

Bus Services In South Newham

TfL Surface Transport – Buses Directorate

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1 INTRODUCTION

- 1.1 There are three major developments in LB Newham that are of sufficient size as to significantly influence the bus network (see map 1).
- 1.2 **Crossrail** operates in two branches through Newham. One branch is the existing Shenfield – Liverpool Street line. The other is a new branch to Abbey Wood which will create a new station at Custom House in Royal Docks.
- 1.3 The **Royal Docks** is a priority GLA Opportunity Area with significant re-development planned and proposed. In addition to Crossrail, there are a number of major brownfield sites slated for redevelopment, proposed new river crossings, a planned expansion of London City Airport and a number of infrastructure interventions (e.g. roads) being considered. It is also adjacent to the Isle of Dogs and Barking Riverside regeneration areas.
- 1.4 **Stratford and the Queen Elizabeth Olympic Park** has undergone significant change with the opening of Westfield Stratford City and the transformation of the Olympic Park. More is planned as the Olympic legacy is delivered.
- 1.5 This study seeks to identify how the bus network will evolve to accommodate the re-development of the Royal Docks and the opening of the Crossrail Abbey Wood branch. It has a time horizon of 2019 – 2021 by which time Crossrail will have opened and the initial phases of many of the main development are envisaged to have been completed even though full build out will be many years after.
- 1.6 Plans for how the bus network will alter to accommodate the Stratford City and Olympic Park changes have already been identified and, in many instances, implemented. The impact of Crossrail (Shenfield branch) will be the subject of a different paper.
- 1.7 This study builds upon the previous reviews of the local bus network.

2 LOCAL TRANSPORT NETWORK

Route summary

2.1 Table 1 summarises routes serving the Royal Docks area. It can be seen that routes are generally high frequency and reliable. Also of note is that the busiest point on each route is outside of the Royal Docks.

Route	Termini	Via	Pk Freq	SD / DD	Busiest Point	Excess wait time (mins) / On-time %	
						Current Minimum Reliability Standard	Reliability over 4 Qtrs
101	Wanstead - Gallion Reach	East Ham	5	DD	East Ham Stn	0.9	0.5
147	Ilford - Canning Town	Custom House	7.5	DD	East Ham Stn	1.0	0.8
173	King George Hospital - Beckton	Alfred's Way	5	SD	Dagenham Heathway	1.0	1.1
241	Canning Town - Stratford City	Custom House	6	DD	Stratford	0.9	0.4
262	East Beckton - Stratford	Plaistow	6	DD	Plaistow	0.7	0.6
300	East Ham - Canning Town	Prince Regent	4	SD	East Ham Town Hall	78.0%	80.8%
325	East Beckton - Prince Regent	Forest Gate	5	SD	Upton Lane	1.1	0.6
366	Redbridge - Beckton	Barking	5	SD	Ilford	1.2	0.8
376	Beckton - East Ham	Tollgate Rd	4	SD	Green Street	82.0%	88.0%
473	North Woolwich - Stratford	Plaistow	6	DD	Plaistow	0.7	0.6
474	Canning Town - Manor Park (24 hr)	South Royal Docks	5	DD	East Ham Town Hall	1.1	0.9
N551	Gallions Reach - Trafalgar Square	Custom House	2 (nights)	DD	Limehouse Stn	85.0%	82.8%

Table 1: Bus Routes serving Royal Docks

Pk Freq = Peak frequency measured in buses per hour (bph)

SD = Single deck. DD = Double deck

Current minimum standard = Reliability standard for each route based on Excess Wait Time (minutes) for high frequency routes (5 bph or higher) and % on-time for low frequency routes (4 bph or lower).

Last 4 quarters are from Quarter 4 12/13 to Quarter 3 13/14.

History of bus network improvements including previous study findings

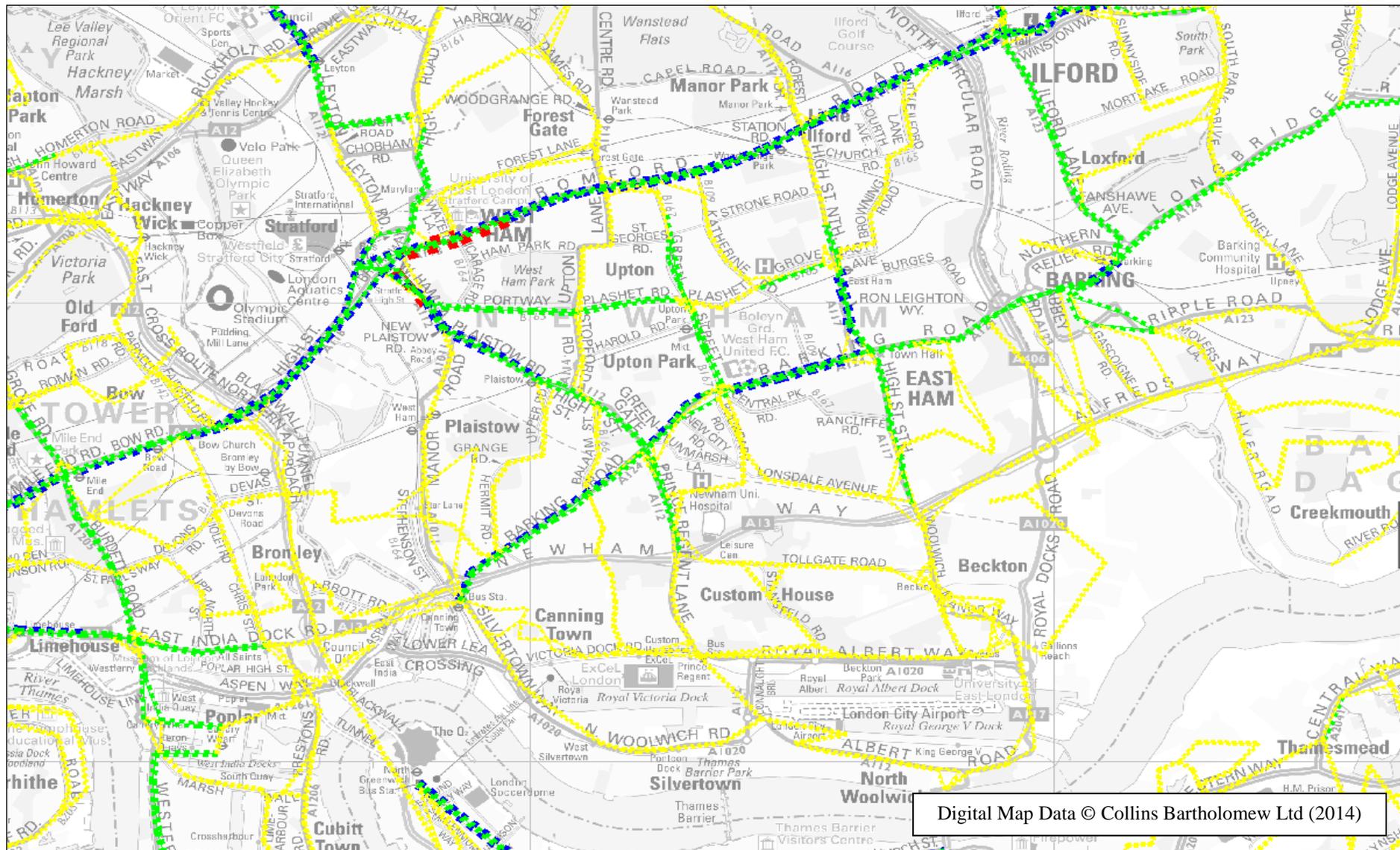
2.2 In the past 10 years there has been a significant enhancements made to the local bus network. As well as a new bus station at Beckton and significantly improved reliability standards reflecting improved performance, the following service changes have been made:

- Route 101 converted to double deck and re-routed to serve Gallions Reach Shopping Park.
- Route 147 increased in frequency to 7.5 bph (6bph Sundays and 5 bph evenings).
- Route 173 converted to a high frequency route on Monday to Saturday daytimes. Evenings and Sunday frequencies also increased from 2 to 3 bph.
- Route 241 extended to serve the new Stratford City.
- Route 262 re-routed to serve Gallions Reach Shopping Park.
- Route 325 evening and Sunday frequencies increased from 2 to 3 bph and Monday – Saturday daytime service converted to high frequency. Also re-routed to serve Fresh Wharf Estate in 2012.
- Route 366 re-routed to serve Gallions Reach Shopping Park. Also re-routed to serve Fresh Wharf Estate in 2012.
- Route 474 extended from Beckton to Manor Park Station and diverted to serve London City Airport. Converted to a 24 hour route in 2007.

- 2.3 Previous studies for Royal Docks focused on how the bus network might develop in response to major new development, the majority of which has still to materialise. As well as additional capacity, it envisaged:
- New links from Canning Town / Silvertown to Beckton, possibly through Silvertown Quays and Royals Business Park (now ABP & UEL) and possibly in conjunction with the curtailment of the 474 at West Silvertown.
 - New links to Gallions Reach Shopping Park (largely implemented).
 - Cutting back of the 69 to Canning Town and extension of the 474 in response to the opening of the DLR extension to Woolwich (implemented).

Travel patterns

- 2.4 Map 2 shows passenger volumes along sections of road. There will often be an overlap between the largest passenger volumes and the busiest point on specific routes.
- 2.5 As would be expected, the largest flows are along the two east-west Romford Road and Barking Road corridors into Central London. Canning Town with its rail offer represents a key node where significant numbers end their bus journey although of course volume of flow picks up again to the west along the A13. This high level of demand partly justifies the need for bus priority along these corridors. In addition, the north-south corridors around Plaistow, Green Street and East Ham also show high volumes of passenger movement.
- 2.6 When compared to elsewhere in Newham, bus demand in the Royal Docks is relatively low. Large brownfield sites which have long remained undeveloped will be one factor explaining this, as will the extensive DLR network providing east-west links either side of the Docks. However, it is demand from the Royal Docks which will in part explain the volume seen north of the A13 in places like Plaistow and East Ham, helping to explain the busiest points shown in table 1.



Map 2: South Newham Bus Passenger Flows by direction per weekday

0 to 4,700 **Yellow** 4,700 to 9,400 **Green** 9,400 to 14,100 **Blue** 14,100 + **Red**

- 2.7 To show travel patterns in more detail, a sample of the origin and destination of trips based on the Royal Docks has been produced. The study area was divided into 10 zones with an additional 5 notable locations selected outside the study area. Table 2 shows how routes within table 1 connect the zones and table 3 shows the number of passenger trips per weekday between them.
- 2.8 The analysis shows the importance of Prince Regent Lane (defined as Barking Road – Victoria Dock Road) as a corridor. This reflects the presence of two secondary schools, a Sixth Form College and Newham hospital as well as the residential land uses. It also shows the relative importance of Canning Town, Beckton, East Ham and Stratford. The relatively low trips related to West Silvertown and Royal Albert Dock will in part reflect the lack of development in these areas.

	Canning Town	West Silvertown	North Woolwich	Royal Victoria	Royal Albert Dock	Freemasons Rd	Prince Regent La	West Beckton	Beckton	Gallions Reach	Stratford	Plaistow	Green Street	East Ham
West Silvertown	474													
North Woolwich	474	474												
Royal Victoria	147, 241, 300		473											
Royal Albert Dock	300			300										
Freemasons Rd	241			241, 325										
Prince Regent La	147, 300		473	147, 300, 473	300, 376									
West Beckton	300			300	300, 376		262, 300, 376							
Beckton	300, 474	474	474	300	300, 376		262, 300, 376	262, 300, 376						
Gallions Reach				325		325	262	262	101, 262, 366					
Stratford	241		473	241, 473		241	262, 473	262	262	262				
Plaistow	241		473	241, 473		241	262, 473	262	262	262				
Green Street					376		376	376	376					
East Ham	147, 300, 474	474	474	147, 300, 325	300, 376	325	147, 300, 376	300, 376	101, 300, 376, 474	101, 325				

Table 2: Origin – Destination of Direct Bus Route Connections

	Canning Town	West Silvertown	North Woolwich	Royal Victoria	Royal Albert Dock	Freemasons Rd	Prince Regent La	West Beckton	Beckton	Gallions Reach	Stratford	Plaistow	Green Street	East Ham
West Silvertown	413													
North Woolwich	475	196												
Royal Victoria	1119		389											
Royal Albert Dock	5			6										
Freemasons Rd	279			457										
Prince Regent La	1462		1261	1354	121									
West Beckton	163			172	169		1081							
Beckton	158	98	1610	28	73		727	1035						
Gallions Reach				1		7	292	252	1018					
Stratford	52		419	228		729	3192	1134	310	240				
Plaistow	10		117	61		285	1989	498	137	186				
Green Street					102		115	120	105					
East Ham	193	68	880	289	24	47	1405	159	2579	780				

Table 3: Origin – Destination Typical Weekday Passenger Trips (two-way)

Bus speeds

- 2.9 Table 4 shows example bus speeds along a number of bus corridors within the study area. The speeds exclude dwell times at bus stops. As development comes forward, generating traffic, maintaining bus speeds will become more challenging. Bus priority would assist in maintaining journey times consistently.

Start / Finish	Corridor	Direction	AM Pk Speed (mph)	Interpeak Speed (mph)	PM Peak Speed (mph)
Airport Roundabout - Canning Town (3.1km)	Silvertown Way / North Woolwich Road	WB	15.3	18.4	17.0
Canning Town - Airport Roundabout (3.1km)	Silvertown Way / North Woolwich Road	EB	14.7	14.5	13.4
Albert Island - A13 (2.8km)	Woolwich Manor Way	NB	11.2	13.2	11.2
A13 - Albert Island (2.8km)	Woolwich Manor Way	SB	14.0	15.7	13.3
Beckton Bus Station - Barking Road (3.2km)	Tollgate Rd / Prince Regent Lane	WB	10.5	10.9	8.9
Barking Road - Beckton Bus Station (3.2km)	Tollgate Rd / Prince Regent Lane	EB	9.7	10.2	7.2
Royal Albert Roundabout - Barking Rd (2.9km)	Royal Albert Way / Victoria Dock Road / Prince Regent Lane	WB	10.6	10.5	7.7
Barking Road - Royal Albert Roundabout (2.9km)	Royal Albert Way / Victoria Dock Road / Prince Regent Lane	EB	7.8	8.5	6.9
Prince Regent DLR - Barking Road (2.3km)	Victoria Dock Road / Freemasons Road	WB	11.1	12.6	11.9
Barking Road - Prince Regent DLR (2.3km)	Victoria Dock Road / Freemasons Road	EB	9.6	10.9	11.0

Table 4: Bus speeds along corridors in the Royal Docks

Speeds exclude dwell time and outliers

AM Peak = 0800 – 0900. Interpeak = 1300 – 1400. PM Peak = 1700 – 1800.

Data used: Wednesday 5 June 2013 and Thursday 6 June 2013

3 DEVELOPMENT SITES

3.1 As an Opportunity Area, the Royal Docks have a number of major sites earmarked for development. Table 5 sets out examples of key development sites in the study area.

Canning Town Area				
Development	Res Units	Jobs	Planning Status	Est Pk Hr Bus Trips
Canning Town Areas 1c, 7 / Rathbone Market area	1,100	0	Approved	110
Custom House / Keir Hardie	4,000	0	Masterplan	400
West Silvertown Area				
Development	Res Units	Jobs	Planning Status	Est Pk Hr Bus Trips
Peruvian Wharf	1,500	1,400	Refused	300
Minoco Wharf	2,598	0	Approved	260
Barrier Park East	777	0	Approved	78
Silvertown Quays	2,933	20,718	Pre-application	640
North Woolwich Area				
Development	Peak hour passengers	Jobs	Planning Status	Est Pk Hr Bus Trips
London City Airport	3,500	960	Approved	50
Royal Albert Dock Area				
Development	Res Units	Jobs / Students	Planning Status	Est Pk Hr Bus Trips
ABP	1,007	16,000	GLA Stage 1	576
UEL extension	0	957	Refused	90
Royal Albert Basin Area				
Development	Res Units	Jobs	Planning Status	Est Pk Hr Bus Trips
Great Eastern Quay & 3A Gallions Reach	963	230	Approved	93
Gallions Quarter (2A, 2B & Armada South)	748	0	GLA Stage 1	49
Beckton Waterfont	Not identified	Not identified	Pre-masterplan	-

Table 5: Major Development Sites in the Royal Docks Area

- 3.2 The **Canning Town / Keir Hardie Estate** area sees significant re-development. A large element of it has already been delivered e.g. adjacent to the Barking Road. Further re-development is planned and more is expected in the vicinity of Custom House. As part of the regeneration of Keir Hardie, new road layouts may be provided.
- 3.3 **West Silvertown** will have around 8,000 new homes. The Silvertown Quays development is also expected to generate around 14,700 jobs. Broadly speaking employment trips will be in the opposite direction to residential generated trips. It is becoming increasingly likely that an at grade bridge will be built across Royal Victoria Dock. Minoco Wharf (now Royal Wharf) has commenced development. Silvertown Quays has a build out timescale of approximately 2018 – 2025. In addition, this area would be the portal for the potential Silvertown tunnel.
- 3.4 The **Royal Albert Dock** area is expected to be a very large employment area. Together with the existing 1000 Dockside (LB Newham offices) and UEL site (8,000 student population), a workforce of around 16,000 people and 1,000 residential units is expected at the ABP site. In addition UEL has sought extension of its site with a potential increase of 1,000 people. Consequently the daytime population of this entire area could be in excess of 25,000. ABP has a build out timescale of approximately 2015 – 2028 with phase 1 complete around 2020. The UEL extension is currently on hold. Discussions are in place with the LB Newham and the developers about how buses might best access this area.
- 3.5 **Royal Albert Basin** is expected to have in the order of 2,000 more residential units initially with more expected should Beckton Waterfront come forward. Scope exists for new road alignments to enable better penetration of the bus network to serve new and existing sites. Timescale for the build out of Gallions Quarter is late 2014 – 2020 with phase 1 opening in late 2016.

4 CROSSRAIL (Custom House)

- 4.1 Crossrail is currently planned to open in late 2018. A station at Custom House is to open on the Abbey Wood branch which will have 12 tph. The stations either side will be Canary Wharf and Woolwich.
- 4.2 Custom House station will be located on the north side of Victoria Dock Road at the corner with Freemasons Road. Presently, it is directly served by routes 147, 241, 325 and N551 while routes 300 and 473 serve Prince Regent DLR station which is 600 metres east of the current Custom House entrance or one stop on the DLR.

5 CAPACITY / TRIP GENERATION ASSESSMENT

- 5.1 Railplan models changes in AM Peak demand along bus corridors against a 2007 base. A 2021 scenario has been modelled which takes account of demand associated with housing and employment forecast in the London Plan and the opening of Crossrail. Outputs that compare the 2021 scenario with the 2007 base have been interpreted.
- 5.2 Corridors which show a significant change in demand in South Newham are:
- **East Ham High Street corridor from Manor Park to Gallions Roundabout/Woolwich Ferry via East Ham.** Northbound demand builds up from an additional 105 passengers per hour at Gallions roundabout to 175 passenger/hour at east Ham Town Hall to 300 passengers per hour at Manor Park. Southbound the figures are 190 passengers per hour approaching East Ham Town Hall; 160 passenger per hour approaching Beckton and 80 at Gallions.
 - **Barking Road from East Ham Town Hall to Canning Town.** This shows demand for an additional 150 passengers per hour westbound approaching Prince Regent Lane. Around two thirds of this demand then heads towards Custom House with the rest towards Canning Town. However, the demand builds up again westbound to an extra 210 passengers per hour on the approach to Canning Town. This build up will reflect demand associated with the new development that has started to come forward and it is likely that a proportion of these trips will actually materialise as walk trips rather than bus trips. The modelling shows similar increases in demand eastbound between Canning Town and Upton Park. The cause of this is less apparent, however, as the contra-peak direction, it is likely there will be sufficient capacity.
 - **Prince Regent Lane from Barking Road to Custom House.** This shows increases in demand of up to an additional 430 passengers per hour approaching Prince Regent DLR / Custom House. Around 25% of this are estimated to originate from Barking Road. Around 150 trips per hour are predicted northbound in the opposite direction.
- 5.3 The Railplan outputs are considered to be underestimating trips relating to developments in Silvertown and ABP since they are not specifically recorded within the model. Using Transport Assessments from the relevant developments the following assumptions have been applied to the following corridors:
- 300 peak hour trips westbound from Silvertown to Canning Town.
 - 450 peak hour trips eastbound from Silvertown to Custom House via Connaught Bridge.
 - 150 peak hour trips north-eastbound from Silvertown towards ABP/Beckton/East Ham.
 - 300 peak hour trips eastbound from Custom House to ABP .
- 5.4 In summary, there are four main areas where significant additional capacity is likely to be required. These are:
- Westbound from Silvertown developments towards Canning Town. Around 7.5 bph are estimated to be required in 2021.
 - Eastbound from Silvertown developments to Custom House and Beckton. Around 10 bph are estimated to be required in 2021 past the sites with around 6 bph assumed towards Custom House.

- Prince Regent Lane southbound from Barking Road to Custom House. An additional 4 – 5 bph is estimated to be required.
- Eastbound from Custom House to the ABP site. An additional 2 bph (or 3 bph single deck) is estimated to be required.

6 INFRASTRUCTURE

River crossings

- 6.1 TfL have recently consulted on possible future river crossings beyond that provided by the Jubilee line, Emirates Airline, DLR, Crossrail and Woolwich foot tunnel. The most developed option is the Silvertown tunnel which would connect with Silvertown Way / Tidal Basin Road. This will be subject to further consultation and scrutiny with a decision expected mid-2016. A tunnel could be operational around 2021.
- 6.2 In addition, it will also become necessary to replace the existing Woolwich Ferry. Options include a new ferry or a fixed link (bridge or tunnel). Most options assume a connection into the Royal Docks via Gallions Reach. Determining which option to pursue is still some time off and consequently, it is assumed that delivery would be after 2021 and beyond the scope of this study.

DLR enhancements

- 6.3 DLR forecast additional demand on the Beckton – Canning Town section and envisage providing additional capacity through a new, direct Beckton to Stratford link to complement the Beckton to Bank service. This section sees a potential increase from 7.5 tph to 12 tph circa 2019 and 15 tph beyond 2022. Crossrail is expected to relieve demand between Woolwich and Canning Town initially with demand recovering post 2022. The current 15 tph may reduce to 12 tph before returning to 15 tph.

Bus priority and bus stands

- 6.4 Bus stands exist at Canning Town station, Prince Regent Station, Beckton Bus Station, Woolwich Ferry, Gallions Reach Shopping Centre and Gallions Reach Sainsbury's. There is also a curtailment stand at London City Airport. The high number of stands reflects the Royal Docks as the terminus for a large number of routes which in turn reflects the barriers caused by the three rivers.
- 6.5 Custom House is likely to increase as a destination with the opening of Crossrail and discussions have commenced with LB Newham regarding provision of bus stopping and standing facilities. ABP also envisage providing for buses to terminate, stand and turn-round within their development. Finally standing provision is thought likely to be required in Silvertown area with a location in the vicinity of West Silvertown DLR being the current thinking.
- 6.6 The area has two bus only road links – Strait Road and Eric Clarke Lane. Bus lanes are also provided on Silvertown Way on the approach to Canning Town. Otherwise the study area has no other bus lanes following removal of the one on Woolwich Manor Way. Bus lanes on Barking Road are currently being reviewed by the Borough. New development coming forward will generate additional traffic and potentially impacting adversely on bus journey times and service reliability. This highlights the need to lock in bus priority.

Bus infrastructure priorities

6.7 As part of the Royal Docks Infrastructure Implementation Strategy, eleven potential interventions have been identified which would particularly assist the bus network in promoting the successful regeneration of the Royal Docks. Five schemes have been prioritised based on relevance to new development. These are:

- Bus facility at Custom House to cater for interchanging passengers and terminating bus routes.
- A highway link through Royal Albert Basin linking Magellan Boulevard with Armada Way middle roundabout. This will bring all of the Gallions Quarter development within 400m of a bus route as well as provide high quality access to a future Beckton Waterfront development.
- Highway infrastructure to allow buses to penetrate south of Royal Albert Way and so better serve UEL, ABP and 1000 Dockside.
- Provision of a bus stand in the West Silvertown area to cater for terminating routes.
- Provision of additional standing space at Gallions Reach shopping Centre to accommodate terminating bus routes.

7 LOCAL ISSUES & ASPIRATIONS

NHS

- 7.1 The main hospital in Newham is Newham University Hospital. Located just off Prince Regent Lane to the north of the study area, it is well connected to communities in the Royal Docks. The Silvertown area does not have direct links although high quality and high frequency interchange can be made at Canning Town. There are no planned re-organisation of medical services that are known of.
- 7.2 GP surgeries are located on East Ham Manor Way, Tollgate Road (near Beckton centre), Prince Regent Lane, Freemasons Road, St Luke's Square and Star Lane. All these are bus corridors providing high quality access to local healthcare by bus. There is also a GP surgery in Britannia Village. Although not directly on a bus route, it is well served by the 474. A new health facility is envisaged near Gallions roundabout as part of the Gallions Quarter development.

Schools

- 7.3 Secondary schools relevant to South Newham are located at Beckton and Lonsdale Avenue. There are also three schools located on or near Prince Regent Lane which will in part explain its importance as a bus corridor. Two schools are located on Upton Lane. Route 678 which runs to Beckton from Upton Lane supports the 325 in meeting the peak school travel demand. TfL are not aware of any significant change to secondary school provision in the near future beyond a new school south of High Street, Stratford. UEL is the main tertiary education centre in the study area.

Borough aspirations

- 7.4 In meetings with LB Newham, the borough has expressed the desire that the regeneration opportunities from developments like Crossrail and ABP benefit as much of the borough as possible. In bus terms, this means maximising access to Custom House station from across the Royals and providing links from the main population areas in the north of the Borough to the new job opportunities in the south.
- 7.5 On a more detailed level, there have been requests to better link North Woolwich and West Silvertown with Gallions Reach Shopping Centre and improve bus access to the Royal Albert Dock area.

8 OPTION DEVELOPMENT

Summary of issues

8.1 An analysis of strengths, weaknesses, opportunities and challenges was undertaken to summarise the key issues facing the study area. This is set out below and in map 3.

<p>Current Strengths</p> <ul style="list-style-type: none"> • Comprehensive network with only a few development sites further than 400m from a bus stop • Very reliable services • Generally high frequency services • Provides for existing travel patterns including access to healthcare and schools 	<p>Development Aspirations</p> <ul style="list-style-type: none"> • No direct link from North Woolwich to Custom House • No direct link from Silvertown to Custom House • No direct link from Silvertown towards West Beckton • No direct link from West Beckton to Custom House • No direct link from Lonsdale Avenue area to Custom House • No direct link from North Woolwich to Gallions Reach Retail Park • Direct links to the ABP site provided by route 376 only • Additional capacity likely needed from Barking Road to Custom House • Additional capacity likely needed in the Silvertown area • Additional capacity likely needed in conjunction with ABP/UEL site •
<p>Opportunities</p> <ul style="list-style-type: none"> • New development provides scope to deliver new infrastructure (e.g. stands and new highway) to enable further service enhancements and improve bus accessibility • Potential to make bus routeings more progressive • New river crossings allowing new north-south links to be provided 	<p>Threats</p> <ul style="list-style-type: none"> • Lack of bus priority • Forecast additional congestion • Physical access to the bus network from south of Royal Albert Way is poor • The Lee and Roding rivers create a barrier to east-west movement

Table 6: Summary of key issues

North Woolwich

- 8.2 Diverting route 474 to reach Canning Town (Hermit Road) via Custom House and Keir Hardie Estate instead of Silvertown has been investigated (see map 4). This would provide direct links from North Woolwich and City Airport to Custom House and retain links to the Canning Town area.
- 8.3 Restructuring would break 900 (7%) direct links per weekday although 170 trips from North Woolwich to Silvertown would remain possible on the DLR. Broken night trips are negligible – around 6 per weeknight. If a route is extended from Canning Town to Custom House (see following section) this would retain 560 of those broken trips. The scheme for route 104A discussed below would retain a further 100 trips. Therefore as few as 250 freehold trips could be broken or 2% of all trips on route 474.
- 8.4 The diversion is broadly similar to the current alignment in terms of mileage although journey speeds would likely be slower. Further analysis would be needed to determine whether peak vehicle requirement (PVR) increases. However, since the 474 re-routings would duplicate links provided by the 241 from Custom House and Keir Hardie estate to Hermit Road, it may be possible to terminate either the 241 or 474 at Canning Town Station.
- 8.5 An alternative amendment to the 474 diversion could be to route it via Freemasons Road to the Canning Town area rather than via the Keir Hardie Estate (see map 4).

West Silvertown

- 8.6 The 474 proposal above would leave Canning Town to Connaught Bridge without a bus service. Although served by the DLR, this would be undesirable as the bus provides a cheaper, more accessible service and potentially alternative destinations. As noted in table 6, a direct link to Custom House and towards ABP / Beckton / NE Newham would be desirable. Forecast demand suggests frequencies in the order of 7.5 bph (double deck) would ultimately be required on North Woolwich Road.
- 8.7 Various options for replacing the 474 on North Woolwich Road were considered. The initial starting point was to extend one of routes 5, 69, 300, 309, 323 or 330 that currently terminate at Canning Town station. Of these, routes 323 and 330 were considered the most promising. However, route 323 could be difficult to double deck should the scale of travel demand materialise. Further, the connections it would provide from the west would largely be already catered for by passengers interchanging at Star Lane and completing the journey by DLR.
- 8.8 Consequently, at this stage the preferred scheme is an extension of route 330 to Custom House via North Woolwich Road (see map 5). This is preferred as it is a relatively short route operating with double deck buses at high frequency. It would also provide links from North Newham (Forest Gate / Green Street) to employment at Silvertown Quays as well as local links for new residents in the West Silvertown area to Canning Town station and shops and Custom House.
- 8.9 Extension of route 325 from Prince Regent to Canning Town via Silvertown was also considered. However, this is a long route and cannot be split into shorter sections without breaking high numbers of trips. Further, there is an aspiration for the 325 to serve ABP instead. Hence this option was not taken further.

- 8.10 A scheme to split route 104 was investigated (see map 6). Amongst other things, the 104 currently provides direct links from the Lonsdale Avenue to Stratford and East Ham. It therefore provides relatively circuitous (but still well used) links from East Ham High Street North and South to Stratford. By splitting the route with an overlap on Lonsdale Avenue, it was envisaged that new links could be provided from the Stratford, Green Street and East Ham areas in the north to the new developments in the Royal Docks while maintaining many existing links.
- 8.11 A leg of the 104 (termed 104A) would operate from Stratford to Lonsdale Avenue as now then divert via Woolwich Manor Way (Beckton), ABP, Connaught Bridge to terminate at a new stand at West Silvertown. The second leg (termed 104B) would operate from Manor Park to Lonsdale Avenue as now then divert via Newham Hospital, Prince Regent Lane and terminate at a new stand at Custom House. This would need to be route tested but is likely to be achievable.
- 8.12 The scheme breaks around 1,200 direct links which is 5% of all trips. This assumes around 500 trips to/from East Ham Fire Station remain within a reasonable walk distance of the 104A. Around 500 of these are to/from Stratford town centre. 400 of these could be retained by extending route 300 to Stratford (see below). Other key locations are the Upton Park Station area (210 broken trips) of which most are from the four stops on East Ham High Street South near Vicarage Lane. These passengers are just over 5 minutes walk from route 58 that would provide an alternative direct link. Also around 100 trips relate to Hatherley Gardens. It is likely that most of these will simply walk to Lonsdale Avenue, although for some the walk will be more than 5 minutes (but less than 10 minutes).
- 8.13 In addition to terminating at Silvertown, route 104A could potentially operate through the proposed Silvertown tunnel to North Greenwich (see map 6).
- 8.14 To provide a link from West Silvertown to the schools and hospital on or near Prince Regent Lane, route 104B could be diverted via the A13 and Freemasons Road, then extended from Custom House to West Silvertown (see Map 6). However, at present such a routeing is not possible eastbound from Freemasons Road onto the A13. Map 7 shows a potential solution but would need the support of LB Newham.

West Beckton / ABP

- 8.15 Provide a direct link from the Tollgate Road / Stansfeld Road area to Custom House has been investigated.
- 8.16 Diverting route 300 at Prince Regent Lane to Custom House (see map 8) would break around 1,500 direct trips (17% of all trips). Around 100 (1%) of these trips would be retained by the 474 and 104B schemes referred to above. The relatively high number is a result of taking away links to/from the local centres at Beckton and Canning Town. Around 370 of the broken trips are between Prince Regent Lane south of the A13) and Tollgate Road / Beckton. Route 262 would provide an alternative for those at the north end of this zone and route 300 (with a longer walk) would remain available for those at the southern end.
- 8.17 Around 250 of the broken trips relate to Canning Town Station especially from the Tollgate Road area. Some of these will find Custom House a satisfactory alternative once Crossrail opens.

- 8.18 Around 100 broken trips are school trips between Park Avenue and Prince Regent Lane.
- 8.19 Reducing the number of broken trips by continuing the 300 to Canning Town via Freemasons Road would still break around 920 trips (11%), reinforcing the importance of Prince Regent Lane as a bus corridor. Another possible alternative is to keep the 300 on its current alignment and double run to Custom House. Neither would represent a cost saving.
- 8.20 The 104 scheme gives a link between ABP and East Ham. It also allows the development to be served by a high frequency double deck route. However, it also breaks a high number of direct links into Stratford from the East Ham area. Therefore consideration has been given to extending route 300 to Stratford from East Ham as a means of retaining these links.
- 8.21 It could be via Plashet Road, Romford Road or Capel Road. The latter (see map 8) would be preferred as it would retain more trips, provide additional capacity into Manor Park Crossrail Station and serve a small area with homes greater than 400m from existing services where requests for a bus have been received. Any routeing via Capel Road would require a route test.
- 8.22 Due to the scale of development at ABP, consideration has also been given to extending route 325 (see map 9). This would provide direct links from the Upton Lane, Balaam Street and Custom House areas. ABP have made provision for bus access and standing in their designs. Consideration would also be given to double decking the service.
- 8.23 Under these indicative plans, ABP would be served by routes 104A, 325 and 376. This represents a potential 15 bph providing 942 spaces per hour. The quality of access for routes 104A and 376 into the ABP site is compromised by Royal Albert Way and the DLR acting as a barrier. Providing a ramp from Strait Road to Beckton Park roundabout (see maps 10 & 11) would enhance the quality of access of route 376 to ABP; enable routes 376 and 104A to serve both ABP and Cyprus; reduce walk times to UEL and 1000 Dockside and reduce the cost of the 104A scheme. A ramp is being investigated with ABP and LB Newham through the ABP planning application and the High Quality Bus Corridor programme.

Custom House

- 8.24 Map 12 shows how Custom House Station would be served if the ideas for routes 104B, 300, 330 and 474 were implemented. creating a new local hub. There would be four through routes (147, 241, 325 and 474) and three terminating routes (104B, 300 and 330) requiring provision for 6 bus standing spaces.
- 8.25 The indicative route network does not entirely meet the predicted demand from Barking Road to Custom House by around 1.5 – 2 bph. This could be achieved by increasing route 147.

Gallions Reach

- 8.26 LB Newham have an aspiration to provide links from North Woolwich / West Silvertown to Gallions Reach (see map 13).
- 8.27 A proposal to extend route 473 to Gallions Reach Shopping Park (and remove the double run to Woolwich Ferry) has previously been investigated but not implemented due to higher than expected costs and insufficient stand space at the Shopping Park. A possible alternative could be to divert the 366 to North Woolwich Ferry. This would be broadly cost neutral. It would benefit people in the North Woolwich / King George V area and provide links from Gallions Quarter to the DLR Woolwich branch. 540 links to/from Beckton District Centre would be broken. The ability to stand the route at North Woolwich Ferry would need confirming.
- 8.28 As part of the Gallions Quarter development, the developer has committed to upgrading Magellan Boulevard to enable two-way bus operation and enable the entire development site to be within 400m of a bus route. However, without a highway link from Magellan Boulevard to Armada Way roundabout buses would be required to double run into Gallions Quarter. This would be expensive and delay through passengers. A new link would enable a progressive routeing that would be broadly cost neutral; bring all of Gallions Quarter within 400m of a bus route, pass through the centre of the Beckton Waterfront development site and potentially provide connections with the Gallions River Crossing. Any or all of routes 101, 262, 366 and N551 could be diverted onto the new highway link.
- 8.29 A river crossing of some form is possible in this locale. If a fixed link, a bus service would operate across the river. This study focuses on a 2019 – 2021 time horizon. Timescales on a firm proposal are still some time off with delivery likely to be 2021 at the very earliest and most likely some time after. Precisely how the bus network would utilise any fixed link would be considered nearer the time.

9 NEXT STEPS

- 9.1 This study envisages a possible bus network for circa 2019 – 2021. Schemes are indicative only and would be subject to detailed evaluation. Typically this would be undertaken 18 months to 2 years prior to implementation using the latest data and information available.
- 9.2 The study has identified that the network meets current travel demand and patterns to a high standard. This suggests that, with the possible exception of links to Gallions Reach Shopping Centre, the need for change is driven by Crossrail and new development. The timescales for Crossrail and the initial phases of many of the envisaged developments converge on late 2018 / early 2019.
- 9.3 The indicative schemes have been shared with LB Newham officers. With the assistance of LB Newham, the ideas for bus routes will now be shared with a wider range of stakeholders.
- 9.4 Developer contributions will be sought to assist funding route enhancements.
- 9.5 This study has been developed to inform the Royal Docks Transport Implementation Strategy. This summarises the challenge for all modes in achieving the vision for the Royal Docks. Infrastructure interventions identified in the Strategy relevant to Buses are key to either delivering the schemes identified in this study or improving them. Delivering the infrastructure will have longer lead times than delivering the bus service changes.
- 9.6 This study has sought to provide reassurance that the infrastructure priorities identified in the Strategy are required and inform the detail.
- 9.7 The Custom House Interchange, West Silvertown bus stand, Beckton Roundabout ramp and Beckton Waterfront highway link will now be progressed in more detail with the relevant agencies.

10 SUMMARY

- 10.1 South Newham has excellent bus service provision. With the arrival of Crossrail and new development, new travel patterns are expected that are of a scale as to justify further development of the bus network. How the bus network might evolve to meet these opportunities has been set out in this paper and summarised in map 14.
- 10.2 Delivering the indicative bus network is expected to require infrastructure interventions. This paper has identified where infrastructure is most required and informs the design process.
- 10.3 The quality of the existing bus service provision is also high with excellent service reliability and good journey times. Maintaining this while delivering significant additional housing and employment will be a challenge. Intervention to protect bus services from increased congestion will be required.
- 10.4 The indicative bus network that has been identified and the complementary infrastructure interventions have informed the Royal Docks Transport Implementation Strategy.

APPENDIX 1 – RESOURCE SUMMARY

Route	Scheme	Broken trips	% of total trips	PVR	Estimated Cost based on PVR £pa	Notes
104A	New Route: Stratford - Lonsdale Ave - ABP - Silvertown at 6 bph	1,092	5%	3	£660,000	Broken trips assumes Route 300 extension to Stratford via Capel Road. Otherwise broken trips are around 1,500 (7%). PVR could be reduced to +1 PVR if routed via Beckton Park ramp.
104B	New Route: Manor Park - Lonsdale Ave - Custom House at 6 bph DD					
104A	Extend 104A to North Greenwich	0	0%	2	£440,000	Extension assumed to replicate the 129 routeing.
147	Increase frequency from 7.5 bph to 9 bph DD	0	0%	4	£880,000	Additional frequency could be achieved through extra peak journeys instead.
300	Curtail at Custom House at 4 bph SD	1,352	16%	(2)	(£440,000)	Broken trips assume 104B and 474 schemes. Otherwise broken trips are around 1,450 trips (17%)
300	Extend from Manor Park to Stratford via Capel Road at 4 bph SD	0	0%	5	£1,100,000	Assumes terminating at Stratford City
300	Increase frequency from 4 bph to 5 bph SD	0	0%	3	£660,000	Assumes frequency increase of Custom House - Stratford City routeing
325	Extend from Prince Regent to ABP at 5 bph SD	0	0%	1	£220,000	Assumed additional distance can be covered in 12 minutes based on 376 from Beckton Park to Tollgate Road.
325	Convert to Double Deck	0	0%	0	£240,000	Assumed 12 PVR and a conversion cost of £20k per bus
330	Extend from Canning Town to Custom House at 5 bph DD	0	0%	3	£660,000	This is cheaper overall than extending route 323 (+2PVR) then increasing to 6 bph SD (+3 PVR)
366	Re-route to Woolwich Ferry rather than Beckton at 5 bph SD	542	6%	0	£0	No change in distance, therefore no cost assumed.
473	Extend to Gallions Reach Shopping Centre at 6 bph DD	348	2%	2	£440,000	Broken trips relate to route no longer serving Woolwich Ferry.
474	Re-route to Canning Town, Hermit Road via Custom House rather than Silvertown at 5 bph DD	248	2%	0	£0	900 broken trips. 560 retained by 330 extension and 100 retained by 104A scheme. No PVR assumed as broadly no change to mileage. Scope also to terminate the 241 at Canning Town Station.
TOTAL		3,582	0	21	£4,860,000	

Important Notes

- Schemes are indicative and do not have approval.
- Costings are broad estimates based on a cost of £220,000 per additional Peak Vehicle Requirement (PVR). Double deck conversion costs based on an estimated £20,000 per PVR.
- Costs are gross estimates and do not take account of revenue.
- It is not considered that both the 366 and 473 scheme would be implemented.
- Route 147 could be achieved through 2 additional return peak hour journeys. The change in PVR would therefore be 2 at an estimated cost of £180,000.
- **Therefore total gross cost for the indicative schemes is £3.7m - £4.9m per annum.** Forecast new trips from the new development in table 5 suggest that schemes are likely to be worthwhile but this would need to be confirmed through a full appraisal.
- All schemes would be subject to detailed cost benefit evaluation prior to being recommended.
- The estimated cost for the Beckton Park roundabout ramp is £5m.
- LB Newham have submitted a DIF bid for the Custom House interchange.
- It is understood that the following developer (s106) contributions have been secured:
 - Rathbone Market: £270,000

- Canning Town 1c & 7: £775,000
- Barrier Park East: £234,000
- Great Eastern Quay: £350,000
- Minoco Wharf (Royal Wharf): £2,200,000 (£550,000 at phase 1).
- Contributions from other relevant development e.g. ABP & Silvertown Quays will also be sought.

APPENDIX 2 – MAPS



Map 1: Bus Studies in LB Newham

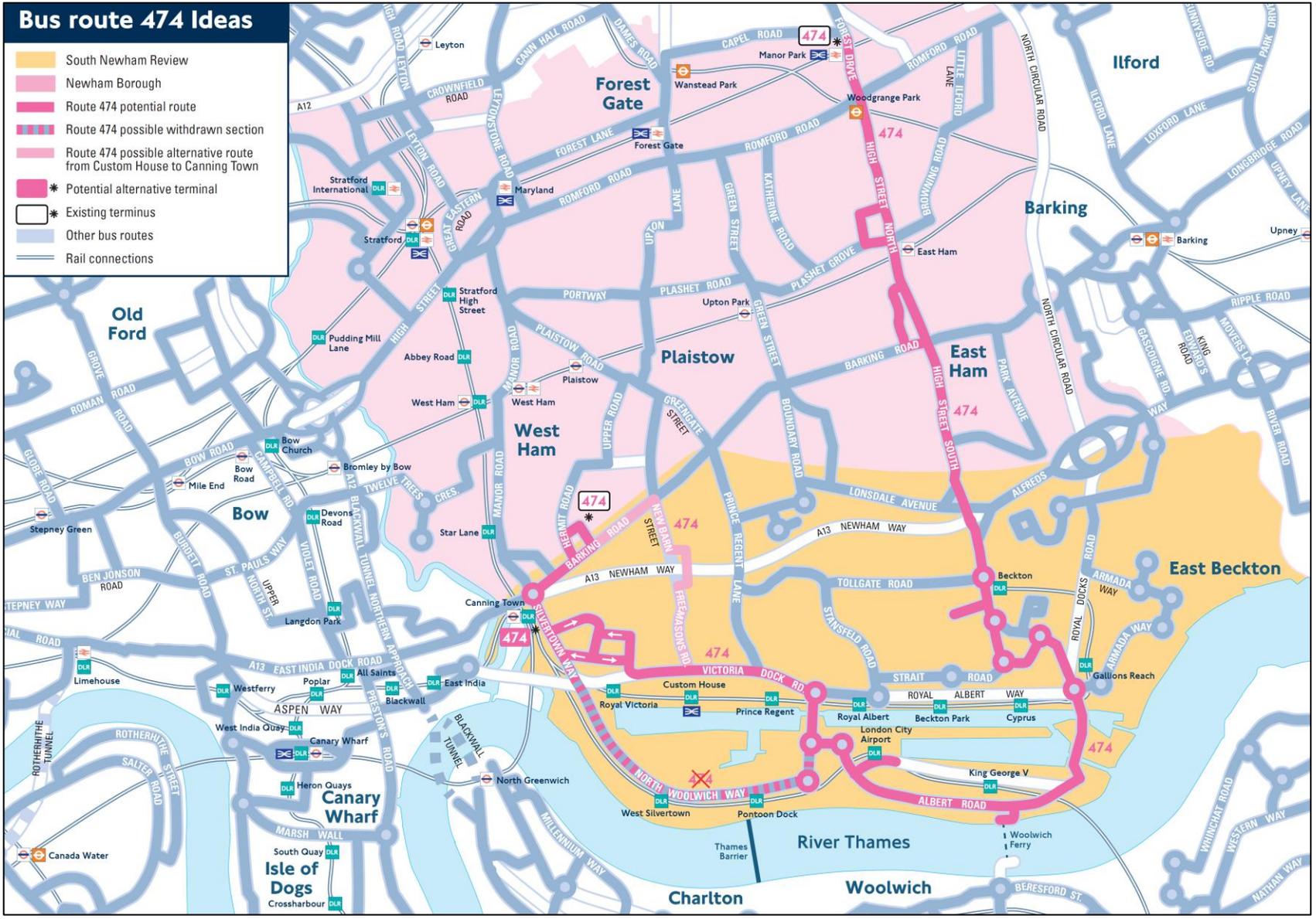
South Newham Review Summary of Issues



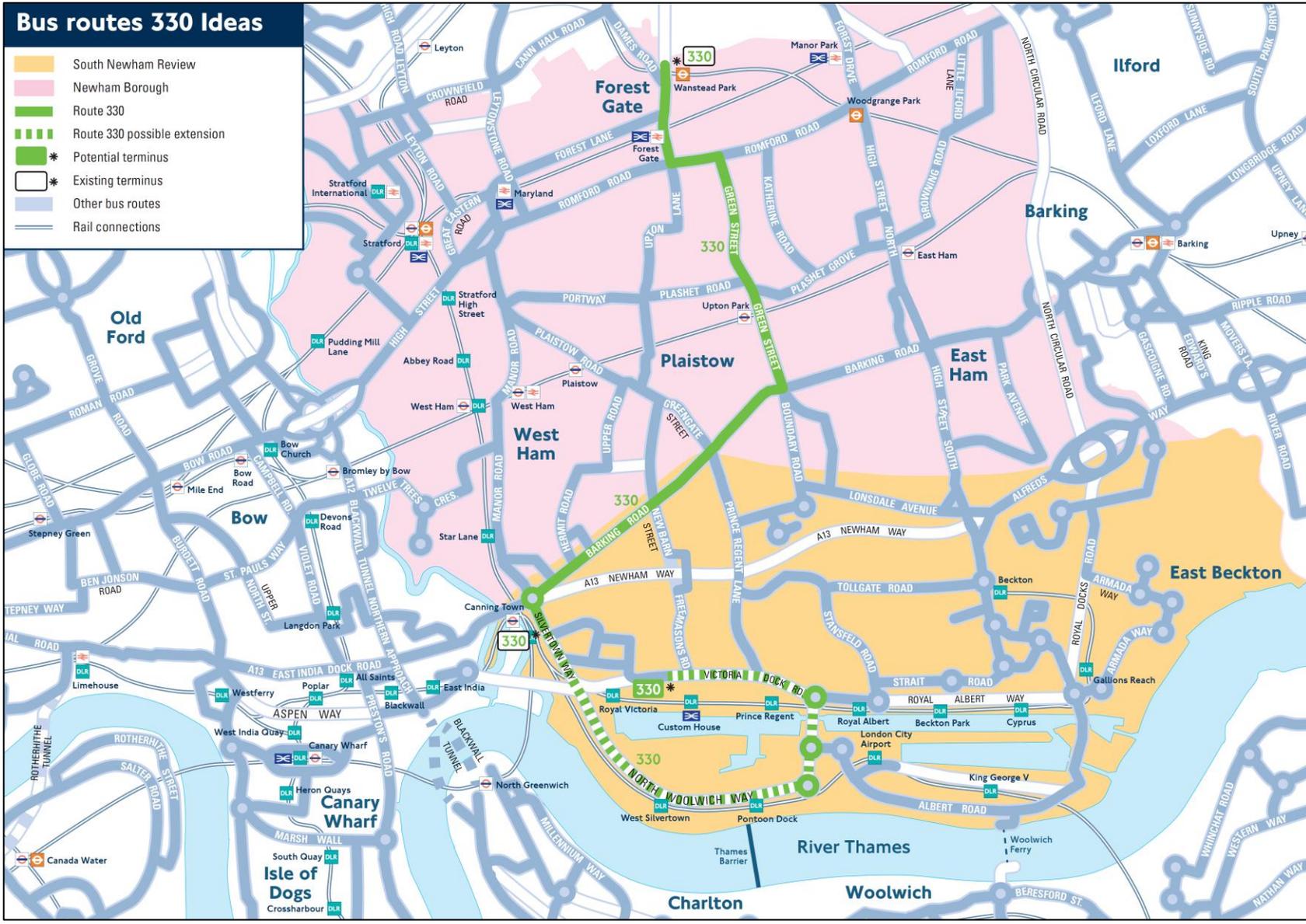
Map 3: Summary of Issues

Bus route 474 Ideas

- South Newham Review
- Newham Borough
- Route 474 potential route
- Route 474 possible withdrawn section
- Route 474 possible alternative route from Custom House to Canning Town
- * Potential alternative terminal
- * Existing terminus
- Other bus routes
- Rail connections



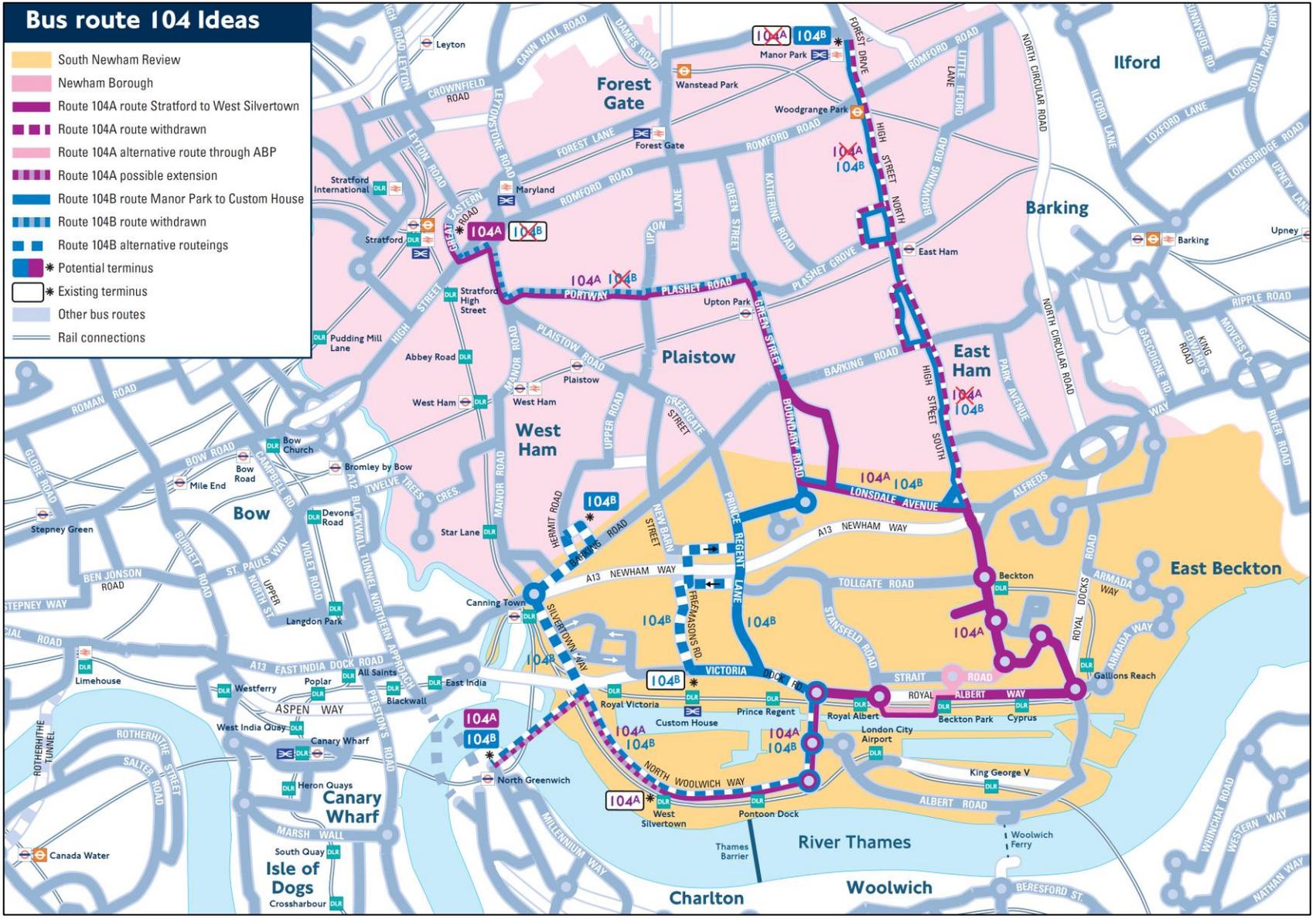
Map 4: Route 474 Scheme



Map 5: Route 330 Scheme

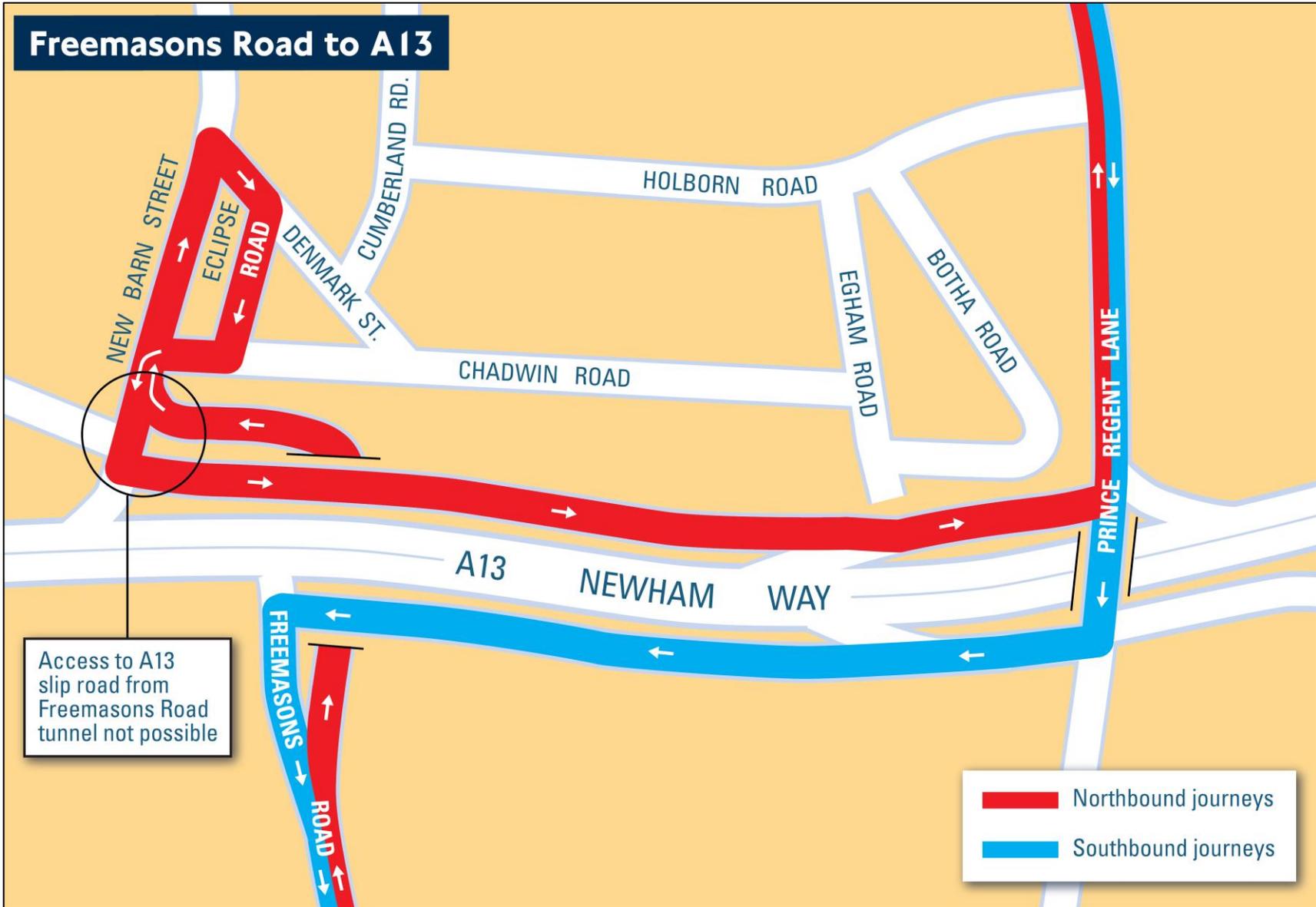
Bus route 104 Ideas

- South Newham Review
- Newham Borough
- Route 104A route Stratford to West Silvertown
- Route 104A route withdrawn
- Route 104A alternative route through ABP
- Route 104A possible extension
- Route 104B route Manor Park to Custom House
- Route 104B route withdrawn
- Route 104B alternative routings
- * Potential terminus
- * Existing terminus
- Other bus routes
- Rail connections



Map 6: Route 104 Scheme

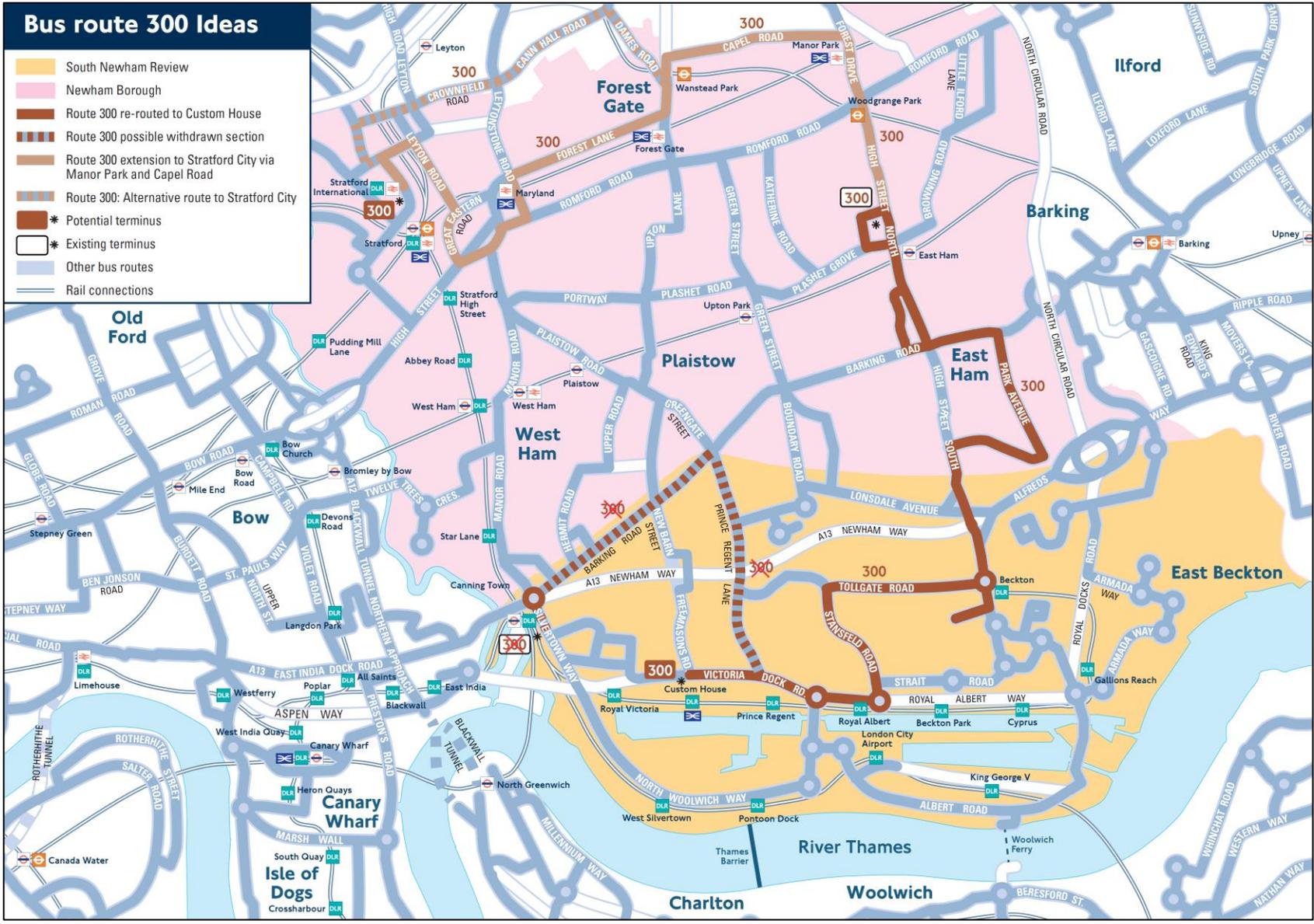
Freemasons Road to A13



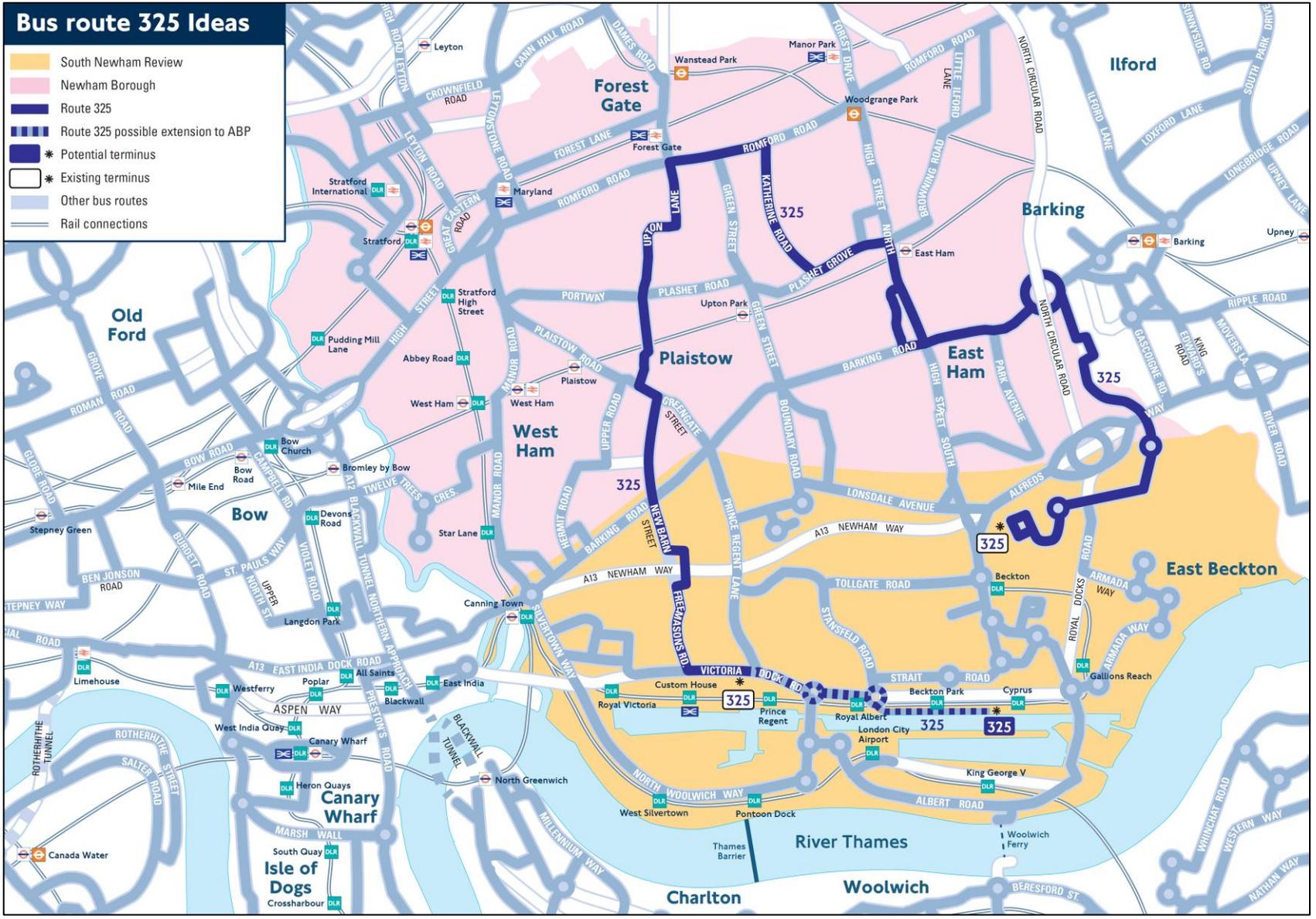
Access to A13 slip road from Freemasons Road tunnel not possible

Northbound journeys
Southbound journeys

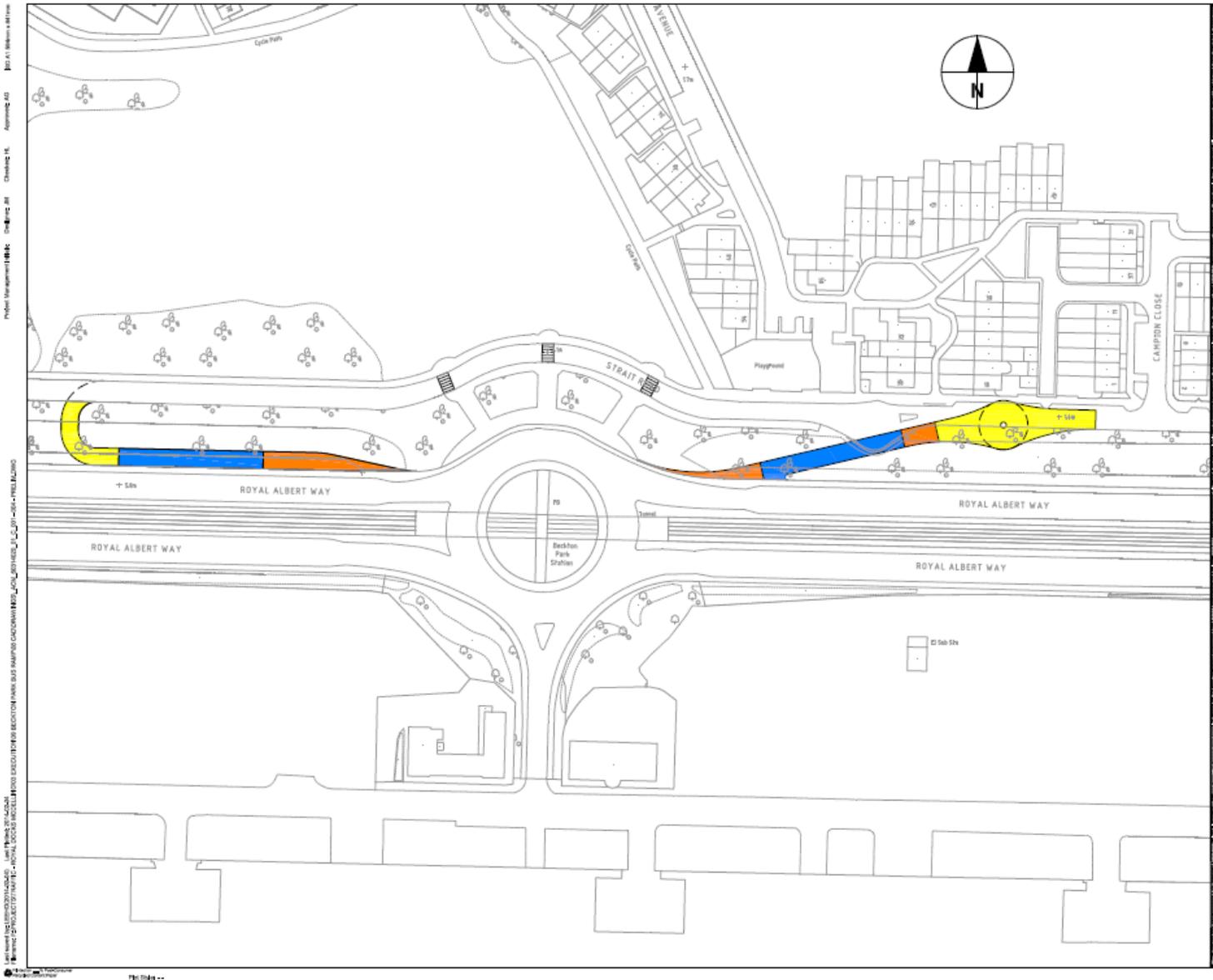
Map 7: Freemasons Road to A13



Map 8: Route 300 Scheme



Map 9: Route 325 Scheme



AECOM

PROJECT
 BECKTON PARK
 BUS RAMP

CLIENT
 TRANSPORT FOR LONDON
 Borough Planning

Transport for London
 9th Floor Windsor House
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- PEDESTRIAN CROSSING POINT
- NEW CONSTRUCTION AT EXISTING LEVEL - LEVEL 201M AOD
- HORIZONTAL SECTION FOR WARRIOR BRIDGE
- RAMP SECTION - MAX GRADIENT 10%

- OPTION 1**
- SINGLE DIRECTION BUS LANES
 - PROTECTING BUS LANES & RAMP SECTIONS OF ROAD
 - NO LANEWORK REQUIRED FROM EXISTING STREET PAVING
 - UNPAVED SECTION OF STREET ROAD CAN BE RECONSTRUCTED INTO PARK

ISSUE REVISION

NO	DATE	DESCRIPTION
1	21/02/24	Issue for Contribution

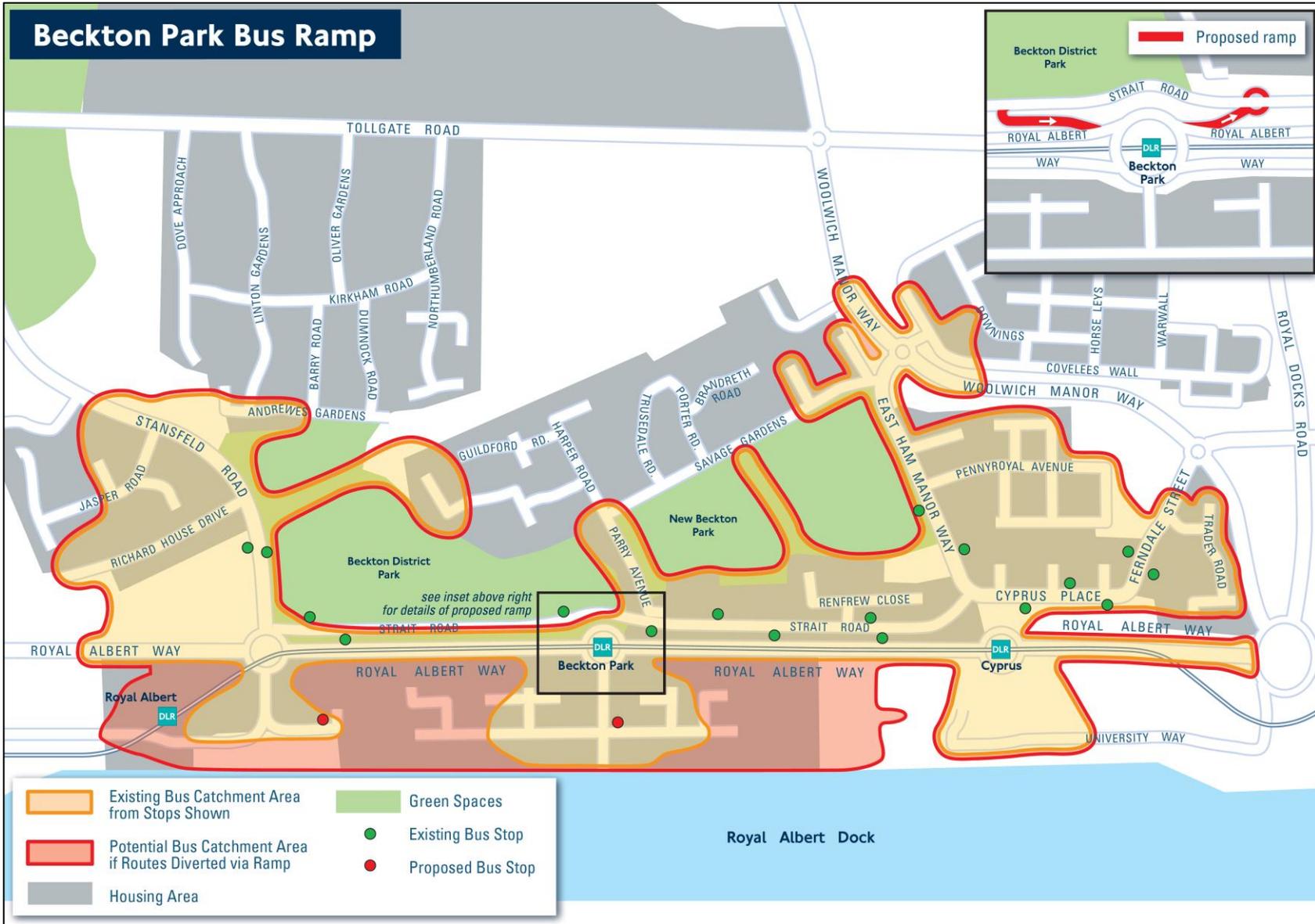
KEY PLAN

PROJECT NUMBER
 60314020

SHEET TITLE
 BECKTON PARK
 PLAN
 OPTION 1

SHEET NUMBER
 ACM_60314020_01_C_002

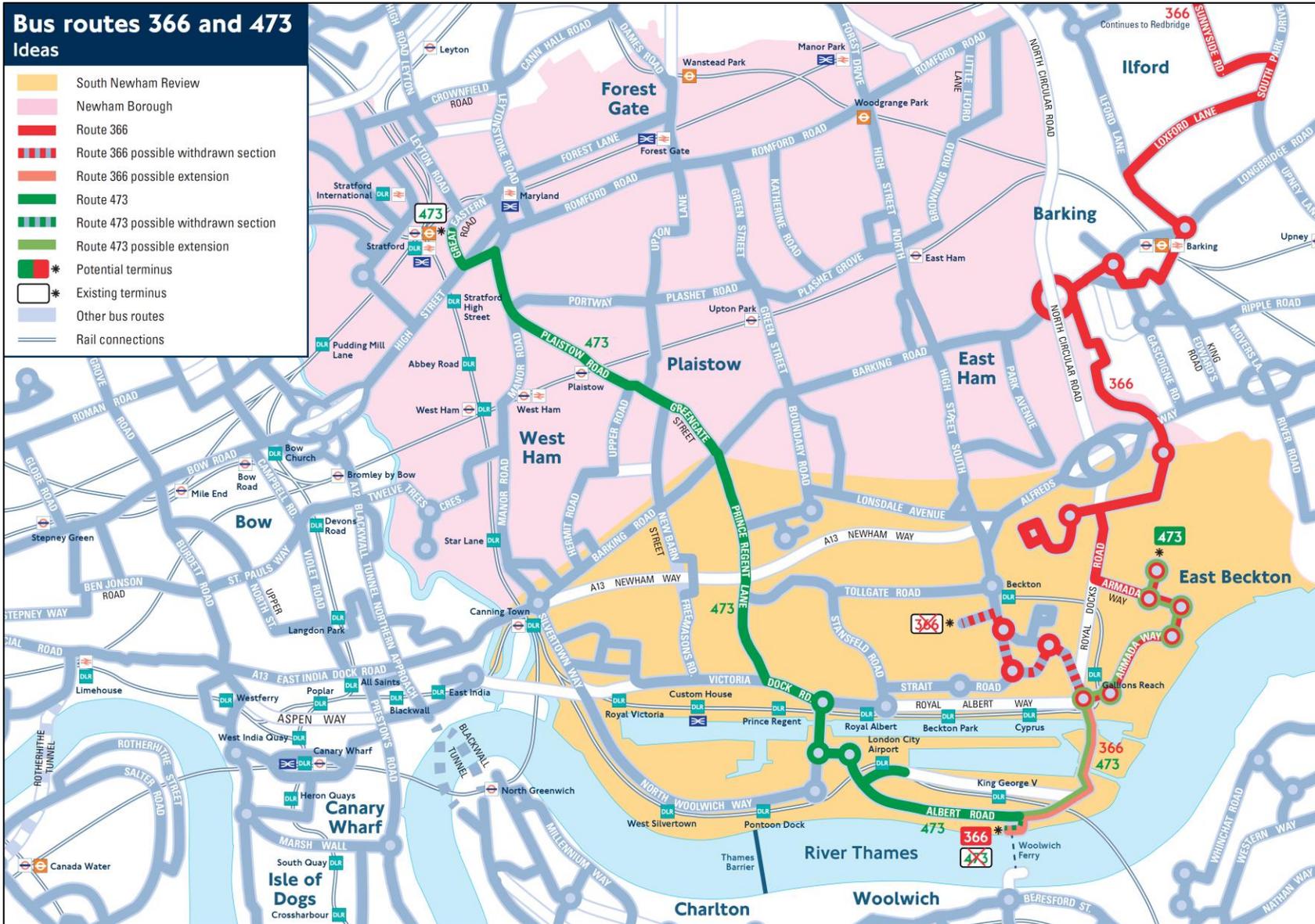
Map 10: Indicative Beckton Park Roundabout Ramp



Map 11: Impact of Beckton Park Ramp on Accessibility



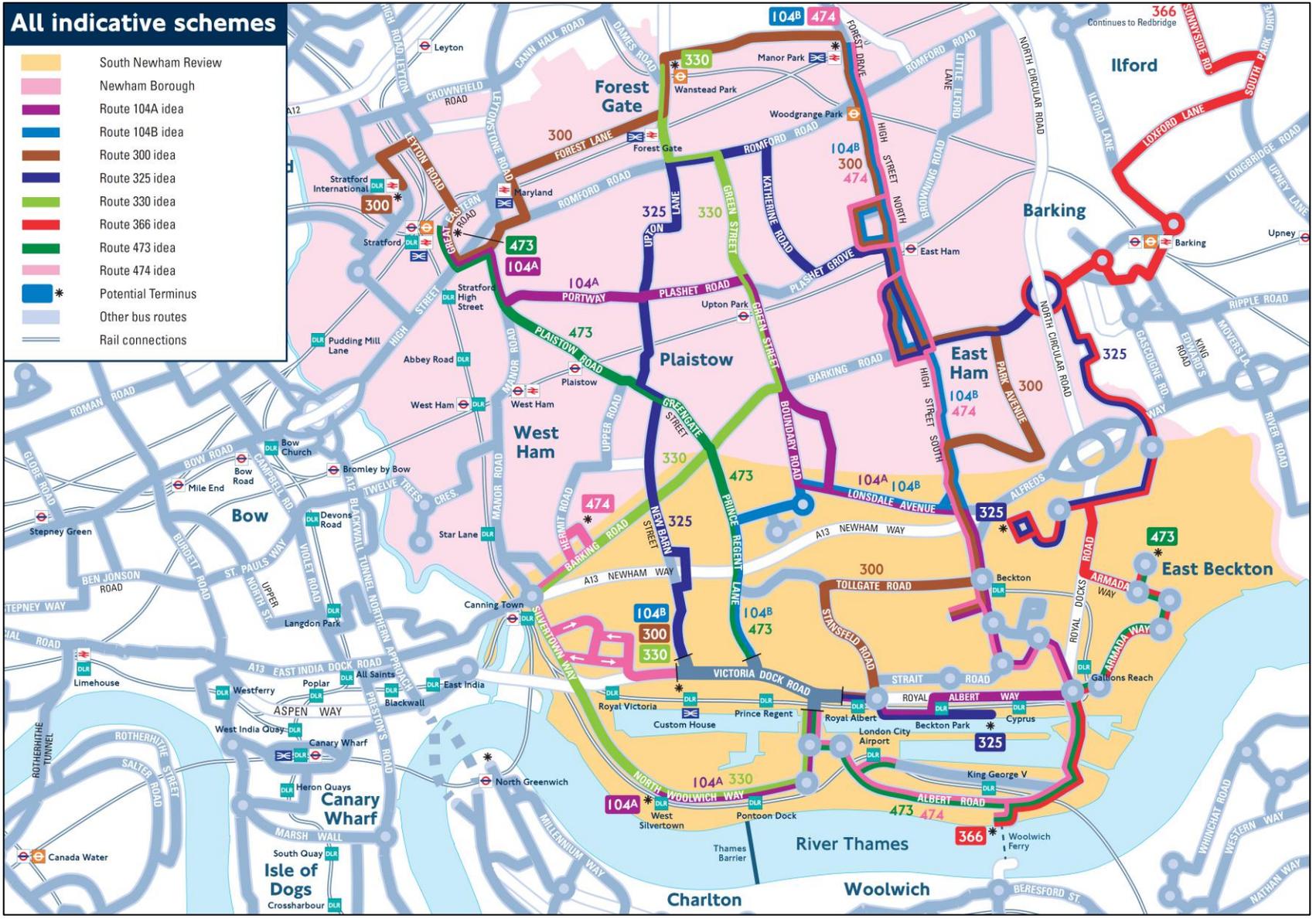
Map 12: Potential Bus Provision at Custom House Station



Map 13: Gallions Reach Bus Route Options

All indicative schemes

- South Newham Review
- Newham Borough
- Route 104A idea
- Route 104B idea
- Route 300 idea
- Route 325 idea
- Route 330 idea
- Route 366 idea
- Route 473 idea
- Route 474 idea
- Potential Terminus
- Other bus routes
- Rail connections



Map 14: All indicative schemes

APPENDIX 3 – CONTRACT END DATES

Route	Contract End Date	5 Yr / 7Yr
104	03-Mar-17	5 yrs
147	06-May-16	5 yrs
300	03-Mar-17	7 yrs
325	03-Mar-17	7 yrs
330	06-May-16	5 yrs
366	25-Mar-16	5 yrs
473	29-Mar-19	5 yrs
474	29-Apr-16	5 yrs

Contract end dates for routes with schemes identified