

Review of bus services in London Riverside East

TfL Surface Transport –
Public Transport Service Planning

August 20 19

MAYOR OF LONDON



Structure

- Objective & Bus Strategy (Feb 2019)
- Background
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Bus Services in London Riverside East

Objective

The need for this study has been identified as a result of the anticipated land use changes adjacent to the New Road corridor. The aim of the study is to understand if, (and if so, how), the bus network may need to change in response to these expected land use and population changes and subsequent demand increase for bus services.

TfL Bus Strategy

TfL set out its strategy for buses at the Customer Service Operations & Performance Panel 13th February 2019. The strategy set out six priorities. Of these six “Growing Demand” & “Re-shaping the Bus Network”, provide the strategic framework for this study and are summarised in the next few slides.



Bus Strategy

The six priorities for the bus network are:

1 LEADING VISION ZERO

Including the Bus Safety Programme

2 IMPROVING AIR QUALITY

Including Zero Emission Buses

3 FOCUSING ON CUSTOMER SERVICE

To meet changing customer expectations

4 IMPROVING BUS DRIVER WELFARE

Reviewing pay and facilities

5 RESHAPING THE BUS NETWORK

With a new strategy for outer London

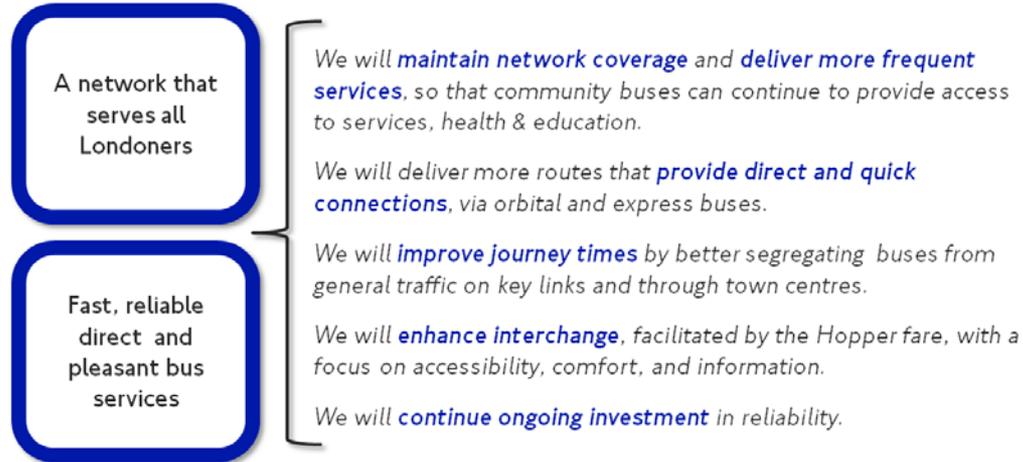
6 GROWING DEMAND

Including road space optimisation



Bus Strategy (Feb 2019)

The vision for reshaping the bus network is:



In outer London that means we will:

- Grow our coverage, providing new links where people want to travel.
- Maintain existing network coverage.
- Be faster, more direct and overall more attractive to target mode shift.

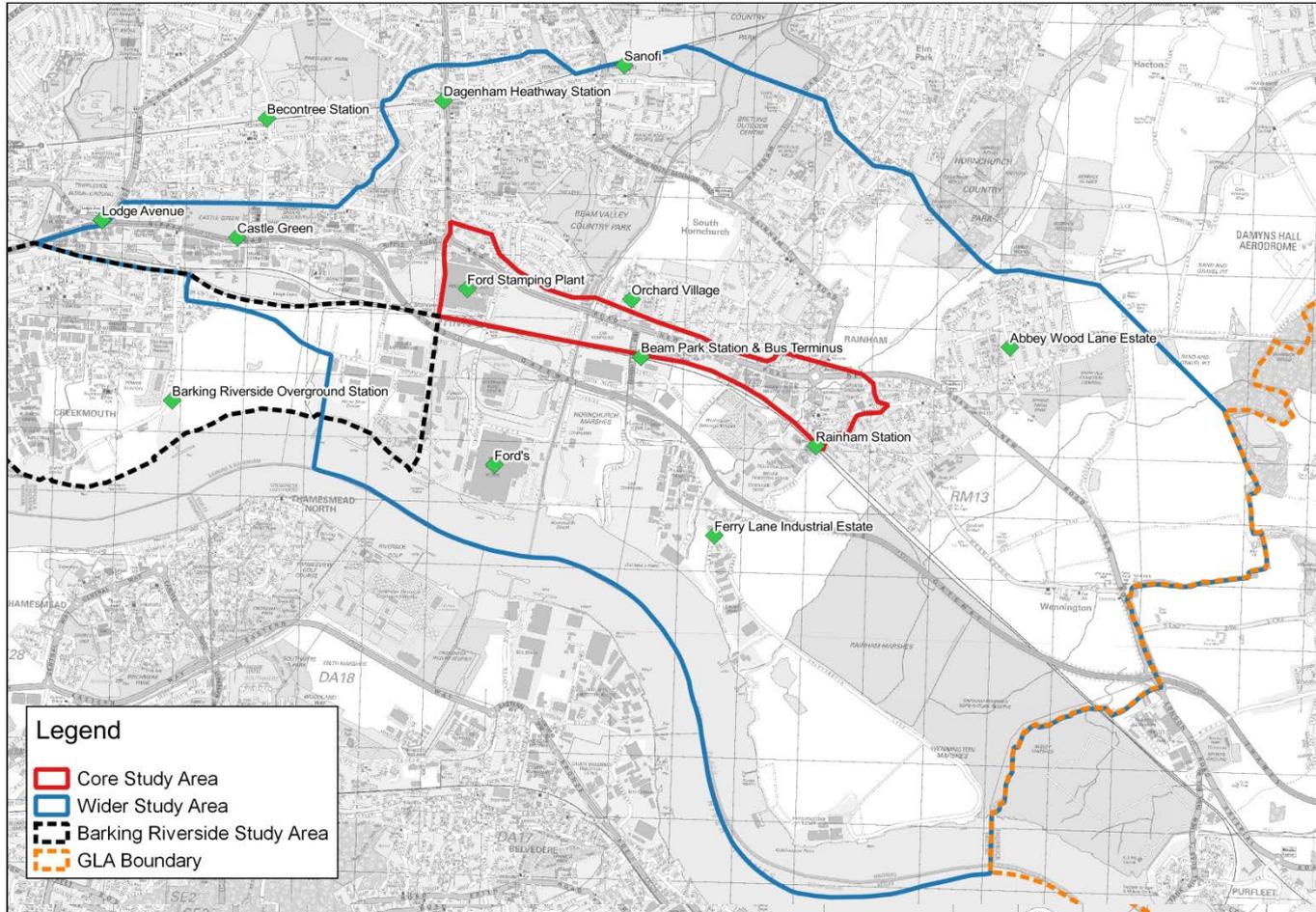
To Grow Demand we will:

Optimise sustainable use of street space to support future expansion of the bus network and ensure reliable journey times. This will support:

- Bringing buses right into town centres
- Providing direct links between town centres
- Delivering new orbital bus links
- Supporting growth areas
- Serving the pilot Bus Transits



Study Area

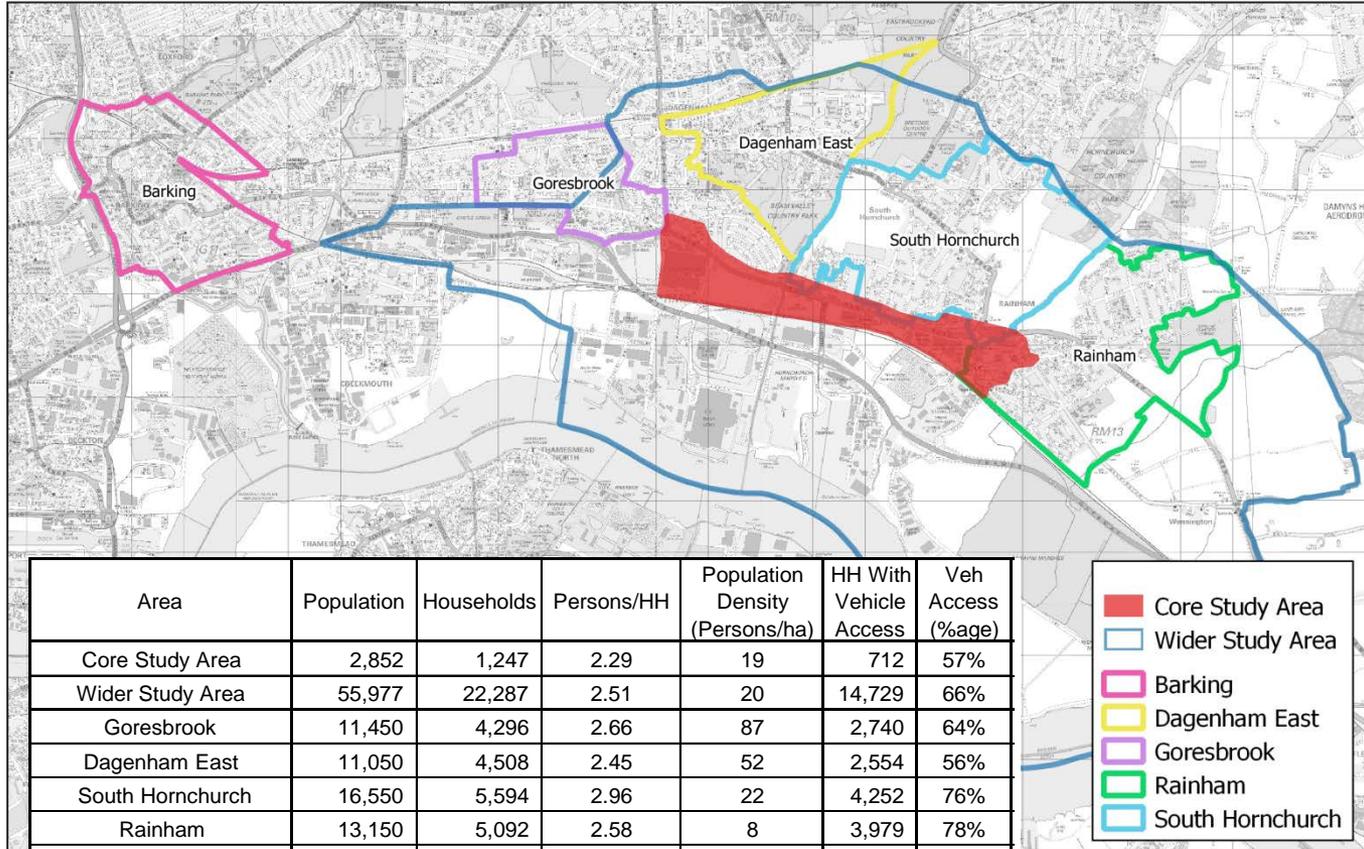


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- Core study area (CSA) represents the location of new housing developments (approx 8,000 by 2030).
- Wider study area identified in liaison with key stakeholders to include key local attractors to the CSA, areas of potential future growth, and key connections already established.



Demographics



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Source - ONS Census 2011

HH=Households ha=hectares

- Local centres identified in order to provide context of the surrounding area and the likely future makeup of the CSA.
- Access to vehicles increases further east.



Land Use

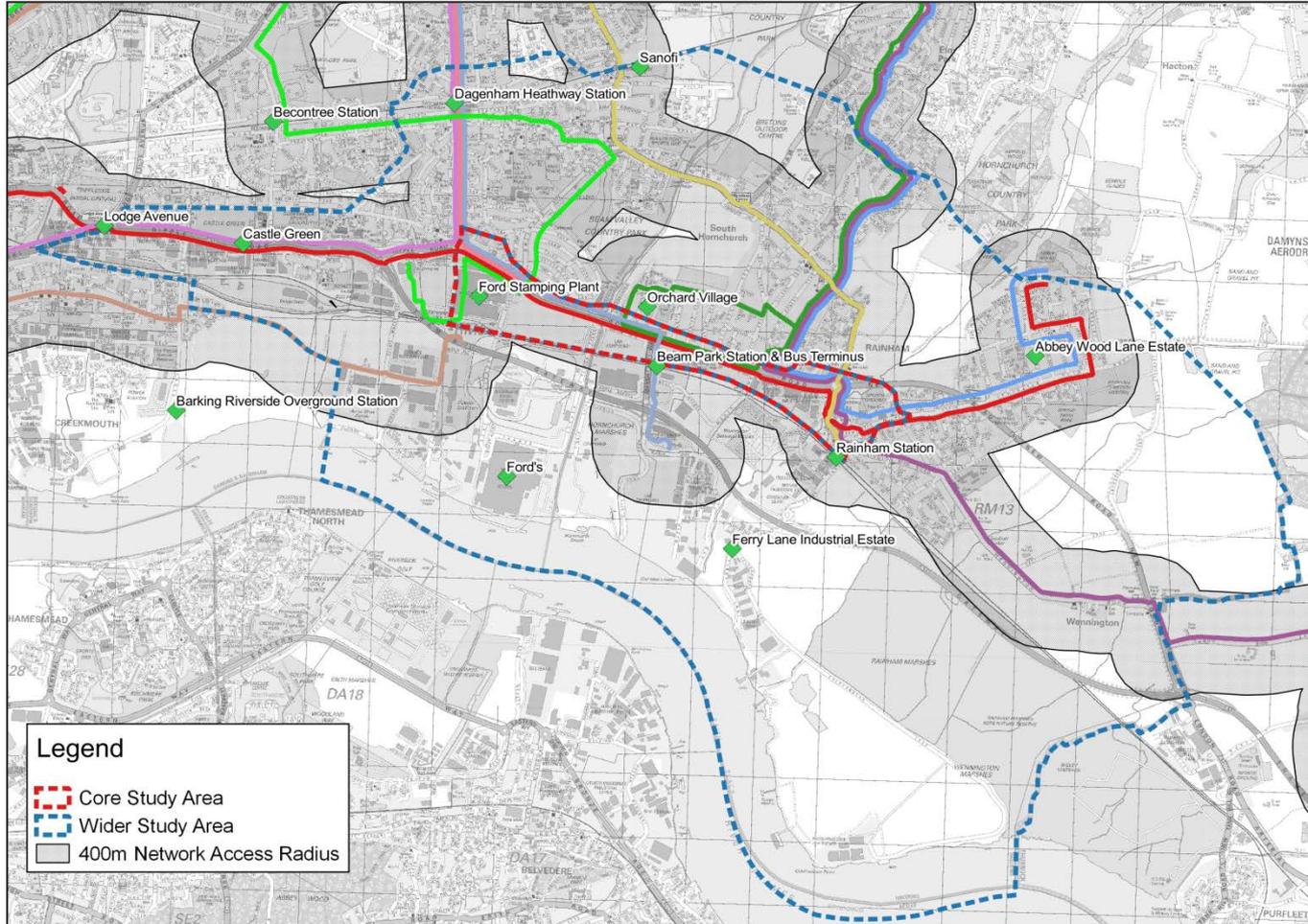


- Predominantly industrial / ex-industrial land to the south of the A1306 and residential uses to the north.
- Rainham Marsh to the east is a protected reserve.
- The A13 and railway line create significant north/south barriers while the Gores, Beam and Ingrebourne rivers create significant east/west barriers through the study area.
- Existing land use of the CSA is largely industrial, with much of it already cleared for housing redevelopment.

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Current Bus Network – Serving London Riverside East

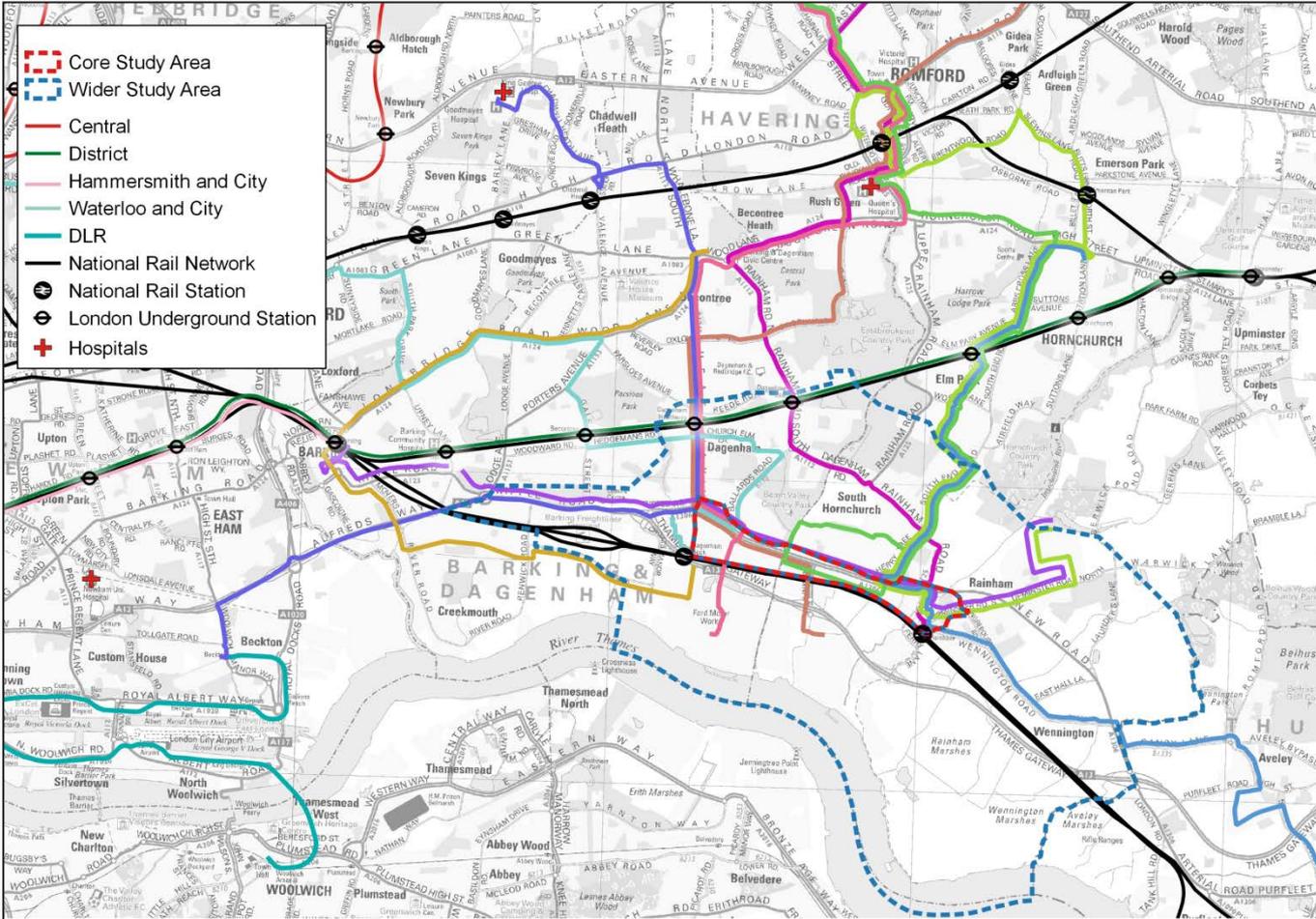


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- The 400m network access radius only considers those routes operating within the study area and does not take into consideration physical boundaries such as the A13, the railway line or water courses.
- Network 'holes' exist to the south of the A13 at Fords, and Ferry Lane Industrial Estate (London Riverside BID)
- The CSA is generally within the 400m catchment.



Current Bus Network – Wider Connections



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- Strong north/south links from A1306 to Romford.
- Links between Rainham and Romford are relatively indirect.
- Strong east/west links across study area to key local centres and amenities (Barking, Ilford, Beckton, Dagenham Heathway & Lakeside).
- Good access to rail network for existing residents.
- Poor access to employment areas south of the A13.



Current Bus Network – Details (1)

Route	Terminus	Terminus	Peak Frequency ^a	Busiest Point	Direction Towards	Hour From	MPS ^c	Cycle Time (mins)	Return Journey Length (miles)	Vehicle Type ^d
103	Chase Cross	Rainham	6	Sandown Avenue	Chase Cross	07:28	0.9 mins	135	18	DD
145 (24h) ^e	Dagenham, Asda	Leytonstone Bus Station	5	Frimley road	Leytonstone Station <>	07:24	1.1 mins	199	25	DD
165	Romford	Rainham	5	Aldingham Gardens	Romford	07:24	0.9 mins	143	22	SD
173	Goodmayes, King George Hospital	Beckton Bus Station	5.5	Oxlow lane	King George Hospital	07:37	1.0 mins	158	19	DD
174	Harold Hill	Dagenham CEME	7.5 ^b	Pettits lane	C E M E	07:15	1.0 mins	168	22	DD
175	Hillrise Estate	Dagenham, Ballards Rd	6	Heathway	Hillrise Estate	07:37	0.9 mins	140	17	DD
287	Rainham	Barking Station	4	Renwick Road	Rainham	07:17	78% on time	105	16	DD
365 (24h)	Orchard Village	Havering Park	5	Ambleside Avenue	Havering Park	07:12	0.9 mins	132	19	DD
372	Hornchurch	Lakeside Bus Station	3	Ferro road	Hornchurch Town Centre	06:58	86% on time	132	23	DD
EL2	Becontree Heath	Dagenham Dock Station	7.5	Faircross	Becontree Heath bus Station	17:43	0.7 mins	120	15	DD

^a Peak frequency expressed as buses per hour (bph) operating in each direction on Monday - Friday.

^b Plus additional peak hour journeys

^c MPS = Minimum Performance Standard, measured by EWT (Excess Wait Time) for services of 5bph and up, and by % on time for services of 4bph or less.

^d DD = Double Deck, SD = Single Deck.

^e Operates on Friday and Saturday nights only.



Current Bus Network – Details (2)

Key points identified from the previous table are:

- Routes are generally high frequency meaning every 12 minutes or better.
- Busiest Points don't fall within the CSA, however key destinations from the CSA are operating close to capacity.
- Primary direction of travel is North & West in the AM peak and South & East in PM peak (except 175 & 365).
- Dagenham Heathway station is a key destination (noted later).
- Route performance standards are typically more stringent compared to the London average performance of 1.0 minute EWT and a 2019/20 budget forecast of 1.1 minutes.
- Cycle times on routes 145, 173 & 174 are approaching the limit of what can be operated efficiently.
- Generally high capacity vehicles i.e. double deck buses are used.



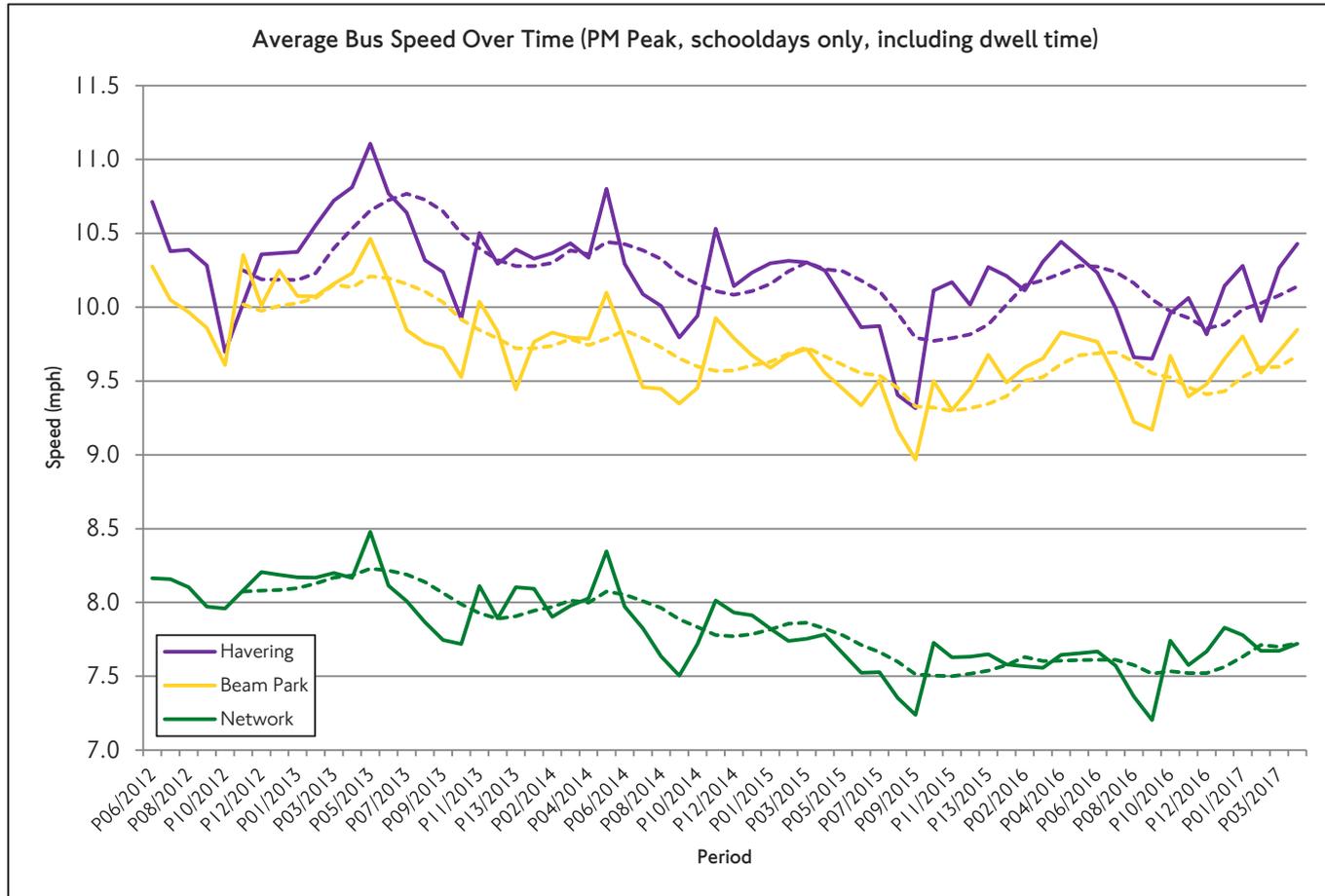
Current Bus Network - Demand

	Core Study Area	Wider Study Area	Barking Riverside & Beckton	Barking Town Centre	North West	Becontree Heath	Becontree Station	Romford	Elm Park Station	North	East
Core Study Area	406										
Wider Study Area	3,648	7,820									
Barking Riverside & Beckton	437	2,429	1,756								
Barking Town Centre	761	1,077	4,696	560							
North West	198	1,871	511	4,121	10,174						
Becontree Heath	148	3,529	518	809	867	293					
Becontree Station	43	825	-	-	1,485	-	69				
Romford	439	4,650	-	-	-	1,467	-	3,746			
Elm Park Station	49	442	-	-	-	-	-	347	37		
North	609	11,115	593	586	326	2,074	-	18,257	1,560	9,714	
East	40	1,200	-	-	-	-	-	0	50	285	181
Total	6,781	34,958	8,074	6,076	12,852	3,833	69	22,351	1,647	9,999	181

Typical weekday passenger trips between destinations



Current Bus Network - Speed



- Progressive decline in bus speeds network wide over the last 5 years.
- Despite Beam Park and Havering averages being higher than network wide, similar trends are evident.
- The decline in bus speed is the major contributor to the decline in network patronage, as bus journey times become longer.
- Some of the patronage decline as a result of reduced bus speeds has been offset by an increase in population.
- Improving bus speeds is a priority for the MTS in order to attract passengers back to the network, and offer an attractive and competitive (in both monetary and time terms) mode choice for new residents.



Forecast Change – Core Study Area

	Households	Population ¹	Estimated AM Peak Hour Bus Trips	Status	Timescales ²
Ford Stamping Plant ^{2 3}	3000	~7,500	300	Pre-Application	2019 Expected application
Somerfields	394	~1,000	40	Pre-Application	2020/2021
Dovers Corner	703	~1,750	70	Approved	2017 Construction start 2022 Build out complete
Beam Park	3000	~7,000	420	Approved	2019 Enabling Works 2021 New rail station 2022 Phase 1 complete 2030 Build out complete
Mudlands	320	~800	30	Pre-Application	Unknown
Land Assembly Sites ²	750	~1,900	75	Masterplanning	Unknown
Total	8001	~19,950	935		

¹ Population estimates based on average household occupancy across LB Havering & LB Barking & Dagenham.

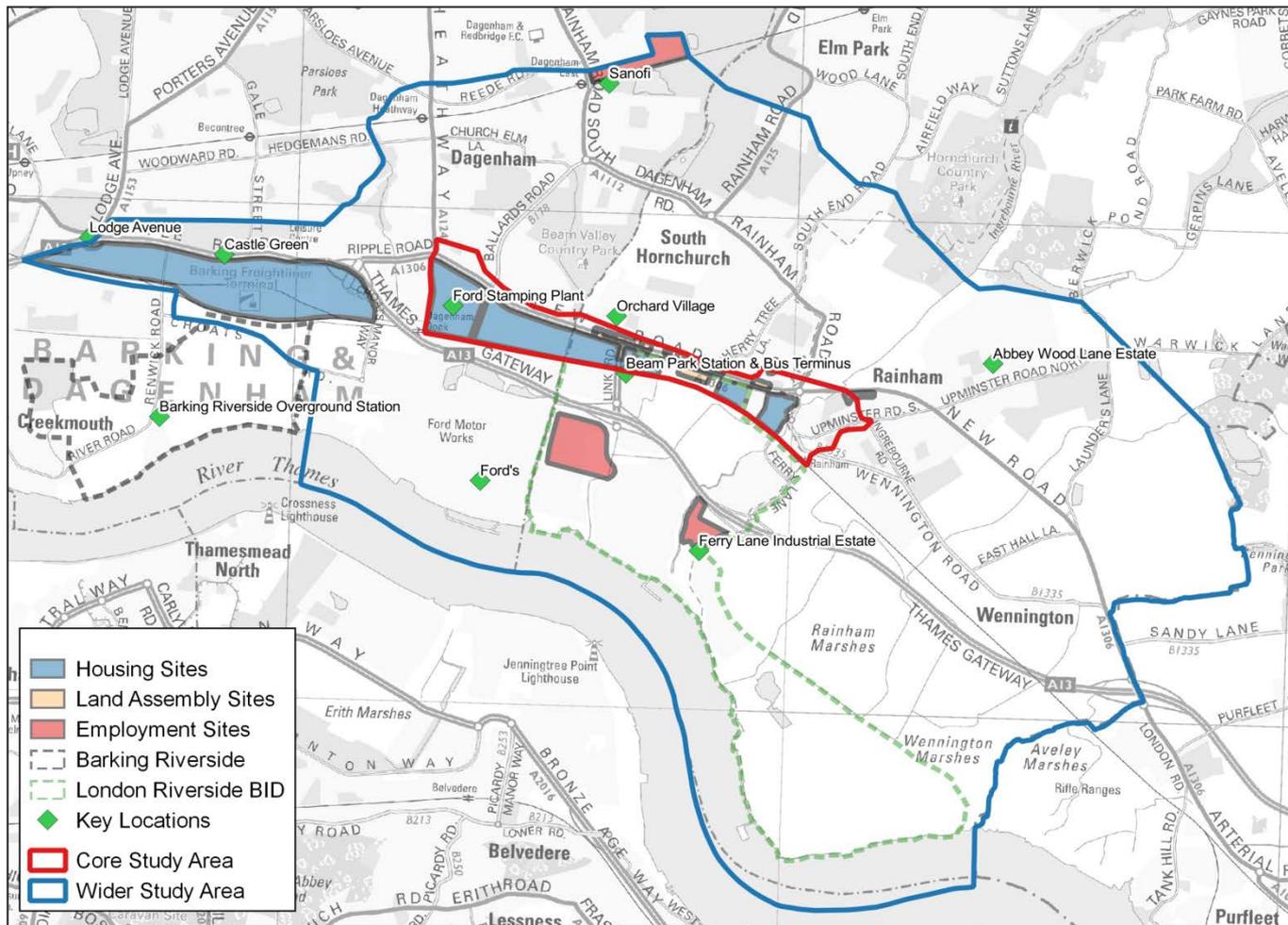
² Current best estimate.

³ Likely to include a secondary school.

- Development in the CSA is dominated by change of land use from industrial to residential.
- A scheme is currently being worked up to revise the highway alignment along New Road, between Dover's Corner & the Barking & Dagenham/Havering boundary.
- Beam Park rail station planned, providing a 4 tph service to Fenchurch Street.



Forecast Change – Wider Study Area



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- The Castle Green site is currently being masterplanned with up to 15,000 new homes expected. Potential for local centre land uses also.
- Further employment development expected within London Riverside BID, with up to an additional 5,000 new jobs. Beam Reach 6 came online in October 2017 (up to 1,750 jobs when at capacity).
- Potential for securing a PT bridge at Salamons Way to improve links through the industrial areas.
- Some existing school expansions planned, however the only new secondary school is earmarked for Ford Stamping Plant.



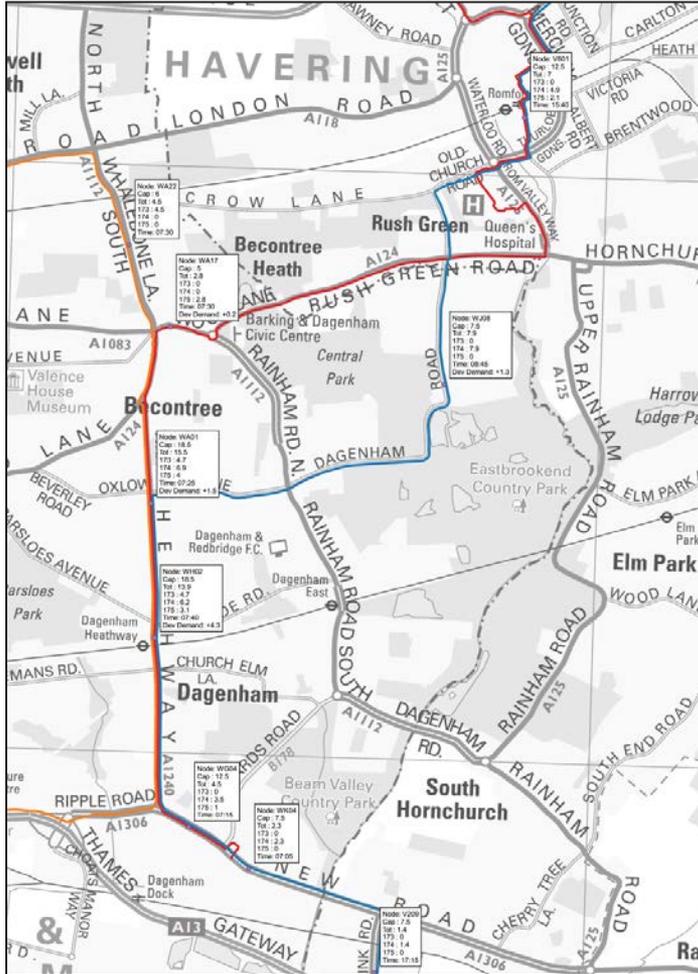
Forecast Change – Development Impact

- Estimated ~900 AM peak hour bus trips to from development sites across the Core Study Area.
- Strategic modelling indicates increased journey times for all highway modes as a result of combined impacts of background growth in population and new development.
- One scenario estimates this level of delay to be in the region of 12-15 minutes increase in round trip time for bus services passing through Chequers Corner.
- Service planning can play a role to mitigate development impacts, particularly for capacity issues, however mitigating against increased journey time through service planning is less effective, and more costly. Other interventions such as bus priority and travel demand management are more effective at offsetting these impacts.



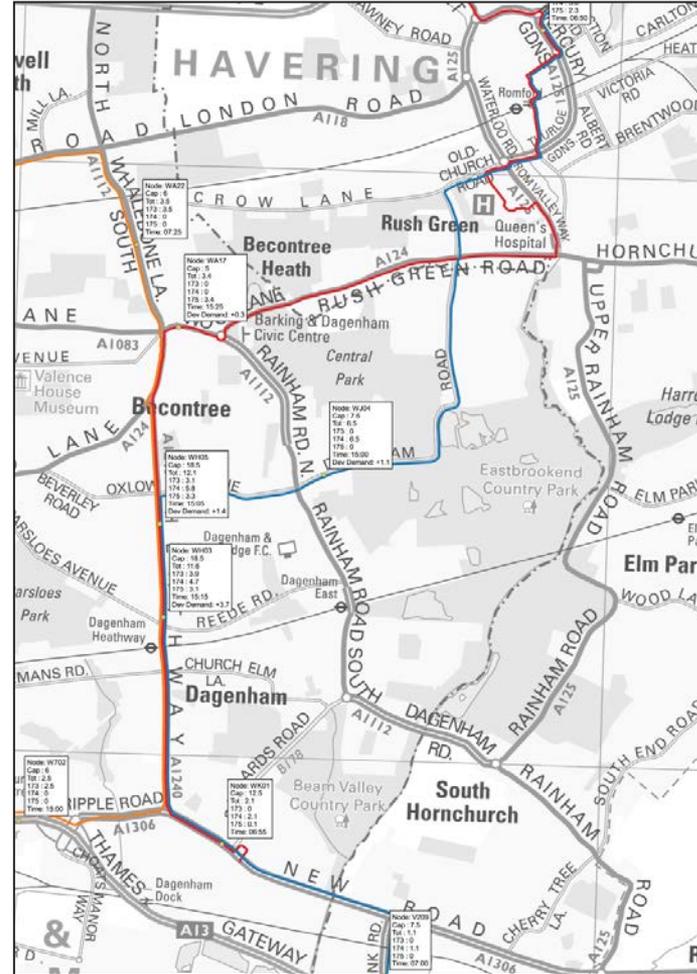
Forecast Change – Development Impact

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AM – Northbound along Dagenham Heathway

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PM - Southbound along Dagenham Heathway



Development Progress

- Beam Park development (3,000 units) gone through planning process.
- £2.7m for bus service enhancements secured in S106 (circa £950 / unit).
- Expected that contributions from adjacent sites will be of the order per unit as Beam Park.
- Somerfield site application expected.
- Ford Stamping Plant compiling a submission. Precise submission date is currently unknown.
- Castle Green and development to the south of the A13 have longer timescales and will require more detailed analysis, should either come forward.



Local Aspirations

- Meeting with key stakeholders has given an insight into local aspirations for the bus network in the area.
- London Borough of Havering
 - Connectivity into industrial areas to the south of the A1306 is considered poor.
 - Journey times between Rainham and Romford are relatively slow due to circuitous routeing.
 - Improvement to bus links to health centres and hospitals is desirable, primarily Queen’s Hospital.
- London Borough of Barking & Dagenham
 - Access to current local centres is considered good, however future planning should consider potential new local centres becoming attractors in their own right, such as Barking Riverside & Castle Green.
 - Seeking improved public transport links to support the intensified development to the South of the A13 that is emerging from work on their Local Plan.



Local Aspirations

- London Riverside Business Improvement District
 - There is a desire for bus links between the London Riverside BID & public transport opportunities such as Rainham Station and bus services along the A1306.
 - There is significant employment expansion identified for the BID, however it is considered that poor public transport links is one of a number of barriers to inward investment.
 - Details on the nature of current employment travel patterns & future employment growth were requested by TfL but have not been received.
 - The level of forthcoming surrounding residential development coupled with employment expansion will likely see demand between these areas and the industrial areas increase, where currently there are no direct links.



Summary of Issues

- Reliability & Journey Times

1. Reliability on routes serving the CSA is generally acceptable.
2. Routes 145, 173 & 174 are least resilient to significant increases in cycle time which may require route restructuring; which is costly & breaks direct travel opportunities.
3. Bus speeds have declined over the past 5 years. More recently the decline appears to have slowed.
4. Recent modelling has shown that forecast increases in general traffic demand have the potential to severely impact future journey times.
5. In order to offer an attractive service/journey time to current and potential future residents, bus speeds must be maintained in the short term and improved over the longer term.
6. Service planning may assist in reducing journey times through more direct routeings, for example between Romford and Rainham, however bus priority and travel demand management will generally be more effective,

- Capacity

7. Generally well matched to demand in the peak hour currently.
8. The future demand created by development is expected to create capacity issues, particularly between the Core Study Area and Dagenham Heathway on the 174, 175 and potentially between the CSA and Barking on the 287.



Summary of Issues

- Connectivity

9. Large barriers to connectivity such as the A13, rail lines & watercourses.

10. Network hole at the south west corner of the CSA.

11. Access to Beam Park station & Dagenham Dock station will be key in order to promote public transport as a viable option and limit the levels of car use within future developments.

12. Poor connectivity into employment areas to the south of the A1306 and to the CSA and Barking Riverside.



Options Considered

- This section summarises the options appraised following identification of current and future issues.
- Options are grouped under three categories:
 - Capacity (CA);
 - Journey Times (JT); and
 - Connectivity (CO).
- Each option is assigned a reference number according to the relevant category.
- The options considered are not formal proposals at present. Any formal proposals will be subject to further business case analysis and approval; confirmation of costs and public consultation where required.
- A number of options are dependent on additional demand to support the economic case for the scheme. Forecast demand estimates have been based upon current information, however this is subject to change.
- As such, demand will be monitored going forward and when appropriate triggers are met, options should be reviewed and brought forward for approval if appropriate. The exact nature of options may vary as time progresses and development builds out.



Options Considered - Capacity

“deliver more frequent services”



Capacity (I)

- Additional demand from development sites within the CSA will increase service loadings through the busiest points on a number of routes.
- This is expected to cause capacity issues on Dagenham Heathway and Ripple Road.
 - Dagenham Heathway addressed with one additional return journey on either route 174 or 175. (Option CA-1)
 - Ripple Road addressed with either:
 - Additional return journey on route 287 (Option CA-2a); or
 - Increase level of service to 5 buses per hour on route 287 (Option CA-2b).

	Option CA-1	Option CA-2a	Option CA-2b
Benefits	<ul style="list-style-type: none"> • Targets the additional capacity at the busiest time of day. • Comparatively cheap compared to increasing base frequency. 		<ul style="list-style-type: none"> • Significant reduction in wait time for all passengers across a longer period of the day. • Converts the route to a high frequency turn up & go service. • Makes better use of anticipated bus priority along Goresbrook Road. • Provides resilience against overcrowding should demand patterns change.
Disbenefits	<ul style="list-style-type: none"> • Limited benefits (i.e. applies only to those passengers travelling during peak hours). 		<ul style="list-style-type: none"> • May require additional stand allocation at either terminus to support 5 buses per hour. • Significantly more expensive than CA-2a.



Capacity (2)

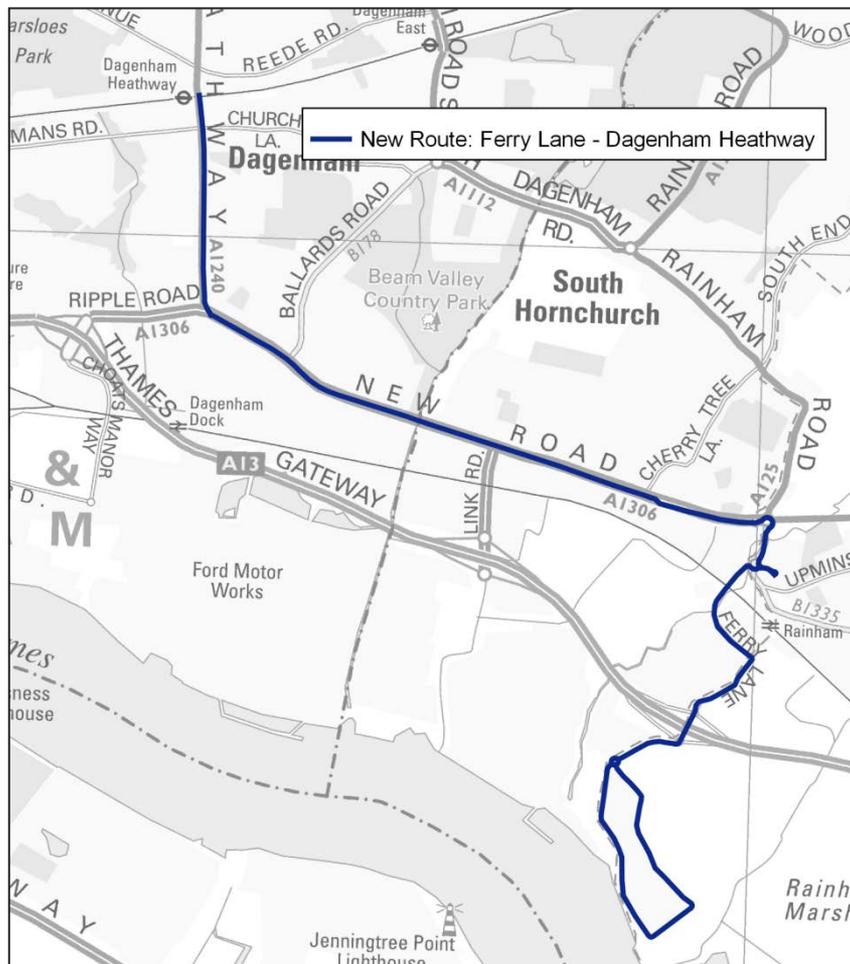
- In addition to addressing capacity issues on Dagenham Heathway through specifying additional journeys, the introduction of a new route has been considered (see map overleaf).
- This new route would also address some issues discussed in further detail in the Connectivity section.
- The route modelled would run at 2 buses per hour, serving Ferry Lane Industrial Estate, Rainham Tesco, Beam Park Station and Dagenham Heathway Station.

	Option CA-3
Benefits	<ul style="list-style-type: none"> • Provides additional capacity between New Road and Dagenham Heathway all day. • Creates new links between Ferry lane Industrial Estate and Rainham town centre, Beam Park Station and Dagenham Heathway. • Provides a platform from which alternative ideas for network development can be based should demand patterns change.
Disbenefits	<ul style="list-style-type: none"> • Requires a stand at both termini.



Capacity (3)

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Option CA-3 – Indicative Routeing



Capacity (4) – Analysis Summary

- Option CA-1:
 - Required to provide sufficient capacity to meet demand.
 - Timescales for exact implementation not yet known, however this will be monitored going forward.
 - Funding available from Beam Park development s106 contributions.
- Options CA-2a & CA-2b:
 - As per CA-1, CA-2a will address any immediate capacity issues.
 - CA-2b:
 - Estimated net cost of approximately £176k per annum.
 - Benefit of approximately £545k per annum.
 - BCR of 3.2:1.
 - Worthwhile, assuming growth in demand is as predicted.
 - It is expected that CA-2 will be required at minimum; however as demand increases, the case for CA-2b will be kept under consideration.



Capacity (4) – Analysis Summary

- Option CA-3:
 - Would provide sufficient capacity to meet increased demand between New Road & Dagenham Heathway with potential funding available from Beam Park development s106 contributions.
 - Estimated net cost of approximately £582k per annum.
 - Benefit of approximately £1,182k per annum.
 - BCR of 2:1, but would require approximately 1,450 additional trips per day to offer value for money.



Options Considered - Journey Times

“provide direct and quick connections”



Journey Times (I)

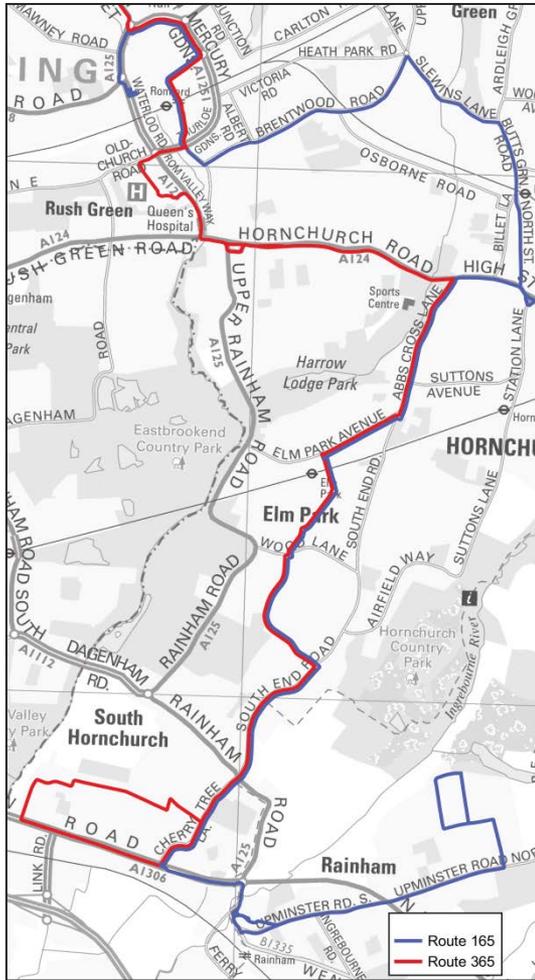
- A key stakeholder issue raised was the long journey time & indirect routing of services between Rainham & Romford.
- Three options were considered to address this issue (see maps overleaf):
 - Swapping the I65 and 365 southern termini. (Option JT-Ia)
 - As option I, but in addition rerouting the 365 via Upper Rainham Road between Elm Park Station and Hornchurch Road. (Option JT-Ib)

	Option JT-Ia	Option JT-Ib
Benefits	<ul style="list-style-type: none"> • Journey time benefit of approximately 5 minutes between Rainham & Romford. • Additional capacity between Rainham & Elm Park. • New direct links created; <ol style="list-style-type: none"> 1. Between Rainham and Queens Hospital/Hornchurch Road. 2. Between Orchard Village and Hornchurch/Emerson Park. 	<ul style="list-style-type: none"> • Significant journey time benefits between Rainham & Romford. • Increased frequency between Upper Rainham Road and Romford.
Disbenefits	<ul style="list-style-type: none"> • Removes existing direct link between Rainham & Hornchurch, although interchange onto route I65 is feasible. • Reduces travel options between Orchard Estate & Romford (route I74 is an alternative) 	<ul style="list-style-type: none"> • Removes direct link between Hornchurch Road and Queen's Hospital. • Significant reduction in frequency between Hornchurch Road and Romford town centre.

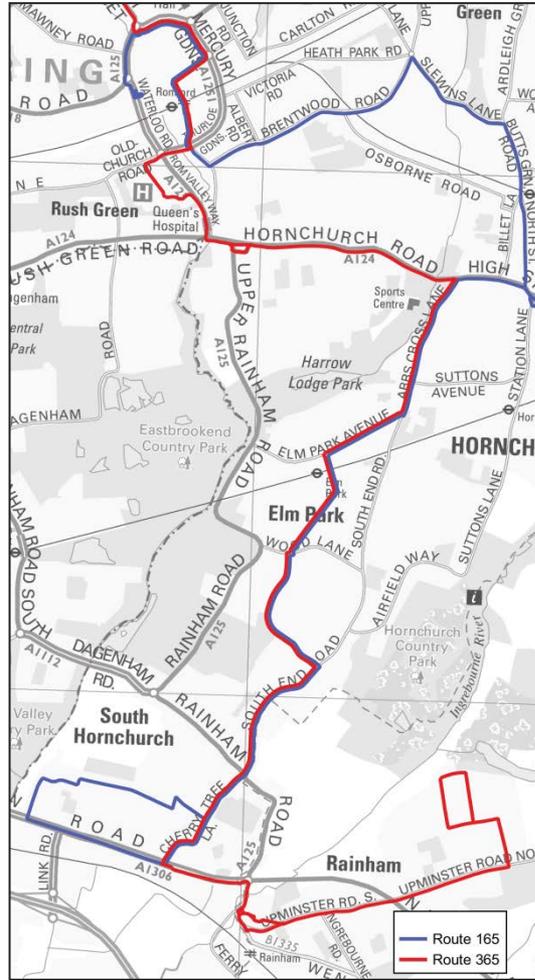


Journey Times (2)

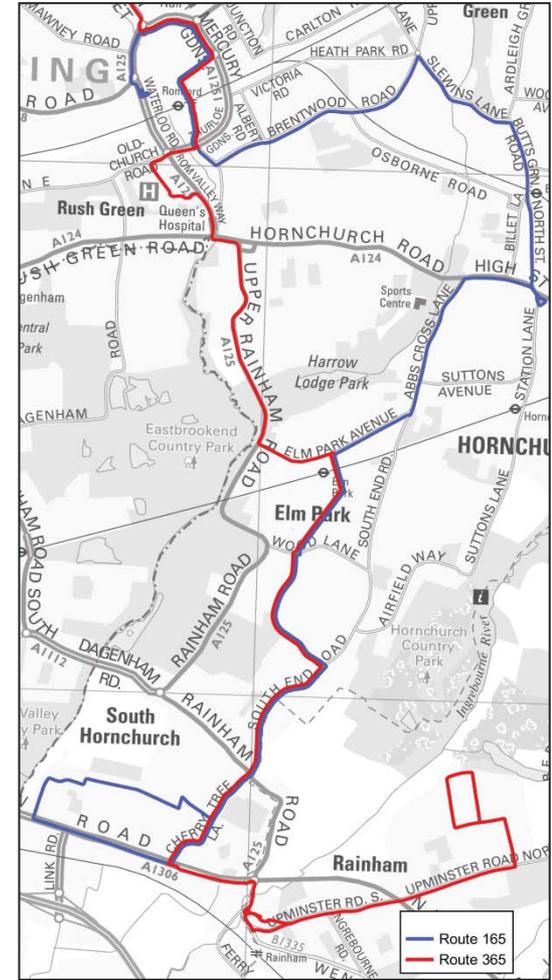
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Current Network – Routes 165 & 365



Option JT-la



Option JT-lb



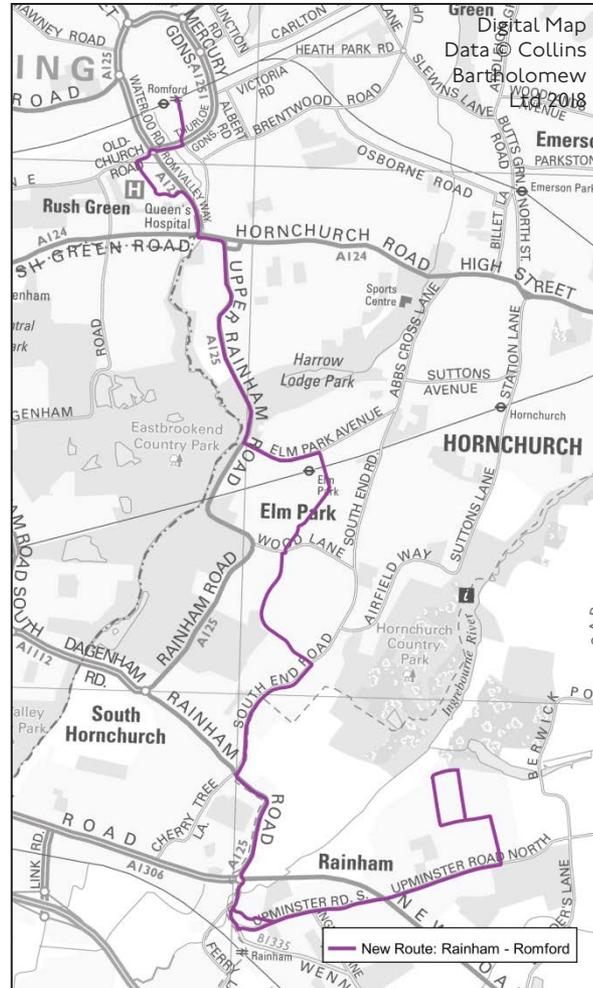
Journey Times (3)

- Consideration has also been given to the introduction of a new route between Rainham Station & Romford Station at 5 buses per hour (see map overleaf). (Option JT-2)

	Option JT-2
Benefits	<ul style="list-style-type: none"> • More direct link between Rainham, Abbey Wood Lane & Romford than existing network. • New direct links created, for example between Rainham and Queen's Hospital. • No impact to existing passengers on routes 165 or 365. • Provides additional capacity to Elm Park Station.
Disbenefits	<ul style="list-style-type: none"> • Requires infrastructure at Romford Station. If this cannot be delivered, it is likely to result in additional operational cost. • Likely abstract some demand from routes 165 & 365. • High operational cost in comparison to JT-1 & JT-2.



Journey Times (4)



Option JT-2 – Indicative Routeing



Journey Times (5) – Analysis Summary

- Option JT-1a:
 - Cost estimated as marginal, with a potential small saving.
 - Breaks approximately 440 trips between Rainham & Hornchurch, and 40 between Orchard Village & Romford.
 - Scheme is all gain provided additional demand between Rainham & Romford is greater than 230 trips per day.
- Option JT-1b:
 - Estimated net cost of approximately £363k per annum.
 - Passenger disbenefit of approximately £2.053m per annum.
 - Disbenefit primarily due to loss of links between Hornchurch Road & Romford/Queens Hospital.
 - Scheme is all lose & therefore not worthwhile.
- Option JT-2:
 - Estimated net cost of approximately £1.52m per annum.
 - Requires approximately 3,350 additional trips per day to offer value for money.



Journey Times (6) - Infrastructure

- Besides influencing journey times through service planning, improving infrastructure and reducing congestion has a significant role to play.
- A number of tests have been undertaken to demonstrate the level of passenger benefit which could be delivered through improved journey times between Rainham & Romford, based on current demand levels.
- This would provide benefit to all existing passengers, as well as generate new demand, abstracted from other modes as a result of being a more attractive mode choice and working towards the sustainable mode share target set out in the Mayor's Transport Strategy.
- Coupling these journey time improvements with service planning enhancements has the potential to reduce the level of additional demand required for service changes to offer value for money.

		Annual Passenger Benefit	Annual Revenue
Journey Time Saving	5 minutes	£202,457	£39,533
	10 Minutes	£420,301	£81,969
	15 minutes	£655,227	£127,519



Options Considered - Connectivity

“grow our coverage and support growth areas”



Connectivity (I)

- Providing quality access to Beam Park station & Dagenham Dock station was identified as a key driver in promoting public transport as a viable option and to limit the levels of car ownership within future developments.
- Extension of existing routes to serve these areas have been considered:
 - Relocating the terminus of route 165/365 into Beam Park station. (Reference CO-1)
 - Restructuring route 145 to operate through Ford Stamping Plane. (Reference CO-3)
- In addition, restructuring route 165/365 to operate two way along Frederick Road has been considered. (Reference CO-2)

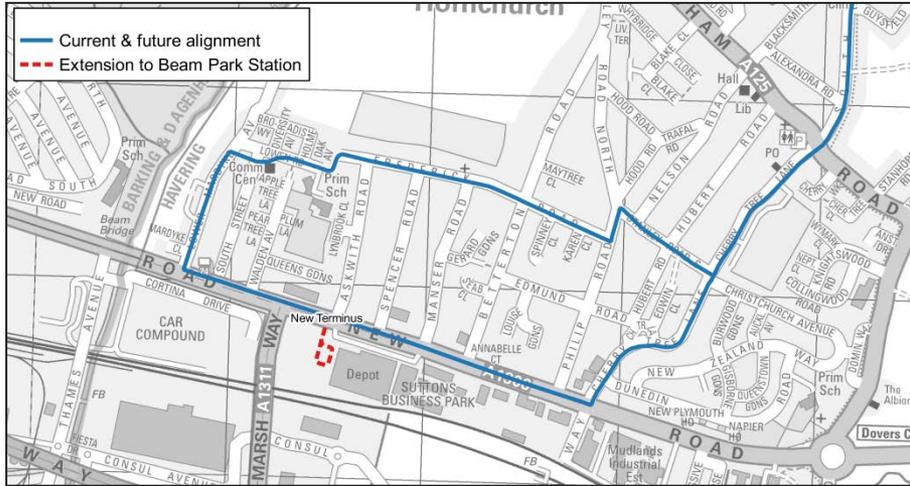


Connectivity (I)

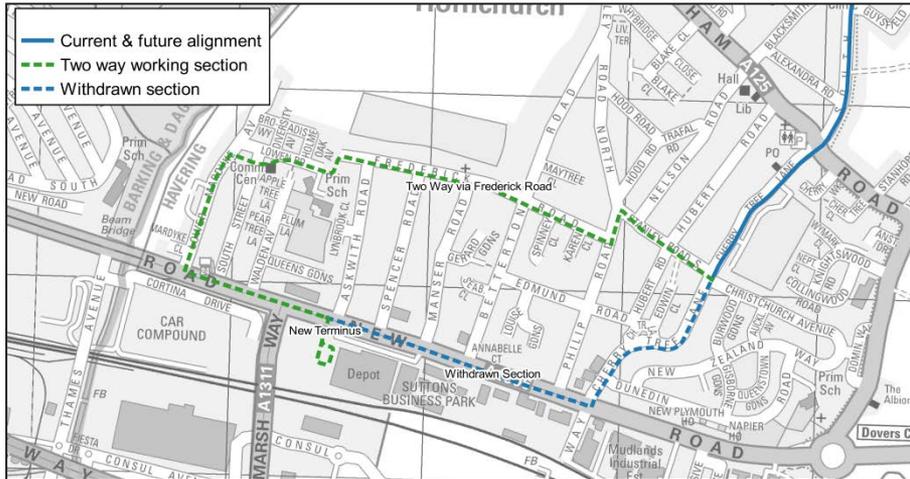
	Option CO-1	Option CO-2	Option CO-3
Benefits	<ul style="list-style-type: none"> Provides quality interchange between rail & bus services. Improves north/south access from Beam Park Station. 	<ul style="list-style-type: none"> Simplifies the network for passengers. Provides faster connection between Orchard Village & Romford. Maintains north/south access to/from Beam Park station. 	<ul style="list-style-type: none"> Improves interchange between rail & bus services. Improves north/south access to/from Dagenham Dock Station. No operational expenditure. Fills network hole at the south of Kent Avenue.
Disbenefits	<ul style="list-style-type: none"> Longer journey time for through passengers. Additional operational cost. Relies on third party delivery of infrastructure. Widens loop working - reducing network simplicity. 	<ul style="list-style-type: none"> Requires delivery of highway improvements to allow two-way working, including parking loss and so may not be feasible. Reduced frequency on a short section of New Road. 	<ul style="list-style-type: none"> Breaks links between New Road & Asda Routing through Ford Stamping Plant requires delivery of suitable highways by developer.



Connectivity (2)

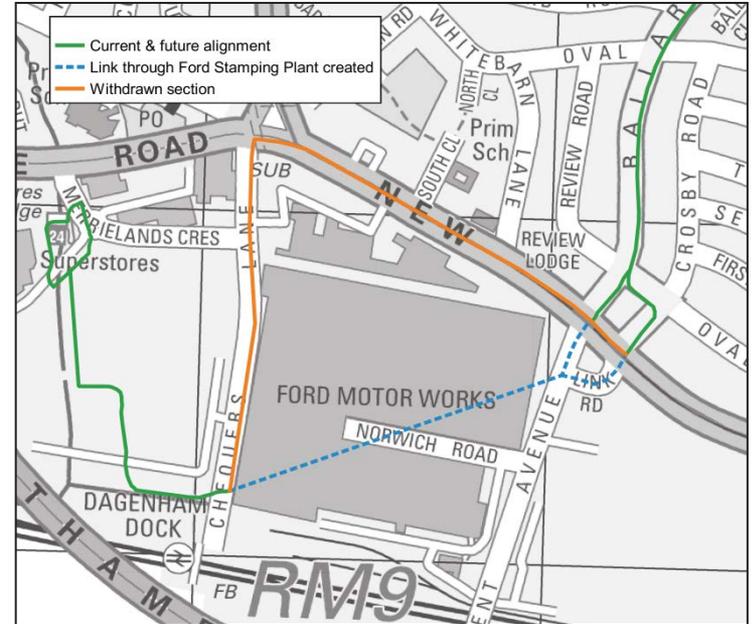


Option CO - 1 – Route 365



Option CO - 2 – Route 365

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Option CO - 3 – Route 145



Connectivity (3) – Analysis Summary

- Option CO-1:
 - Estimated net cost of approximately £146k per annum.
 - Requires approximately 380 additional trips per day to offer value for money.
 - By comparison, approximately 1,100 daily passengers use stops for Rainham station across routes 103 & 372 and approximately 160 daily passengers use stops for Dagenham Dock station on route 145.
- Option CO-2:
 - Estimated net cost of approximately £7k per annum.
 - Requires approximately 25 additional trips per day to offer value for money.
- Option CO-3:
 - Estimated net cost to be neutral.
 - Breaks approximately 300 trips to/from stops on New Road.
 - It is assumed a significant proportion of these broken trips would transfer to adjacent stops (Ballards Road stops approximately 200m away) or to new stops within the Ford Stamping Plant development.
 - New trips expected to be generated from serving a network hole at the south of Kent Avenue (once development is built out).



Connectivity (4)

- Poor connectivity into employment areas to the south of the A1306 was identified as a key stakeholder issue.
- Extension of existing routes to serve employment areas have been considered (see maps overleaf):
 - Extending route 103 from Rainham Station to Ferry Lane Industrial Estate (in 2 stages) (reference CO-4)
 - Extending route 174 from CEME to Rainham Station, via Ferry Lane. (reference CO-5)
- Peak time shuttle service between Rainham Station & Ferry Lane. (Reference CO-6)

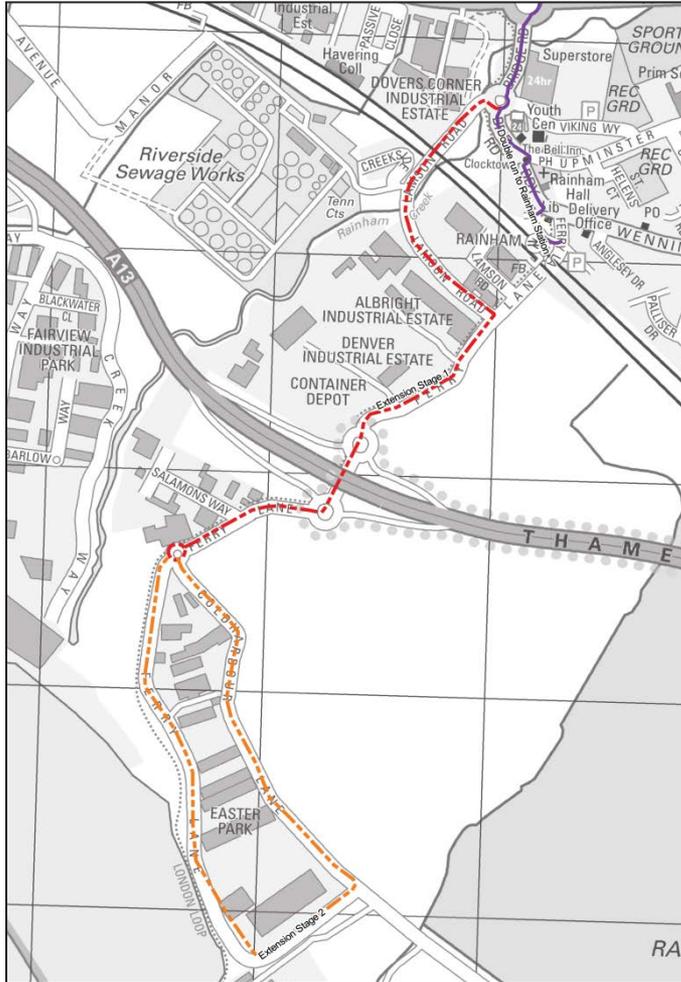


Connectivity (4)

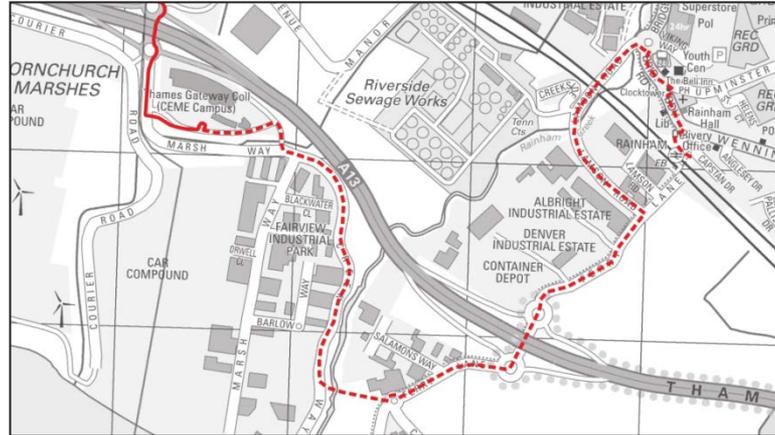
	Option CO-4	Option CO-5	Option CO-6
Benefits	<ul style="list-style-type: none"> Provides links between Rainham Station & Ferry Lane Industrial Estate. 	<ul style="list-style-type: none"> Provides links from Rainham Station into northern end of Ferry Lane Industrial Estate. Provide links into Fairview Industrial Estate. Provides direct links between CEME & Rainham Station. 	<ul style="list-style-type: none"> Provides links between Rainham Station & Ferry Lane Industrial Estate Limits operational cost by only serving the area at start & end of working day. Could operate with only one stand if necessary.
Disbenefits	<ul style="list-style-type: none"> Requires a double run at Rainham Station (costly & delays through passengers). Likely high operational cost. Requires a bus stand. Demand is not properly known at this stage, but it is likely to be low and restricted to shift patterns. As such, the desired destinations for current/future workforce are not known. 	<ul style="list-style-type: none"> Doesn't serve south of Coldharbour Lane/Ferry Lane roundabout. Significant infrastructure cost to bridge Ingrebourne river. High operational cost. 	<ul style="list-style-type: none"> Operating only on east side of Ingrebourne would limit demand potential. Does not fulfil the "simple network" principle. Onward connectivity beyond Rainham station would require interchange. Limited operational benefits as demand expected to be low, yet would incur a peak operational cost.



Connectivity (5)



Option CO - 4

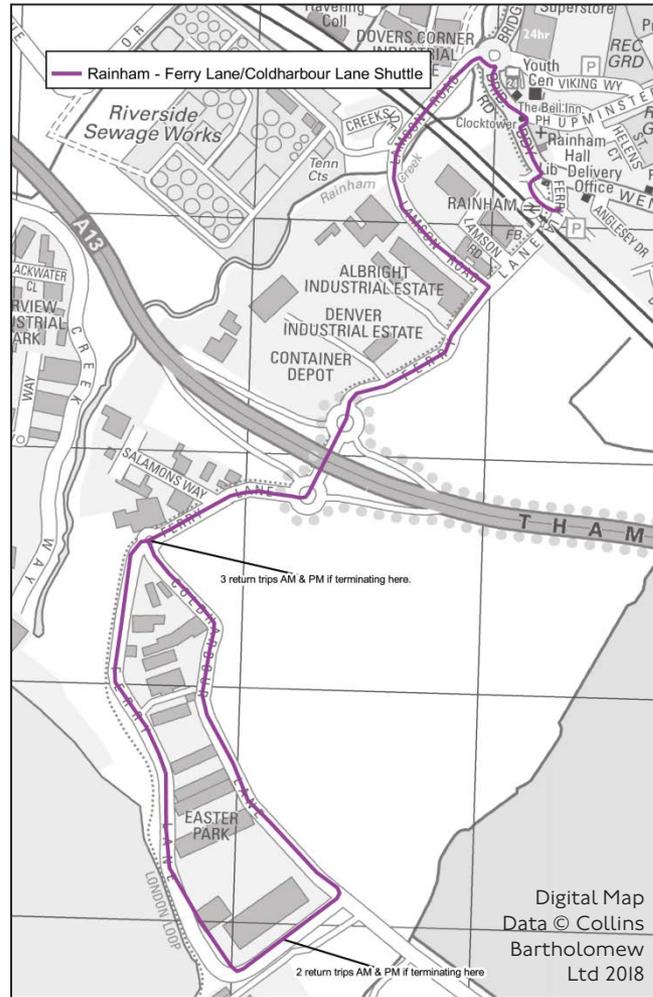


Option CO - 5

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Connectivity (6)



Option CO - 6



Connectivity (7)

- Option CO-4:
 - Stage 1:
 - Extension to Ferry Lane roundabout.
 - Estimated net cost approximately £193k per annum.
 - Requires approximately 500 additional weekday trips to offer value for money.
 - Stage 2
 - In addition to Stage 1, extension to Coldharbour Lane.
 - Estimated net cost approximately £36k per annum, additional to Stage 1 (£229k total).
 - Requires a further 150 additional weekday trips to offer value for money (650 total).
- Option CO-5:
 - Estimated net cost approximately £614k per annum.
 - Requires approximately 1,550 additional trips per day to offer value for money.
- Option CO-6:
 - Estimated net cost approximately £72k per annum.
 - Requires approximately 230 weekday trips to offer value for money.
 - Would operate either:
 - 6 return trips per day (3*AM & 3*PM) between Rainham Station and Ferry Lane roundabout.
 - 4 return trips per day (2*AM & 2*PM) between Rainham Station and Coldharbour Lane.



Connectivity (8)

- Poor connectivity between employment areas to the south of the A1306 and Barking Riverside was identified as a key issue.
- Options for introducing east – west connections which provide new links between London Riverside BID, the CSA, Castle Green, Barking Riverside & Royal Docks has been considered.
- Indicatively, two new routes have been envisaged:
 - A route linking the Royal Docks, Barking Riverside, Castle Green and the CSA (operating along New Road); and
 - A route linking the Royal Docks, Barking Riverside, future development to the south of the A13 and London Riverside BID (operating along a new highway corridor yet to be constructed to the south of the A13).
- This is an opportunity to tie together sections of bus priority which are in delivery, or have previously been investigated, into a more comprehensive network and together this would provide a high quality service through a “Core Bus Priority Section” (as illustrated overleaf).
- A scheme of this nature would align with Mayor’s Transport Strategy Proposal 91 to “...pilot bus transit networks in outer London Opportunity Areas...”.

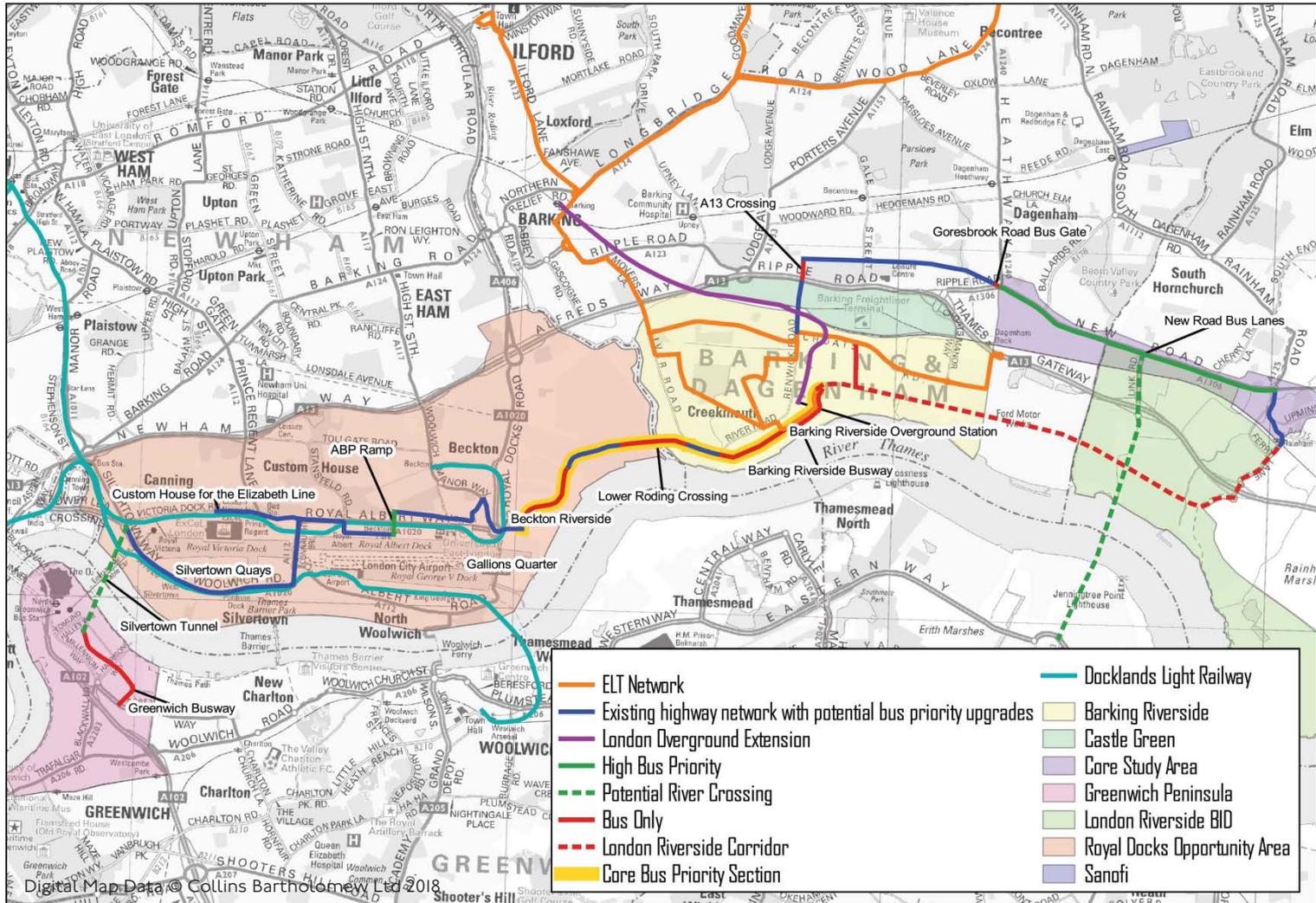


Connectivity (8)

- If demand dictates, additional services could later be introduced which utilise these bus priority sections in parts so as to maximise the potential benefit realised.
- This is an infrastructure led scheme due to the level of capital investment required to deliver these services; it is therefore considered of limited benefit to attempt to determine the operational feasibility of bus services at this time.
- However if these services were enabled by the delivery of the infrastructure, there are expected to be significant benefits to both existing and future residents of these areas and it is an opportunity to deliver exemplar public transport infrastructure to support new and existing housing and employment development.
- Its is therefore proposed that further analysis be undertaken into the feasibility of the highway requirements.



Connectivity (9)



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Option Prioritisation

Reference	Scheme	Demand required to demonstrate Value for Money	Change in PVR	Appraisal Outcome	Conditions & Justification
JT-1a	Swap 165 & 365 southern termini.	230	0	Aimworthy	Could be implemented now, subject to route test & consultation.
CO-1	Relocate 165/365 terminus into Beam Park station stand.	380	1	Aimworthy	Subject to delivery of infrastructure, consultation and opening of Beam Park station.
CO-2	Operate route 165/365 two way along Frederick Road.	25	0	Aimworthy	Subject to delivery of infrastructure, route test and consultation. However, scheme would be contentious.
JT-2	New route between Rainham, Abbey Wood Lane & Romford.	3350	9	Not Aimworthy Currently	JT-1 a provides a significant proportion of the journey time benefits more cost effectively. Significant journey time benefits and demand generation would be required to justify the scheme. If these materialise it may be worthy of further investigation.
CA-2a	Additional return journey on route 287.	N/A	1	Aimworthy	Once demand from new development comes forward. Undertake review to determine most appropriate option at this stage.
CA-2b	Increase 287 frequency to 5bph Monday to Friday.				
CO-3	Restructure route 145 to operate through Ford Stamping Plant.	-	-	Aimworthy	Subject to delivery of infrastructure and growth in demand from existing or future development.
CA-1	Additional return journey on route 174 or 175.	N/A	1	Aimworthy	Once demand from new development comes forward.
CA-3	New 2 bph service between Ferry Lane Industrial Estate & Dagenham Heathway.	1450	3	Do not progress	There are more cost effective alternatives to serving Ferry Lane Industrial Estate & providing sufficient capacity on Dagenham Heathway.
CO-6	Peak only shuttle service between Rainham Station & CEME.	230	1	Further Analysis Required	Only once certainty over demand can be provided. This is the most likely option for serving Ferry Lane as it requires least demand to demonstrate value for money.
CO-4	Stage 1: Extend route 103 to Ferry Lane roundabout.	500	1	Do not progress	CO-6 is the most likely option to be introduced initially. Should demand grow, these options could be revisited.
	Stage 2: Extend route 103 to Coldharbour Lane.				
CO-5	Extend route 174 to Rainham Station, via Ferry Lane.				
JT-1b	As JT-1 & reroute the 365 via Upper Rainham Road.	N/A	0	Do not progress.	Does not provide value for money.



Conclusion

1. This study has demonstrated that passenger journey times and service reliability are at risk from growth in congestion and pipeline schemes for the highway network. Resolving this through improved bus priority infrastructure can deliver significant benefits to current and existing passengers, and also help support potential future service planning schemes.
2. There is a significant amount of new development forecast in the CSA. Options have been identified which:
 - Will address overcrowding;
 - Close network holes; and
 - Serve the new Beam Park station.
3. In response to stakeholder requests, we considered a range of options outside of the CSA which addressed a number of current and future issues. Options have been identified which:
 - Serve the London Riverside BID;
 - Improve journey times between Rainham & Romford; and
 - Provide the concept for Bus Rapid Transit infrastructure between the study area and Barking Riverside/Royal Docks.
4. The approach taken seeks to move the bus network forward through the approach set out in the Bus Strategy (February 2019).



Next Steps

- The majority of options prioritised for progression in this review are driven by demand growth; therefore timescales for implementation will be largely dependent on the completion of development sites.
- Whilst some sites are currently being built out, others have yet to enter the planning process. As such these options are unlikely to come forward in the short term.
- Once demand growth is nearer to materialising, the evaluation of the costs & potential benefits of options will be revisited. Should they still demonstrate value for money they will be progressed as service changes through normal channels, and public consultation where appropriate.
- Meanwhile TfL will continue to review the bus network as a matter of course and respond to any new issues as they arise.
- Liaison with stakeholders will proceed regarding the issues and ideas identified through this study.

