

Planning Transit Mega Projects – Crossrail 2 and Northern Powerhouse Rail in the UK and lessons for North America

Stephen Pauling, Head of Rail Planning

Formerly Transport Planning Manager, Crossrail 2 at Transport for London

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Contents

1. Introduction - what is Crossrail 2?
2. London's key growth challenges
3. Crossrail 2 story to date
4. How does Crossrail 2 support growth
5. Northern Powerhouse Rail
6. Headline lessons for North America

What is Crossrail 2?



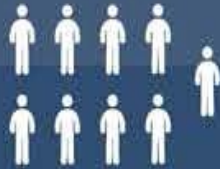
Crossrail 2 is a proposed new \$43bn railway line serving London and the wider South East of England

- Over 40 miles of new tunnel
- 51 stations (12 below ground)
- 30 trains per hour
- Capacity for 270,000 people in peak period
- Unlocks up to 200,000 new homes
- Creates 200,000 new jobs
- Open in the early 2030s
- Largest rail project ever planned for London

London's population growth challenge

London is growing by...

9 new residents
every hour



That's a car load
every 26 minutes



or

2 Buses
every day



or

2 Tube trains
every week



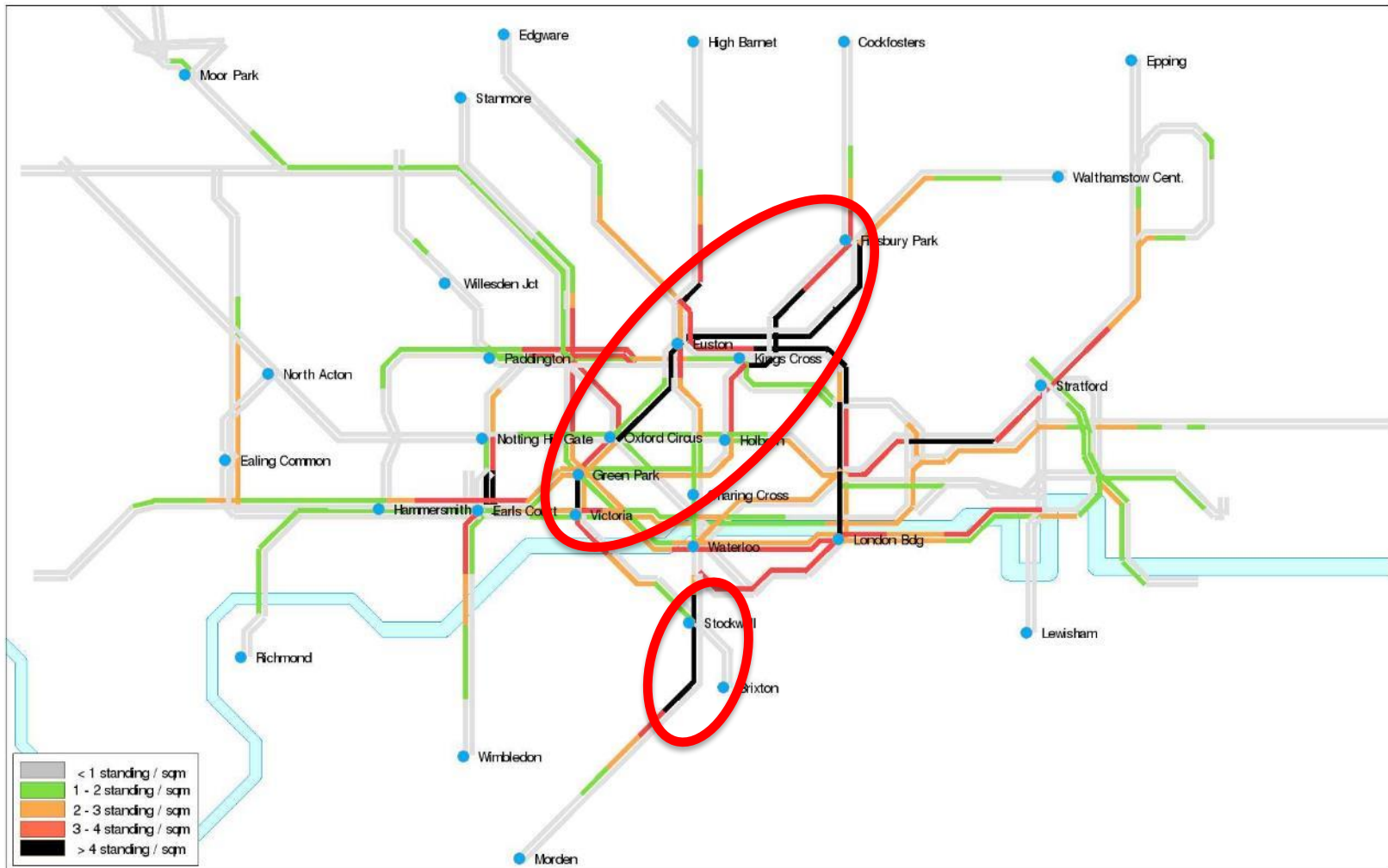
Today the population is

8,600,000

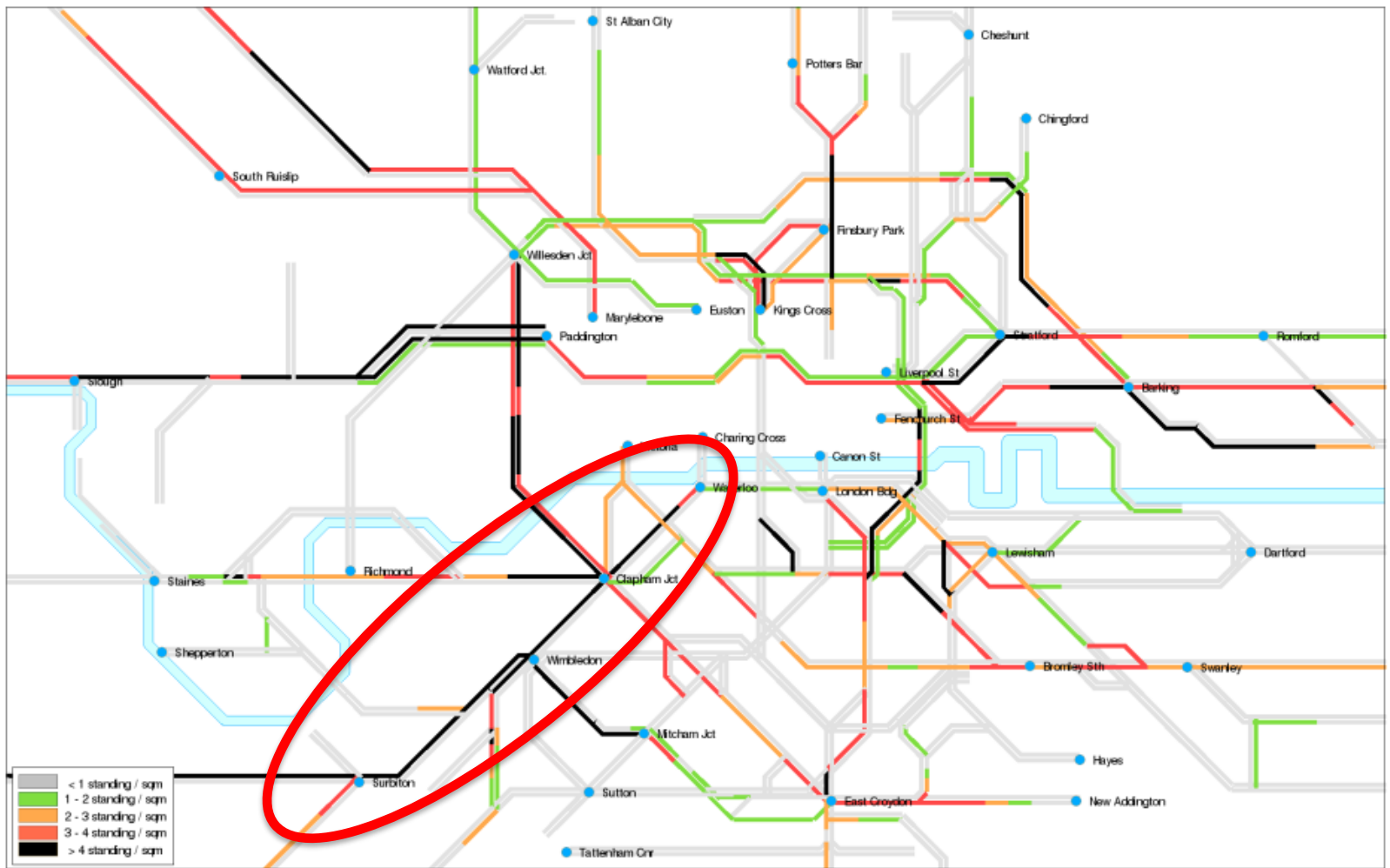
and by 2030, it will be

c. 10,000,000

Transport capacity challenge – 1 (Tube/Subway)

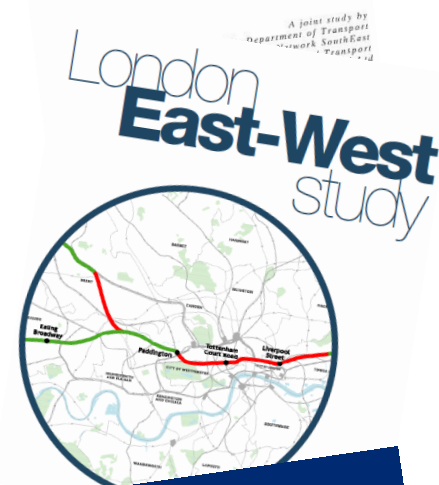
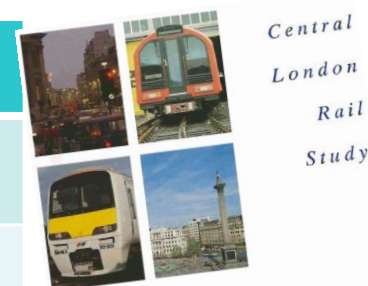


Transport capacity challenge – 2 (NR/Commuter Rail)



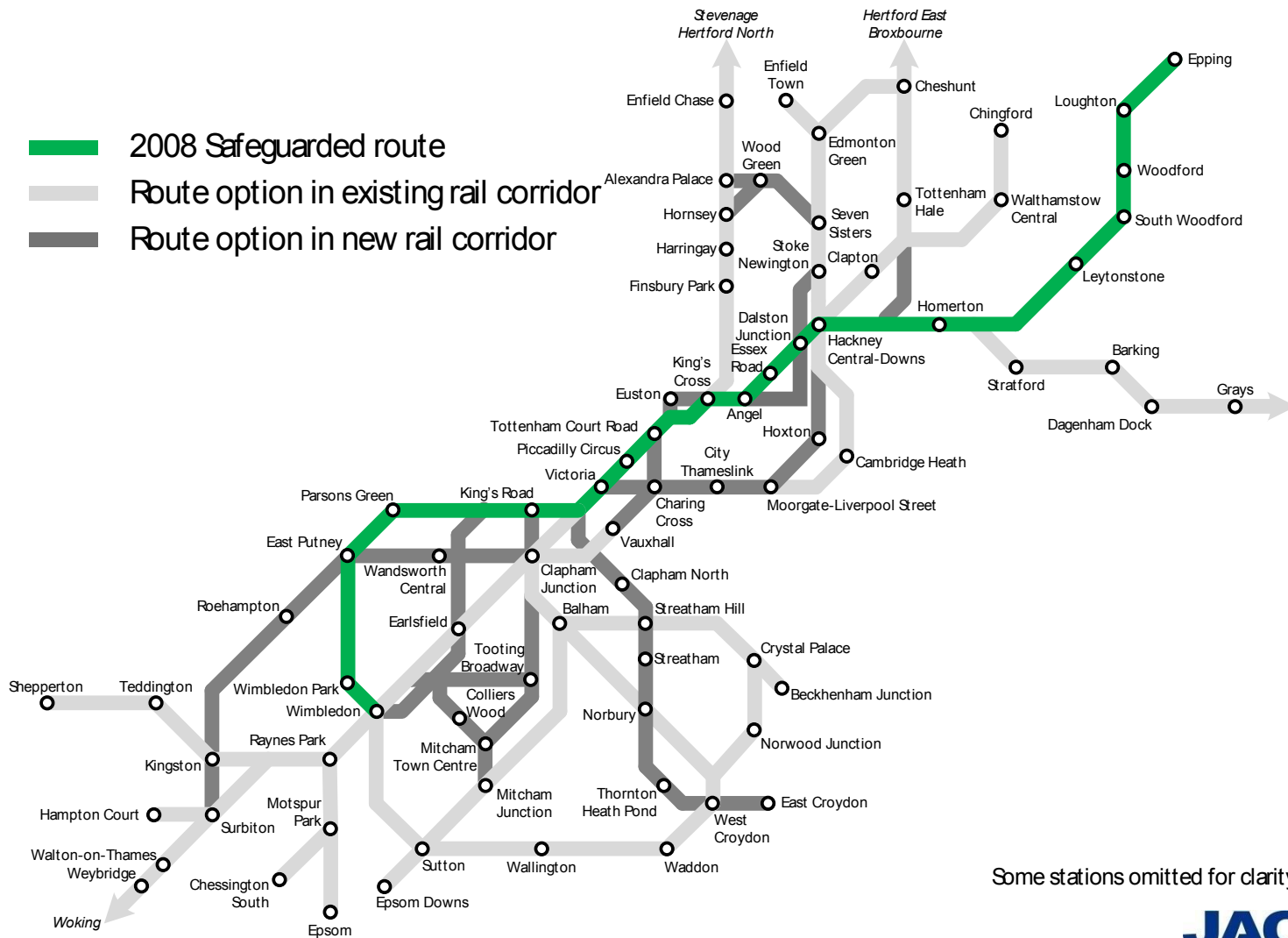
Crossrail 2 – a potted history

Year	Output	Outcome
1944	GLP	Concept of a cross London tunnelled rail service introduced.
1974	London Rail Study	Chelsea-Hackney Underground line identified as possible scheme to serve future demand
1989	Central London Rail Study	Continued support for Chelsea-Hackney line as part of wider need for additional rail capacity
1991	Safeguarding	Chelsea-Hackney line adopted and directions issued
2000	London East-West study	Recommended further study to look into feasibility of Chelsea-Hackney to be delivered post-Crossrail
2002-2008	Continued investigation	Ongoing engineering feasibility, planning and optioneering work on Chelsea-Hackney line.
2008	Crossrail Royal Assent	Crossrail Bill becomes a Parliamentary Act
2008	Safeguarding refresh	Safeguarding directions for Chelsea-Hackney line updated
2009	DfT requests Mayor & TfL review scheme	TfL to review case for scheme, identifying new options in light of emerging London transport (MTS) and land-use (London Plan) policy, and to refresh safeguarding
2010 / 2011	TfL and NR policy support	MTS supports new rail capacity in SW-NE corridor. NR emphasise in South East RUS crowding on SWML and WAML could be reduced by Crossrail 2



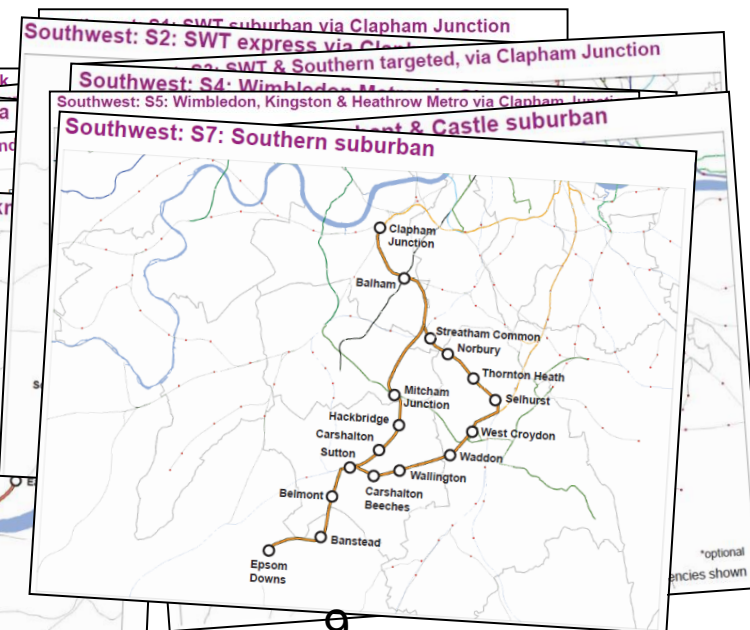
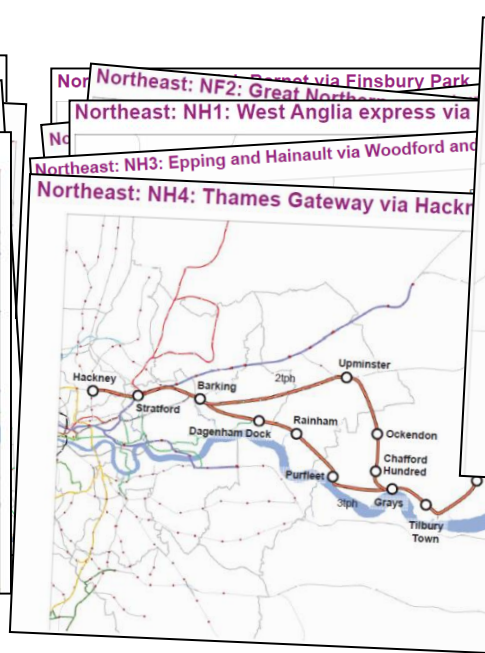
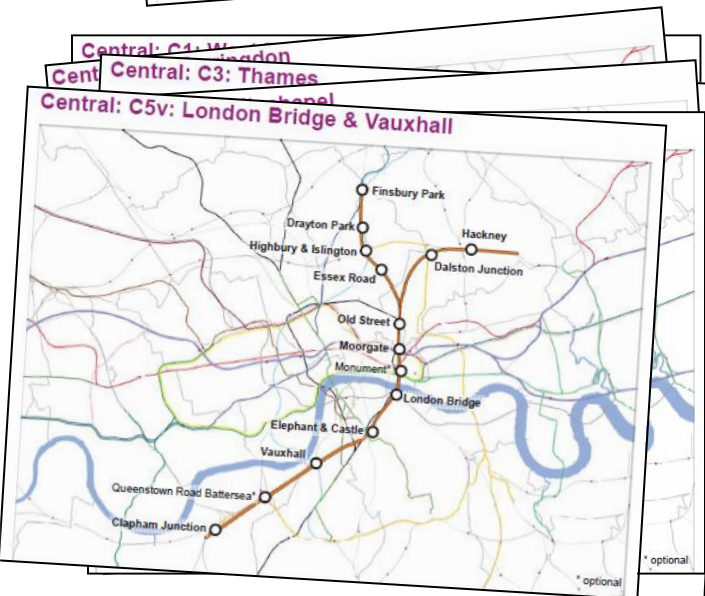
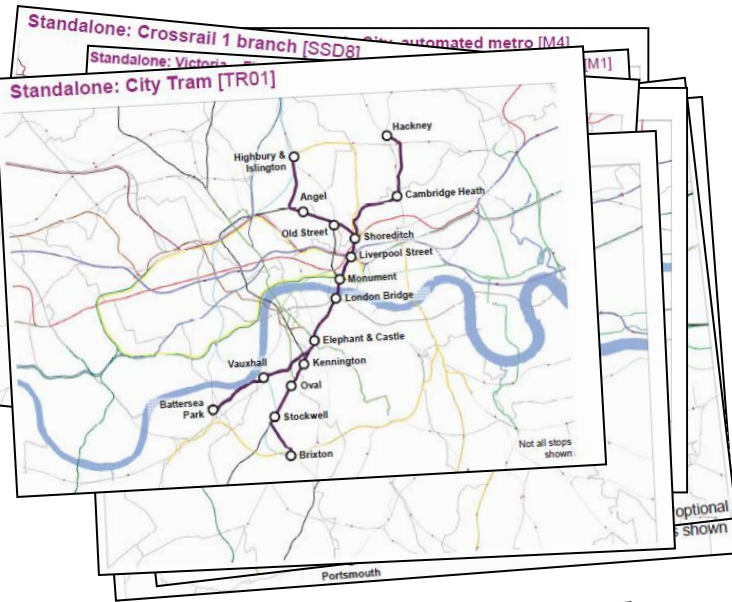
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Subject to rigorous option assessment



2010 – 2013: Assessment of many options

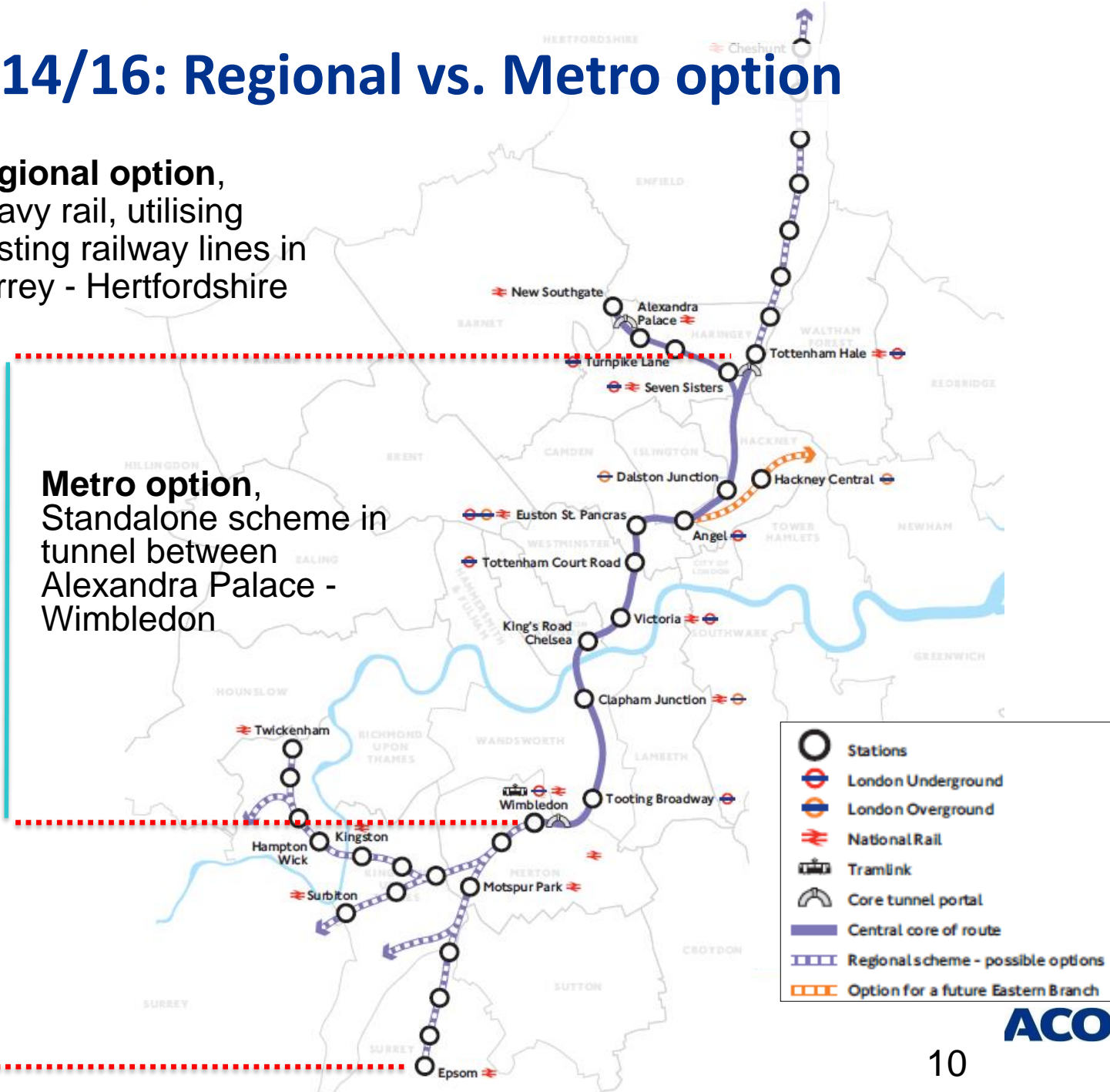
- Long-list of up to 100 options
- Standalone options and options split geographically: Northern, Central, Southern
- Various rail modes e.g. metro, DLR, heavy rail, tram
- Options assessed against relevant project objectives (aligned to London MTS)



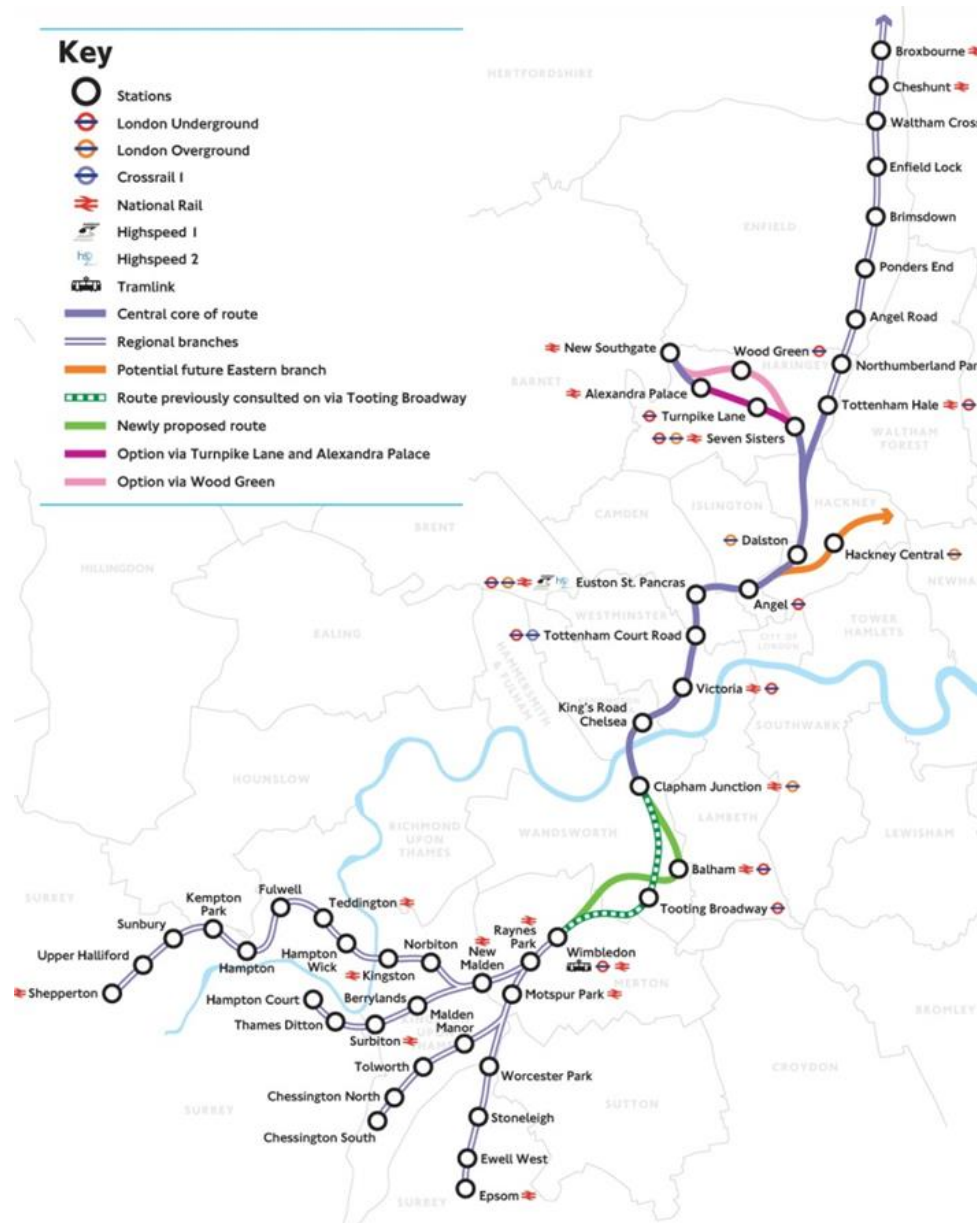
2014/16: Regional vs. Metro option

Regional option,
Heavy rail, utilising
existing railway lines in
Surrey - Hertfordshire

Metro option,
Standalone scheme in
tunnel between
Alexandra Palace -
Wimbledon



2017 scheme – Crossrail 2



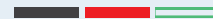
Improving existing networks is essential but new links are also needed



1981



1987



1999



2019



Transport links at Canary Wharf

 New road links

 Buses

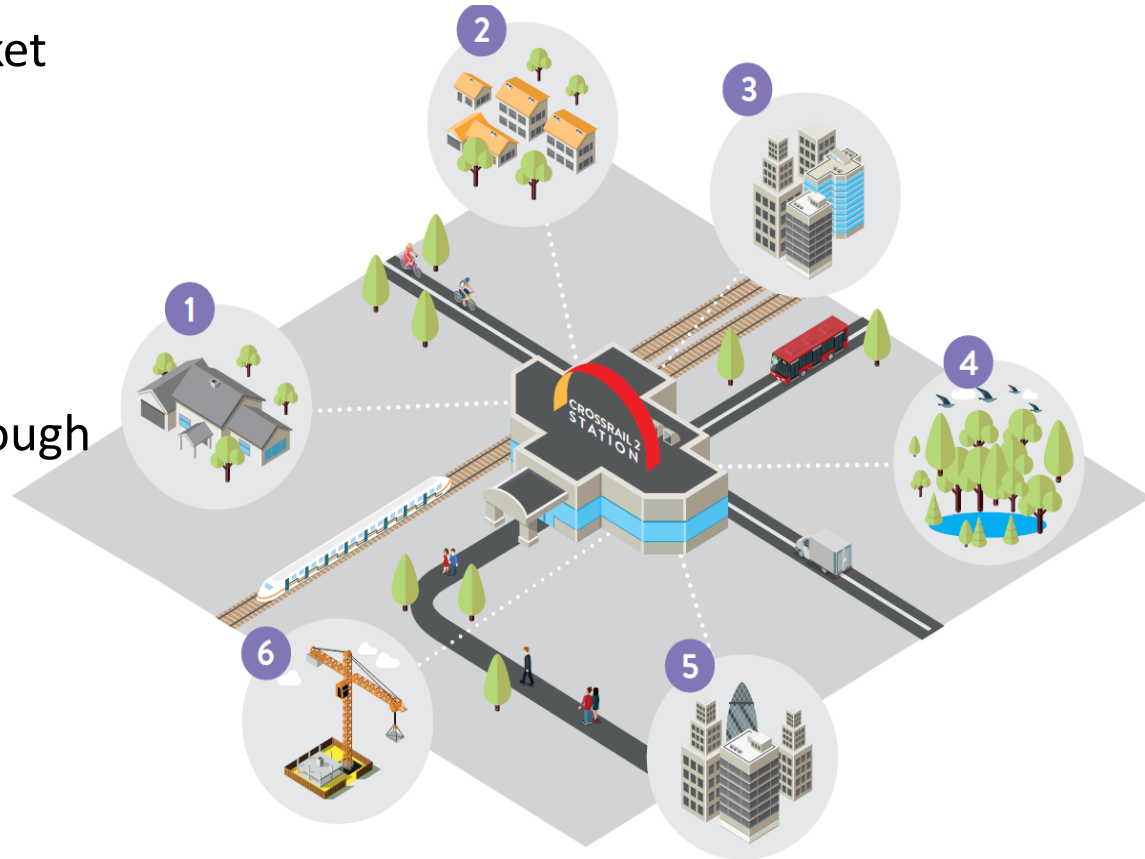
 DLR

 Jubilee

 Crossrail

How does Crossrail 2 promote growth?

1. Widening the property market
2. Making development viable
3. Building at higher densities
4. Enhancing quality of life through pro-active public sector involvement
5. Improving employment opportunities
6. Improving market confidence



Northern Powerhouse Rail

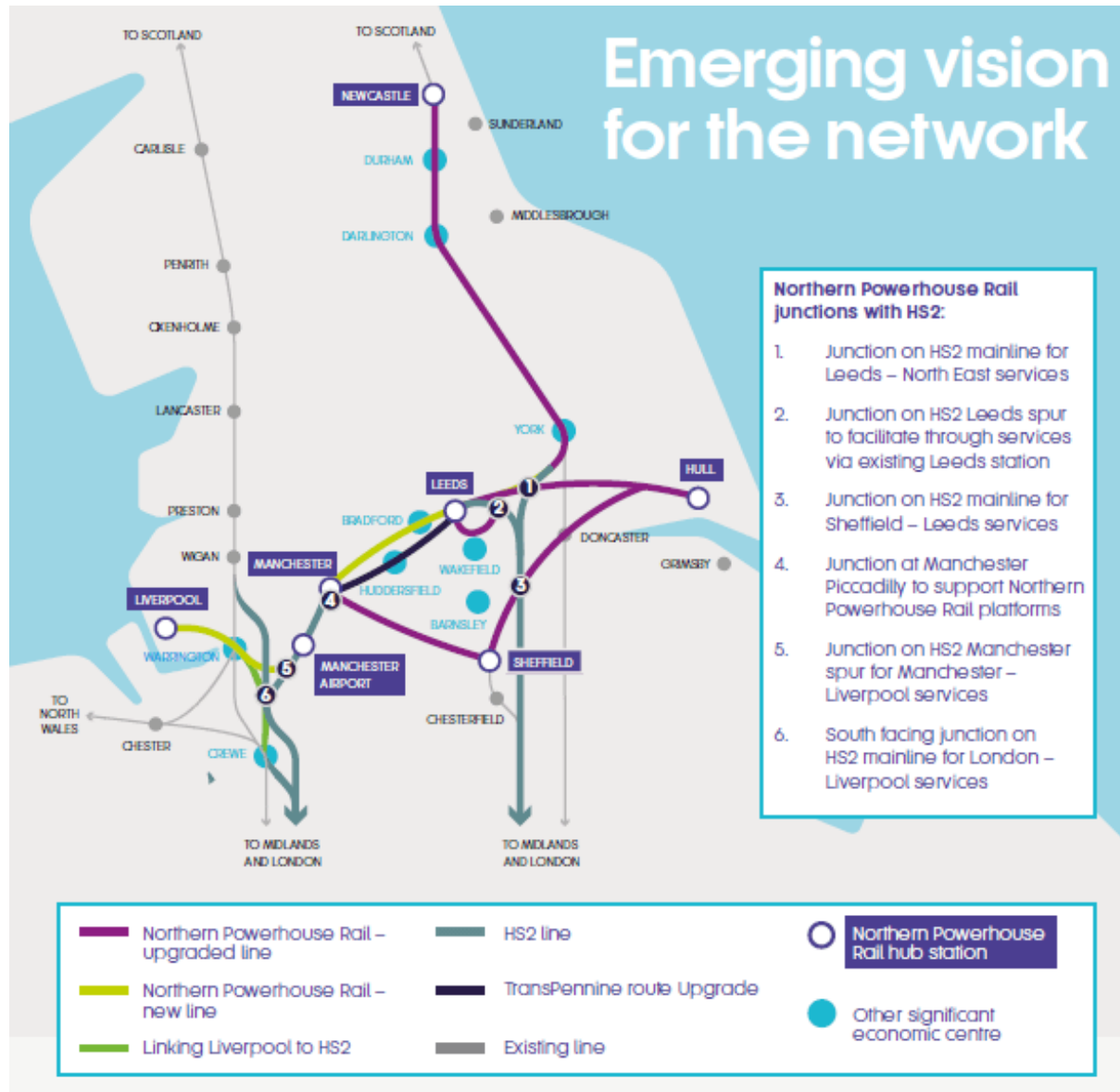
Northern Powerhouse Rail (NPR) is a network of new and upgraded rail links between the largest cities in the North of England

- Designed to unlock transformational economic growth across the North of England, rebalancing the UK economy
- Some links expected to be new high speed rail lines, e.g.: Leeds to Manchester
- Some links expected to be upgraded lines
- Aim is to deliver a major increase in capacity, with a more reliable regional rail network
- Faster journeys to grow City Region employment catchment = agglomeration benefits

Minster	09:21	13	Transpennine	Menton For Hgd	10:18	1	Northern	Southampton C	10:27	
Peninsula	10:30	8	Arriva Trains	Northwich	10:17	11	Northern	Southport	10:22	
Peninsula L St	10:21	13	Northern	Norwich	10:43	13	East Midlands	Stafford	10:27	
Perpool L St	10:07	10:09	14	Transpennine	Nottingham	10:43	13	East Midlands	Stalybridge	10:11
Perpool L St	10:37	14	East Midlands	Oxford	10:27	5	CrossCountry	Stockport	10:15	
Perpool S Pw	10:07	10:09	14	Transpennine	Parbold	10:22	14	Northern	Stockport	10:17
Perpool S Pw	10:37	14	East Midlands	Penbry & By Po	10:30	8	Arriva Trains	Stockport	10:20	
Pelli	10:30	8	Arriva Trains	Peterborough	10:43	13	East Midlands	Stockport	10:27	
Ron Euston	10:15	6	Virgin Trains	Plunkley	10:17	11	Northern	Stockport	10:30	
Rock Gralan	10:17	11	Northern	Port Talbot Pw	10:30	8	Arriva Trains	Stockport	10:43	
Snow	10:30	8	Arriva Trains	Poulton Le Fyl	10:46	14	Northern	Stoke On Trent	10:15	
Sclesfield	10:27	5	CrossCountry	Poynton	10:46	14	Northern	Stoke On Trent	10:27	
Sclesfield	10:35	7	Virgin Trains	Prestbury	10:46	14	Northern	Stoke On Trent	10:46	
Sclesfield	10:46	14	Northern	Preston Lancs	10:15	14	Transpennine	Styal	10:46	
Seaton	10:11	13	Transpennine	Preston Lancs	10:46	14	Northern	Swansea	10:30	
Shechester O R	10:07	10:09	14	Transpennine	Reading	10:27	5	CrossCountry	Thetford	10:43
Shechester O R	10:22	14	Northern	Reddish North	10:14	14	Northern	Harrington Cti	10:07	10:09
Shchtr Airpor	10:14	14	Northern	Romiley	10:14	14	Northern	Harrington Cti	10:37	
Shchtr Airpor	10:24	14	Northern	Rose Hill Marp	10:34	14	Northern	Hesthoughton	10:22	
Siple	10:14	14	Northern	Ryder Brow	10:14	14	Northern	Whitland	10:30	
Sldeth Road	10:14	14	Northern	Salford Cresce	10:22	14	Northern	Widnes	10:37	
Sord Haven	10:30	14	Northern	Sandbach	10:46	14	Northern	Wigan N W	10:15	10:16
Son Keynes	10:15	14	Northern	Scarborough	10:11	14	Northern	Wigan Hallgate	10:22	
Soverly	10:17	14	Northern	Scunthorpe	10:20	14	Northern	Winslow	10:30	
Soldsworth	10:17	14	Northern	Seaver	10:11	14	Northern	Winslow	10:38	
Sogation Roa	10:17	14	Northern	Selby	10:41	14	Northern	Winchester	10:27	
Soth	10:17	14	Northern	Sheff Meadows	10:20	4	Northern	Winton	10:27	
Sr Hills C	10:17	14	Northern	Sheffield	10:20	4	Northern	Winton	10:34	
Sr Hills C	10:17	14	Northern	Sheffield	10:43	14	Northern	Winton	10:34	
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Currently fewer than 10,000 people in the North can access four or more of the North's largest economic centres within an hour. This would rise to 1.3 million once Northern Powerhouse Rail is delivered; transforming the job market, giving businesses access to skilled workers in larger labour markets and offering individuals the opportunity for flexible career development and progression, all within the North of England.

NPR Network



Towards UK-wide vision for rail mega projects



Lessons for North America - 1

- Affordability – balance of benefits with cost
- Establish strong and accountable project governance via early engagement with potential partners – tiers of Government, State, Regional, Local...
- Build a strong partnership with key stakeholders, especially business community
- Ensure alignment with strategic transportation policy context
- Identify sound objectives to assess options against
- Scheme option appraisal must be robust with real rigour to withstand scrutiny (e.g. NEPA)

Lessons for North America - 2

- Develop appraisal framework. Usual one-size-fits-all approach doesn't work for mega rail projects
- Explore innovative funding and financing options
- Ensure strong political support at senior level through early buy-in to build momentum – “infrastructure inheritance”
- Be responsive to change – need for dynamic flexibility



Stephen Pauling, Head of Rail Planning

stephen.pauling@jacobs.com