic volumes in this area will soon return to normal and act as a barrier to use of active and sustainable modes.

Assists a high quality sense of place as a gateway to the Garden Community. The scheme is described on the next two page.

### Cost

£16M - £18M

### Funded

Part ?

### Timescale / Trigger

Linked to A12 and A120 schemes

**GC Essentials**

### Delivery Agency

Highways England to part fund / NEGC to part fund.  
ECC / Highways England to deliver

### Assumptions

Some HE Funding available as part of A120 Corridor Sustainable Transport Measures. Deletion of slip roads may facilitate an A12 scheme and savings. Predicated on A120, A12, PR2, R1 and R2 to make this work.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study

PR1

## Marks Tey station and junction package (page 2)



West  
Marks Tey

### Summary

- Existing eastbound on-slip and westbound off-slip retained for public transport and local traffic; existing westbound on-slip and eastbound off-slip removed.
- London Road (south side) used as two-way road for current residents, a limited part of Village 3 and as a bus link to Village 3. New London Road roundabout not needed.
- Wide level active bridge (5-6m wide) to better connect the two communities and station (similar to the 'Learning Link' across main rail line in Ashford, Kent).
- Depending on considerations of wider affordability, public realm, potential air rights development and interface with A12 J19-25 widening a larger structure akin to and bridges over sections of the North Circular (e.g. on the A504 at East Finchley) could be pursued, but will bring add significant additional cost (£50M+) and disruption to road users.

(continued on next page)

### Assumptions

NEGC November 2016 Cost Review figures revalidated by RJ Internal Review (27/02/17) with 5-6m wide bridge £4M-£5M, 3 junctions (£10M in total) + Improved walking/cycling links and public realm (£2M-£3M). Costs further dependent on specification of materials  
Dependent on A12 widening alignment design and opportunities

**Cost**  
£16M - £18M

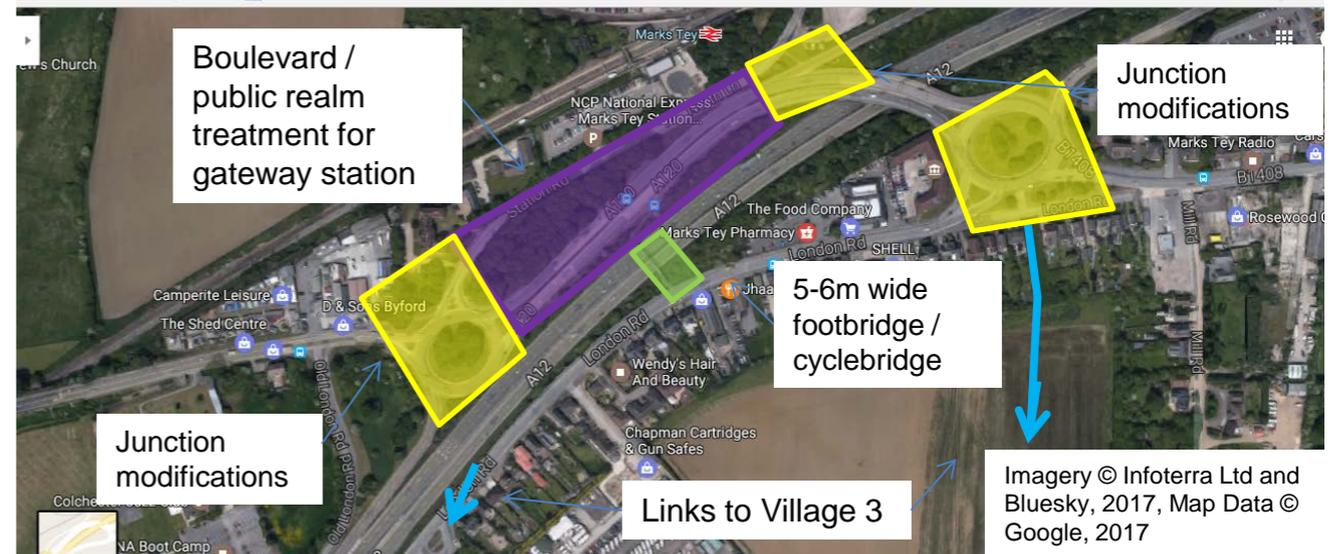
**Funded**  
Part?

### Timescale / Trigger

Linked to A12 and  
A120 schemes  
**GC Essentials**

### Delivery Agency

Highways England to part  
fund / NEGC to part fund.  
ECC / Highways England to  
deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
		N/A				
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
	N/A					

<b>Overall Appraisal</b>
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study

PR1

## Marks Tey station and junction package (page 3)



West  
Marks Tey

### Summary

- High quality wide toucan crossing along bridge / station desire line.
- Conversion of existing A120 dual carriageway to single carriageway road for all vehicles, single carriageway bus way, with North Lane in front of station converted into footway / cycleway (similar to A12 Boulevard Concept – see PR3).
- Modified junction for eastbound on slip and North Lane; with bus priority.
- Consideration be given to conversion of B1408 Prince of Wales roundabout to traffic signals with bus priority, linked to the neighbouring junctions.
- Preference for bus link to be via London Road or direct on to Prince of Wales Roundabout to be determined through masterplanning and traffic modelling.

### Assumptions

NEGC November 2016 Cost Review figures revalidated by RJ Internal Review (27/02/17) with 5-6m wide bridge £4M-£5M, 3 junctions (£10M in total) + Improved walking/cycling links and public realm (£2M-£3M). Costs further dependent on specification of materials  
Dependent on A12 widening alignment design and opportunities

**Cost**  
£16M - £18M

**Funded**  
Part?

### Timescale / Trigger

Linked to A12 and  
A120 schemes  
**GC Essentials**

### Delivery Agency

Highways England to part fund / NEGC to part fund.  
ECC / Highways England to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
		N/A				
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
	N/A					

<b>Overall Appraisal</b>
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PR2

## Marks Tey (Stane Street) traffic reduction package

### Summary

Marks Tey railway station will be the primary focus for rail services for the Garden Community at least in the Local Plan Period.

The current unwelcoming environment for active modes, given traffic volumes, narrow footways, air and noise pollution acts a barrier to movement.

If the opportunity to remove traffic from the area post the construction of the A120 is not grasped early in the Garden Community's life then traffic volumes in this area will soon return to normal and act as a barrier to use of active and sustainable modes. Consideration should be given to:

- Potential reallocation of road space on existing rail overbridge including signalised control to facilitate reduced road width
- Potential reallocation of road space along sections of Stane Street corridor.
- Access Control Point(s) with ANPR technology to restrict access to new Garden Community by vehicles (other than buses) west of the existing village and on mini Marks Tey village bypass (see scheme R2) at defined peak periods to minimise use of Stane Street as a through route.

### Assumptions

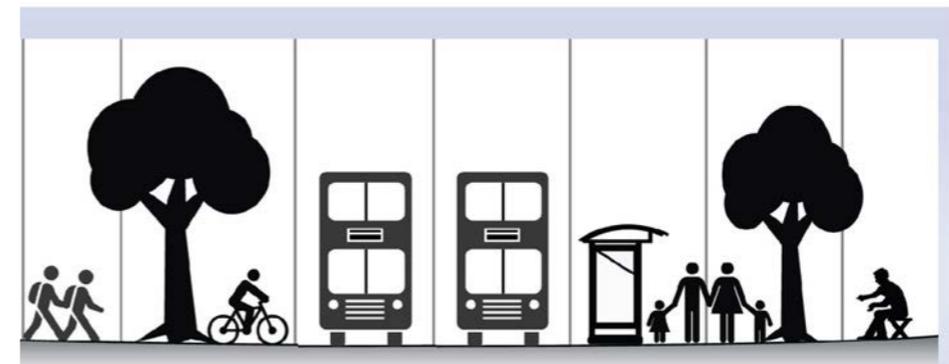
Some HE Funding potentially available as part of A120 Corridor Sustainable Transport Measures. The bridge is not likely to be replaced with a wider structure during the plan period. Does not assume major public realm improvements which would cost more.

**Cost**  
£1M - £2M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
A120 Scheme  
**GC Essentials**

**Delivery Agency**  
Highways England to part fund / NEGC to part fund.  
ECC / Highways England to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
	N/A					

Overall Appraisal
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PR3

## Opportunities from realigned A12 in Marks Tey

### Summary

In order to increase capacity on the A12, a new alignment between Feering and Marks Tey is being considered as an option instead of online widening. Should the A12 be widened offline, then the old carriageway provides an opportunity for a linear movement corridor for a variety of modes to better meet the needs of the Garden Community. The old A12 could be converted to a boulevard with segregated lanes for rapid transit and cyclists, lanes for vehicular traffic, wide pavements and green spaces, with appropriate frontage development. A similar principle has been adopted in the Bicester NW Ecotown development where the A4095 is being converted from a wide single carriageway into a 20M+ wide boulevard for all modes.

South of the Garden community, the existing A12 alignment would form more of a distributor road function to provide local access to the A12 (via a new junction in the Kelvedon / Feering / south of Marks Tey area), Tiptree and Kelvedon, and a western parkway (scheme R1) for access to Villages 2 and 4 within DLA's Masterplan of December 2016.

### Cost

£2M - £10M

### Funded

Part?

### Timescale / Trigger

Local Plan Period  
A12 Scheme (RIS1)

### Delivery Agency

Highways England to part fund / NEGC to part fund.  
ECC / Highways England to deliver

### Assumptions

Some HE Funding may be potentially available as part of sustainable transport measures associated with the A12 scheme. RJ Internal Review (27/02/17) assumed that this cost between £2M and £3M for a conversion to provide a safe environment without new public realm, to £8M-10M for full conversion with higher quality materials. The specification of materials is an important contributor to cost.



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
		N/A					Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT1a**

## Rapid Transit Loop from London Road to Stane Street including land bridge (Bus only roads)

### Summary

Delivered incrementally from the outset to serve new development outlets whilst delivering a cohesive, viable rapid transit network.

Incorporates adjacent walking / cycle infrastructure alongside to provide 'flagship' active mode routes through the development that connect with 'quietways' and green links.

Supports higher densities and reduced parking provision in corridor vicinity. Potential requirement for operational subsidy from the Garden Community to provide attractive frequency to facilitate high mode share.

DLA's December 2016 Concept Framework suggests two rapid transit corridor loops of 16km in total length in the development connecting to the existing road network at London Road and Stane Street. Should this just be a bus only road similar to Kent Fastrack, then estimated costs for this length are: £19.2M to £24M with a land bridge crossing of the A12 and GEML of £25M.

### Assumptions

Bus only road: £1.2M - £1.5M per km (Kent Fastrack); Separate stand alone cost for Land Bridge crossing £25M (NEGC Concept Feasibility Study Cost Review, November 2016). Does not include cost of vehicles. Costs and length depend on A12 alignment and updates to Concept Framework.

### Cost

£45M - £50M

### Funded

No

### Timescale / Trigger

Local Plan and Post 2033 – to serve each phase of development  
**GC Essentials**

### Delivery Agency

NEGC to fund  
ECC / NEGC to deliver

### High quality potential rapid transit routes could include :

- New express rapid transit links to Colchester via the A12 and Cymbeline Way (running in traffic on the A12) (PT), and Stanway and Shrub End Road (PT) and incorporate passive provision for links to a western P&R for the Garden Community.
  - Potential through routes to the West Tendring / Colchester Borders Garden Community via the town centre and University
  - The provision of bus only roads does not preclude the conversion to tram operation in future although to minimise cost and disruption the tram tracks and passive provision for power and related systems would need to be included at the outset adding to cost.
  - A bus only road will provide more flexibility and enable conventional services, such as the 70 or 71 to use the infrastructure too which will be useful during early phases.
- \* Further work on feasibility and business case of rapid transit to be commissioned.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT1b**

## Rapid Transit Loop from London Road to Stane Street including land bridge (Guided Bus)

### Summary

Delivered incrementally from the outset to serve new development outlets whilst delivering a cohesive, viable rapid transit network.

Incorporates adjacent walking / cycle infrastructure alongside to provide 'flagship' active mode routes through the development that connect with 'quietways' and green links

Supports higher densities and reduced parking provision in corridor vicinity  
Potential requirement for operational subsidy from the Garden Community to provide attractive frequency to facilitate high mode share.

DLA's December 2016 Concept Framework suggests two rapid transit corridor loops of 16km in total length in the development connecting to the existing road network at London Road and Stane Street. A full Guided Bus option would indicatively cost £96M to £120M; Land Bridge £25M

In Cambridgeshire, operators have invested in the buses, and pay CCC an access fee. For use of the guide way.

### Assumptions

Guided Bus £6M to £7.5M per km (Cambridgeshire vs Luton-Dunstable). Separate stand alone cost for Land Bridge crossing £25M (NEGC Concept Feasibility Study Cost Review, November 2016). Does not include cost of vehicles

Costs and length depend on A12 alignment and updates to Concept Framework.

### Cost

£120M - £145M

### Funded

No

### Timescale / Trigger

Local Plan and Post 2033 – to serve each phase of development

### Delivery Agency

NEGC to fund  
ECC and NEGC to deliver

### High quality potential rapid transit routes could include :

- New express rapid transit links to Colchester via the A12 and Cymbeline Way (running in traffic on the A12) (PT), and Stanway and Shrub End Road (PT) and incorporate passive provision for links to a western P&R for the Garden Community.
- Potential through routes to the West Tending / Colchester Borders Garden Community via the town centre and University
- Would not allow conventional services such as the 70 and 71 or new local services say to Halstead to use the infrastructure unless they were equipped with guided technology.

\* Further work on feasibility and business case of rapid transit to be commissioned.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
							Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PT1c

## Rapid Transit Loop from London Road to Stane Street including land bridge (Tram-Train)

### Summary

Delivered incrementally from the outset to serve new development outlets whilst delivering a cohesive, viable rapid transit network  
 Incorporates adjacent walking / cycle infrastructure alongside to provide 'flagship' active mode routes through the development that connect with 'quietways' and green links  
 Supports higher densities and reduced parking provision in corridor vicinity  
 Potential requirement for operational subsidy from the Garden Community to provide attractive frequency to facilitate high mode share.  
 DLA's December 2016 Concept Framework suggests two rapid transit corridor loops of 16km in total length in the development connecting to the existing road network at London Road and Stane Street, and potentially with the rail network at the existing Marks Tey station and / or a future West Tey station. Indicative costs for tram infrastructure within the Garden Community of £176M with a further cost of a land bridge across the A12 and GEML £25M. Requires a Transport and Works Act Order Application.

### Assumptions

Tram infrastructure costs of £11M per km Source East Colchester Rapid Transit Study. **Does not include any substantial costs £££ associated with rolling stock, depots, civils and railway systems connections to the GEML.** Potential efficiencies through connectivity to wider Colchester Metro system.

**Cost** £210M + other costs TBC

**Funded**  
No

### Timescale / Trigger

2025+ to serve each phase of development and to tie into rail franchising.

### Delivery Agency

NEGC to fund  
 ECC / Network Rail / Rail Franchise Operator / NEGC to deliver

### High quality potential rapid transit routes could include :

- Tram-train routes within the development connecting the various villages and town centre with potential onward links to Sudbury, Colchester, University and the West Tending / Colchester Borders Garden Community (subject to feasibility study). Could be included in specification of future Greater Anglia rail franchise that would begin in 2025.
  - New express rapid transit links to Colchester via the A12 and Cymbeline Way (running in traffic on the A12) (PT), and Stanway and Shrub End Road (PT) as well as local bus services could also use the rapid transit corridor. This happens in many locations in the UK such as Croydon with trams and buses on Addiscombe Road.
- \* Further work on feasibility and business case of rapid transit commissioned for completion in the spring of 2017.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
Green	Red	Yellow	Green	Green	Green	Green	Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
Yellow	Yellow	Green	Green	Green	Yellow			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT2**

**Park and Ride (P&R) Site connected to rapid transit corridor**

## Summary

Provision of P&R function to dovetail with planned rapid transit corridors. Serves P&R passengers for Garden Community employment and retail areas.

Express rapid transit services would continue on to Colchester but not expected that users would board for Colchester at this location. Instead, useful in providing a source of demand and revenue to help underpin potential viability of services in early years of Garden Community.

Co-ordinated with parking strategy (**All Sites P5**) for the Garden Community.

Good access from new A12 and/or new A120 with cycleway links to adjacent development areas and rural hinterland for local connections.

Designed with passive provision for expansion both in terms of modular building and car parking (costs for 1000 spaces assumed below) along with sustainability features such as SUDS and electric charge points.

Could initially run from an interim location and share parking with other land uses, as per the original Cressex Island P&R, High Wycombe. This would need to be a similar location/corridor to the future site to provide users with service continuity.

**Cost**  
£3.5M - £5M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
**GC Essentials**

**Delivery Agency**  
ECC to fund with some  
NEGC contributions



## Assumptions

Colchester Park and Ride site outturn cost £3.4M (source: ECC) + 44% optimism bias for highway based schemes to provide a cost range.

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
					N/A		Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PT3

West Tey Railway Station

## Summary

- 2 platform face conventional railway station with suitable provision for passing loops as part of wider Great East Mainline resilience and capacity considerations.
- Acts as main rail station for the Garden Community. Current Marks Tey station retained. Mirrors provision of main station at Milton Keynes and Basildon after initial phases.
- Minimum 15 minute frequency of service to London and Colchester, and must complement “Ipswich in 60” and “Norwich in 90” goals.
- Integrated with rapid transit corridor services with high quality interchange facilities and through ticketing.
- Integrated with active modes through cycle hire, ‘flagship’ and ‘quietway’ routes with modular cycle storage to allow easy expansion.
- Passive provision for interchange with autonomous vehicles.
- Needs to demonstrate value for money in terms of cost and patronage.

## Assumptions

Proposed Beaulieu Park station costs advised by ECC as of March 2017 as £145M to £158M (including all aspects of design) although Beaulieu Park has some unique factors.

## Cost

£145M - £158M

## Funded

No

## Timescale / Trigger

Post 2033

**GC Essentials**

## Delivery Agency

NEGC to fund (potentially with SELEP contributions)  
Network Rail / NEGC to deliver

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PT4

## West Tey Town Centre Transit Hub

### Summary

- Modular facility provided in early years with passive provision for easy and affordable expansion.
- Served by rapid transit, local and regional services to destinations such as Colchester, Coggeshall, Halstead, Braintree and Stansted.
- Plentiful secure cycle storage and bike hire available.
- Passive provision for autonomous vehicle interchange.

**Cost**  
£5M - £7M

**Funded**  
No

**Timescale / Trigger**  
Linked to phasing of development  
**GC Essentials**

**Delivery Agency**  
NEGC to fund /  
ECC / NEGC to deliver

### Assumptions

Park and Ride in Colchester cost £3.4M (source: ECC) and a figure of £5M was assumed in Jacobs' Colchester Rapid Transit Final Report (September 2016), leading to our November 2016 Cost Review to recommend £5M-£7M

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PT5

## Marks Tey Station Access for All Improvements

### Summary

- There is already a local campaign to improve accessibility at Marks Tey station given its role as an interchange station between the Great Eastern Mainline and the Gainsborough Line. The station is not in the current tranche of Access for All Improvements.
- Marks Tey station will remain the local railway station for the Garden Community for the Local Plan Period at least, and should Government funding not be sourced for improvements then a contribution from the Garden Community will be important to allow rail services to be accessed by all people resident and visiting, supporting interchange with rapid transit modes at the station.
- The scheme involves the provision of a new wide footbridge with lifts and steps to serve all three platforms at Marks Tey railway station.

**Cost**  
£3M - £5M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
**GC Essentials**

**Delivery Agency**  
Access for All funding post 2020? Otherwise NEGC will need to help fund  
Network Rail / Greater Anglia to deliver

### Assumptions

Example AFA scheme costs in the public domain, include new lifts for the subway at Manningtree cost £3M opening 2016; new lifts and footbridge at Penrith cost £3M opening 2016; a larger scale scheme at Denmark Hill with raised walkway cost £6M opening 2013. The £3M figure has been used with an optimism bias of 66% to provide a suitable range.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT6**

**Promotion of heavy rail services on Gainsborough line**

## Summary

The Gainsborough line currently provides an hourly service from Marks Tey to Sudbury stopping at Chappel & Wakes Colne and Bures. Three of the stations are in Essex, and one in Suffolk. It is the remnants of the former secondary line from Colchester to Cambridge that was once double track. Rolling stock is currently dated 1 or 2 car diesel multiple units.

The new Greater Anglia franchise proposes to extend this service to Colchester North and Colchester Town from 2019 with new bi-modal rolling stock offering new journey connections, and the potential for this service to be further extended to the Sunshine Coast line, Harwich or Ipswich, with promotion of these new journey opportunities.

Consideration should be given to working with Greater Anglia and Network Rail to evaluate the business case for a passing loop to enhance the frequency to 2 trains per hour, with potentially rising demand from the 2019 service specification providing the business case to support this.

## Cost

£10M

## Funded

Rolling stock only

## Timescale / Trigger

2019 – new Greater Anglia rolling stock

## Delivery Agency

Network Rail / Greater Anglia to fund and deliver

## Assumptions

A passing loop would incur costs although a lower cost than that of the Cressing Loop (£10M) could be likely given the absence of electrification and the shorter trains in operation.

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT7**

## Lexden Road Bus Lane (Full)

### Summary

Essex Highways have developed a scheme for an inbound bus lane on Lexden Road. The purpose is to improve bus reliability on a key corridor served by routes such as 70 and 71 from Chelmsford and 65 from Tollgate. Following public consultation, a streamlined solution has been developed for implementation in 2017 including shorter bus lanes, junction improvements, pedestrian crossing facilities and waiting restrictions to improve the level of service for both active modes and public transport users.

The current deliverability of the larger scheme has informed our alternative suggestion of express rapid transit links using the A12 and Cymbeline Way and the Stanway Western Bypass and B1022 Shrub End Road. (see **PT7 and PT8**). The need for the larger scheme will need evaluation following implementation of the 2017 scheme.

**Cost**  
£4M - £5M

**Timescale / Trigger**  
Local Plan Period

**Delivery Agency**  
SELEP funded  
ECC to deliver

**Funded**  
Yes

### Assumptions

Based on recently developed scheme cost estimate (2016). Higher than usual cost because of number of statutory undertakers diversions required.

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
N/A	N/A							

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT8**

## Bus Service to Colchester (via Cymbeline Way)

### Summary

Express Bus service from the Garden Community to Colchester Town Centre via the A12 (Junction 27), Cymbeline Way and Sheepen Road.

To facilitate this service a scheme would be needed that included the following:

- widening of Cymbeline Way within the highway alignment with one additional rapid transit lane for 750m inbound on approach to Sheepen Road and 750m outbound on approach to Spring Lane Roundabout.
- Provision of bus priority measures at the Spring Lane Roundabout for buses from both the A12 and Colchester.
- Bus priority signalised junction with Sheepen Road to allow buses to bypass the Colne Bank Roundabout and serve the Colchester Institute and town centre.

This has been specified to avoid the need for any tree felling on what is a sensitive corridor, and also avoid affecting the flood plain.

### Assumptions

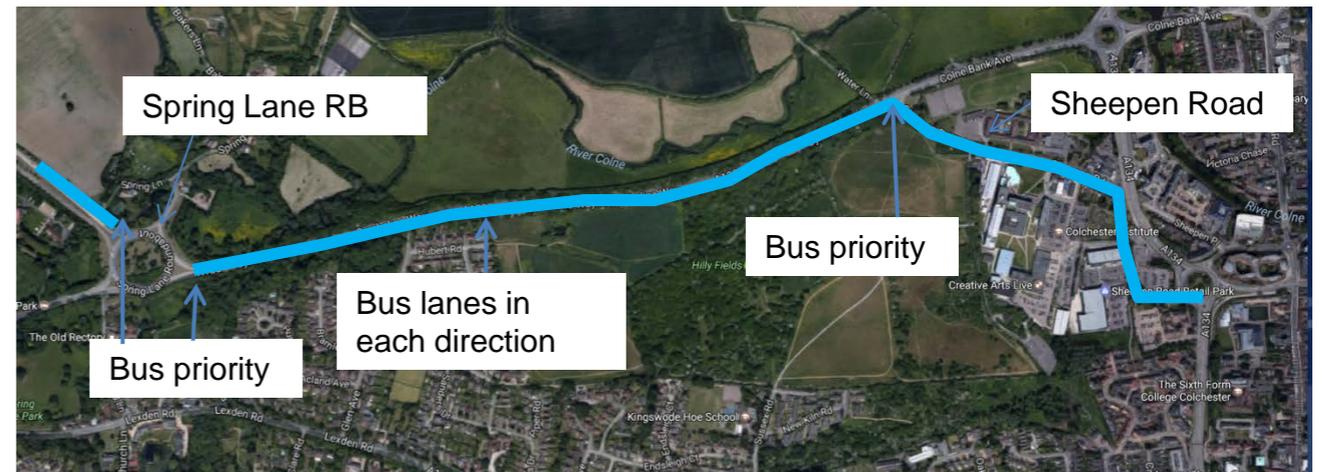
Cost of new buses assumed to be met by the operator.  
RJ Internal Review (27/02/17) assumed a cost range of £3M to £4M with an optimism bias of 44% on the upper figure given potential for major utilities in verge (a frequent issue with old trunk roads in urban areas), and proximity of flood plain.

**Cost**  
£3M - £6M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
**GC Essentials**

**Delivery Agency**  
ECC to fund with some  
NEGC contributions



Imagery © Infoterra Ltd and Bluesky, 2017, Map Data © Google, 2017

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
					N/A			Deliverability
								Feasibility
								Affordability
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation		Reasonable fit with Objectives?	



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

PT9

## Bus Service to Colchester (via Shrub End Road)

### Summary

Provision of a new bus route from the Garden Community to Central Colchester via Tollgate, Stanway Western Bypass and Shrub End Road. Shrub End Road already has a bus only northbound section on the approach to the A134 Maldon Road Roundabout with further wide stretches which could be allocated bus lanes in future should the demand require this.

The scheme involves the provision of a new rapid transit / cycle only link (or all traffic road option with bus lanes – **see R5**) between the end of Stanway Western Bypass and the roundabout junction of the B1022.

Provides bus users with a journey time saving over cars using Warren Lane and the B1022. Requires connections to existing roundabout junction of Stanway Western Bypass and Warren Lane in the west, and the B1022 and Cunobelin Road in the east.

Potential deliverability affected by the Fiveways Fruit Farm site (planning application under consideration – March 2017).

### Assumptions

Noted that there are some archaeological and historical site considerations (Brickway farm and Gryme Dyke) that are major issues for study and careful mitigation. RJ Internal review (27/02/17) suggested a cost range of £6M to £7M with a 44% optimism bias on the upper figure given these potential issues. Does not include the cost of buses.

### Cost

£6M - £10M

### Funded

No

### Timescale / Trigger

Local Plan Period  
**GC Essentials**

### Delivery Agency

NEGC/wider development/  
ECC to part fund  
ECC to deliver; bus  
companies to provide service

Imagery © Infoterra Ltd and Bluesky, 2017, Map  
Data © Google, 2017



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

**PT10**

## Serving the Garden Community via First Bus 70 / 71

### Summary

Additional buses that divert from existing routes (70 from Stane Street & 71 from London Road) to serve the Garden Community on a regular basis. The existing frequency on these routes would be retained, and would still serve Stane Street and London Road, with these 70A and 71A variants supplementing the frequency.

An option could also be a variation of both services by creating a circular route to / from Colchester only to provide an increased frequency once the rapid transit loops discussed in **PT1** are built out

Both routes are profitable with 4000 homes with the ambitious mode share but require medium to high fares at 4000 homes to do so.

It is noted that it does not provide the Garden Community with transformative modern public transport that best meets the ambition, and so schemes **PT7** and **PT8** (alongside a potential Greater Colchester Metro) are required to meet this goal.

### Cost

Profitable in some scenarios

### Funded

No

### Timescale / Trigger

Initial Phases

### Delivery Agency

NEGC contributions through sustainable transport measures  
Bus companies to provide service

### Assumptions

Assumed that Operators will fund purchase of new higher spec vehicles

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

R1

## Western Parkway (Page 1)

### Summary

A 40mph c. 3km link road between the existing A12 alignment and the existing A120 Stane Street alignment east of Coggeshall with intermediate at grade junctions for access to the Garden Community.

Provides primary access to Villages 2, 4 and Town Centre from the Strategic and County Road Network. This would be built as a single carriageway road, with segregated 'flagship' cycleway. Passive provision would be made for future dualling, given the expected traffic volumes even with an ambitious mode share achieved.

Includes a structure over the GEML. Because of its proximity to the existing A12 alignment the junction may need to be offset to avoid steep gradients.

This is distinct from a new A120, which is likely to be built to expressway standards with few intermediate junctions between the A12 and Braintree. Precise connections to new A12 and A120 are dependent on their alignments.

Facilitates removal of traffic from the existing Marks Tey community and Stane Street to lock down the benefits of the wider A120 improvement.

### Assumptions

RJ Internal review (27/2/17) £13M to £15M for link road and junctions (including at grade tie-in to old A12 alignment or a new local distributor road), including a structure over GEML. A 44% optimism bias figure has been applied to the upper figure given the need to cross the railway and potential unknowns.

**Cost**  
£13M - £22M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period and  
post 2033  
**GC Essentials**

**Delivery Agency**  
NEGC to fund  
ECC to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N.A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

R1

## Western Parkway (Page 2)

### Summary

It is noted in the North Essex Garden Communities Peer Review chaired by Lord Kerslake that Garden Community development at Marks Tey needs to wait until a new A120 has been built. This reduces the opportunity to deliver 2500 homes at Marks Tey during the Local Plan Period.

An option potentially exists to construct the Western Parkway as an interim Marks Tey bypass prior to the construction and opening of a full A120 scheme on a different alignment. This would connect the A120 at Coggeshall with the A12 south of Marks Tey either on its current alignment or via the old A12 and a new junction. In tandem with access control measures on Stane Street this would provide the headroom for development in Marks Tey to commence.

It would need to be designed in such a way to meet initial A120 needs but to transform seamlessly into a Parkway type environment for the Garden Community once the A120 has been built on its new alignment.

Indicative sketches of how this could look with an offline A12 widening option are shown right. Alignments are purely indicative at this stage.

### Assumptions

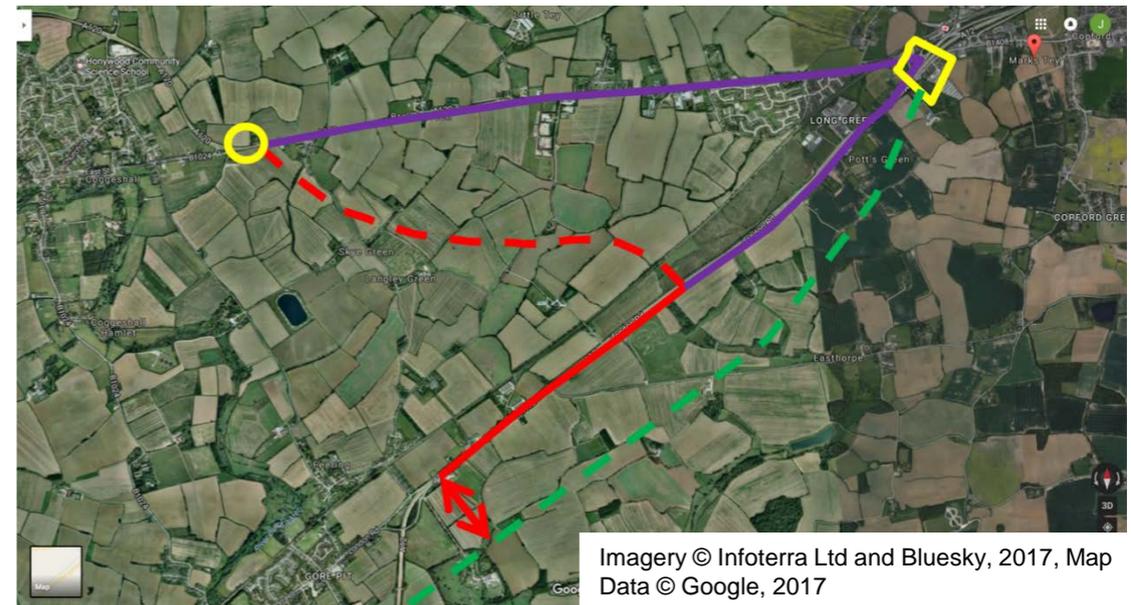
RJ Internal review (27/2/17) £13M to £15M for link road and junctions (including at grade tie-in to old A12 alignment or a new local distributor road), including a structure over GEM. A 44% optimism bias figure has been applied to the upper figure given the need to cross the railway and potential unknowns.

**Cost**  
£13M - £22M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period and post 2033  
**GC Essentials**

**Delivery Agency**  
NEGC to fund  
ECC to deliver



Imagery © Infoterra Ltd and Bluesky, 2017, Map Data © Google, 2017

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N.A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

R2

## A12 Southern Junction for Garden Community

### Summary

A new grade separated all movements junction south of the Garden Community to be provided as part of the A12 widening scheme. This would serve the Garden Community, potentially Local Plan development opportunities at Kelvedon and potentially allow rationalisation of the existing Marks Tey and limited movements B1024 Feering junction, supporting other objectives (such as scheme PR1).

Costs and nature of the scheme will depend on various factors such as:

- the preferred routing chosen for the A120 (Braintree to A12) scheme
- whether an offline or online widening option for the A12 is chosen
- Length of a link road between the new A12 and old A12
- Whether access is provided at the same junction as the new A120 (this would likely require a three level junction which is unlikely to represent a high quality sense of place for a Garden Community) or at a separate junction

### Assumptions

Dependent on A12 widening alignment. Costs will be affected by whether the junction can be constructed offline and the scale of the junction in relation to development at Kelvedon. Ranges include A12 J28 outturn + construction price inflation of c£15M with no especially unique factors (although no link road) to M11 J7a at £68M which does include some link roads.

**Cost**  
£15M - £68M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
**GC Essentials**

**Delivery Agency**  
Some NEGC contributions alongside other developers and Government funds TBC  
HE / ECC to deliver

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A	TBC		N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
TBC								



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

R3

## Provision of new main alignment for car based traffic instead of Stane Street

### Summary

The purpose of this scheme is to allow Stane Street to be prioritised for public transport and active modes as the most direct route. Stane Street will be reserved for local traffic only with access control points / bus gates limiting access to through traffic

- 20mph single carriageway circuitous link with connections to the “villages”. Designed and built in line with Manual for Streets with specific provision for walking and cycling and green infrastructure to act as a mini bypass of Marks Tey village and separate parts of Stane Street at Little Tey and Broad Green. Provides car based access to initial Local Plan homes but with longer distances compared to public transport and active modes
- As applied in Cambridge, the option exists to use congestion control points (see **All sites P13**) at its eastern end where it re-joins Stane Street west of the railway line to restrict access to the A12 for car traffic during peak periods to reinforce the primacy of sustainable and active modes whilst still supporting car travel in off peak periods. This supports scheme PR1 and PR2.

### Assumptions

Some HE Funding potentially available as part of A120 Corridor Sustainable Transport Measures  
Assumed to be covered by developer funding for internal roads

### Cost

N/A

### Funded

Yes

### Timescale / Trigger

Local Plan Period and post 2033. Dependent on location of first villages  
**GC Essentials**

### Delivery Agency

NEGC to fund with potential for some limited Highways England contributions

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West  
Marks Tey

R4

## Stanway Green Road (all modes)

### Summary

A new 1.8km single carriageway road for all modes with rapid transit lanes and bus priority to help connect the Garden Community and development in Stanway to central and southern Colchester. This would provide relief to the existing route via Warren Lane and its substandard junction with the B1022. It could help relieve some through traffic from central Colchester and lower quality roads wishing to access the A12, but could also lead to an increase in traffic using routes through Stanway and Tollgate.

It is noted that there are some major archaeological and historical site considerations that would require careful mitigation (Brickway farm and Gryme Dyke). In addition there are potential deliverability concerns associated with the Fiveways Fruit Farm site (planning application under consideration – March 2017).

Requires connections to existing roundabout junction of Stanway Western Bypass and Warren Lane in the west, and the B1022 and Cunobelin Road in the east.

### Assumptions

Requires traffic modelling and business case assessment to assess its feasibility. RJ Internal Review (27/02/17) suggested a cost range of £6M to £7M with a 44% optimism bias on the upper figure given likely archaeological and historical site issues. Does not include the cost of buses.

### Cost

£6M - £10M

### Funded

No

### Timescale / Trigger

Local Plan Period

### Delivery Agency

Garden Community / ECC / other developers / SELEP? to fund  
ECC to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A			Deliverability
								Feasibility
								Affordability
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation		Reasonable fit with Objectives?	



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Essex County Council

# 9 Menu of Policy Interventions (West Tendring / Colchester Borders)



## 9.1 West Tendring / Colchester Borders Infrastructure Summary

The following is a current summary of total infrastructure costs where the Garden Community could be expected realistically to fund a significant proportion although not necessarily all (identified as **GC essentials** on each scheme). This is split by type. **These figures do not include costs associated with internal walking, cycling and road infrastructure (unless otherwise stated) which would be defined during subsequent master planning.**

	GC Essentials	
	Low range	High range
Active Modes & Public Realm	£4M	£6M
Public Transport	£30M (Guided Bus) £164M (Tram)	£63M (Guided bus) £186M (Tram)
Road	£25M	£36M
Travel Plan Measures (@£1,500 per home) – 10,700 homes	£16M	£16M
<b>Total</b>	<b>£75M to £209M</b>	<b>£121M to £244M</b>

- All totals are rounded.
- Travel Plan measures (inclusive of bus service subsidies) are from the AECOM June 2016 report although dependent on number of homes assuming a set amount per household.
- The above figures do not include costs associated with open space provision (involving some active mode links) or those associated with the Urban Extension.
- The interventions can be found on the pages in turn. In some cases costs are not yet known or can be given realistically given the stage of the project. **All costs will need further review through masterplanning and feasibility studies where relevant.**
- **The plans within this report reflect a point in time reached during the evolution of the Concept Framework. It must be noted that these plans will change as the Concept Framework for West Tendring / Colchester Borders evolves and develops further.**

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

A1

## Enhanced Cycle connectivity to Central Colchester

### Summary

- Three schemes to improve capacity, quality and choice for cyclists:
- Widened, fully surfaced, fully lit upgrade to existing shared pedestrian cycle route to Central Colchester from Hythe station to cater for increased demand for all journey purposes whilst maintaining a safe walking route (2.5km). The current route is not continuously surfaced, lacks lighting adjacent to the allotments and has a narrow pinch point underneath the railway.
  - Elmstead Road / Greenstead Road is a relatively direct route to central Colchester providing a route for more confident cyclists. Replacement of current facilities when rapid transit crossing of A134 Colne Bank is delivered (see and costed within PT1) and helps lock in capacity for active / sustainable modes from current A133 widening.
  - Widening of existing footpaths on north sides of the A133 Clingoe Hill to provide direct cycle link to Knowledge Gateway and Central Colchester from the Garden Community (2.5km x2)

### Assumptions

Based on current Essex Standards of 3m width, 7.5km of lit route at approx. cost of £350k (incl 20% contingency) per km, or unlit route is approx. £280k (incl 20% contingency) per km based on Chelmsford Growth Strategy

**Cost**  
£2.5M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period –  
Initial Phases  
**GC Essentials**

**Delivery Agency**  
NEGC Contribution  
ECC Contribution



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A				



# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

A3

## Zig Zag Bridge Improvement

### Summary

Upgrade to “Zig Zag” Cycle Bridge over rail line with lifts to reduce walk and cycle journey times between the University, Garden Community and Wivenhoe Trail cycle route. Currently cyclists must dismount to use the crossing.

Based on the cost of bridges recently installed across the rail line a new ramped bridge with steps is likely to cost upwards of £2m.

However in this instance the cost could be considerably reduced by modifying the existing structure, adding steps and raising the parapet height for cycling. A significant but unknown cost will be Network Rail charges.

### Cost

£0.5M to £3M

### Funded

Yes

### Timescale / Trigger

Local Plan Period –  
Initial Phases

**GC Essentials**

### Delivery Agency

Various funding sources to be considered including NEGC and other developers  
Network Rail to deliver



### Assumptions

Colchester Borough Council will be commissioning a feasibility study to look into options to improve journey times and accessibility for all modes. High level cost estimates advised by Colchester Borough Council, March 2017

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A	N/A			

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

A4

## Wivenhoe Trail Riverside Extension in Hythe

### Summary

The current Wivenhoe Trail provides an off-road connection from Wivenhoe, the University and Central Colchester.

It is understood from Colchester Borough Council that this will gradually be extended in the Hythe area to provide a fully continuous cycle route as an alternative to the current route characterised by industrial land uses on Hawkins Road

Dependent on gradual redevelopment of land alongside the River Colne joining up with recent residential and mixed use development, and it is anticipated that the costs of doing so will be fully met by these developments

### Cost

N/A

### Funded

Yes

### Timescale / Trigger

Local Plan Period  
Development in Hythe

### Delivery Agency

Developer Funded



### Assumptions

None

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A			N/A	N/A			

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

A5

## Salary Brook Crossing and Eastern Slope

### Summary

Salary Brook is a local nature reserved managed by Colchester Borough Council, with a walking trail loop that interconnects with the Brookside Trail and a footpath to Crockleford Heath up the escarpment.

It is understood from DLA's Concept Framework to date that the current plan is to dedicate more of the land in this area to a country park to act as a buffer and green links between Greenstead and the Garden Community. We suggest that there should be a mix of walking, bridleway and surfaced shared use cycle links to provide an all weather link. This would require a replacement of the existing footbridge over the brook, removal of stiles and provision of an all weather sustainable surface in keeping with country park. For climbing the slope, the goal should be to maximise the use of contours to climb slope in a longer circuitous route that avoids steep gradients. Gunpowder Park at Waltham Abbey provides a guide as to what can be achieved. [www.visitleevalley.org.uk/en/content/cms/nature/nature-reserve/gunpowder-park/](http://www.visitleevalley.org.uk/en/content/cms/nature/nature-reserve/gunpowder-park/)

### Cost

£750K - £1.5M

### Funded

No

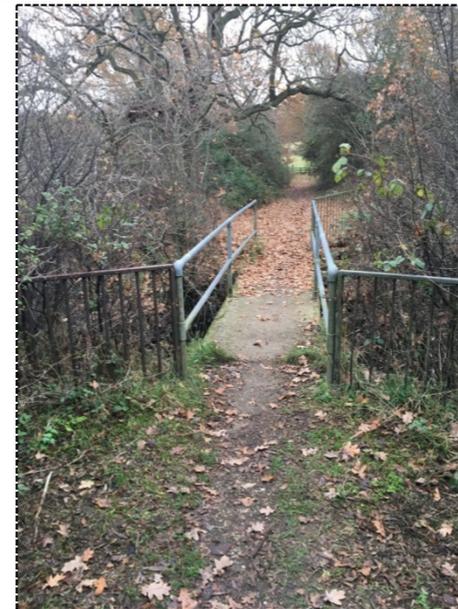
### Timescale / Trigger

Local Plan Period

**Open Space provision**

### Delivery Agency

NEGC contribution and delivery associated with the proposed Country Park within the Concept Framework



### Assumptions

Dependent on length. Based on assumption of current footpath 1.5km length and our high level estimates of £500k to £1M per km for off road routes in the NEGC Cost Review, November 2016

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A	N/A			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**A6**

## Brookside Path Upgrade

### Summary

Brookside path is a shared use footway / cycleway between the A133 Clingoe Hill, Knowledge Gateway and Bromley Road. The trail is lined as segregated at its southern end and shared use at its northern end where it is narrower. The surfacing is variable, with some unevenness.

With increased demand for further destinations such as a larger country park at Salary Brook and connections to North Colchester via schemes such as A6 and A8 current capacity for walking and cycling is insufficient.

Provision of a 3m wide route to the standard recently provided at the Knowledge Gateway for its circa 2.3km length

The subway underneath Salary Brook is prone to flooding and narrow. An enhanced shared use path takes cyclists to the Knowledge Gateway alongside the A133 for an at grade crossing. A similarly enhanced route to the Greenstead Roundabout will provide an opportunity to use crossing facilities at that location to access Greenstead Road for Central Colchester.

### Cost

£800K

### Funded

No

### Timescale / Trigger

Local Plan Period

**GC Essentials**

### Delivery Agency

NEGC Contribution

ECC Delivery



### Assumptions

Route is generally lit for most of its length. Based on current Essex Standards of 3m width, lit route is approx. £350k per km (incl. 20% contingency), based on Chelmsford Growth Strategy

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A	N/A			

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

A7

## Salary Brook – Welshwood Park / Fox Street Cycle Route

### Summary

Existing PROW connect Bromley Road with Welshwood Park and A137 Fox Street. It is suggested that these are upgraded to all weather surface, 3m width and lighting) as these offer the potential to provide strong off road links between the North of Colchester, Garden Community and University joining up with the Salary Brookside Trail and other existing cycle routes in these areas. As there are slopes, an all weather surface will prevent the surface being eroded by rainwater and quickly becoming difficult to use. The scheme involves use of a short stretch of un-adopted road from Bromley Road (by the Beehive PH) to Salary Brook Mill to where it joins the existing PROW to Welshwood Park. This would provide the most direct route but would require landowner engagement to assess its practicality. Provision of toucan crossing and visibility improvements where cycle route links up with Salary Brook Trail and crosses the A137 to provide continuous route from North Colchester, 'Urban Extension' and the University / Garden Community.

### Assumptions

3km in length. No major objections from Ramblers Association or other groups to their upgrade. DLA's latest plans do not propose development here. Offroad figures of £500k to £1m per km used as per A4. £160k each for two toucan crossings with high friction surfacing based on 2016 Essex schemes. This does not include cost of new standalone green links within Garden Community.

### Cost

£2M - £3.5M

### Funded

No

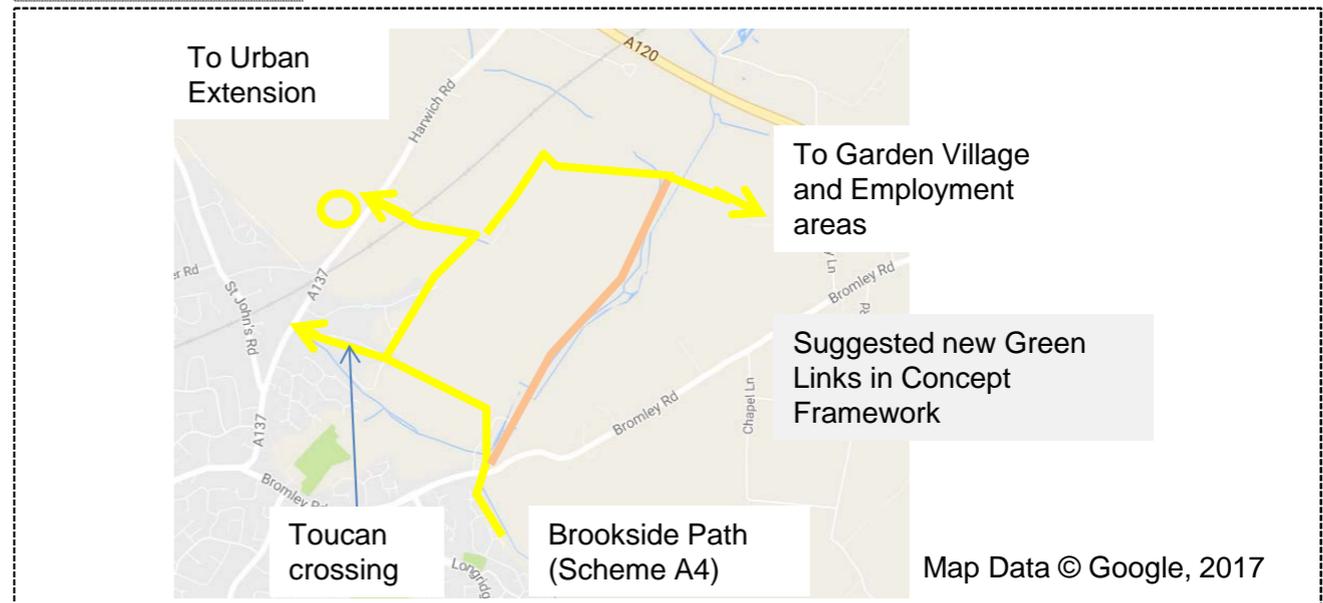
### Timescale / Trigger

Local Plan Period

**Open Space provision**

### Delivery Agency

NEGC Contribution  
NEGC / ECC to deliver (assumed part of open space costing)



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
				N/A	N/A			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

A8

## Cycle Links to St Johns Road and Ipswich Road

### Summary

The Colchester Cycle Action Plan proposes a wide number of new on road and off road routes in the urban area to complement the previous investment associated in the town. This includes schemes in the pipeline for the A1232 Ipswich Road as well as potential east-west routes on St Johns Road and the formalisation of cycling on the off road least-west inks south of St Joseph Road. With the Urban Extension to the immediate east of this area there is a need to ensure that this is properly integrated into these routes, and additional short links incorporated.

### Cost

<£100K

### Timescale / Trigger

Local Plan Period

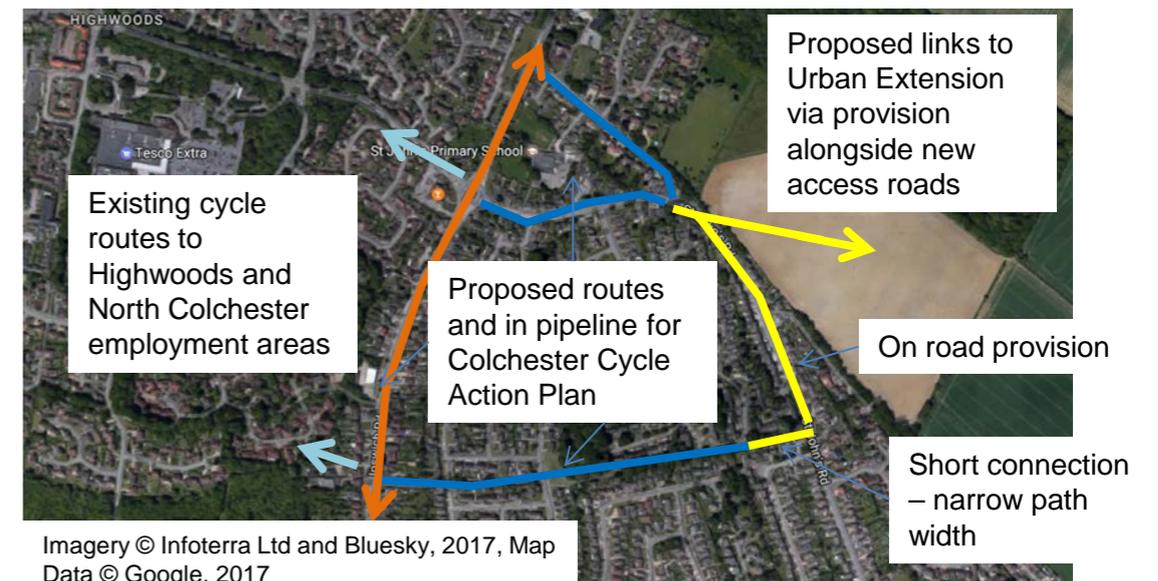
### Delivery Agency

Urban Extension to fund and deliver

### Funded

No

### Assumptions



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
				N/A				

# North Essex Garden Communities Movement and Access Study



West Tendring /  
East of Colchester

**PT1  
(Op 1)**

**East Colchester Rapid Transit – GC to Colchester North  
(Option 1 Guided Bus via East Hill) – page 1 of 2**

## Summary

Guided Bus Rapid Transit solution via East Hill. Jacobs September 2016 Strategic Outline Business Case provided the following breakdown:

- Guided bus technology where segregated from traffic (within the Garden Community) 3kms at £7.5M per km (based on Luton-Dunstable)
- Dedicated crossing of A134 Colne Bank to link Greenstead Road and Elmstead Road (£2.3M)
- Dedicated crossing of Clingoe Hill at the Knowledge Gateway Junction
- Park and Ride facility (£5M) at Northern Terminus close to A120-A133 Link or further south-east close to A133. The provision of two facilities would add an extra £5M cost, which has just been applied to the upper range.

DLA's Interim Concept Framework (December 2016) assumes a routing further east that adds approximately another 2km of route, with additional £15M cost based on the above, resulting in the range in cost provided.

## Assumptions

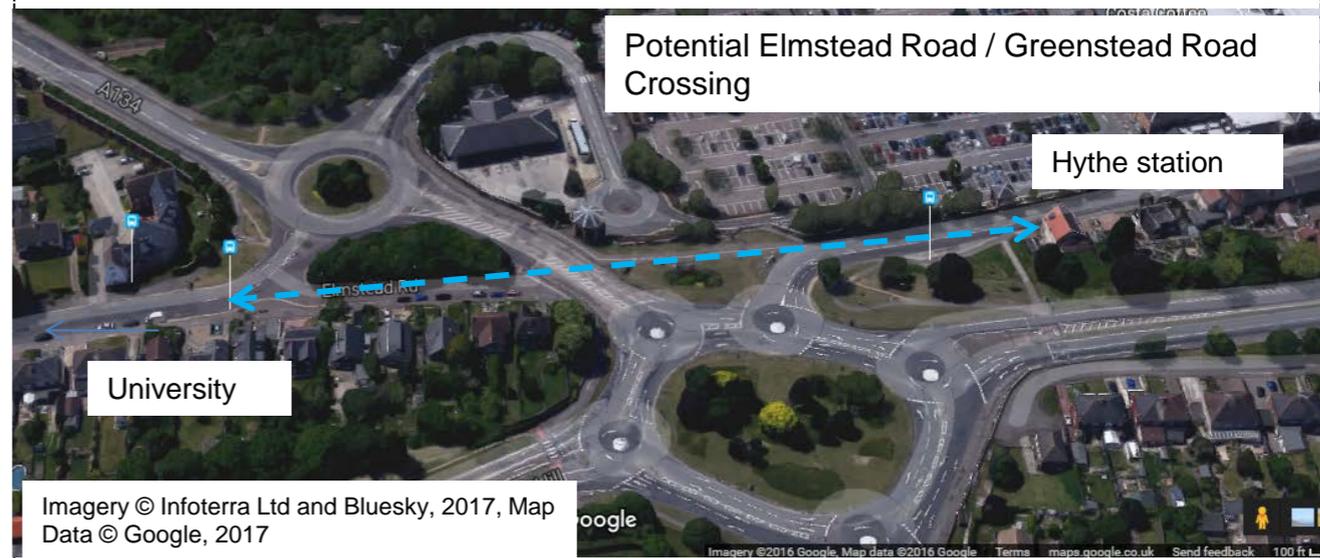
Costs and benefits from Jacobs' East Colchester Rapid Transit Study Strategic Outline Business Case (September 2016). Ongoing operational and maintenance costs to be covered by farebox revenue: £3M p.a. Solution for crossing A134 also to be informed by Local Plan design work for A133 corridor (Scheme R5)

**Cost**  
£30M - £50M

**Funded**  
No

**Timescale / Trigger**  
Local Plan period  
(potentially open as early as 2025)  
**GC Essentials**

**Delivery Agency**  
NEGC Contribution / Other Developer / ECC / SELEP funding  
ECC / Network Rail to deliver



## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
	N/A					

<b>Overall Appraisal</b>
Deliverability
Feasibility
Affordability
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT1  
(Op 1)**

**East Colchester Rapid Transit – GC to Colchester North  
(Option 1 Guided Bus via East Hill) – page 2 of 2**

## Summary

Guided Bus Rapid Transit solution via East Hill (continued)

- Potentially extends to P&R Northern Terminus and / or West Tey / Braintree Borders via rapid transit routes via the A12 or B1022 (see **West Tey schemes PT7 and PT8**) – not costed here.
- Efficient if an existing bus operator who is active in Essex was contracted to provide the services, with Essex County Council retaining the responsibility for maintaining the on-street infrastructure
- This performs best of the options considered in September 2016 in terms of affordability, Net Present Value (NPV) and Benefit/Cost Ratio (1.58) - this project would be classified as “medium value for money” by DfT. This would need revisiting in the light of changes in development quantum and route length proposed in the Concept Framework.

## Cost

£30M - £50M

## Funded

No

## Timescale / Trigger

Local Plan period  
(potentially open as  
early as 2025)  
**GC Essentials**

## Delivery Agency

NEGC Contribution / Other  
Developer / ECC / SELEP  
funding  
ECC / Network Rail to deliver



Source:  
<http://www.brtuk.com/brt-in-the-uk-what-to-expect-from-2016-at-a-glance/>,  
accessed 20 March 2017

## Assumptions

Costs and benefits from Jacobs' East Colchester Rapid Transit Study Strategic Outline Business Case (September 2016)  
Ongoing operational and maintenance costs to be covered by farebox revenue: £3M p.a.

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
	N/A							

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT1  
(Op 2B)**

**East Colchester Rapid Transit – GC to Colchester N  
(Option 2B Guided Bus via Colchester Town)**

## Summary

Guided bus solution via conversion of the Colchester Town branch line. The closure of the railway line to Colchester Town would require statutory procedures as specified in the Railways Act 2005. The investment case for conversion would also have to demonstrate that the replacement services represented better value for money than the existing rail service. A bus service could cross at the existing Hythe station level crossing. Involves an additional rail turnback facility at Hythe or even at a new University station for services that currently terminate at Colchester Town from London, Colchester North and in future Sudbury, and also provide enhanced interchange with the guided bus services. The rest of the route is the same as PT1 (Op 1). As per Option 1, it is noted that DLA's additional 2km of routeing in the current Concept Framework results in a potential additional £15M in cost based on Luton-Dunstable figures to provide the upper range.

**Cost**  
£48M - £63M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
(potentially open as early as 2025)  
**GC Essentials**

**Delivery Agency**  
NEGC Contribution  
SELEP Major Scheme  
Alternative funding?  
Network Rail / ECC to deliver

## Assumptions

Greenstead / Elmstead Crossover £2.3M; Hythe turnback £7M, Rail Corridor Conversion £11.3M, P&R Site £5M, Garden Settlement Guided Bus Infrastructure including crossing of Clingoe Hill £22.5M

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT1  
(Op 2T)**

## East Colchester Rapid Transit – Garden Community to Colchester North (Option 2T Tram via Colchester Town)

### Summary

Tramway solution via conversion of the Colchester Town branch. Requires a Transport and Works Act Order (TWAO) application. Closure of rail line to Colchester Town requires statutory procedures as specified in Railways Act 2005. The investment case for conversion must demonstrate that the replacement services represents better value for money than existing rail service. Because of the need to access and take over the Colchester North branch, and the difference in power systems, the tram would need to cross the rail line on a bridge, potentially in the Eastern Approach area. Involves an additional rail turnback facility at Hythe or even at a new University station for services that currently terminate at Colchester Town from London, Colchester North and in future Sudbury, and also provide enhanced interchange with the tram services. DLA's addition of approximately 2km of routeing in the current Concept Framework results in an additional £22M in track and alignment costs. Knock on implications for rolling stock has not been calculated at this stage.

**Cost**  
£164M - £186M

**Funded**  
No

**Timescale / Trigger**  
Local Plan Period  
(potentially open as early as 2025)  
**GC Essentials**

**Delivery Agency**  
NEGC Contribution  
SELEP Major Scheme  
Alternative Funding?  
Network Rail / ECC / Greater Anglia to deliver?



### Assumptions

Tram Conversion of 11.1 kms of route £122.6M (£11M per km), Rolling Stock £30.0M, P&R £5M, Rail turnback at Hythe £7M; £9.4M operational costs per annum. Source East Colchester Rapid Transit Study

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
							Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

PT1  
(Op 5A)

## East Colchester Rapid Transit – Garden Community to Colchester North (Option 5A Tram Train)

### Summary

As part of a separate commission, Jacobs have been asked to look at an option of using tram-train technology as applied in Germany and being trialled in Rotherham and Sheffield .

This is a variation of Option 2 and involves in the interim a service from Colchester North Platform 5 to Colchester Town (as currently used by a shuttle service), with reversal on to Hythe, University, Garden Community and Park and Ride site

### Cost

£TBC

### Funded

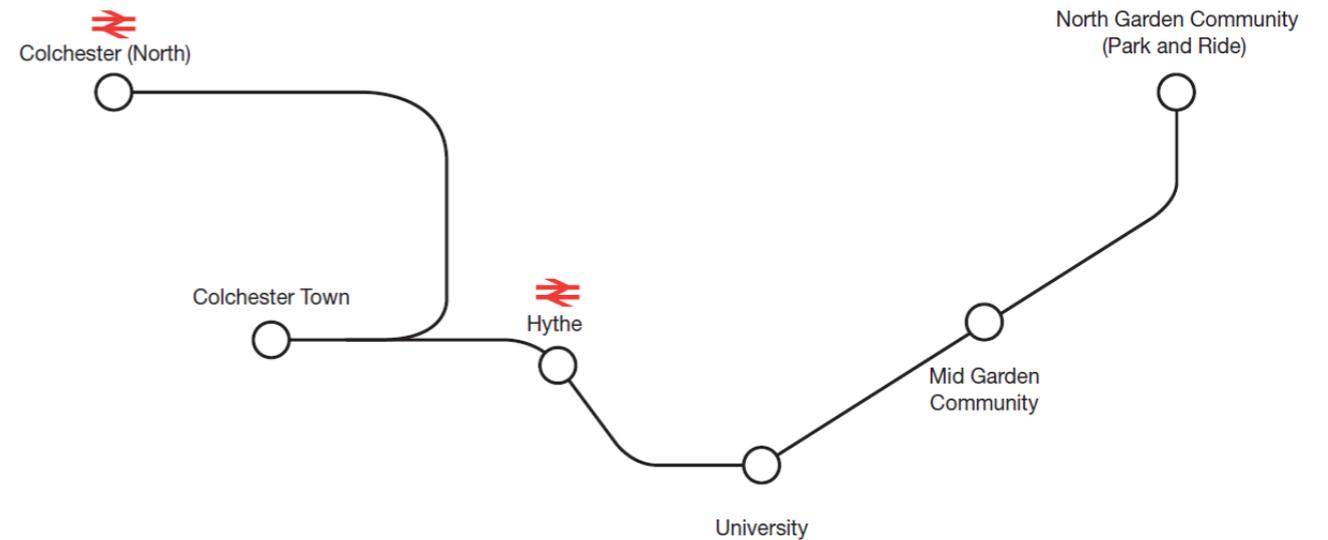
No

### Timescale / Trigger

Local Plan Period  
(TBC)

### Delivery Agency

NEGC Contribution  
SELEP Major Scheme  
Alternative Funding?  
Network Rail / ECC / Greater  
Anglia to deliver?



### Assumptions

This report concludes in the spring of 2017

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
Green	Orange	Light Green	Light Green	Light Green	Yellow	Light Green
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
Light Green	Yellow	Green	Light Green	Green	Green	

Overall Appraisal
Deliverability – TBC
Feasibility – TBC
Affordability – TBC
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

PT1  
(Op 5B)

## Greater Colchester Metro (Tram Train)

### Summary

This is a further variation of Option 2 and involves a future extension of services from the West Tending / Colchester Borders Garden Community. Instead of terminating at Colchester North Platform 5 they would extend to destinations such as Marks Tey, West Tey, Sudbury and possibly Braintree.

### Cost

£TBC

### Funded

No

### Timescale / Trigger

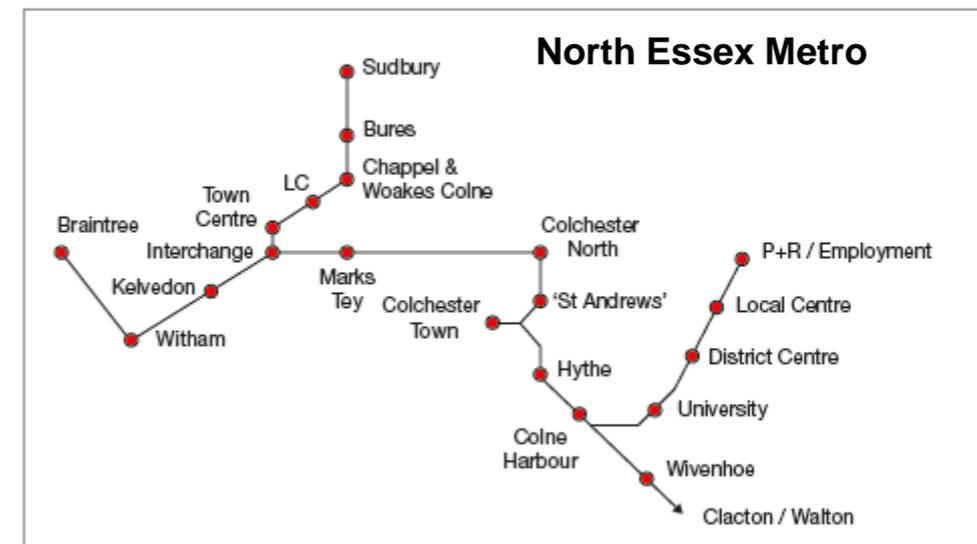
Local Plan Period  
(TBC)

### Delivery Agency

NEGC Contribution  
SELEP Major Scheme  
Alternative funding?  
Network Rail / ECC / Greater  
Anglia to deliver?

### Assumptions

This report concludes in the spring of 2017



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure
Green	Yellow	Green	Green	Green	Green	Green
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation	
Green	Yellow	Green	Green	Green	Green	

Overall Appraisal
Deliverability – TBC
Feasibility – TBC
Affordability – TBC
Reasonable fit with Objectives?

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

PT2

## Harwich Road Level Crossing

### Summary

An increase in rail services whether through conventional trains or tram trains will require a greater use of the level crossing barriers with potential congestion impacts.

A technology solution (to reduce the time level crossing barriers are closed for) or a congestion control point for cars on Harwich Road south of the A133.

Some mitigation will be provided by **Scheme PT3** to close Greenstead Road at its junction with the A133 to through vehicular traffic reducing the junction interfaces at the Harwich Road / Greenstead Road junction.

### Cost

Unknown

### Timescale / Trigger

Post 2033

### Delivery Agency

Network Rail / ECC to deliver

### Funded

No



### Assumptions

Potential funding via Network Rail's F001 Level Crossings Risk Reduction Fund may be an option

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
			N/A	N/A	N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
N/A	N/A			N/A	N/A			

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT3**

## Closure of Greenstead Road to through traffic at selected times

### Summary

- Forthcoming A133 widening schemes, provides a limited window of opportunity to lock in some of the capacity released for rapid transit and active modes.
- Suggested a peak time access control method as used in Cambridge (see **All Sites PT13**) be used to limit access to residential traffic.
- Delivery vehicles would still be able to access Greenstead Road residential properties and businesses from its northern end at the junction with Harwich Road at these times
- This will help to reduce traffic flows to make this a more direct route to the town centre attractive for cyclists and reduce congestion for buses at Harwich Road. Also can be delivered as an interim solution early in the Local Plan Period benefitting services from the University.
- Bus priority at Greenstead Rd / Harwich Rd junction to aid movements to / from Greenstead Rd – this could be simply signals on Harwich Road (north) to allow buses in and out of Greenstead Road.

### Assumptions

Early and open consultation accentuating the environmental benefits for Greenstead Road residents essential.  
Associated with Schemes **A1, PT1, and R5.**

### Cost

Included in PT1

### Funded

No

### Timescale / Trigger

Local Plan Period  
A133 St Andrews  
widening  
**GC Essentials**

### Delivery Agency

ECC to forward fund?

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT4**

**University of Essex Station**

## Summary

- University of Essex station has previously been proposed as part of the Essex component of the SELEP Growth Deal and Strategic Economic Plan (2014)
- 2 platform accessible station with footbridge; no car parking
- Consider provision of turnback facilities for extended Sudbury service and as a destination for a repurposed Colchester Town service associated with PT1 as an alternative to providing this at Hythe. This would move a £7M cost from PT1 to this scheme.
- Remote from the Garden Community however.
- Could instead be served by the rapid transit solution **PT1** avoiding the need for this scheme.

## Cost

£5M - £10M

## Funded

No

## Timescale / Trigger

None

## Delivery Agency

University of Essex / SELEP funding

## Assumptions

£5M Cost from Essex Growth Deal Submission (2014). A new double track station for Soham in Cambridge is estimated at £6.2M in the Cambridge City Deal, although further allowance should be made for 12 car platforms and any overhead line equipment modifications

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT5**

**A137/A1232 – Urban Extension Rapid Transit / Active Modes only roads**

## Summary

DLA's Draft Concept Framework (December 2016) indicate an "Urban Extension" with indicative roads connecting two parcels with the A137, A1232 and St John's Road.

To encourage use of active and sustainable modes through links within the site should be minimised (at least in peak periods) with rapid transit, walking and cycling only roads. Walking links to St John's primary school would otherwise be affected by additional traffic on this road.

This would require a bus gate within the centre of the development. A traffic signalised connection with St Johns Road may be favoured to provide bus priority .

## Cost

£900K - £1.1M

## Funded

Included

## Timescale / Trigger

Dependent on Urban Extension timing

## Delivery Agency

Urban Extension to fund and deliver through provision for internal roads

## Assumptions

Based on the plans it has been assumed that there would be approximately 750m of rapid transit / active modes only roads. Fastrack type costs of £1.2 to £1.5M have been assumed as a proxy.

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A					Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

**PT6**

## Central Colchester Terminal Bus Capacity

### Summary

Essex County Council are currently developing a 'Bus Blue Print' for Colchester town centre given the shortage of terminal capacity at Osborne Street for additional services. Officers are working with the Operators and looking at alternative routing options.

Additional services for the Garden Community in West Marks Tey and West Tending provide an added impetus for this Blue Print to provide passive provision for future growth.

### Cost

TBC

### Timescale / Trigger

Local Plan Period

### Delivery Agency

ECC / Bus companies to deliver

### Funded

No

### Assumptions

Work in Progress

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

R1

A120-A133 Link Road

## Summary

The original £17M cost is based on a c.2.4km alignment provided by Mersea Homes to AECOM for the June 2016 Report. This assumed a 40 mph Dual Carriageway corridor with one intermediate at grade signalised junction for the Garden Community, an at grade roundabout with A133 and possible B1027/B1028 link and grade separated dumbbell roundabout junction with A120.

A shorter c.2km dual carriageway route further east with additional intermediate junctions and landscaping is currently proposed in DLA's draft Concept Framework, which may affect this cost. To provide a range we have also applied optimism bias of 44%.

This potentially allows the A133 west to/from Colchester to have some of its carriageway reallocated for public transport.

It is recommended that only one lane is provided in each direction outside of the junctions at the outset to help manage demand.

## Cost

£17M - £25M

## Funded

No

## Timescale / Trigger

Local Plan Period  
**GC Essentials**

## Delivery Agency

NEGC / Growth Funding to fund  
ECC to deliver

## Assumptions

Costs from AECOM June 2016 report with 44% optimism bias for upper range given change in alignment. RJ Internal Review (27/02/17) determined that we were still content with these figures as being indicative.

Alignment to be confirmed by Concept Framework



Imagery © Infoterra Ltd and Bluesky, 2017, Map Data © Google, 2017

Alignment purely indicative – to be confirmed by Concept Framework

## Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
	N/A	N/A		N/A	N/A		Deliverability	
							Feasibility	
							Affordability	
							Reasonable fit with Objectives?	
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

R2

## A133-B1027/B1028 Link Road with Cycleway

### Summary

This involves a short single carriageway 40mph link road between the A120-A133 Link west of Elmstead Market and the B1027 and B1028 to Wivenhoe and Alresford with a separate segregated flagship cycleway (see **All Sites P23** for specification).

Linking up with the A120-A133 alignment results in 1.3km of new carriageway loosely on the alignment of Elmstead Road with a mini bypass of Elmstead Road in the Wivenhoe urban area. It also results in the need for two improved / new junctions at:

- B1027 Brightlingsea Road / Elmstead Road adjacent to Wivenhoe Town FC (roundabout)
- B1028 Colchester Road on the northern boundary of Wivenhoe (roundabout)

This could help to remove further traffic from the A133 corridor into Colchester.

### Assumptions

Length of route depends on proposed alignment of A120-A133 Link. RJ Internal Review 27/02/17 determined likely cost based on current known facts

### Cost

£5M - £6M

### Funded

No

### Timescale / Trigger

A120-A133 Link – during the Local Plan Period

**GC Essentials**

### Delivery Agency

ECC / Development in Wivenhoe / Tending to fund with small NEGC contribution



Imagery © Infoterra Ltd and Bluesky, 2017, Map Data © Google, 2017

Alignment purely indicative – to be confirmed by Concept Framework

### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal		
		N/A					Deliverability		
							Feasibility		
							Affordability		
							Reasonable fit with Objectives?		
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation				
				N/A					



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Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

R3

## A137/ Bromley Road Junction Improvements

### Summary

This is currently a mini roundabout with a zebra crossing on the A137 northern arm, and a bus stop immediately to the south.

This junction was initially recommended for upgrade in AECOM's June 2016 Report. This was based on an assumption of a connection for vehicles on to Bromley Road from the Garden Community, although the main focus of development on Bromley Road is now a smaller Garden Village, with a connection at its far northern end for the remainder of the Garden Community. There would also be a connection on to the A137 for a portion of development from the Urban Extension.

It is noted from Google Street View that there is likely to be statutory undertakers' equipment in the wide footways that surround this junction, with a car dealership on the northeast side of the junction.

Traffic signals could be implemented with an opportunity for a short two lane approach from Colchester. It is suggested that a "monitor and manage" approach is taken initially.

### Assumptions

Assuming no land take or Compulsory Purchase then a figure of £3-5M is likely to be appropriate.

### Cost

£3M - £5M

### Funded

No

### Timescale / Trigger

Dependent on when connection to Bromley Road and A137 is made, and monitoring vs defined traffic levels

**GC Essentials**

### Delivery Agency

NEGC to fund  
ECC to deliver



### Appraisal Summary

1 40:30:30 Mode Share	2 Timely sustainable transport	3 Smart solutions	4 Support efficient use of land	5 Inclusive, affordable, sustainable accessibility	6 Green links by active modes	7 Healthy, safe and secure	Overall Appraisal	
		N/A			N/A			Deliverability
								Feasibility
								Affordability
								Reasonable fit with Objectives?
8 High Quality sense of Place	9 Natural environment heritage	10 Lower carbon emissions	11 Prosperous sustainable economy	12 Modern frequent reliable PT to major towns	13 Effective network function / operation			
	N/A							



integrated expertise



Essex County Council

# North Essex Garden Communities Movement and Access Study



West Tending /  
East of Colchester

R4

## A133 Corridor Improvements

### Summary

SELEP Growth Deal funding has been achieved for the following schemes:

- Colne Bank Widening to 2 lanes
- A133 Ipswich Road Improvements including new roundabouts at junctions with A1232 Ipswich Road and A137 Harwich Road including carriageway widening to 2 lanes in each direction and east-west cycle improvements.

Further improvements to the A133 Cowdray Avenue are associated with forthcoming developments in North Colchester.

Local Plan modelling mitigation design is also investigating further improvements to the A133 corridor including the Greenstead Roundabout.

### Assumptions

Local Plan modelling mitigation to review further necessary improvements to the A133 corridor.

### Cost

£20M

### Funded

Yes

### Timescale / Trigger

2017 +

### Delivery Agency

SELEP & Developer  
Funding

