

Bus Services in Barking Riverside

TfL Surface Transport – Buses Directorate

November 2016

1 INTRODUCTION

- 1.1 The purpose of this paper is to set out how the bus network is envisaged to develop as Barking Riverside development gets built out and occupied.
- 1.2 Consideration is given to the both the wider area where significant development is forecast as well as the Barking Riverside development itself.
- 1.3 Within this context a strategy for buses is presented to inform the detailed approach and design of the bus network.
- 1.4 Service changes and associated infrastructure interventions are then summarised chronologically based on key milestone dates as identified by the development.
- 1.5 Future bus route ideas are all indicative and subject to further development. Any definitive proposals that are taken forward will need to be formally consulted upon.

2 BARKING RIVERSIDE DEVELOPMENT AND SURROUNDS

Wider Context

- 2.1 East London is forecast to see the largest growth of any of the London sub-regions. A population growth of circa 600,000 and 160,000 additional jobs are envisaged by 2031.
- 2.2 A key element of this growth is focused on the developable land available on both banks of the Thames. On the North side of the river, these growth and opportunity areas are:
 - **Isle of Dogs including Canary Wharf.** Minimum 10,000 homes and circa 110,000 jobs.
 - **Royal Docks.** 20,000 homes and circa 30,000 jobs.
 - **Barking Riverside.** 10,800 homes.
 - **Beam Park and surrounds.** 4,000 homes.
- 2.3 The above areas are bounded by the Thames in the South and the A13 in the North. Between the Limehouse basin in the west and the River Ingrebourne in the east, the areas are sub-divided by the River Lee, River Roding and Chequers Lane.
- 2.4 Strategic roads and railways primarily run east-west providing links into Central London although the DLR and London Overground (Gospel Oak – Barking) are exceptions as are the A12 and A406.
- 2.5 Aside from Central London and Canary Wharf, the established town centres of Stratford, Barking, Ilford and Romford are located to the north of the above sites.
- 2.6 Access across the Thames within this area is possible by a variety of modes between the Isle of Dogs and Gallions Reach only. However the opportunity for buses to cross the river is limited.
- 2.7 Some major infrastructure to complement and enable the forecast development is either planned or being considered. Examples include:
 - Bus priority schemes;
 - Extension of the London Overground to Barking Riverside;
 - Opening of the Elizabeth line;
 - A new station at Beam Park on the c2c line;
 - Interventions on the A13 to replace infrastructure beyond its design life and to manage traffic demand; and
 - New river crossings.

Barking Riverside Development

- 2.8 This is a large consented housing development of 10,800 homes. Construction is in phases with initial phases already constructed and occupied. It is envisaged that the development will be complete by around 2031. (See map A1 in appendix A). The phasing of the development is based on assumptions from 29 September 2015. These have since evolved and will continue to be tweaked but are understood to be accurate in general terms.

- 2.9 Construction to date has been to the west of Renwick Road and centred around Galleons Drive and Mallards Road (marked purple on map A1). A key milestone will be the opening of 320 residential units south of Handley Page Road (previously called the SIGMA development). This is due to open in early 2017. Various examples of high quality bus transit infrastructure are also planned.
- 2.10 The next phase of development will be mainly located to the east of Renwick Road and starts with a large school campus and some housing (marked purple on map A1). Housing, a local centre and a railway station will follow. These area marked red on map A1 will be delivered first followed by the area marked green.
- 2.11 The final phase will again be west of Renwick Road facing the Thames. This is the area marked brown on map A1.
- 2.12 Parts of the industrial land on Thames Road and on River Road adjacent to the Roding may in time be re-designated for housing. So too may land east of the Gores Brook. However, this is still at a very early stage and this paper assumes only the possibility of change.

3 NETWORK PLANNING AND BUS PRIORITY STRATEGY

Background

- 3.1 Sustainability is a key objective for the Barking Riverside development. From a transport perspective, the nearby A13 is at capacity at peak times of the day. Therefore adding significant additional traffic onto the A13 has negative implications for the operation of a strategic arterial road serving London and Essex. It also has implications for the development as congestion to access or cross the A13 will result in queues thus affecting air quality and journey times for the residents and businesses of Thames View and Barking Riverside. It can be seen that in addition to wider policy objectives, there is also a specific local imperative for promoting sustainable transport.
- 3.2 In recognition of this, Barking Riverside Ltd's (BRL) transport strategy for the development seeks to achieve an aspirational public transport, walking and cycling modal share of over 80% for external trips and over 90% for trips within the development. The extension of the London Overground forms a major component of this strategy but so too are objectives to cater for walking, cycling and travel by bus. The aspirational mode share by bus is 40% for external trips.
- 3.3 With regard to buses, the strategy has been to develop a transit approach meaning greater levels of continuous on-road priority to enable high quality bus services to operate. This has resulted in the introduction of the East London Transit (ELT) network with continuous bus priority, higher specification bus stops and bespoke branding of the bus service.

Bus Priority Strategy

- 3.4 An initial draft vision for a transit network to complement and support housing and economic regeneration in East London's growth and opportunity areas is being considered (see map A2). Transit in this context is defined as exemplar, continuous bus priority connected to major new development. Not only does the vision have regard to passenger flows but also the feasibility of delivering exemplar bus priority. The development of the transit network depicted in map A2 focuses around three principles:
- The ELT group of bus routes described in this note;
 - Thames Gateway opportunity areas where relatively undeveloped land offers greater feasibility to deliver transit level bus priority within prospective housing zones and areas of intensification; and
 - Intensified bus priority on complementary bus corridors that feed into expanding employment areas.
- 3.5 The draft vision will be explored in more detail through additional projects such as the City in the East study.
- 3.6 Within Barking Riverside, the bus priority strategy consists of the following approach:
- Provide only pedestrians, cyclists and public transport users with the most direct routing across Barking Riverside via the local centre;
 - Protect buses from obstructive parking through a combination of bus-only roads, parking restrictions and inset parking / loading bays; and
 - Protect buses from congestion through bus priority measures like bus-only roads and bus lanes.

Bus Service Strategy

- 3.7 The strategy for the bus service within Barking Riverside is an expansion of the ELT network and associated branding that has the following guidelines:
- **Comprehensive:** People living and working within 400m (5 minutes walk) of a bus route. Services operating from early morning till late at night 7 days a week;
 - **Simple:** Easy to understand routeings, timetables and ticketing arrangements;
 - **Reliable:** Buses taking advantage of associated bus priority to arrive at even intervals; and
 - **Frequent:** A 'turn-up-and-go' level of frequency where justified by demand and sufficient capacity to meet peak demand.
- 3.8 Achieving the above objectives will need to have consideration of budget constraints and represent value for money.

4 DEVELOPING THE BUS NETWORK OVER TIME

Introduction

- 4.1 This section summarises the roll out of a potential bus network starting with an acknowledgement of changes to date. This has been done to inform infrastructure requirements and their design as well as provide interested stakeholders with a fuller understanding of what the bus network might look like.
- 4.2 Future bus route ideas are all indicative and subject to further development. Any definitive proposals that are taken forward will need to be formally consulted upon. Bus frequencies for future years are particularly indicative as frequencies are primarily defined by the capacity required in the busiest hour at the busiest location. The peak hour capacity requirement may be driven by factors other than the Barking Riverside development and so may follow different timescales to those suggested below.

Changes made to date (see map A3)

- 4.3 The study area is served by routes EL1 (24 hour), EL2 and 387. The ELT network was introduced in February 2010 serving Thames View Estate and Dagenham Dock Station. The routes made use of a number of highway schemes that provided higher levels of bus priority and replaced route 369.
- 4.4 In September 2013 the EL1 was extended into Barking Reach.
- 4.5 In August 2014 both the EL1 and EL2 were increased in frequency from 5 to 6 buses per hour (bph) on Monday to Saturday daytimes representing a 20% increase.
- 4.6 In March 2016 the frequency was increased again. On route EL1 it became 10 bph on Monday to Saturday daytimes with frequencies also enhanced on evenings and Sundays from 3 to 6 bph. Night frequencies remained unchanged. At the same time route EL2 was increased to 7.5 bph on weekdays and from 3 to 4 bph evenings and Sundays. Where the ELT routes paralleled each other this represented a 45% increase in frequency. In addition, the EL2 was re-routed away from Ilford and extended to Becontree Heath extending the coverage of the ELT network.
- 4.7 The steady increases in frequency have reflected the increase in patronage as the population has grown. Around 744 units have been delivered in Barking Riverside, primarily in the area around Galleons Drive and Mallards Road. In late 2015 there were around 15,000 trips per day to, from or within the study area (which includes all the area to the south of the A13). This compares to 8,500 per day in 2007 prior to the changes summarised above. This is an increase in patronage of 76%.
- 4.8 Also of note is the quality of service as measured in Excess Wait Time (EWT). The lower the number the more punctual and reliable the service. The ELT network has achieved an average Excess Wait Time of 0.7 minutes between Quarter 2 2014/15 and Quarter 1 2016/17 (2 years). In comparison the average across London has been 1.1 minutes and 1.2 minutes across Barking & Dagenham Borough. Route 387 has achieved 1.0 minute EWT over the same time period but it is worth noting that since 2010 additional time has been added to the 387 schedule at a cost of two additional buses. On route 387 there has therefore been a degradation of end to end journey times and an increase in operating costs but reliability has been successfully mitigated.

4.9 The above data provides significant support for the objective of delivering high levels of bus priority in order to provide the highest quality bus service.

Potential network changes by 2017 (see map A4)

4.10 To enable the next phase of the development east of Renwick Road, entirely new infrastructure will be required, including:

- A new access road off Choats Road called Crown Street. Opens 30 June 2017;
- A new road off Crown Street called Drovers Road. This road will provide the access to the school and the first houses. Opens 30 June 2017;
- A bus only connection from Drovers Road to River Road. Opens 30 June 2017; and
- A bus stand adjacent to Crown Street to the north of Drovers Road. The stand will be available from 30 June 2017 and is expected to be a long term temporary arrangement.

4.11 The initial land uses consist of a school campus and new housing located adjacent to Crown Street and Drovers Road. An additional 568 units are expected to be built and occupied by early 2018. Overall, Barking Riverside will then consist of around 1,250 units and a population of circa 3,100.

4.12 The school campus consists of:

- **SEN School:** For 60 students. Opened September 2016;
- **Primary School:** For 630 students. Opens September 2017;
- **Secondary School:** The school opens in September 2017 with 850 students. This will grow each year to a total of 2,100 students by 2022; and
- **Staff:** The campus will have around 500 staff associated with it.

4.13 The school will initially be relatively remote from its catchment area and require access by bus. As regards the SEN school which opened in September 2016 with a temporary access off Renwick Road, the Headteacher has confirmed that TfL buses will not be required initially as they will be providing their own transport.

4.14 The service changes to support these new land uses involve changes to routes EL1 and 387.

4.15 Route EL1 will be extended from Barking Reach to Barking Riverside (Crown Street) at existing frequencies. It would use the new bus only access between River Road and Drovers Road.

4.16 There will also be changes to route 387 which includes renaming it EL3 (see map A5). Specifically those changes are:

- Re-route it through Barking town centre to improve town centre access and improve journey times and service reliability;
- Re-route it at River Road in both directions to run via Thames Road, Creek Road, Long Reach Road and new roads within Barking Riverside to a new terminus on Crown Street. Buses would use roads treated with bus priority measures but no longer serve the section of Thames Road between the junctions of Creek Road and Marine Drive; and
- EL3 frequencies would be increased to 6 bph on Monday to Friday daytimes.

- 4.17 The scheme provides links to the school from Thames View Estate; the newly opened Barking Riverside homes and catchment areas further away. It also provides high quality transport links to and from the new and future housing providing the option for new occupants to make sustainable travel choices.
- 4.18 A consultation on the above service changes closed on 14 August 2016. 253 responses were received with 63% supporting or partially supporting the EL1 change and 65% supporting or partially supporting the EL3 change. Implementing the changes is dependent upon the delivery of both the necessary infrastructure e.g. the bridge linking Crossness Road and Handley Page Road and the opening of key land uses to create the travel demand. It is intended that changes will be implemented in phases from February 2017 with the new routeings within Barking Riverside commencing in September 2017.

Potential network changes by 2021 (see map A6)

- 4.19 Development by 2021 will primarily consist of an additional 2,600 residential units built and occupied since 2017 making a total of around 3,800 units with a population forecast of 9,500. The housing will primarily be located either side of Drovers Road although a further block is also expected to be constructed near Handley Page Road. By this time the school will also be approaching its full size.
- 4.20 The scale of development will require highway interventions at the Renwick Road junction with the A13. From a bus perspective the requirement is for a road link from Renwick Road into Goresbrook across the A13 with associated bus priority. The details of this road link are still to be determined. Possibilities include construction of a new road to the current Lodge Avenue roundabout or a bridge over the A13 from Renwick Road to Goresbrook. In consideration of the bus priority strategy and in order to prevent rat-running any such link is likely to restrict car movements to some extent.
- 4.21 Such a link would permit a potential new route – provisionally named EL4 – to operate from Barking Riverside station via Crown Street and the cross-A13 link into Goresbrook and the District line. At present it is envisaged it will extend to Becontree Heath via Porters Avenue. The routeing is indicative at this time and is subject to change (see map A7). A provisional frequency of 4 bph is currently assumed. The introduction of the EL4 would require a temporary bus stand in the vicinity of Barking Riverside Station.
- 4.22 The London Overground extension to Barking is planned to open in 2021. Frequencies will typically be 4 trains per hour. The station entrance will be facing onto the square that forms the district centre (see map A8).
- 4.23 The opening of the railway is expected to see a temporary decline in bus usage on routes EL1 and EL3 as bus trips to locations near Barking town centre transfer to the train. Subject to evaluation nearer the time, it is envisaged that route EL1 would operate in two legs, both of 5 bph. Leg 1 would be Ilford to Mallards Road (the current 2016 terminus) and leg 2 would be Ilford to Crown Street. Therefore western Barking Riverside and Thames View Estate would continue to have the same level of service (10 bph) but there would be a frequency reduction in eastern Barking Riverside. However, eastern Barking Riverside would still be served by EL1 (leg 2) and EL3 at a combined frequency of 11 bph. There would also potentially be new route EL4 providing a further 4 bph.

Potential network changes by 2026 (see map A9)

4.24 Between 2021 and 2026 a number of infrastructure changes are expected to have happened. These include:

- An extension of Crown Street southwards with high levels of bus priority;
- Construction of an east-west busway from River Road/Mallards Road through to the eastern end of the development near Choats Road;
- The above two roads enable a section of Choats Road to close and given over to other use; and
- Provision of a permanent bus stand located at the eastern end of east-west Busway.

4.25 New development will be located either side of the busway. By 2026 8,000 residential units are planned to have been built with an estimated population of 19,900. The local centre located opposite the train station is also expected to have been completed by this time.

4.26 Subject to detailed evaluation, costs and consultation a number of changes are envisaged to the bus network. These include:

- Re-routeing of the EL1 and EL3 onto the busway from River Road through to the new stand at the eastern end of the Barking Riverside development. This will allow the maximum coverage of the new development bringing homes within 400m of a bus route and connecting residents with their local centre and train station. It will also utilise the busway providing the maximum level of bus priority;
- Route EL1 would no longer operate in two legs and the full level of service would operate along the full length of the route;
- Bus stands at Mallards Road and Crown Street may therefore become redundant;
- It is assumed that route EL3 would operate at around 10 bph;
- Route EL2 would be routed through the development via Crown Street. Together with routes EL1 and EL3 it would ensure homes are within 400m of a bus route and provide a link to Dagenham Dock station; and
- Route EL4 would be re-routed via Crown Street and the east-west busway. A frequency increase to 5 bph is currently assumed but subject to change.

Potential network changes by 2031 (see map A10)

4.27 By 2031, it is envisaged that all 10,800 units will be complete. The final phases of the development will largely be located near the river to the west of Renwick Road and south of River Road. The total population of Barking Riverside is estimated at around 27,300 people.

4.28 It is envisaged that route EL4 would be extended to the western end of this latest phase of development and a bus stand provided to enable it to terminate. This will bring all homes within 400m of a bus route and provide links to the district centre, train station, school and District line.

Other potential changes

- 4.29 The relative flexibility of the bus network enables it to change more rapidly to the realities on the ground. Land use changes, transport projects and policy changes - both known and unknown – mean the bus service changes described above are indicative only.
- 4.30 As noted above, by 2031, plans for significant re-development of River Road and Thames Road may be more of a reality. The Royal Docks on the other side of the Roding is forecast to deliver significant employment. Work looking at providing a link across the Roding for pedestrians, cyclists and buses is being undertaken to understand the issues and feasibility. A sustainable transport bridge would provide direct travel opportunities running parallel to the A13. The competitive journey times compared to using the A13 by car would accord with the strategy to manage demand and journey times on the A13 itself.
- 4.31 In light of the above, and as suggested in map A2, route EL4 or some other bus route might be routed beyond Barking Riverside to the River Road development or the Royal Docks.

5 INFRASTRUCTURE

- 5.1 A summary of the bus infrastructure required is listed chronologically below. Generally the provision of this infrastructure is outside the direct control of TfL Buses.
- 5.2 The detail of the bus infrastructure provision will be agreed between BRL, TfL and LB Barking & Dagenham (LBBD) through the Strategic Infrastructure Scheme (SIS) and the relevant Sub-Framework Plans.

2017

Infrastructure	Location	Delivery Agent
Bus ramp	Long Reach Road	BRL
Bus bridge	Minter Road	BRL
Busway	Handley Page Road	BRL
Temporary bus-only link road	River Rd – Drovers Rd	BRL
New roads	Drovers Rd & Crown St	BRL
Temporary bus stand for 4 buses including driver toilet	Crown St	BRL
Bus stops	Various	TfL / BRL

2021

Infrastructure	Location	Delivery Agent
Re-open closed bus stand and driver toilet	Mallards Road	TfL
A13 Link	Renwick Road to Goresbrook	TfL
Bus Priority	Renwick Road / Choats Road	BRL
Temporary bus stand for 2 buses including driver toilet	Near Barking Riverside Station	BRL
Bus stops	Various	TfL / LBBD

2026

Infrastructure	Location	Delivery Agent
Busway	East-West through Barking Riverside Phase 2	BRL
Busway	Crown Street	BRL
Bus stand for 5 buses including driver toilet	East end of east-west busway	BRL
Bus stops	Various	TfL / BRL

2031

Infrastructure	Location	Delivery Agent
Busway extension	East-West busway	BRL
Bus stand for 2 buses including driver toilet	West End of east-west busway	BRL

6 SUMMARY

- 6.1 The size of the Barking Riverside development on land which is largely undeveloped provides a major opportunity to deliver infrastructure that builds in bus priority and offers the scope to meet the challenging targets for high modal share by public transport and other sustainable transport modes.
- 6.2 A 'Transit' approach has been taken towards bus service planning to complement the on-highway bus priority.
- 6.3 This paper has identified a timeline for how the bus network could develop as development comes forward and summarises the associated infrastructure required. Future bus route ideas are all indicative and subject to further development. Any definitive proposals taken forward will need to be formally consulted upon.

APPENDIX A – SCHEME MAPS

Map A1: Barking Riverside Development Phases

Map A2: A Vision for the East London Transit Network

Map A3: 2013 – 2016: Barking Riverside Bus Services

Map A4: 2017: Barking Riverside Bus Services

Map A5: Route EL3

Map A6: 2021: Barking Riverside Bus Services

Map A7: Route EL4

Map A8: Barking Riverside Railway Station Layout

Map A9: 2026: Barking Riverside Bus Services

Map A10: 2031: Barking Riverside Bus Services

MAP A1: Barking Riverside Development Phases

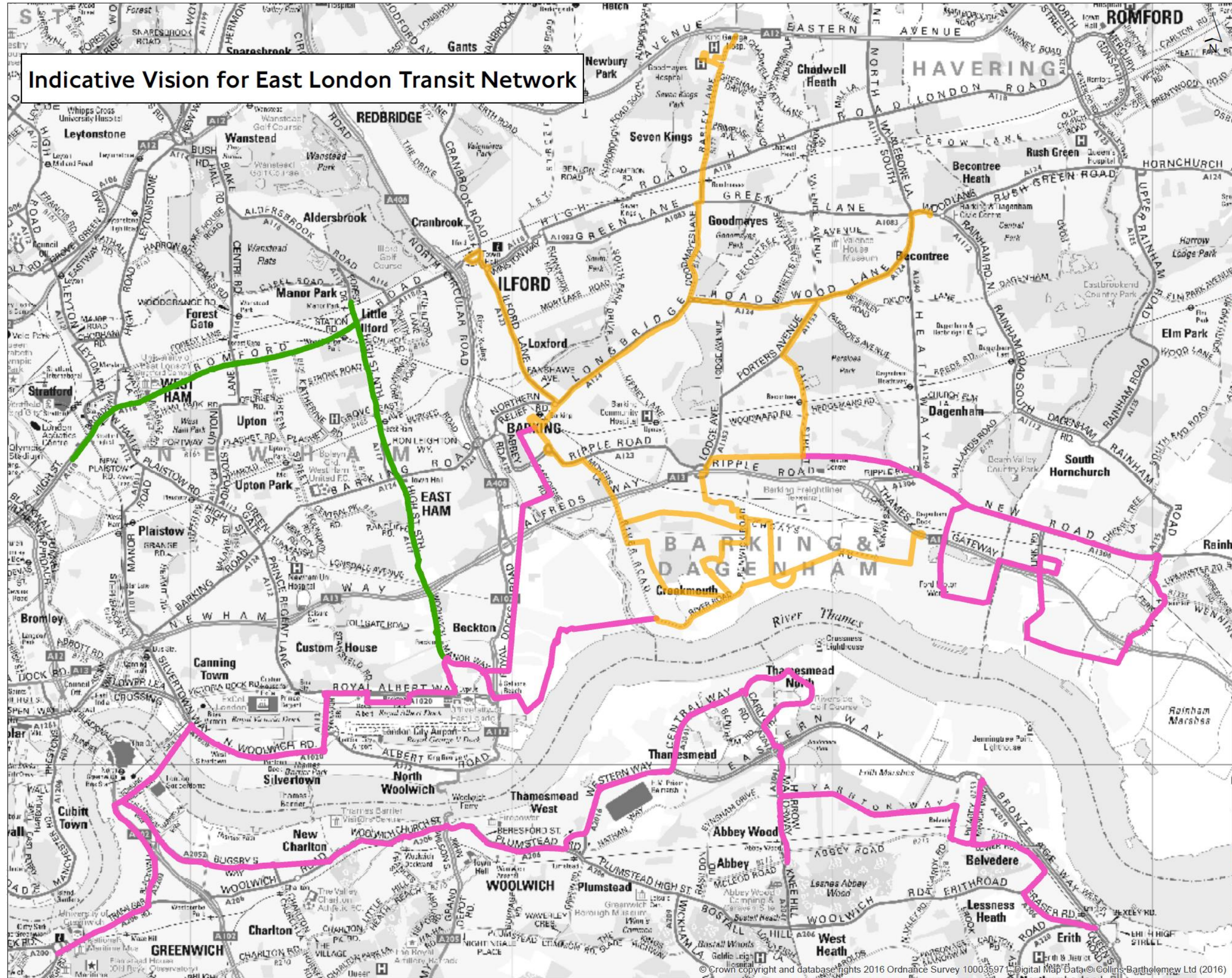
Delivery & Implementation Plan

Snapshot: JULY 2031

10,919 occupations



MAP A2: A Vision for the East London Transit Network



Key

- ELT (EL1, EL2, EL3, EL4)
- Transit through opportunity areas
- Complementary Intensified Bus Priority Corridor

Exact roads identified for Transit are indicative, not confirmed and subject to change

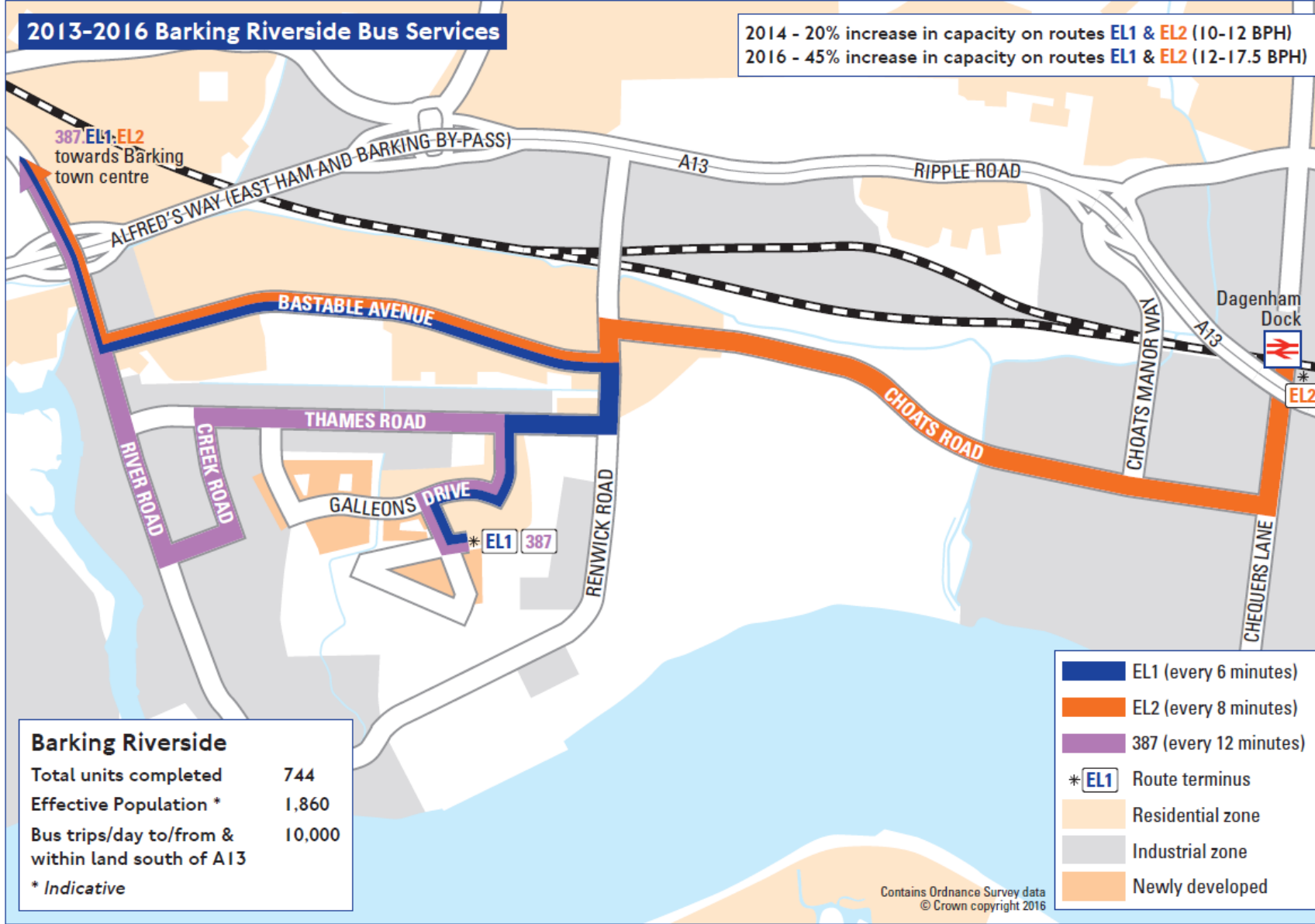
0 0.5 1
 Kilometres

Indicative London Transit Network

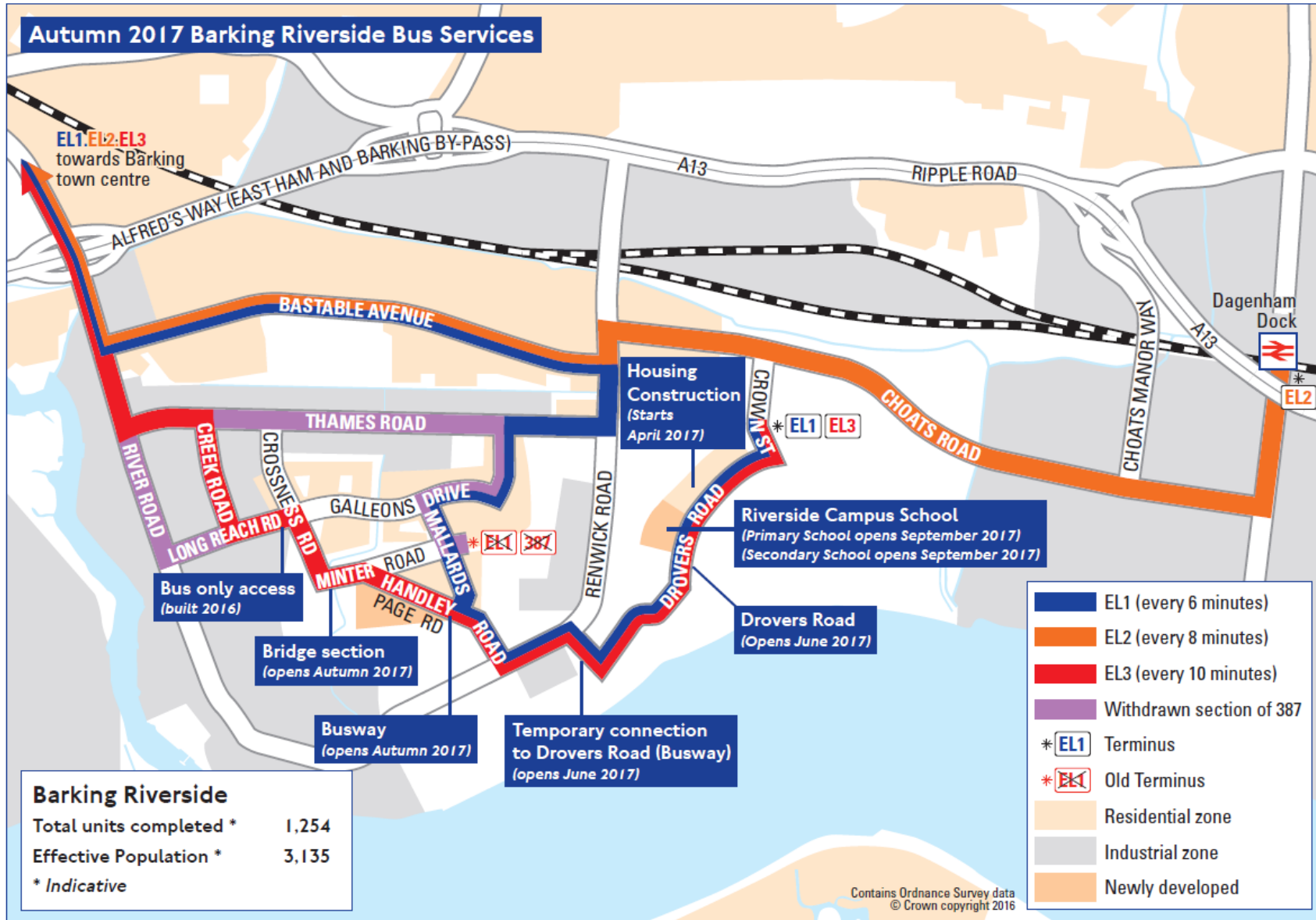
Scale	Date	Status
1:41,302	13/10/2016	
Drawing No.		Rev.

© Transport for London
 © Crown copyright and database rights 2016
 Ordnance Survey 100035971
 Digital Map Data © Collins Bartholomew Ltd (2015)
 This product includes mapping data licensed from Ordnance Survey.
 © Crown Copyright (2016) License No. 100017302

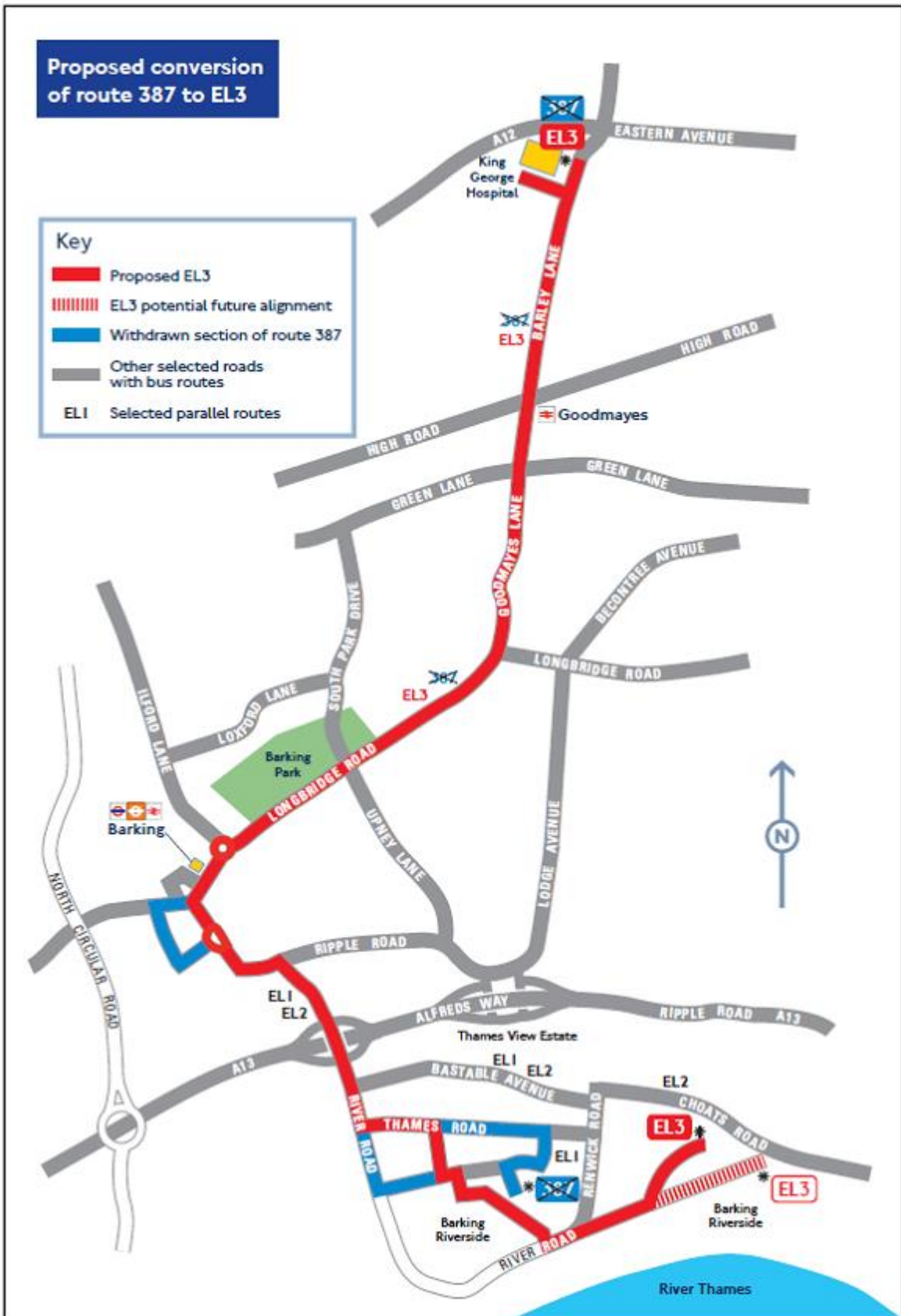
MAP A3: 2013 – 2016: Barking Riverside Bus Services



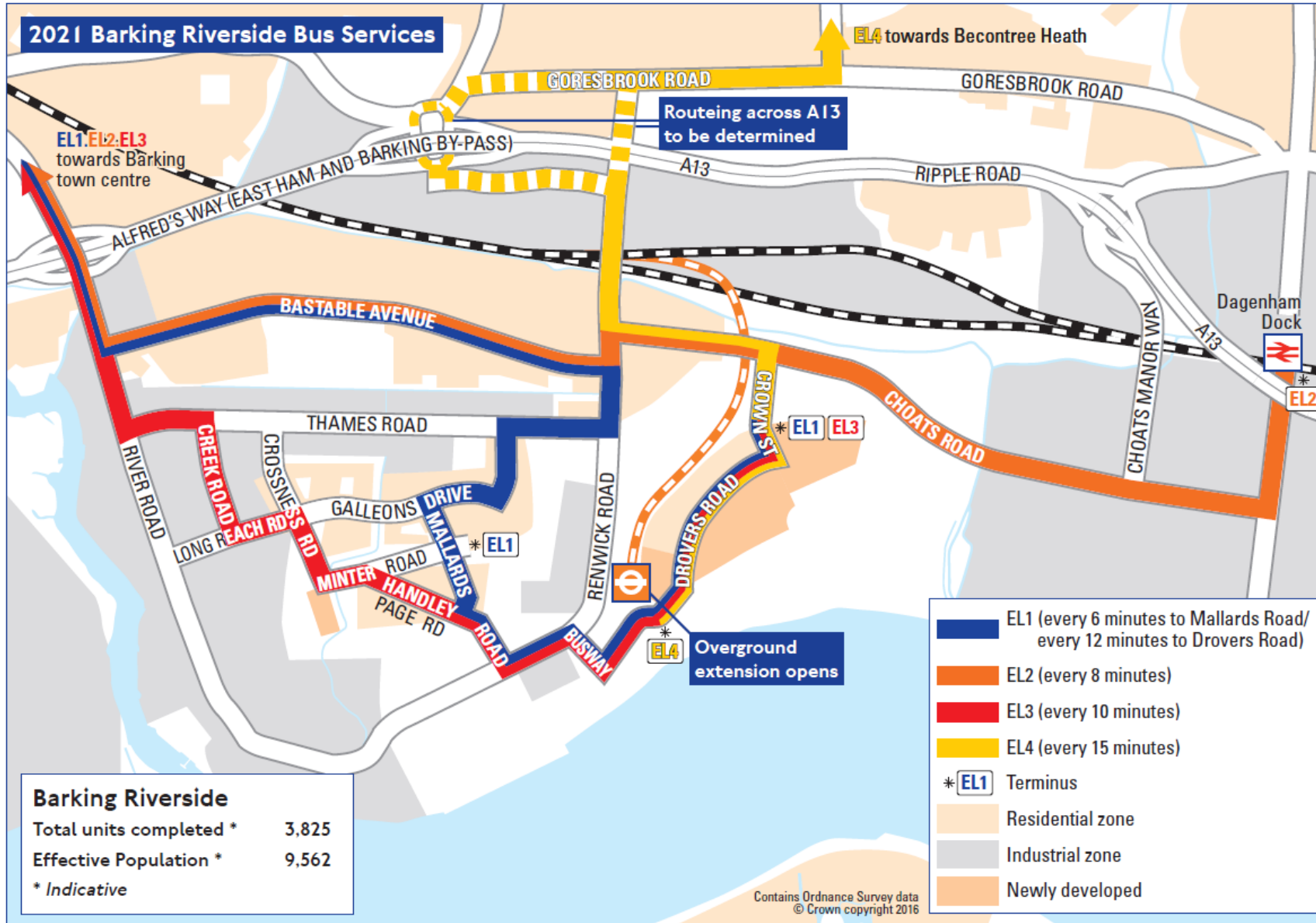
MAP A4: 2017: Barking Riverside Bus Services



MAP A5: Route EL3



MAP A6: 2021: Barking Riverside Bus Services

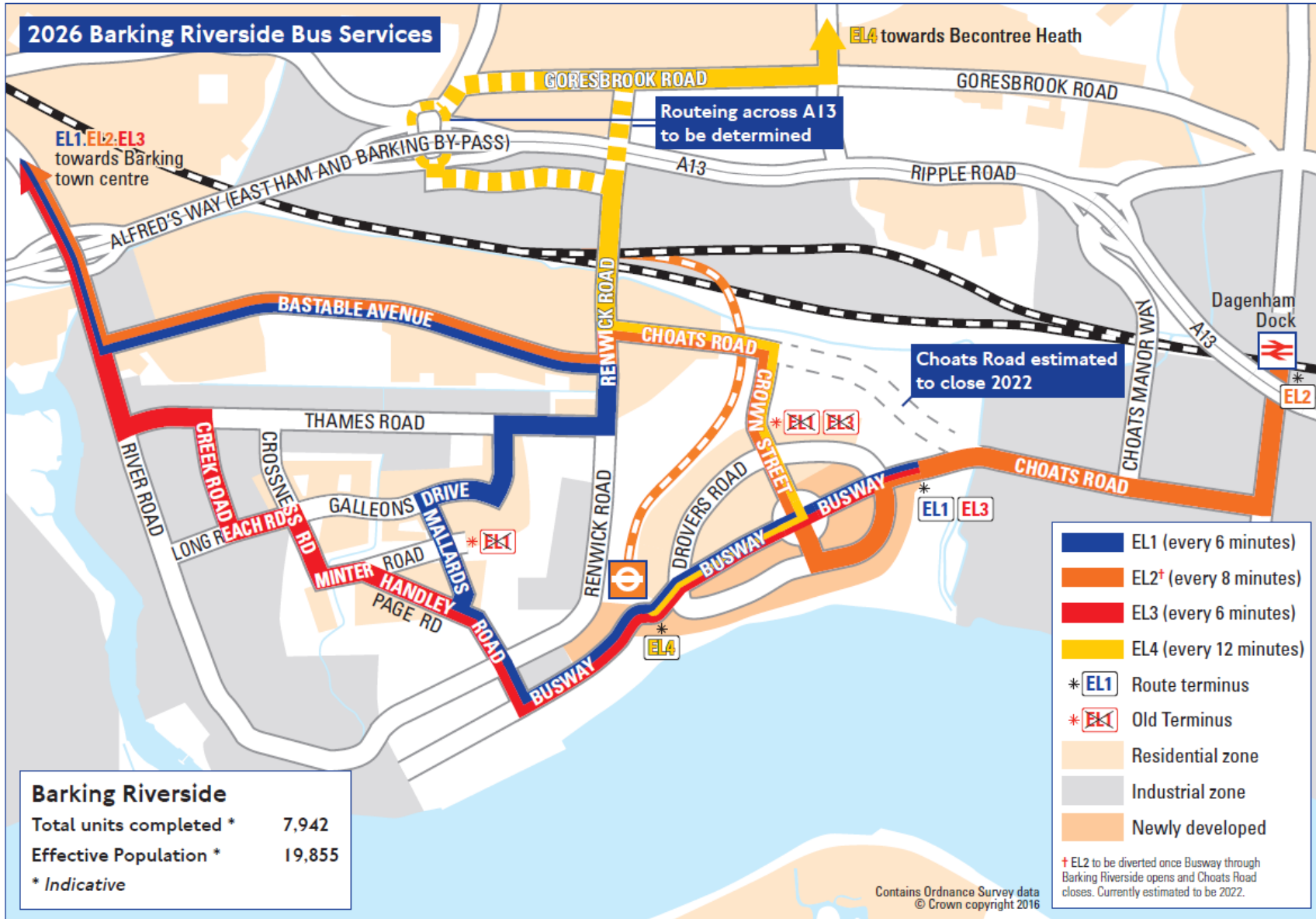


MAP A8: Barking Riverside Railway Station Layout with Bus Interchange

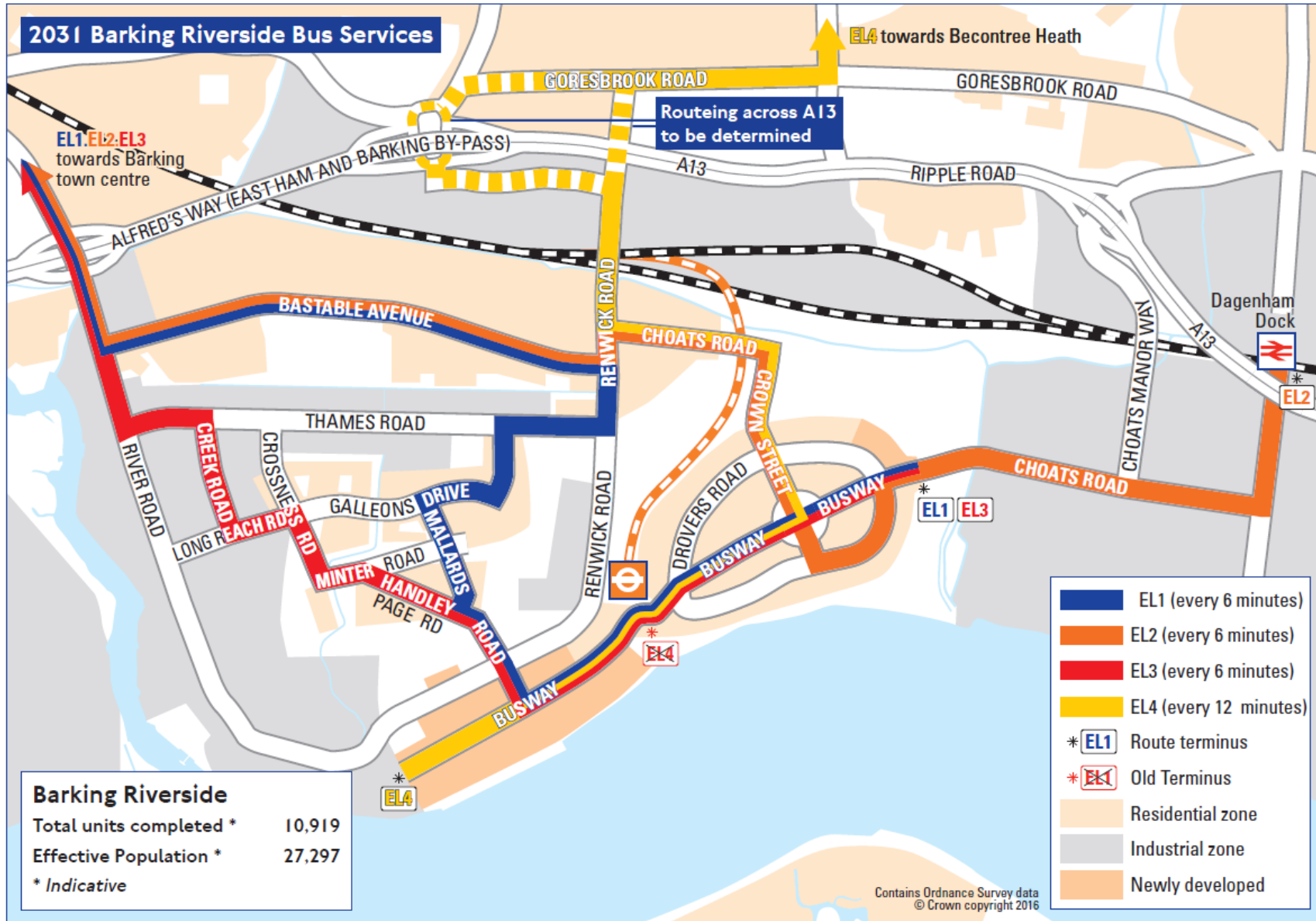


Extract from London Overground Barking Riverside Extension Project – Design & Access Statement

MAP A9: 2026: Barking Riverside Bus Services



MAP A10: 2031: Barking Riverside Bus Services



APPENDIX B – PRESENT & PROPOSED FREQUENCY & STRUCTURE SUMMARY

	AM Peak	Mid day	PM Peak	Eve	AM Peak	Mid day	PM Peak	Eve
<u>Route EL1</u>								
<i>MF</i>		2016				2031		
Ilford Broadway, Ilford Hill - Barking Reach, Mallards Road	10	10	10	6	-	-	-	-
Ilford Broadway, Ilford Hill - Barking Riverside, Busway East End	-	-	-	-	10	10	10	6
<i>Sat</i>								
Ilford Broadway, Ilford Hill - Barking Reach, Mallards Road	5/7.5	10	10	6	-	-	-	-
Ilford Broadway, Ilford Hill - Barking Riverside, Busway East End	-	-	-	-	5/7.5	10	10	6
<i>Sun</i>								
Ilford Broadway, Ilford Hill - Barking Reach, Mallards Road	3/4	6	6	6	-	-	-	-
Ilford Broadway, Ilford Hill - Barking Riverside, Busway East End	-	-	-	-	3/4	6	6	6
<i>Nightly</i>								
Ilford Broadway, Ilford Hill - Barking Reach, Mallards Road	2	-	-	-	-	-	-	-
Ilford Broadway, Ilford Hill - Barking Riverside, Busway East End	-	-	-	-	2	-	-	-

Toilets available at Mallards Road and to be made available at new stand at the east end of the Busway

	2016				2031			
	Via Choats Road				Via Crown Street			
<i>MF</i>								
Becontree Heath Bus Station - Dagenham Dock	7.5	7.5	7.5	4	10	10	10	7.5
<i>Sat</i>								
Becontree Heath Bus Station - Dagenham Dock	4/5	6	6	4	5/7.5	10	10	7.5
<i>Sun</i>								
Becontree Heath Bus Station - Dagenham Dock	2/3	4	4	4	5	7.5	7.5	7.5

Toilets available at Becontree Heath and Dagenham Dock

	AM Peak	Mid day	PM Peak	Eve	AM Peak	Mid day	PM Peak	Eve
<u>Route 387 / EL3</u>								
<i>MF</i>		2016				2031		
Little Heath, Haw Bush - Barking Reach, Mallards Road	5	Via Thames Road 5 5 3			-	Via Minter Road - - -		
Little Heath, Haw Bush - Barking Riverside, Busway East End	-	-	-	-	10	10	10	7.5
<i>Sat</i>								
Little Heath, Haw Bush - Barking Reach, Mallards Road	3	5	5	3	-	-	-	-
Little Heath, Haw Bush - Barking Riverside, Busway East End	-	-	-	-	5/7.5	10	10	7.5
<i>Sun</i>								
Little Heath, Haw Bush - Barking Reach, Mallards Road	3	3	3	3	-	-	-	-
Little Heath, Haw Bush - Barking Riverside, Busway East End	-	-	-	-	5	7.5	7.5	7.5

Toilets available at Mallards Road and to be made available at new stand at the east end of the Busway

Route EL4

<i>MF</i>		2016				2031		
Barking Riverside, Busway West End - Becontree Heath Bus Station	-	-	-	-	3	5	5	3
<i>Sat</i>								
Barking Riverside, Busway West End - Becontree Heath Bus Station	-	-	-	-	3	5	5	3
<i>Sun</i>								
Barking Riverside, Busway West End - Becontree Heath Bus Station	-	-	-	-	3	3	3	3

Toilets available at Becontree Heath and to be made available at new stand at the west end of the Busway