Beyond the Elephant

Extending the Bakerloo

Jonathan Roberts, JRC

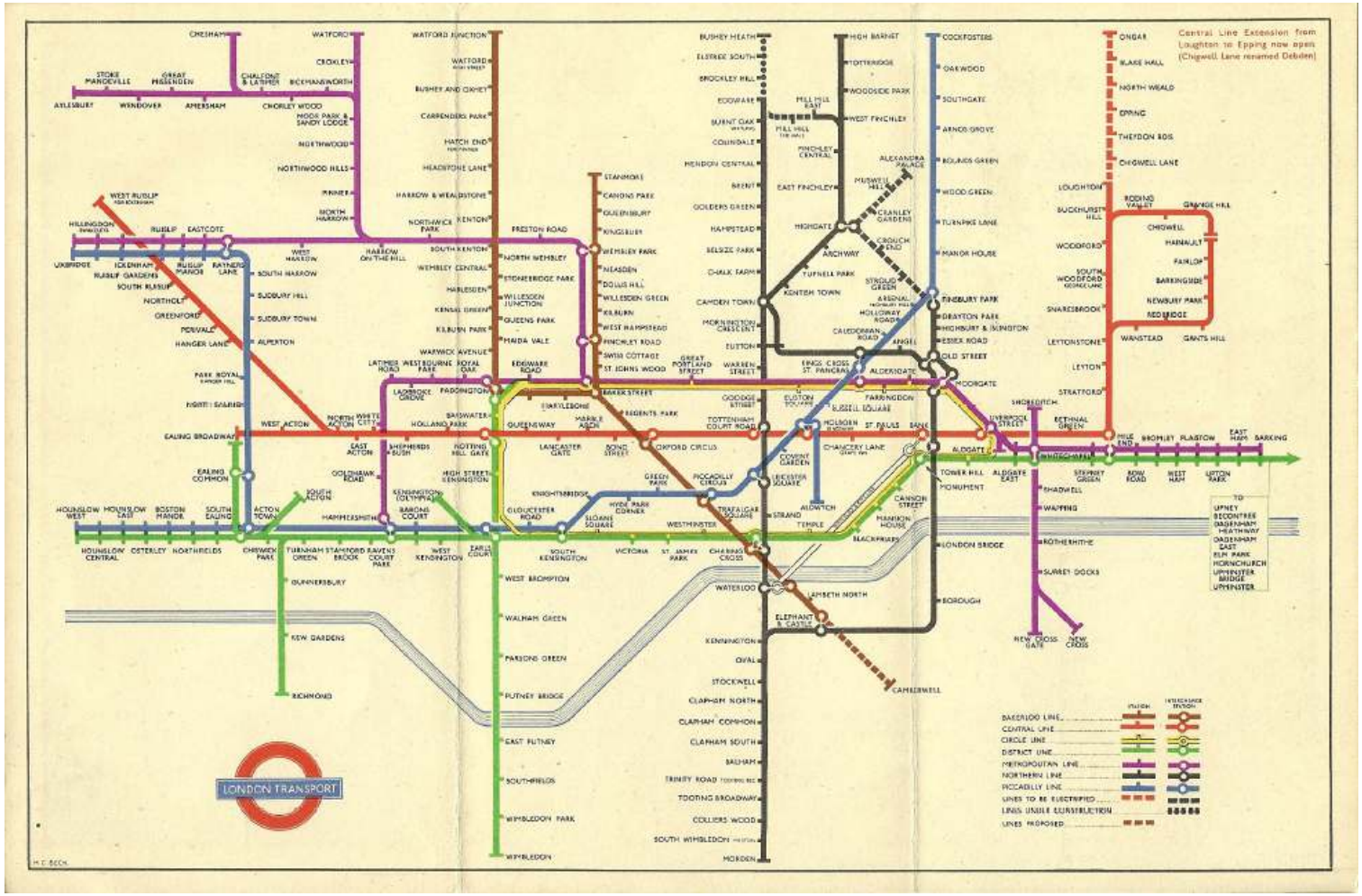
At Lewisham Council

Sustainable Development Select Committee

15 March 2012


Beyond the Elephant

June 1949 tube map



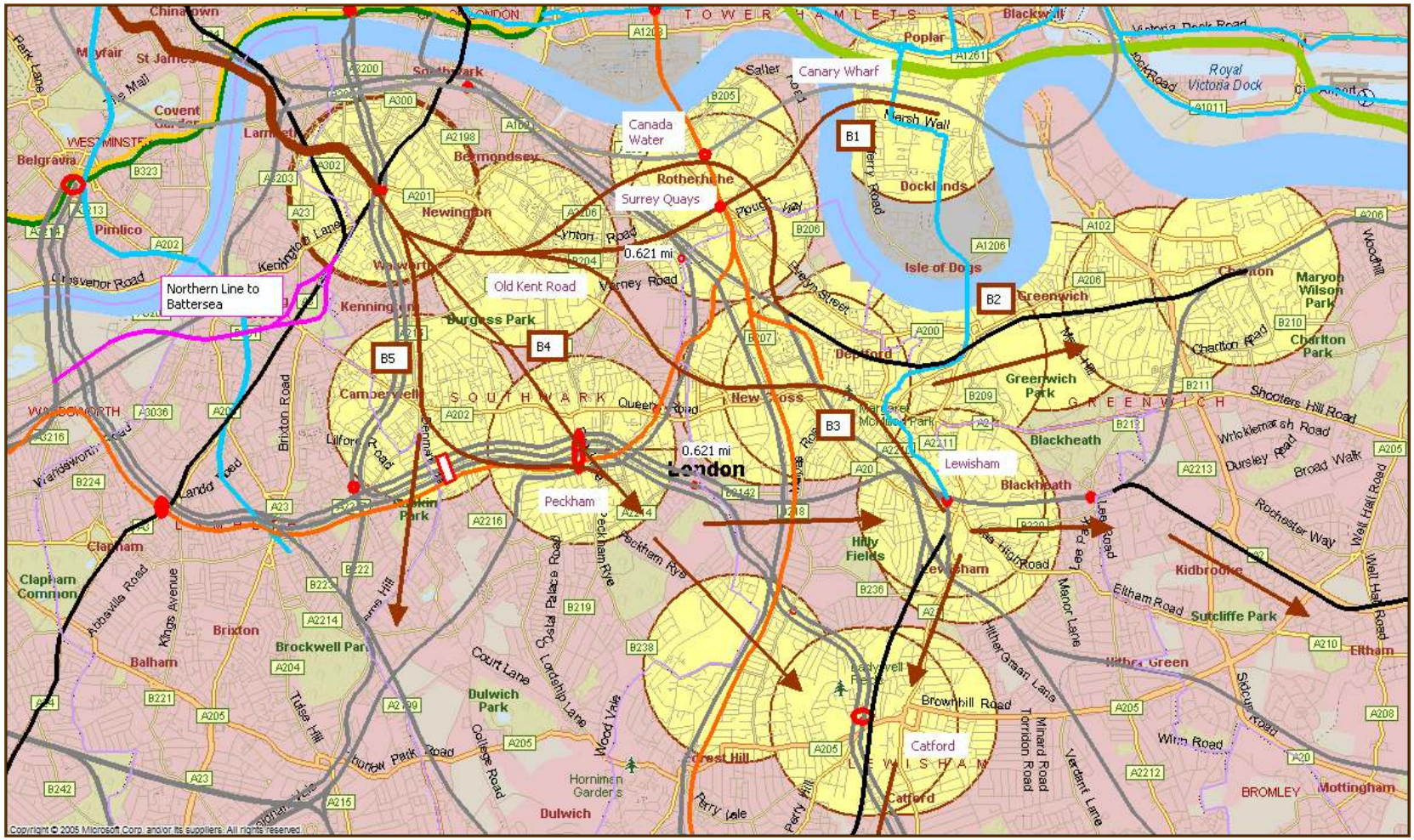
Topics in JRC report Sept 2010

- What tube options are ***not*** possible
- Rationale for recent schemes
- Potential purposes of extensions
- Possible routes and specifications
- A feel for costs and other factors
- Timescales and project priorities

Further topics today

- Update on official thinking
- Spending pressures and priorities
- Demand indicators
- Project risks and other ‘lions in the path’
- A wider South and SE London approach
- Stakeholders and politics

Inner London main catchments



Bakerloo capital costs

Cost break-down to re-use on Bakerloo

Basic costs to consider include:

- Number of additional trains
- Type of station construction
- Complexity of interchanges
- Tunnelling costs in SE London
- Costs of converting any surface railways.

Facilities such as control centre extension, escape shafts, environmental mitigation, and depot /siding expansion are within proportional extra costs.

Cost schedule adopted for Bakerloo extensions:

Stations: new in tube **£100m**, adaptation from main line **£30m**,
extra interchange: **£50m**

Tunnels: £180m per twin-track mile

Adaptation of main line: £40m /mile

Trains: 7-car: rounded **£10m** /train

Other charges: £130m per twin-track mile for tunnel section, **£30m** per mile for surface section.

Main purpose of costs is to show relative size of funding for options.

Lessons from history

Five main criteria to be met

- Business case
- Merits and priority against other projects
- Government and stakeholder backing
- Funding / financing
- Affordability

What case for an extension?

- Lack of line doesn't justify automatically!
- In Mayor's revised Transport Strategy
- Recent ideas within official rail planning
- Not limited to SE London
- Needs to show wide benefits
- **Unlikely as tube project in isolation**
  - more likely as part of wider strategy

Recent examples

Projects driven by over-riding capacity and access priorities

- 1970s split Bakerloo NW into two lines
- 1990s Jubilee extension to Docklands and Stratford
- 2000s East London Line
- 2010s Crossrail, Thameslink

Mayor's transport strategy

MTS May 2010

- **TfL Business Plan > ~~2017/18~~ now 31 March 2015**
- **Unfunded projection > 2031**

- Support economic development and population growth
- Enhance the quality of life for all Londoners
- Improve the safety and security of all Londoners
- Improve transport opportunities for all Londoners
- Reduce transport's contribution to climate change and improve its resilience
- Support delivery of the London 2012 Olympic and Paralympic Games and its legacy

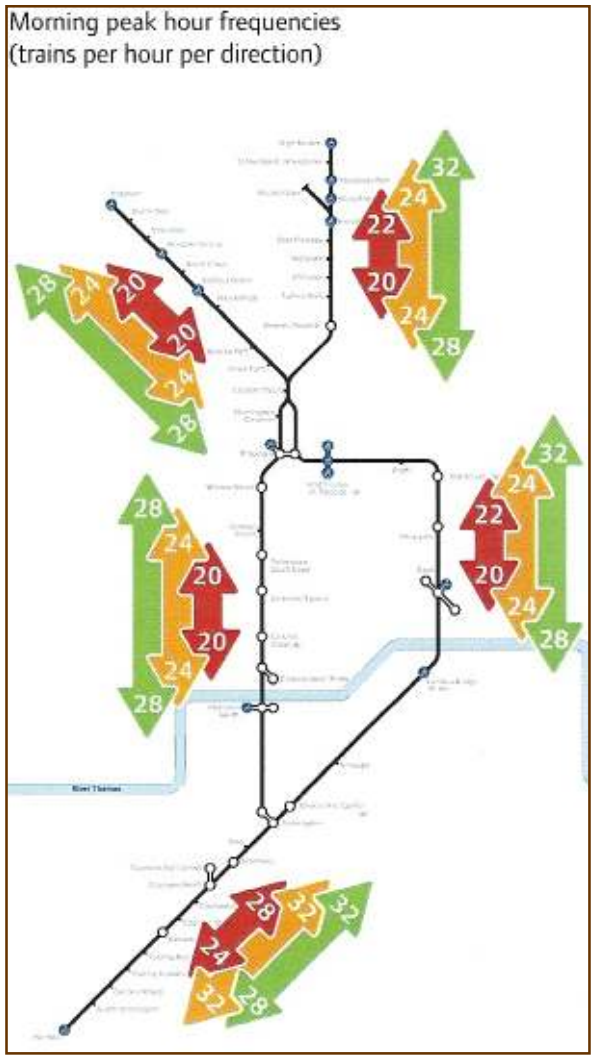
MTS and Bakerloo SE

Various aspiring statements

- By 2020, Bakerloo Line tube upgrade will be complete
- Lighter, more energy efficient, higher capacity Bakerloo trains – and more of them
- Important NW-SE strategic role for Bakerloo
- Serve regeneration zones: Harlesden, Paddington, Elephant & Castle, inner SE London
- Improve transport accessibility
- Free up National Rail capacity at London Bridge
- **Project to be reviewed further: no funding or timescale**

Tube upgrade example

- Northern Line example here:
- Bakerloo is last in the queue
- Now late 2010s **or later** (affordability, project basis)
- Issues will arise, eg depot, station and termini capacity
- **Desirable to design upgrade to allow for any extensions NW and SE**

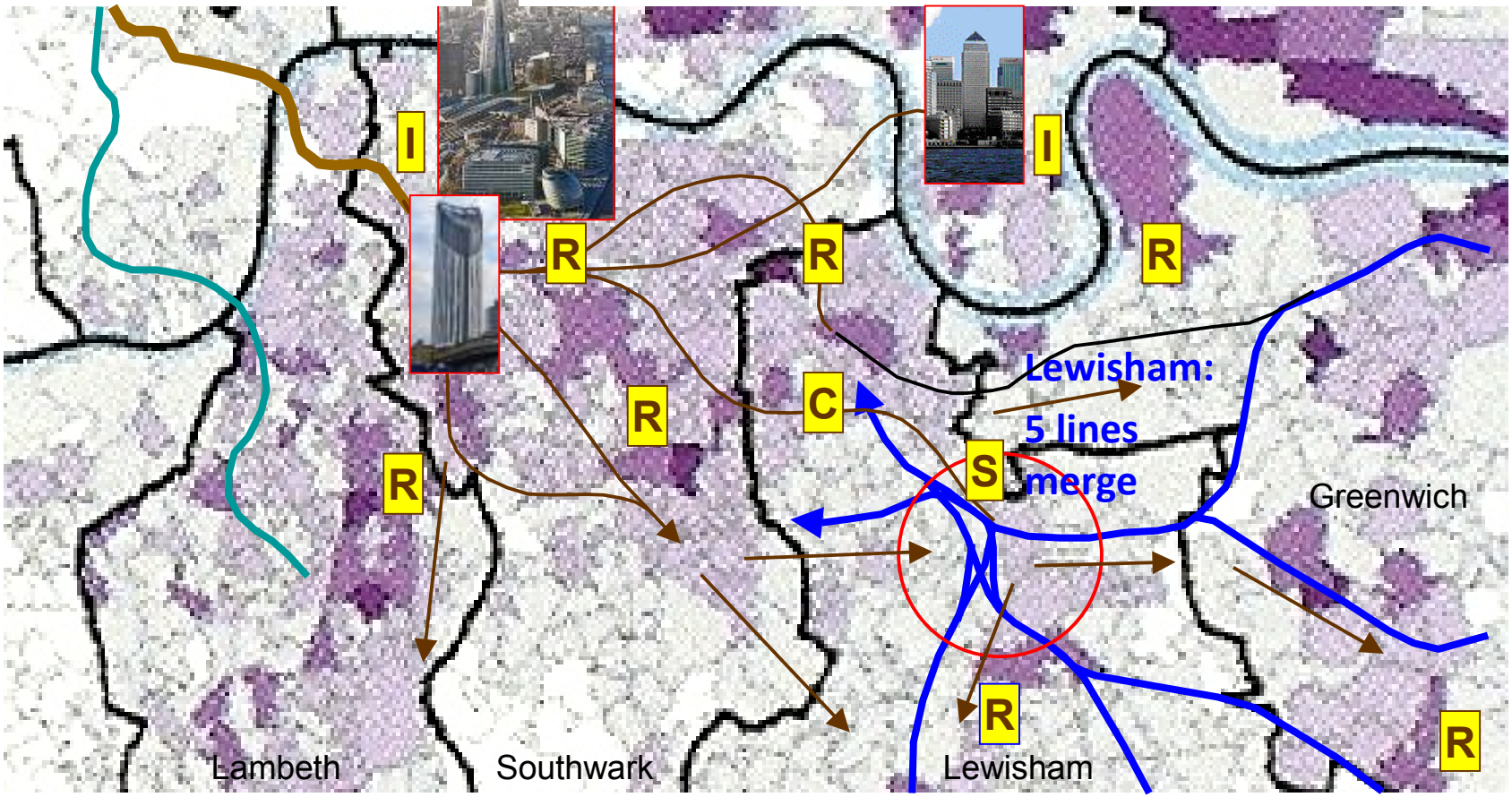


Reasons now and future?

Six main elements

- Regeneration & skills & access
- Investment and economic growth zones
- Capacity vs. demand on rail & transit
- Housing & population growth
- Environment / petrol prices / low carbon
- Slots released on main line tracks

Inner SE London needs



R: Regeneration I: Investment and growth C: Capacity H: Housing (borough-wide)
E: Environment, carbon (borough-wide) S: Slots for main line

To Lewisham or Catford

Headline case								
Extension includes Lewisham centre and i'change, or Catford centre and i'change								
Expands SE catchment with overall costs similar to B3								
Reasons								
Regeneration	Additional areas: Lewisham catchment or Catford catchment							
Investment	Lewisham gateway schemes or Catford town centre renewal							
Capacity	Inner SE London: South Eastern network and ELLX relief							
Housing	Southwark and Lewisham priorities							
Environment	Sustainable growth							
Slots	No slots released directly on main line							
Specification	**B4 + Lewisham**		**B4 + Catford**		**B5 + Lewisham**		**B5 + Catford**	
B3 Tot 1,940	**Grand Tot**	2,065	**Grand Tot**	2,096	**Grand Tot**	2,315	**Grand Tot**	2,346
Tube line	+2.5 miles	775	+2.6 miles	806	+2.5 miles	775	+2.6 miles	806
Stations	**2** or 3, 2 i'c	300	2 stn, 2 i'c	300	**2** or 3, 2 i'c	300	2 stn, 2 i'c	300
Trains	+4 to Lew	40	+4 to Cat	40	+4 to Lew	40	+4 to Cat	40
Capacity risks	Medium		Medium		Medium		Medium	
	Tube extensions: Lewisham via Brockley, Catford via Honor Oak Pk							

Outer route options

Basis for assessment

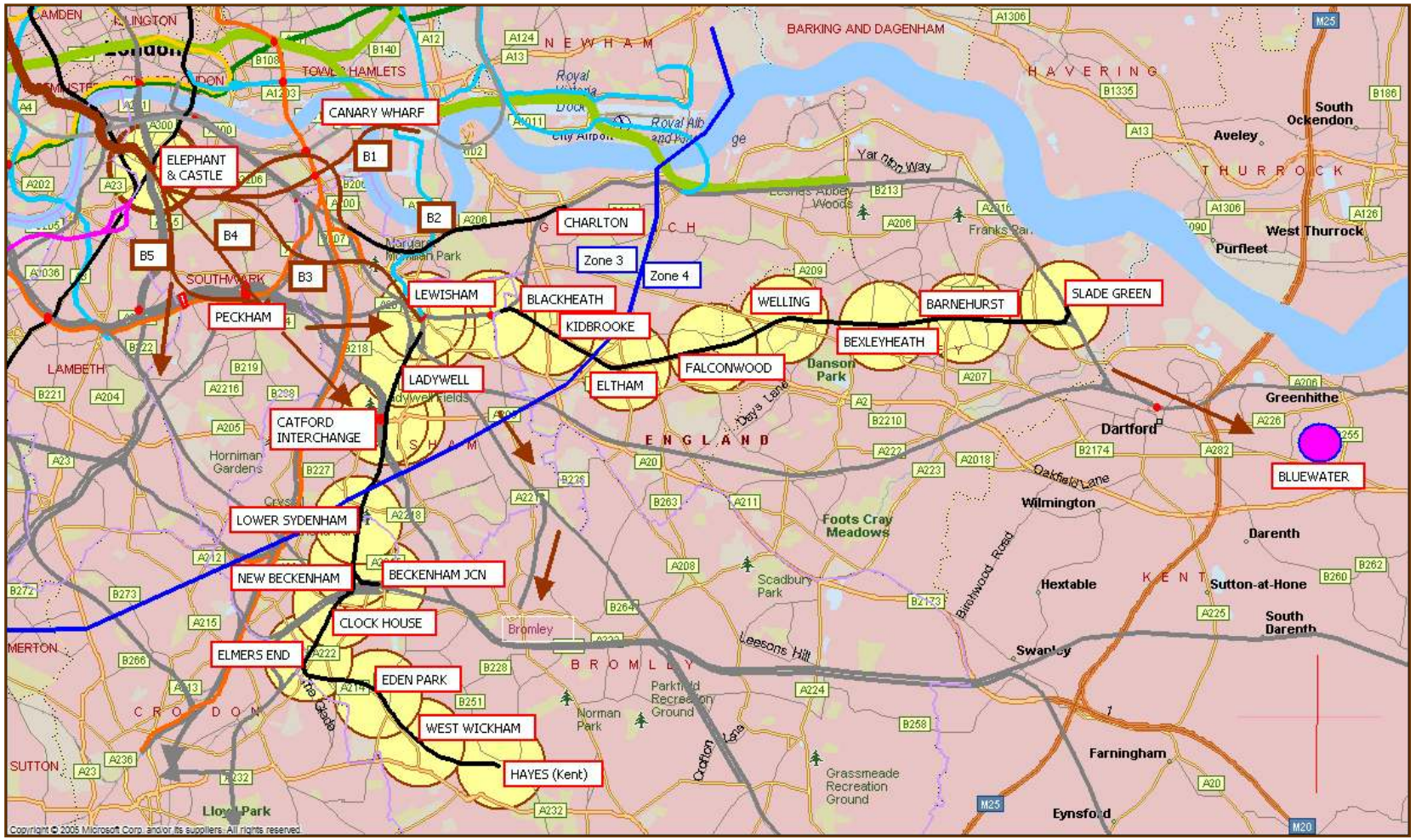
- Most suburbs built-up, so gains are:
  - new main line train slots + reliability
  - lower carbon use (e.g. less car travel)
  - new links to key growth areas (homes, jobs)
- Only a top destination justifies more tunnelling
- Aim for surface line conversion or vacant route
- Joint tube/main line unlikely with disability rules

Outer route options

Optioneering

- Bexleyheath:
  ? depot sharing at Slade Green
  ? long term potential to Bluewater on surface line
- Bromley North:
  major SE town centre
  but no main line slot release, slow times to London
  (? Better as light rail, referenced in LSE RUS and SELRAS)
- Catford and Hayes:
  already separate from other lines after Lewisham
- **So main options Bexleyheath, Hayes**

Outer route options



Outer London capital costs

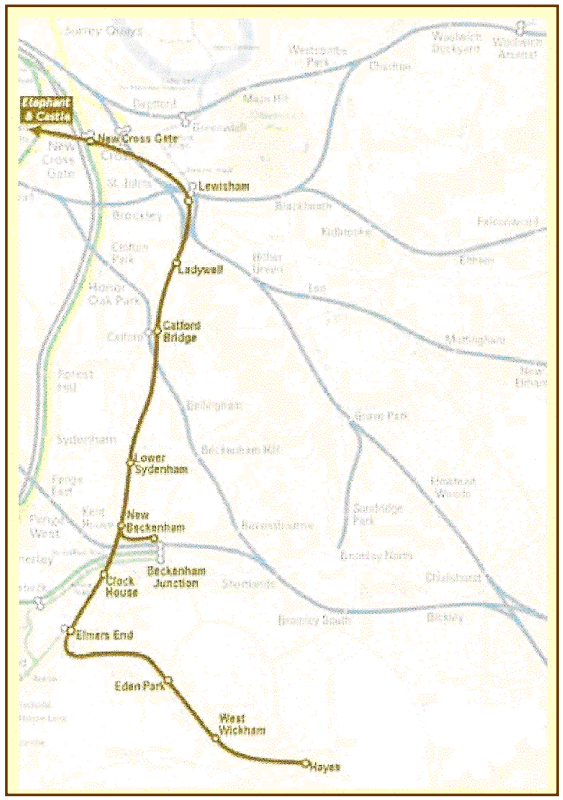
Headline case							
Substitution of main line branch creates new train slots via Lewisham / New Cross							
Local usage gain despite fewer London destinations, scope for new outer rail flows							
Reasons							
Regeneration	New workforce catchments; Bexleyheath helps Thames Gateway						
Investment	Promotes more of SE London on tube map						
Capacity	Allows service expansion on other SE London and Kent lines						
Housing	Outer London Borough priorities						
Environment	Sustainable growth						
Slots	8 released from Bexleyheath line (Vic. not counted), 6 from Hayes						
Specification	**B3 + Bexleyh'th**		**B4 + Bexleyh'th**		**B5 + Bexleyh'th**		**B3 + Hayes/BJc**
	Grand Tot	**3,231**	**Grand Tot**	**3,356**	**Grand Tot**	**3,606**	**Grand Tot** **3,232**
	Outer Total					**1,291**	**1,292**
Tube/Surface	½ mile tube/ramp, 8.8 miles surface					771	+½**T**+8¼**S** 732
Stations	8 surface stations (Blackheath 4 track), 2 i'change					340	10 stn, 2 i'c 400
Trains	up to 18 more trains, incl. Ctl.Lon extras					180	+16 > Bex 160
Capacity risks	High risk in Central London, more capacity needed						High in Ctl.Lon

Bakerloo SE – official analysis

What London & South East RUS says

8.6 Gap N – Bakerloo Line Southern Extension

8.6.1 The established Kent RUS identified that a potential scheme to convert the Hayes branch for use by London Underground services could alleviate main line and suburban routes via London Bridge, with services on this line rerouted via a southern extension to the London Underground Bakerloo Line. Such a line would also provide additional capacity in inner South London, greatly improving travel opportunities for areas such as Denmark Hill and Camberwell. There may also be capacity relief to the Elephant & Castle corridor to Blackfriars, depending on the specific route chosen.



Bakerloo SE – TfL position

SE London Rail Access Study (SELRAS) objectives

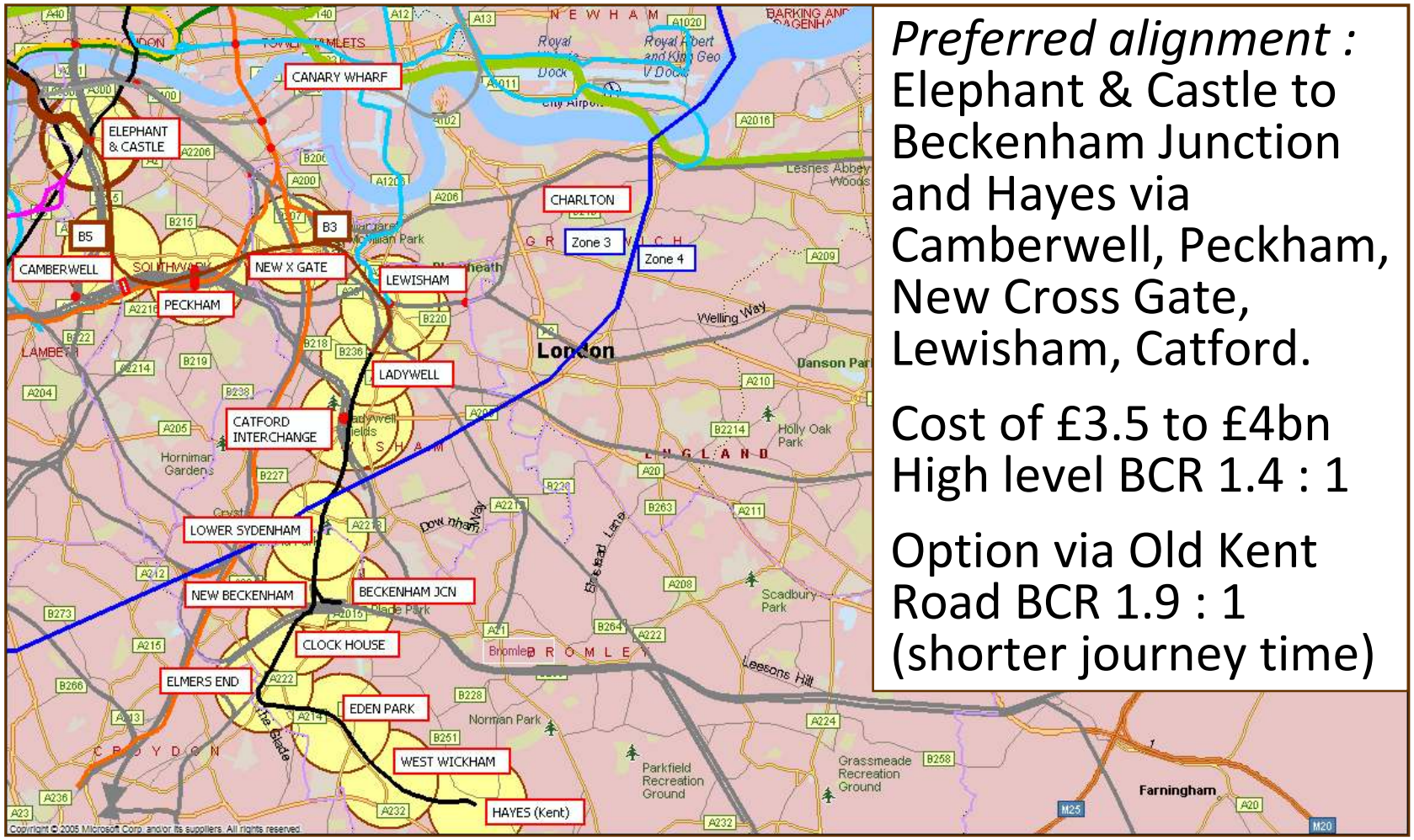
- regeneration and development in opportunity areas
- improve connectivity
- reducing crowding on National Rail and at termini
- maximise Underground efficiency
- value for money

Bakerloo gives most benefits – at high cost

Schemes tested

- DLR to Bromley North
- bus link along Hayes branch
- Bakerloo to Bromley or Hayes

TfL Bakerloo SE – 2010 view



Preferred alignment :
Elephant & Castle to Beckenham Junction and Hayes via Camberwell, Peckham, New Cross Gate, Lewisham, Catford.

Cost of £3.5 to £4bn
High level BCR 1.4 : 1

Option via Old Kent Road BCR 1.9 : 1
(shorter journey time)

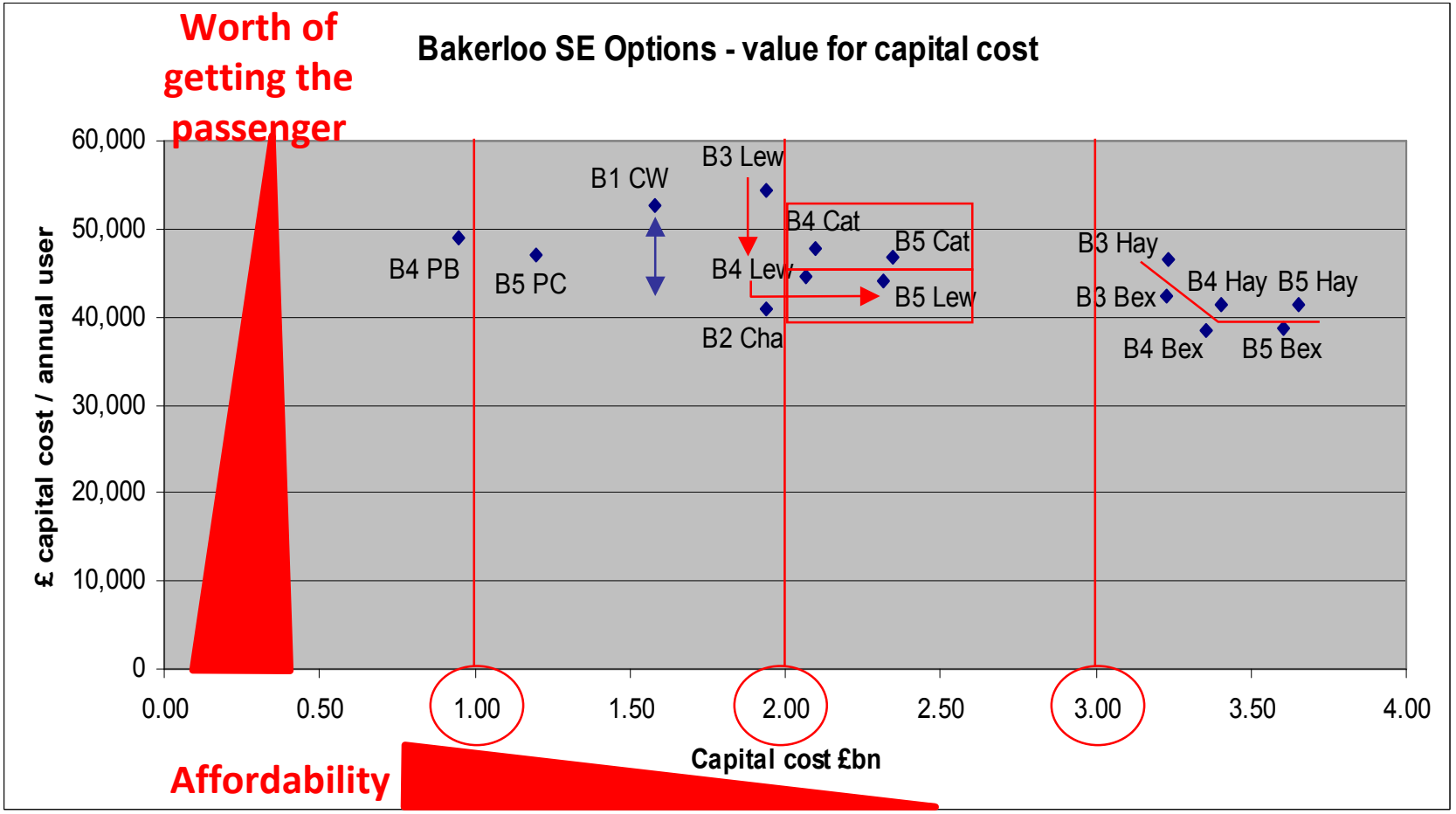
Value for money

Relative use: compare to relative capital cost

- Tube stations attract different passenger volume !
- Piccadilly North Z45 v GN Z456 = x 3.2-3.7
- Northern North (ex GN) v GN Z456 = x 2.3-2.7
- Northern South v main Southern Z3 = x 2.9
- Northern South v Thameslink loop Z3 = x 13.7
- Various U/D Z2 v nearby main line Z2 = x 15-20
- **Apply some usage factors consistently**

Rounded = x 3

Value for money



Business case - benefit:cost ratio

- Preferred TfL scheme BCR 1.4 : 1
- Better schemes already exist, eg 1.9 : 1
- DfT currently sets 2 : 1 as value passmark for new investment **+ new funding pressures**
- JRC analysis shows:
  - via Camberwell to Hayes is highest cost option
  - Hayes costlier per passenger than Bexleyheath
  - **Phasing (affordable?) may support good BCR**

Merits & priorities vs others

- Serves fewer critical areas / objectives than some other rail projects
- London's new priorities already emerging:
  - more Crossrail extensions
  - Crossrail 2 (possibly phased)
  - Orbital capacity, Lea Valley, SWT etc
- More main line capacity, eg 12-car SE London
- Accommodating the impacts of HS2
- **Bakerloo not yet justifying priority attention**

Government & stakeholders

A matter for the Mayor of London

- London needs to prioritise its own spend
- Less national benefit than Crossrail, HS2
- Is it good value to spend (net) £1.3bn on outer extension to gain 6-8 peak slots/hr?
- Lack of clarity on best value route
- A promoter (TfL) with a long shopping list

Funding and financing

- TfL doesn't know where its funding will come from, to 2021 let alone 2031
- Currently bidding for 2014-19 National Rail investment priorities
- Crossrail taking Supplementary Business Rate, who might be next for that?
- Northern Line to Battersea relying on developer gain but in funding trouble
- Few large developments in Bakerloo catchment

Spending pressures in 2020s

Affordability + some large bids

Network Rail control periods	CP5	CP6	CP7	CP8
£bn spend Years	2012-13	2014-19	2019-24	2024-29	2029-34
Govt spending review	•	•	• •	• •	• •
General elections		?	?	?	?
Mayoral elections	•	•	• •	•	•
Crossrail 1		14.5			
TfL to 2017/18	2008-15	38 →	seeks	3½-4½	annually
Crossrail 2			6- 22		within TfL?
Trams anyone?			?	?	within TfL?
HS2 Phase 1		7- 9			
HS2 Phase 2			15-25		
Tube upgrades		1-2 annually	1-2 annually		within TfL
Bakerloo SE			2-4 sometime		within TfL?

Some practical questions

- Depot location if many trains for SE?
- Is it efficient to replace 12-car SE peak train with 2 shorter Bakerloo trains (& are there fewer seats)?
- Why spend £1bn+ to turn commuter line into tube?
- Only solves 1 of 5 Lewisham Jcn. lines, and will annoy users who like direct City **&** West End trains
- If SE and Kent see even more demand in 2030s, could need further, main line scheme
- South London also needs more relief in 2030s

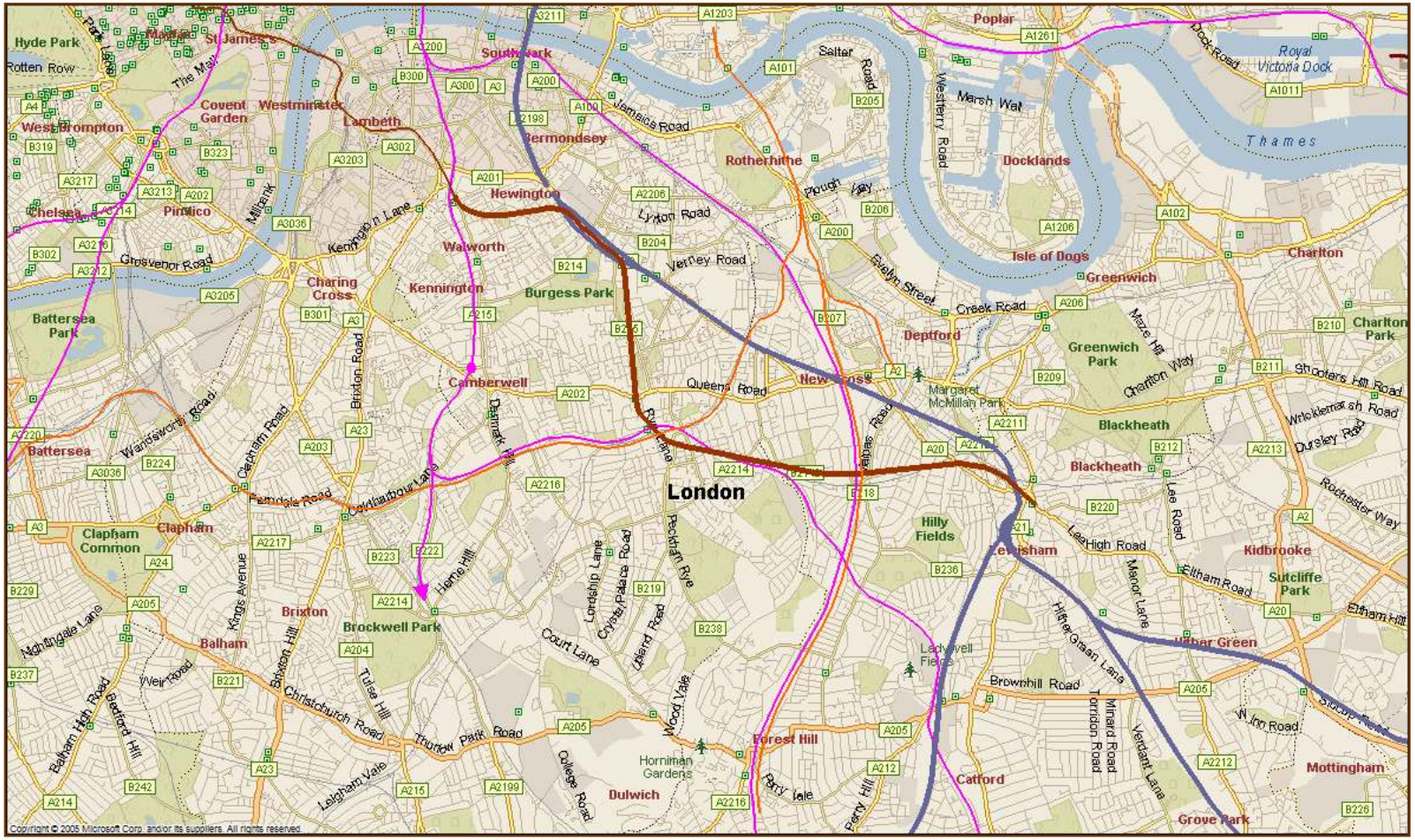
Bakerloo SE – JRC assessment

- Good to strong, but **not** overwhelming case
- Risks being high cost project without strong passenger support
- Not yet sufficient TfL priority and attention
- Moderate political and stakeholder interest
- Remains ‘nice to have’
- Probable funding gap - phasing needs care
- Risk of an ‘ideas gap’ as well as funding gap

Bakerloo SE – a new way?

- Build Bakerloo in phases in 2020s, but please design for 2040s-2050s?
- Think of main line options that might solve Lewisham Jcn issues without some of the apparent downsides for local commuters
- Is Mile End a relevant example of easy interchange for City / West End passengers?
- How might such opportunity be achieved?

After several phases?




NT & CASTLE
bound trains: Bakerloo line
ELEPHANT & CASTLE