Luton: opportunities for East West Rail
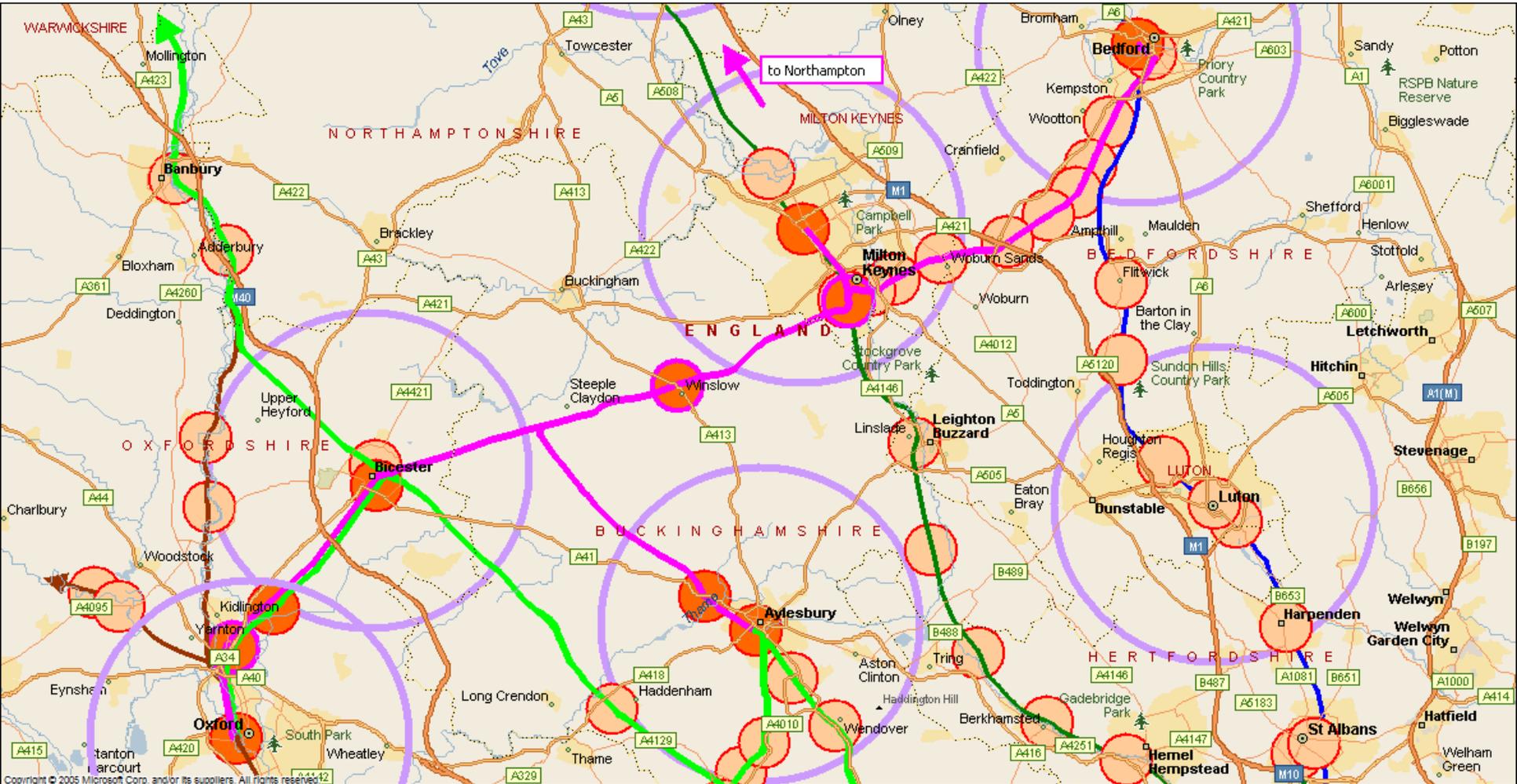
**Jonathan Roberts, JRC
for Luton Borough Council
29 May 2012**
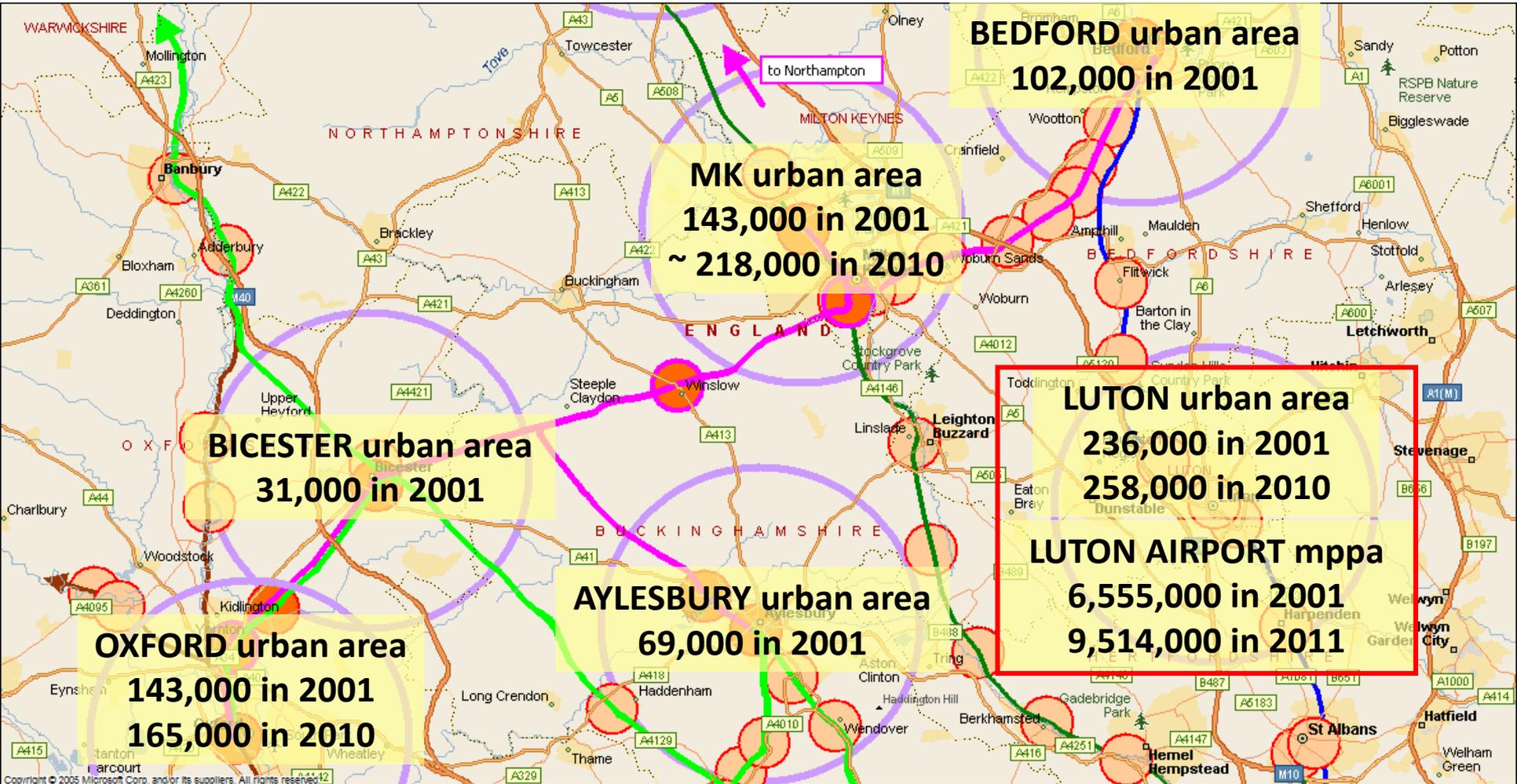https://www.jrc.org.uk/

Core equation

Population size

+

International airport

=

Business case
worth studying

Initial EWR links

Major urban areas

BEDFORD urban area
102,000 in 2001

to Northampton

MK urban area
143,000 in 2001
~ 218,000 in 2010

LUTON urban area
236,000 in 2001
258,000 in 2010

LUTON AIRPORT mppa
6,555,000 in 2001
9,514,000 in 2011

BICESTER urban area
31,000 in 2001

AYLESBURY urban area
69,000 in 2001

OXFORD urban area
143,000 in 2001
165,000 in 2010

Demand linked to distance / journey time

Relative demand between EWR urban centres, ONS 2001 urban areas, new journey pairs only									
based on (population x population / straight-line distance / 1,000,000) to provide a comparative number									
Totals	Oxford		Population based on ONS 2001 data						
without Luton		Bicester							
			Aylesbury						
	919	307	832	Milton Keynes					
6,672	341	96	265	1,315	Bedford				
				132	53	150	16	Didcot	
				1,676	733	2,318	249	Reading	
with Luton	901	236		2,344		Luton (incl Dunstable, Houghton Regis)			
13,244	95	25		239		Luton Airport			
In the case of Oxford-Bicester, the gap will be covered by Chiltern Railways' Evergreen 3 service from 2013									
	impractical rail routes unless major change to EWR proposals						requires Bletchley reversal		

- Gravity model based on 2001 data, potential for up to **100%** increase in travel demand with addition of Luton and London Luton Airport

- Model updated for 2010 urban areas (incl. estimates where not known), ca. **85-90%** increase in travel demand with additional of Luton / LLA

Strong numbers

- **EWR benefits range should also apply to Luton**
  - traffic relief, capacity for jobs/homes growth
  - dependable journey time between major centres
  - connectivity between high population corridors
  - Plus jobs/travel access at London Luton Airport

- **However, much validation required**
  - geographical feasibility of direct links
  - operational features, capacity, service options
  - demand, costs, WebTag, BCR
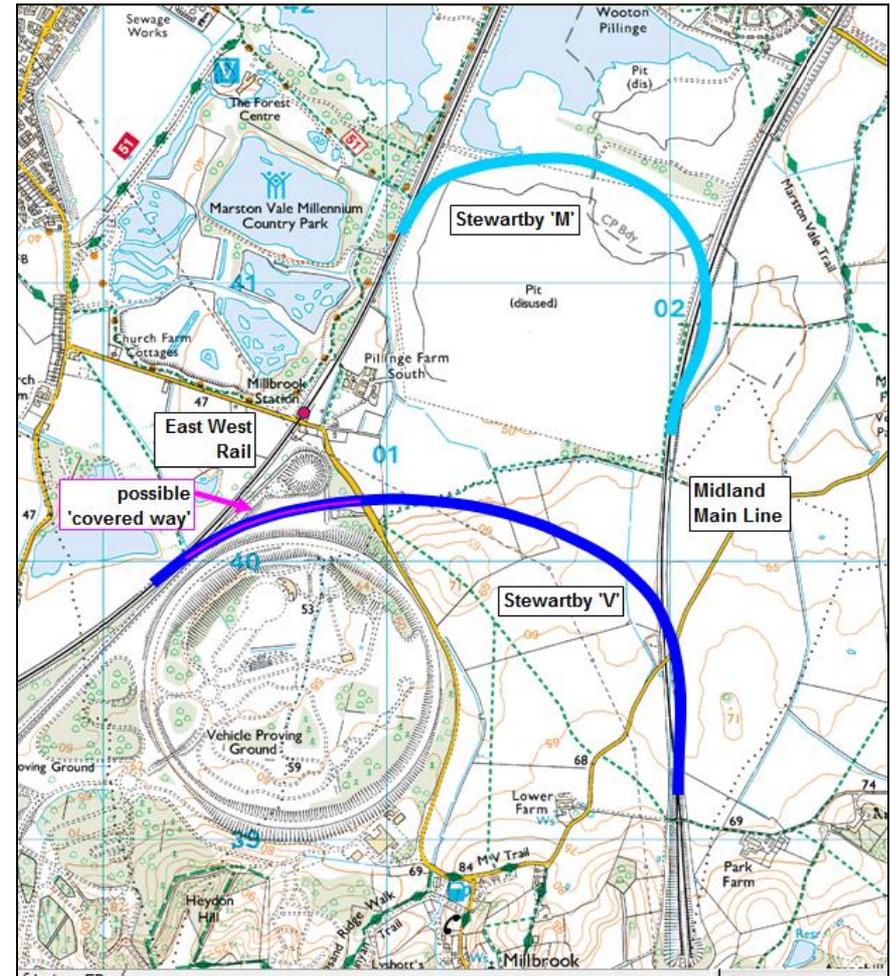 - powers acquisition, funding, timescales

Feasibility of direct links

2 links needed:
- EWR to Midland Main Line (MML)
  - serves all Luton <> EWR western
- WCML N to E chord, onto EWR at Bletchley
  - serves Luton <> MK Central

EWR < > Midland Main Line

3 options reviewed for EWR to MML

X **Alongside M1**:
80-100 mph, 8½ miles
Woburn Sands < >
Harlington (not shown)

X **Stewartby 'V'**:
60mph, 2.1 miles
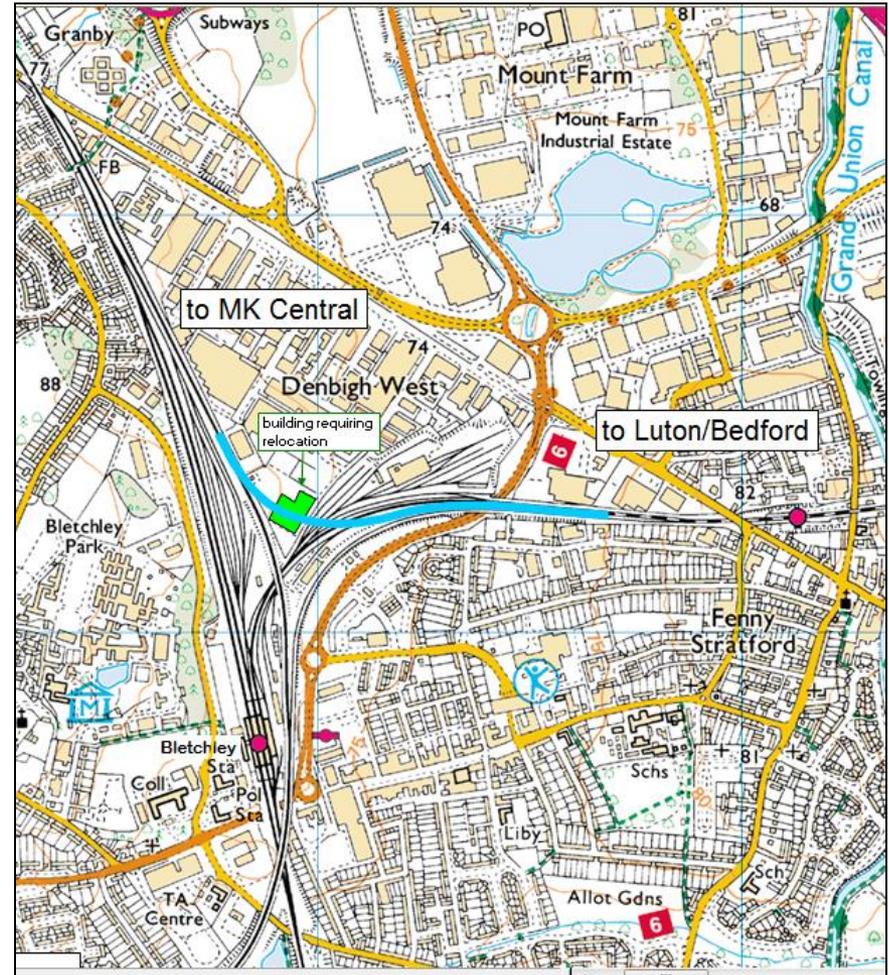S of Millbrook to N of
Ampthill Tunnel

✓ **Stewartby 'M'**:
40 mph, 1½ miles
N of Millbrook to N of
Ampthill Tunnel

Bletchley N to E chord

1 main option:

- ✓ Denbigh Hall lines to Bletchley flyover, towards Fenny Stratford

- • High level viaduct over Bletchley-Bedford tracks

- • Relocation of one recent business unit

- • 15-20mph curve, radius based on new Shoreditch High Street viaduct

Scope for direct services

Relative demand for direct services (new journey pairs only) based on 2010 population estimates	
Reading-Didcot-Oxford-Bicester-Bedford	1,588
MK Central-Bedford	1,829
Reading-Didcot-Oxford-Bicester-MK Central	3,998
Reading-Didcot-Oxford-Bicester-Luton/Airport	4,721
Luton/Airport-MK Central	3,306
Luton/Airport-MK Central-Northampton	5,240

- Strong potential demand for direct trains between Luton/Airport and:
  - MK Central, Northampton
  - Bicester, Oxford, Didcot, Reading
- Volume comparable to already modelled EWR flows for western scheme services.

Outline service options

- **Luton/Airport < > MK Central**
  - as a service between major urban areas less than 20 miles apart, a minimum 30 minute frequency is desirable
  - fast journey time proposed to create attractive service
  - modelled times are 35 minutes or faster, non-stop
  - Thameslink peak capacity allows new service layer
    - Thameslink = 8 Bedford trains, 4 Luton, 4 St Albans
  - WCML has slow line 'headways' of 4 minutes
    - MK terminal capacity may be limited, ? trains to Northampton
  - 3 trains Luton-MKC ½-hourly, 4 trains to Northampton

Typical car journey times: 30+ minutes off-peak, >50 minutes peak times

Outline service options

- **Luton/Airport < > Oxford/Didcot/Reading**
  - direct Luton-Reading service preferred because of indicated demand, but already 2 tph proposed from EWR
  - Luton-Oxford times 55 minutes or faster, limited stops
  - timetabling options include:
    - 3rd EWR hourly train to Reading
    - reverse Luton train at Didcot (link to GW west)
    - reverse Luton train at Oxford
  - 3 trains required for Luton-Oxford/Didcot service

Typical car journey times: 75 minutes off-peak, >90 minutes peak times

Outline costs + BCR

- **£100m costs based on Stewartby 'M':** (~GRIP2)
  - possible siding at Luton Airport Parkway   £10m
  - Stewartby chord between EWR and MML   £40m
  - Bletchley N to E chord excl business unit relocation   £44m

  Assumes no increase in 60mph E of Bletchley – there may be a case

  Includes 120% provision for project fees, risks, but excl. optimism bias

- **Operating costs:**
  - train requirements are similar to EWR 2a western scheme, excluding Aylesbury-MKC, so change in costs should be *less* than EWR 2a.

Outline costs + BCR

- **Rail revenues and wider benefits:**
  - beneficial change with 2 Luton services is *greater* than change from EWR 1a to EWR 2a
  - the larger scale of Luton urban area / Airport also helps
  - change in net rail benefits (and webTAG benefits) can be *greater* than between EWR 1a & 2a (+£114m PV revenue)
  - also PV may be higher with lower operating costs (see above), though capital cost is greater than EWR 1a to 2a

- **Conclusion**: only a 66% increase in user benefits is needed to achieve a slightly higher BCR, **6.6 to 1**, than the present 6.3 to 1 (offset by 66% higher operating costs and £100m capital)

- **This is cautious. A £114m PV net rail revenue gain (with other changes as above) raises BCR to over 12.0 to 1.**

Timescales, programme fit

- All this requires in-depth validation

- CP5 processes largely complete, high-level negotiations under way, hopeful about EWR western scheme

- Don't want to get in way of current EWR scheme, but to add to its worth

- Work to GRIP4 required if parties agreeable to it, includes same scale of detail as EWR west so far – potentially faster as avoids some preliminary 'casting around'

- A strong candidate for Network Rail development funding

- Powers acquisition for Stewartby, Bletchley N to E (maybe 2014 to end 2015)

- Possible to catch up with EWR main western scheme, and fit in as Phase 2.

EWR West with Luton