Review of bus services in Waltham Forest

Public Transport Service Planning

April 2021

EVERY JOURNEY MATTERS

Disclaimer

This review examines the bus network in London Borough Waltham Forest and how it may change in the future in response to changing travel patterns and future developments.

The interventions considered are ideas and not proposals and are therefore subject to change.

Any proposal will require a detailed cost benefit appraisal and would be subject to funding

Public consultation is always undertaken on service changes which significantly alter a bus route

All usage and reliability data quoted is pre-2020 and therefore excludes the effects of COVID

Structure

- Bus planning policy
- Background
- Bus schemes investigated
- Next steps

Bus services in London Borough Waltham Forest

Objective

Identify how the bus network might be further improved in London Borough Waltham Forest following a data review and discussion with LB Waltham Forest (LBWF).

Bus Strategy Update (Feb 2020)

Amongst the six priorities set out for the bus network, this study responds to priorities 5 and 6 “Re-shaping the bus network” and “Growing demand”.

Regarding the strategy for Outer London it means:

- *Enhancing network coverage*
- *Supporting growth areas*
- *Continuing to remove spare capacity where it exists*

Bus service planning guidelines

In designing bus service changes, the bus service planning guidelines are followed; providing a:

- **Comprehensive** network
- **Frequent** network
- **Reliable** network
- **Simple and easy to use** network
- **Value for money**

Background

Review of recent service changes (201 9-2020)

The bus network in LBWF is kept under constant review, as indicated by these recent changes:

Frequency increase

Route 66 from 5 buses per hour (bph) to 6 bph MF daytimes

Route 158 from 7.5 bph to 10 bph MSat daytimes, from 5 bph to 6 bph Sunday shopping hours, from 4 bph to 5 bph all evenings

Route 123 from 5.5 bph to 6 bph MSat daytimes

Route W19 from 5 bph to 6 bph MF daytimes

Route W11 from 2 bph to 4 bph all evenings

Route 212 from 6 bph to 7 bph MF daytimes

Route 444 from 3 bph to 4 bph all evenings

Restructuring

Routes 97 and **357** withdrawal from Walthamstow Bus Station

Route 55 extension to Walthamstow Bus Station / **Route 48** withdrawal

Route W19 extended to Argall Avenue at all times

Route W11 re-routed via Blackhorse Road Station

Data analysis

However, we also conducted a data analysis on the LBWF bus network to share with the Borough and inform where else we might investigate further bus network changes. The analysis was grouped into three main themes:

- **Accessibility** (Network coverage, bus infrastructure, connectivity, etc.)
- **Demand** (Bus usage, census data, developments, etc.)
- **Delivering good quality public transport** (Reliability, speed, bus priority, etc.)

The analysis and discussion with the Borough led to the identification of some key features:

- **Grow bus demand** (and make the bus network more value for money)
- **Bring people within 400m of the bus network** (a comprehensive network)
- **Consider future development** (a comprehensive network)
- **Address declining bus speeds and lack of bus priority infrastructure** (a reliable network)

From this five schemes were identified for consideration

Bus schemes investigated

List of schemes investigated

Growing bus demand: A reliable network

- **Route W15 : Restructuring** – addressing bus speeds / bus priority

Growing bus demand: A frequent and value for money network

- **Argall Avenue : Terminus swapping –** growing demand
  (Routes 20, 215, W19, W12)

Growing bus demand: A comprehensive and value for money network

- **Orient Way : Bus extension** – closing network holes / future development
  (Routes 20, 215, W19, W12)

Growing bus demand: A reliable and value for money network

- **Hatch Lane : priority scheme** – addressing bus speeds and bus priority
  (Routes 212, 357, 657)

Growing bus demand: A comprehensive and value for money network

- **Route 385 : Restructuring** – growing demand

Route WI 5 Restructuring

– Reliable network

Route W1 5 – Data analysis summary

Route W15

Start Cogan Avenue Estate **End** Hackney Town Hall

Freq 7.5 bph AM peak, 7 bph PM Peak, 6 bph Sat, 5 bph Sun, 4 bph all evenings

Cost recovery 59% (2019) **Usage** -24% (2014-2019)

Primary Issue

The route has often struggled to operate reliably requiring various interventions. These have included:

- Widening the headway in the PM peak (2012)
- Shortening the route (2014)
- Adding additional buses into the schedule (2005, 2011, 2012 and 2014)

Route W1 5 – Data analysis summary

Route W15

Primary Issue (cont'd)

Data shows performance significantly lower than its standard (see table) although performance has been good during the pandemic

Further widening of headway would be the default solution in the event of poor performance returning

The EWT standard was lowered from 1.2 to 1.3 minutes (2017). This compares with a typical standard of between 0.9 and 1.1 minutes for similar routes in the Borough

A more radical intervention was therefore considered; namely restructuring.

Route	Q1 2019/20	Q2 2019/20	Q3 2019/20	Q4 2019/20	Current Annual Average	Current QIC Minimum Standard	Proposed QIC Minimum Standard
	High Frequency Routes: Excess wait time (minutes)						
W15	1.52	1.17	2.09	1.46	1.56	1.30	1.30

Route WI 5 restructuring

Rationale

Make journey times more reliable by splitting the route into two significantly shorter routes

Proposal

- **Route WI 5**

Start Cogan Avenue Estate

End Leyton, Downsell Road

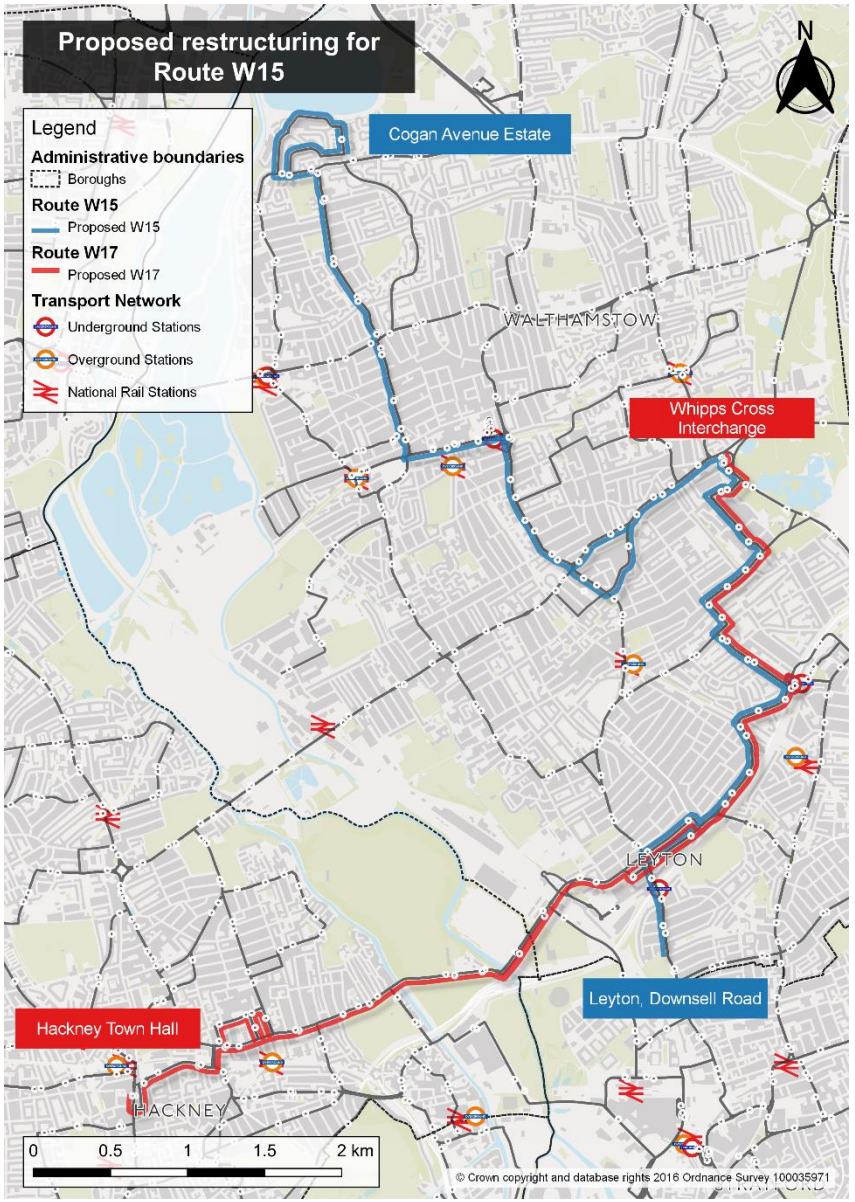
Freq 6 bph MF, 5 bph Sat, 4 bph Sun and all evenings

- **Route WI 7**

Start Hackney Town Hall

End Whipps Cross Interchange

Freq 4 bph MSat, 3 bph Sun and all evenings



Summary

Strengths

Previous approaches to improving reliability have had limited success. This more significant intervention is expected to improve reliability by reducing exposure to variable delay

Low number of broken trips i.e. 1.5% of all trips on the route

Provides additional capacity on the busiest part of route W15 between Leytonstone and Whipps Cross (even allowing the additional peak hour journey on route W19 to be saved)

Provides new direct links to/from Leyton e.g. to Whipps Cross Hospital

Supports new development at Whipps Cross hospital

Weaknesses

Frequency reduction at the ends of the current route structure – especially the Hackney section which goes from 7.5 bph to 4 bph

1.5% of all passengers will now need to change buses e.g. at Whipps Cross interchange

Recommendation

Consider restructuring as a potential solution in the event of reliability continuing to be an issue or as new development at Whipps Cross comes forward.

Argall Avenue

– frequent and value for money network

Routes W19/W12 – Data analysis summary

Route W19

Start Ilford, Hainault Street **End** Argall Avenue Industrial Estate

Freq 6 bph MF, 5 bph Sat, 3 bph Sun and all evenings

Cost recovery 58% (2019) **Usage** +27% (2014-2019)

History

Frequency increase from 3 bph in 2014 to 6 bph (Dec 2019)

Evening extension from South Grove to Argall Avenue (Sept 2020)

Route W12

Start Wanstead, Woodbine Place **End** Walthamstow, Coppermill Lane

Freq 2 bph MSu all day

Cost recovery 39% (2019) **Usage** -33% (2014-2019)

History

Frequency reduction from 3 bph in 2014 to 2 bph (Dec 2017)

Route 20/215 – Data analysis summary

Route 20

Start Debden Station **End** Walthamstow Central

Freq 4 bph MSat, 2 bph Sun daytime and all evenings

Cost recovery 59% (2019) **Usage** +2% (2014-2019)

Route 215

Start Lea Valley Camp Site **End** Walthamstow Central

Freq 3 bph MSat, 2 bph Sun and all evenings

Cost recovery 61% (2019) **Usage** +8% (2014-2019)

Argall Avenue – Data analysis summary

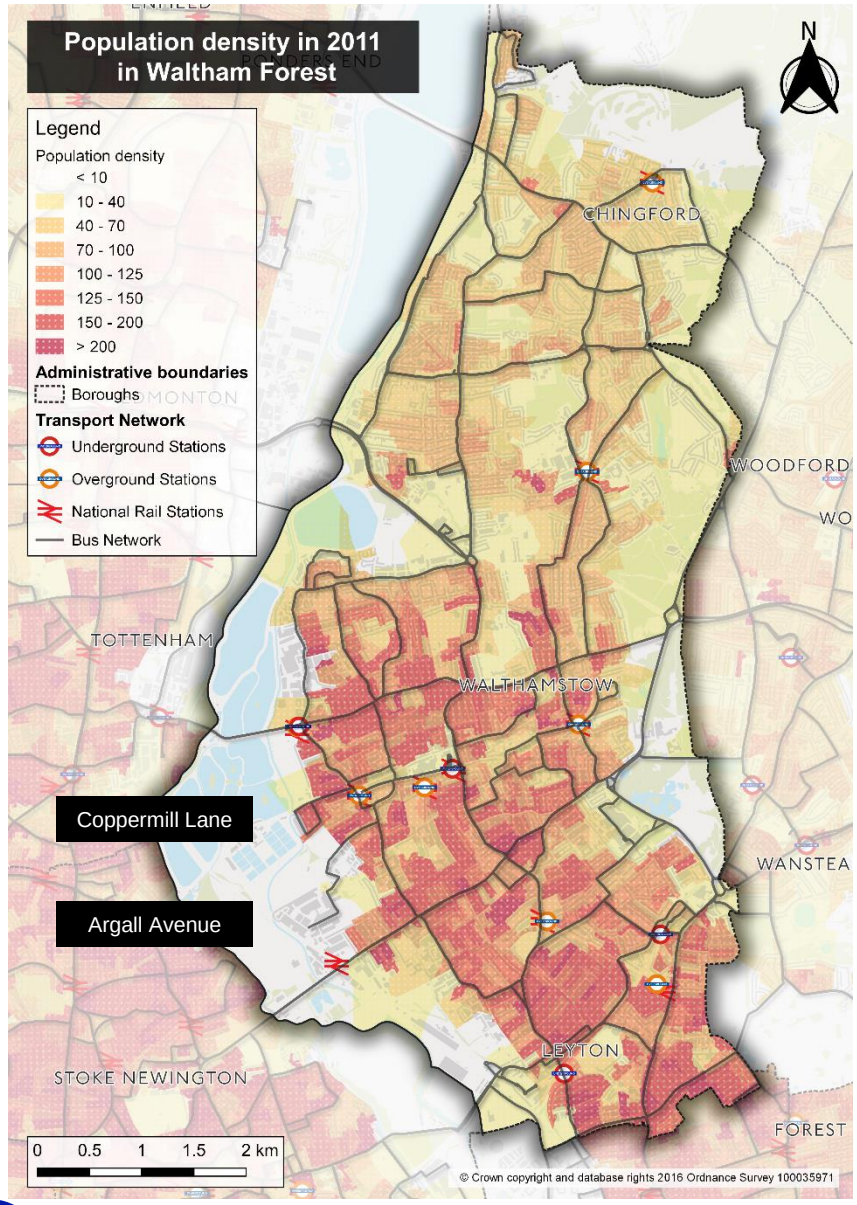
Primary Issue

W19 has seen significant growth in demand in recent years with the busiest section being between Leytonstone and Whipps Cross. Frequencies have doubled in response to this growth in demand

This has significantly benefitted the Argall Avenue area where travel demand is relatively low. Meanwhile, route W12 which serves the more residential Coppermill Lane area has seen a frequency reduction in the recent past as the most cost effective way to address reliability concerns. This has been successful to date.

The maps below show residential and job density to be higher at the Coppermill Lane end of the W12 than the Argall Avenue end of the W19 route. Providing the higher density area with the higher frequency route should generate more benefit to passengers overall and may assist cost recovery on the network. Consequently swapping the western terminus of the W12 and W19 has been investigated

Mindful that will result in a significant drop in frequency in the Argall Avenue area; consideration was also given to curtailing the W12 back to Walthamstow and extending the 20 or 215 to Argall Avenue instead.


Population density in 2011 in Waltham Forest
N
Legend
Population density
< 10
10 - 40
40 - 70
70 - 100
100 - 125
125 - 150
150 - 200
> 200
Administrative boundaries
Boroughs
Transport Network
Underground Stations
Overground Stations
National Rail Stations
Bus Network
CHINGFORD
WOODFORD
TOTTENHAM
WALTHAMSTOW
WANSTEA
LEYTON
STOKE NEWINGTON
FOREST
Coppermill Lane
Argall Avenue
0 0.5 1 1.5 2 km
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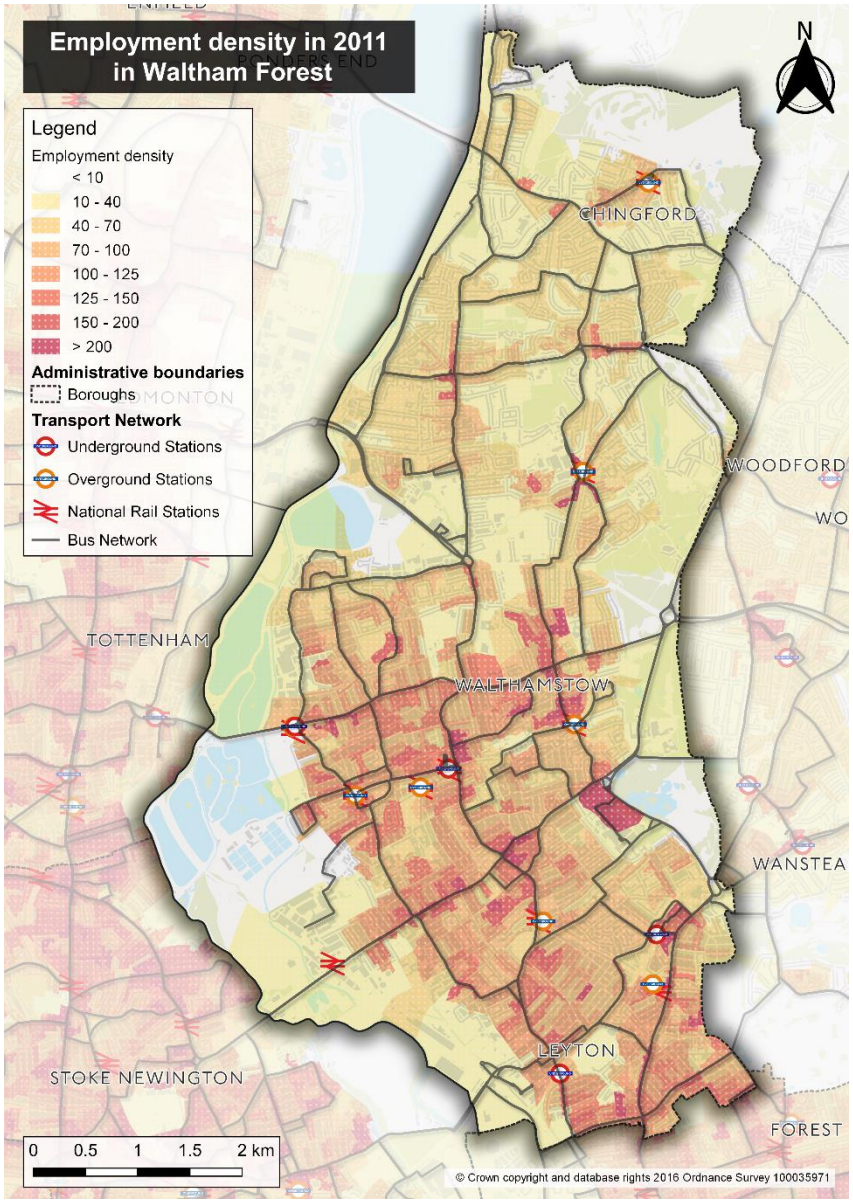
Employment density in 2011 in Waltham Forest
N
Legend
Employment density
< 10
10 - 40
40 - 70
70 - 100
100 - 125
125 - 150
150 - 200
> 200
Administrative boundaries
Boroughs
Transport Network
Underground Stations
Overground Stations
National Rail Stations
Bus Network
CHINGFORD
WOODFORD
TOTTENHAM
WALTHAMSTOW
WANSTEA
LEYTON
STOKE NEWINGTON
FOREST
0 0.5 1 1.5 2 km
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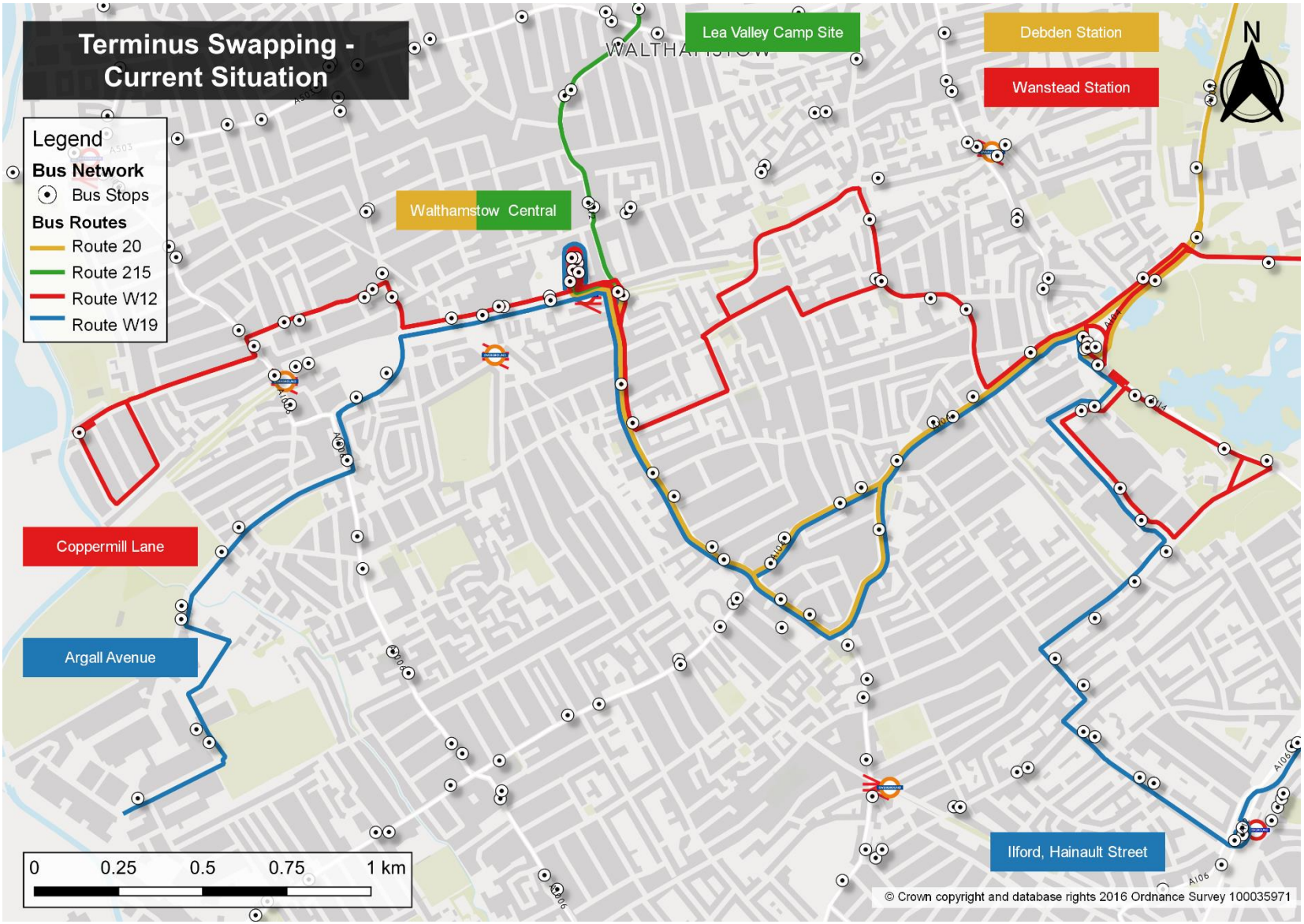
Terminus Swapping - Current Situation
Legend
Bus Network
Bus Stops
Bus Routes
Route 20
Route 215
Route W12
Route W19
Lea Valley Camp Site
Debden Station
Wanstead Station
Walthamstow Central
Coppermill Lane
Argall Avenue
Ilford, Hainault Street
N
0
0.25
0.5
0.75
1 km
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Terminus Swapping

Rationale

Provide a bus service with a higher frequency where there is a higher population and employment density i.e. Coppermill Lane compared to Argall Avenue.

Proposal

- Terminate route W19 at Coppermill Lane
- Terminate route W12 at Argall Avenue OR curtail route W12 at Walthamstow Central and terminate route 215 or route 20 at Argall Avenue instead

Evaluation

- Swapping the W19 and W12 requires no additional buses & represents the lowest cost. However it generates the least passenger benefit
- Swapping the W19 & W12 but extending the 215 also likely requires no additional buses but is nevertheless slightly more expensive. However it is estimated to generate more passenger benefit.
- Swapping the W19 and W12 but extending the 20 likely requires an additional bus but is estimated to generate the most passenger benefit.
- All three schemes have excellent benefit to net cost ratios

Summary

Strengths

Re-balancing of provision where population/employment is more dense (Route W19)

Maintains direct connections to key passenger destinations e.g. Walthamstow Central and Whipps Cross (Routes 20 or W12)

Creates new connections (All routes but especially route 215)

Double-deck buses maintain similar capacity on Argall Avenue (Routes 20 or 215)

Weaknesses

Probably insufficient space at present at Argall Avenue for double-deck buses (Routes 20 or 215) to turn around

Frequency decrease on Argall Avenue from High Frequency service to Low Frequency service

Breaks some direct passenger trips requiring interchange e.g. at Walthamstow Central

Recommendation

Consideration could be given to pursuing these scheme if there is interest. Terminating W19 at Coppermill Lane and W12 at Argall Avenue is the most feasible.

Orient Way –

Comprehensive and value for money network

Orient Way – Current situation

- No bus service on Orient Way. Long been an aspiration by LBWF to operate a bus route along it
- Part of Orient Way is more than 400m from the bus network (see map)
- 2,250 units in the process of being built in the vicinity of Orient Way (see map)
- Current network focuses frequency onto Church Road/High Rd Leyton; Lea Bridge Rd and Ruckholt Rd. Lea Bridge station now provides fast links into Stratford

Bus service extension via Orient Way

Rationale

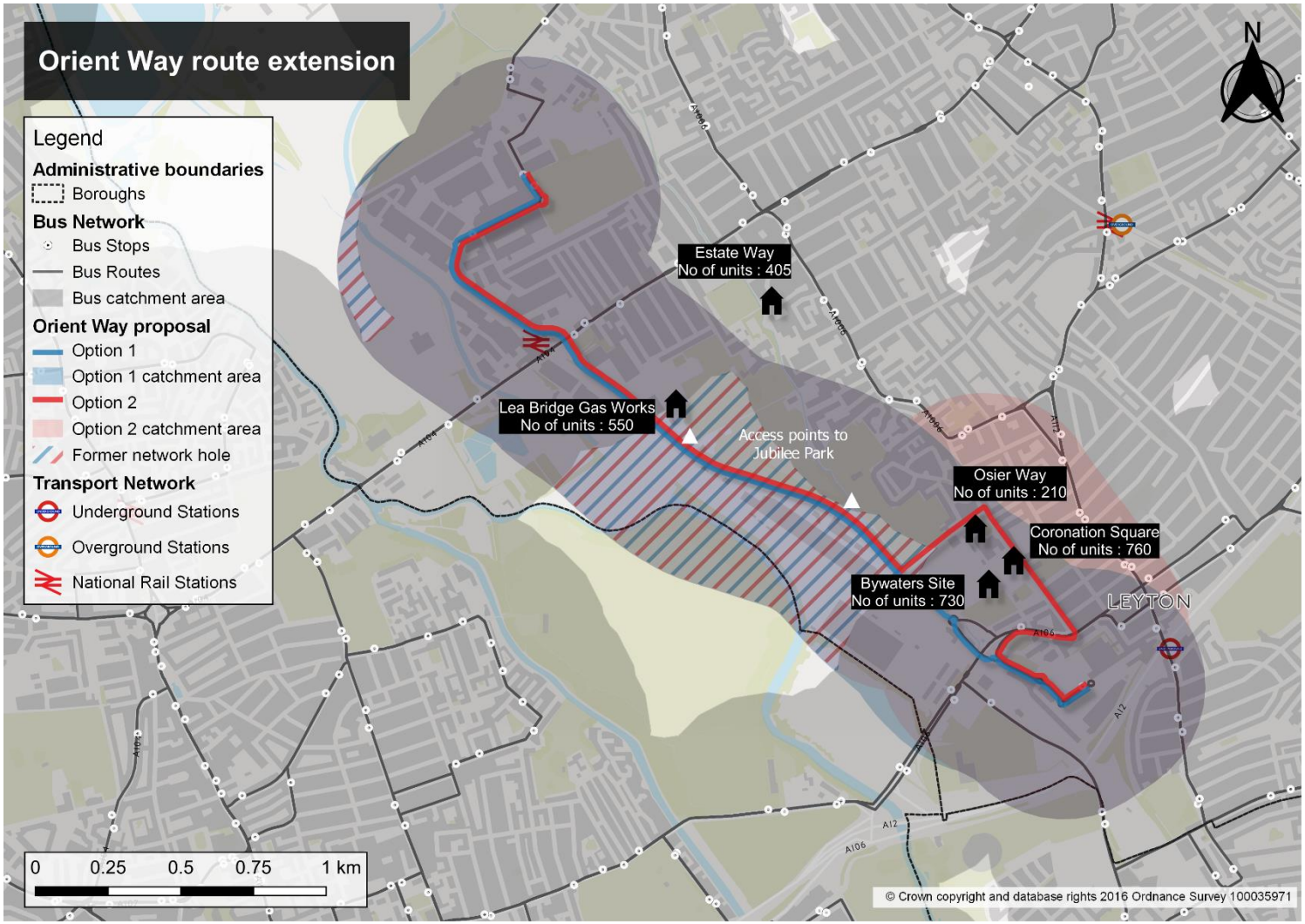
Support planned new development; close an existing network hole and provide new direct travel connections

Proposal

Eight schemes have been appraised building upon the Argall Avenue scheme above where any of routes 20, 215, W12 or W19 might reasonably terminate at Argall Avenue. The options were:

- Extend route 20, 215, W12 or W19 from Argall Avenue to Leyton Mills via Orient Way only (see map)
- Extend route 20, 215, W12 or W19 from Argall Avenue to Leyton Mills via Orient Way, Osier Way and Oliver Road (see map).
  NB: this alignment is reliant upon the approval of a planning application amending the road junction

Route extension and catchment area



Appraisal Summary

Route	Scheme	Estimated Gross Cost £pa	Estimated Revenue £pa	Estimated Passenger Benefits £pa	Estimated Net Cost £pa	Benefit to Net Cost X to 1	Estimated Mileage pa	Estimated PVR
W19	Extension to Leyton Mills via Orient Way	£571,744	£135,315	£473,604	£436,429	1.1	117,112	3
W19	Extension to Leyton Mills via Orient Way and Osier Way	£693,837	£146,305	£512,069	£547,531	0.9	141,480	4
20	Extension to Leyton Mills via Orient Way	£431,817	£108,177	£378,620	£323,639	1.2	85,246	2
20	Extension to Leyton Mills via Orient Way and Osier Way	£517,428	£116,770	£408,694	£400,658	1.0	105,086	2
215	Extension to Leyton Mills via Orient Way	£402,357	£71,150	£249,026	£331,207	0.8	71,598	2
215	Extension to Leyton Mills via Orient Way and Osier Way	£471,653	£74,650	£261,274	£397,003	0.7	88,261	2
W12	Extension to Leyton Mills via Orient Way	£206,065	£41,163	£144,071	£164,902	0.9	52,445	1
W12	Extension to Leyton Mills via Orient Way and Osier Way	£216,518	£44,884	£157,094	£171,634	0.9	64,651	1

Understanding the evaluation

- None of the schemes represent good value for money (2.0 to 1 or better). Why?
- Three of the four new developments are already within 400m of high frequency bus corridors (see map)
- The marginal increase in operating cost is significantly influenced by the frequency of the route extended. However those frequencies significantly affect waiting time
- The Orient Way schemes provide 2-6 bph (depending on option) to Walthamstow and Leyton. However, so does Church Road (15bph) / High Road Leyton (30 bph) just a little longer walk away
- The table below compares travel times from each of the new developments to Walthamstow and Leyton. Travel time consists of walk time to the stop; average waiting time for a bus and travel time on the bus to the destination. For Orient Way it assumes the highest frequency option (W19) – which is also the highest cost – and the quickest routeing via Orient Way only
- It shows that in the majority of cases the travel time using the Orient Way corridor is less attractive than the Church Road / High Road, Leyton corridor or even just walking the whole way

	Walking distance (m)		Travel to Walthamstow Central (min)			Travel to Leyton Station (min)			Travel to Leyton Mills (min)		
Site	Orient Way	Church Rd/High Rd Leyton	Via Orient Way	Via Church Rd/High Rd Leyton	Walking Only	Via Orient Way	Via Church Rd/High Rd Leyton	Walking Only	Via Orient Way	Via Church Rd/High Rd Leyton	Walking Only
9 Osier Way	220	450	24	23	41	17	15	15	13	19	14
Bywaters Site	200	550	25	23	50	16	12	14	12	16	11
Coronation Square	280	330	26	20	40	17	9	10	13	13	10
Lea Bridge Works	270	800	22	25	35	19	22	30	15	26	28

Summary

Strengths

Closes a network hole i.e locations more than 400m from the bus network

Creates new travel opportunities to places like Lea Bridge Station and Leyton Mills

Weaknesses

Relatively expensive with limited benefits

Limited attractiveness compared to Church Road/High Road Leyton corridor for new residents in new developments

Railway line prevents there being any catchment area to the west

Difficult access to the eastern side with hedges and limited access points

No pavement on the western side of the road making provision of northbound stops difficult

Recommendation

There is no business case for an extension of a bus service to Leyton Mills via Orient Way at this point. Further development coming forward including the potential to regenerate Leyton Mills may change that in the future

Hatch Lane –

Reliable and value for money network

Hatch Lane Priority Scheme

Description

- Routes 212, 357 and 657 deviate in the westbound direction to better serve local shops on Hatch Lane
- Through passengers experience delays depending on the ease by which buses re-join the main road

Rationale

- Simplify the routeing for westbound journeys of routes 212, 357 and 657
- Improve reliability through less variable run times & quicken journeys for through passengers

Proposal

- Re-route the 212, 357 and 657 to stay on the main road and avoid Hatch Lane deviation
- Install a new bus stop on New Road and provide a footpath to the shops

Hatch Lane Priority Scheme

The proposed westbound stop would be located 25 metres away from the current westbound bus stop.

Summary

Strengths

Time savings for through passengers (of which there are twice as many as there are boarders/alighters)

Represents very good value for money in bus service planning terms

Weaknesses

Additional walk distance to local shops (25 metres at most)

Requires fairly extensive highway intervention to provide a bus stop and footpath

Recommendation

Discuss with LBWF what interest there is in pursuing this scheme as part of a wider programme of bus priority in the borough

Route 385 Restructuring

– Comprehensive and value for money network

Route 385 – Data analysis summary

Route 385

Start Chingford Station **End** Crooked Billet, Sainsbury's

Freq Every 70 minutes Monday to Saturday only (6 return journeys per day)

Cost recovery 19% (2019) **Usage** Very low but +4% (2014-2019)

History

Frequency reduced from every 60 to every 70 minutes to address longer end to end run times and improve reliability (Nov 2014). Still struggles to meet its 90% on-time performance standard

Its main purpose is to close a number of network holes on the periphery of the Borough boundary and provide those residents with a link to their local supermarket and local centres. Withdrawing the route would meet standard business case criteria but that would significantly impact around 125 trips per weekday

Primary Issue

We've considered how we could get more from the existing resource while retaining its role of providing a bus service within 400m of where people live

Current routeing - sections

Waltham Way

Without the 385, much of it would be >400m from a bus stop

Not especially pedestrian friendly

Limited penetration into the houses to the east

Kings Head Hill

Some local shops but not a major attractor

Station Road

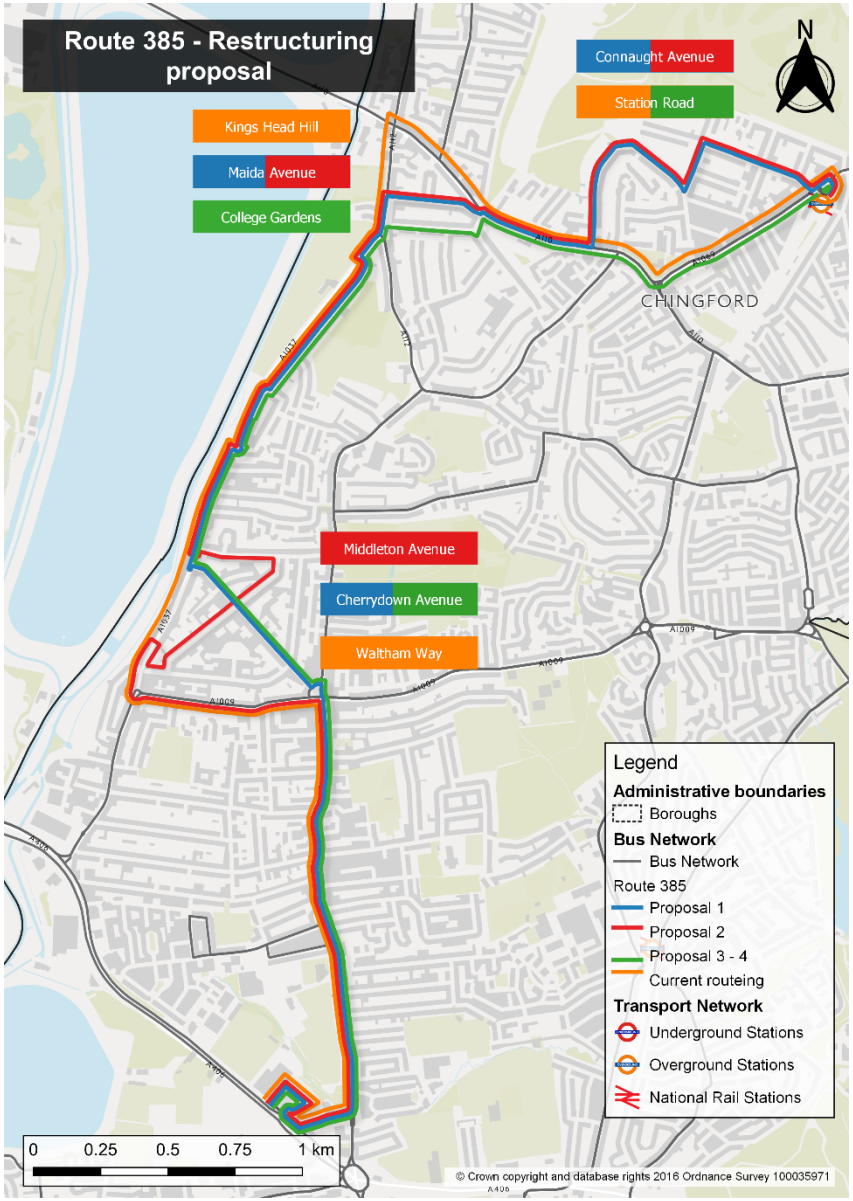
Main road with local shops

Summary

How to address declining journey times?

How to expand coverage without creating a network hole?

Continue to provide for current travel patterns



Routeing ideas - sections

Cherrydown or Middleton Avenue

Better penetration into the estate

Faster journeys (Cherrydown Avenue only)

Maida Avenue or College Gardens

Faster journeys into Chingford at cost of access to a parade of shops on Kings Head Hill

Connaught Avenue

Closes another network hole BUT

Slower journeys (compensated by other sections)

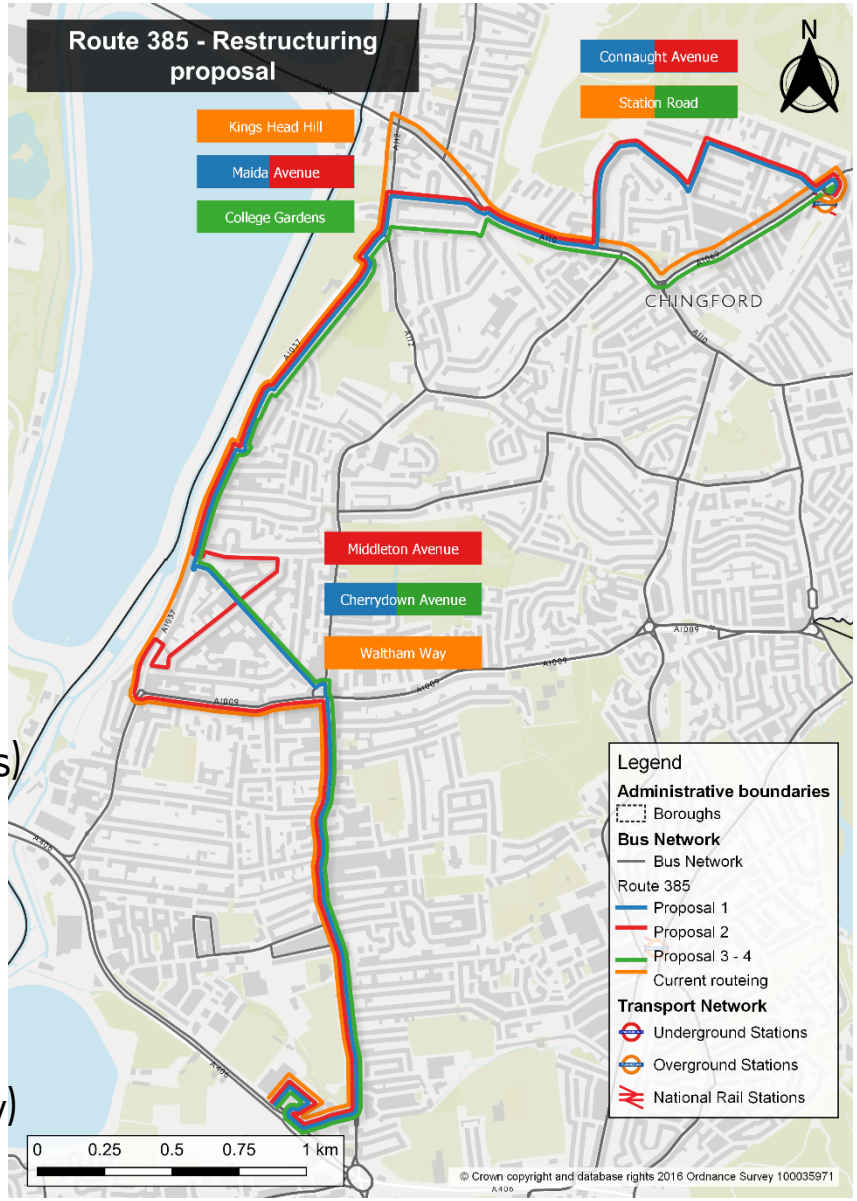
Reduces access to shops on Station Road

Summary

Speeds up some journeys

Increases network coverage (see diagrams below)

Reduces access to local shops



Cost Benefits Analysis

Route	Scheme	Estimated Gross Cost £pa	Estimated Revenue £pa	Estimated Passenger Benefits £pa	Estimated Net Cost £pa	Benefit to Net Cost X to 1	Estimated Mileage pa	Estimated PVR
385	Cherrydown Ave, Maida Ave and Connaught Ave	(£645)	(£189)	£351	(£456)	All-Gain	(819)	0
385	Middleton Ave, Maida Ave and Connaught Ave	£1,361	£132	£2,889	£1,229	2.4	1,730	0
385	Cherrydown Ave, Maida Ave	(£1,404)	£839	£1,896	(£2,243)	All-Gain	(1,784)	0
385	Cherrydown Ave, Maida Ave - 1 bph frequency	£586	£2,711	£6,148	(£2,126)	All-Gain	744	0

Walking analysis from Waltham Way, Old Church Road and Cherrydown/Middleton Avenue (Dark blue = 5min walking, blue = 10min walking)

Summary

Strengths

Improves connectivity to local residential areas without creating network holes

Faster journeys (options 1, 3 and 4)

Each component has a value for money business case

Weaknesses

Risk of increased runtime with some schemes (options 2 and 4) leading to widening

Possible implementation risks around serving new roads and LBWF aspirations for Cherrydown Avenue near Chingford Mount shops

Reduced access to some shops

Recommendations

All of these schemes are marginal and any or all or none of them could be taken forward. Liaison with LBWF has indicated no strong views on changing the route. However, the opportunity to investigate progressing further remains available.

Next steps


kney Town Hall
W15
DML 44171
EL
Peterborough Road
20 56
257 357 W15
W16 W19 N55

Conclusions and way forward

Working with LB Waltham Forest, we have undertaken a comprehensive review of bus data within the Borough. Taking some of the issues the data highlighted together with feedback from the Borough on their priorities, we identified and appraised 5 schemes within the context of the MTS and TfL's bus strategy.

Restructuring route W15 is not proposed at the present time but could be considered in future

Despite being a long term aspiration, our appraisal explains why a bus service extension via Orient Way represents poor value for money at the present time

However a scheme which swaps the western termini of routes W12 and W19 has a good business case. As do a bus priority scheme involving service planning in Hatch Lane and ideas for getting more from the resource currently dedicated to route 385. Nevertheless these schemes are still relatively marginal. Should the Borough or other stakeholders express an interest in progressing with these ideas, we would be happy to investigate further.

Waltham Forest will continue to change (e.g. the development plans at Whipps Cross hospital site) and so we will continue to keep the Borough's bus network under review.