

# DEVELOPING A WEST OF ENGLAND RAIL METRO PLAN – TfGB

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## DEFINITIONS

- By a **Rail Metro** we mean a rail-based transport system utilising either heavy or relatively light-weight vehicles – including **tramtrain** – operating at relatively high frequency. The site is normally a city or city region. In a city of Greater Bristol's size, average service frequency is perhaps no less than every 15 minutes; more frequent in the city centre, less frequent on branches to satellite towns. Tramtrains are able to run both on existing railways lines, and on-street in a city centre.
- '**West of England Metro**' branding can be applied to different types of service on different lines.
- Rail Metro services are defined so as to be distinct from other already **existing rail services**. The latter are **Intercity services** to London, Birmingham and Exeter, and the **Regional Rail** services reaching towards Weymouth, Taunton, Cardiff, Gloucester, Swindon, Salisbury and beyond.

## SUMMARY AND RECOMMENDATIONS

The following interim goals should be pursued in parallel.

1. Via MPs and ministers, lobby for **Network Rail's electrification works** to:
  - a. include electrification of lines to Weston, Portishead and the Avonmouth/Henbury loop;
  - b. allow for future Metro services patterns at reopened and existing mainline stations.
2. Secure agreement between DfT, Network Rail and Local Authorities as to the financing of **4-tracking** of Filton Bank and Parson St.
3. **Safeguard** the local rail depots and station sites and accesses in Local Plans.
4. Negotiate with Port of Bristol, LEP, Network Rail, and Local Authorities (LAs), the joint planning, design and funding of **Portishead and Henbury loop reopenings**.
5. Negotiate Community Infrastructure Levy from the development of **Filton Airport** to Henbury loop, with S.Glos Council.
6. Negotiate with DfT, joint local LAs' control of subregional (either Metro or Regional Rail zone) **rail decentralisation**.
7. Secure a rail safeguarding line through Temple Meads **plots 3/6**, with Network Rail.
8. Bristol mayor and the other LAs to fund local **station improvements** and **reopenings**, including accessibility, security (CCTV) and lighting. Staffing highly desirable wherever possible.
9. Bristol mayor to commission twin **consultancy studies**:
  - a. of Metro options: routes, rolling-stock and phasing;
  - b. with First as a non-voting consultee, a parallel study of bus network replanning and interchange options.
10. With DfT, maintain a watching brief over the impact of the emerging Metro plans and phasings on potentially desirable **rail franchise modifications**.
11. Work towards the emergence of an **Integrated Transport Authority**, charged with the integrated planning of local rail, bus and highway management, liaising closely with officers charged with **landuse planning**.

## PART 1. SCOPING THE PLAN

Scoping a West of England Rail Metro Plan requires a realistic evaluation of our options on a Metro's reach, service levels, rolling-stock, track and depots, interchanges, phasing, and certainly not least – planning, administration and funding. Existing useful precedents are noted.

### **Metro reach.**

A West of England subregional Rail Metro, if utilising the **existing and mothballed heavy rail network**, logically would extend as far as Weston super Mare, Portishead, the Avonmouth/Henbury loop, Newport, Yate, Bath Spa / Chippenham and Westbury/Frome. Former lines capable of reinstatement might include those to Thornbury, Mangotsfield/Warmley, Whitchurch and Radstock.

Whereas with respect to **street-running** vehicles, the reach logically might be the built-up area of Bristol, but especially the city centre.

These two broad options are not mutually exclusive.

### **Appropriate service levels.**

**Bristol city centre.** Any tramtrain on-street services should be at high net frequency (5 minutes or less), and could be from more than one suburban route.

**City region core axes.** Metro, Regional Rail and Intercity net service frequency between **Temple Meads** and the other key city region rail interchanges at both **Bristol Parkway** and **Bath Spa**, should be no less than 10 minutes.

**Metro.** Desired **reopened stations** are listed in the current West of England Partnership (WEP) Metro proposal, except for Wiltshire. Others are desirable on mothballed lines. In order to impact significantly upon the subregion's future modal split, Metro stations (except the most rural) ideally should have no less than a 15 minute frequency; higher, on street-running sections.

**Regional Rail.** Additional city–region stations – at for example Flax Bourton, Stonehouse, Charfield, Corsham, Royal Wootton Bassett – on the Intercity and Regional Rail lines, could be served by Regional Rail services. Ideally at no less than 30 minute frequency.

## **Rolling–stock.**

**Type.** The options include **heavy rail** (ultimately electrified), **Light Rapid Transit** (LRT, notably tramtrain), and **Ultra Light Rail** (ULR). Different lines may require different vehicle types.

Note however that different vehicles may have different station platform height implications and street–platform design needs. There appear to be two options:

- Low–floor vehicles requiring lower city centre on–street platforms, but requiring the (re)building of suburban Metro stations, and leading to complications at interchange stations (eg. at Temple Meads, Bristol Parkway, Filton Abbey Woods, Bath Spa, Trowbridge, etc.), or
- High floor tramtrains not requiring station alterations, but requiring high on–street platforms (eg. at Centre and Broadmead in Bristol). If additional street–running lines are envisaged, one option would be distinct low–floor vehicles on these particular lines; but complex city centre platforms then required.

On ULR, see Appendix 2.

**Procurement.** Given the current national shortage of available rolling–stock – either new or cascaded – those planning the West of England Metro need to both define their requirements, and hasten to join the queue.

## **Track and depots.**

**Safeguarding of land.** Most rail lines offer a number of track improvement and depot facilities options (see line options, below).

But Metro **stations, passing loops and depots** require planning so that the land in question can be safeguarded: such as the potential station site at the former gasholder site on Dovercourt Road, SE7. Discussion with the owners is necessary. A total audit is urgent.

### **Electrification.**

- **Protection of options.** The imminent electrification of the main lines between Temple Meads and both Bristol Parkway and Bath Spa must be planned so as to allow a greatly increased frequency of local trains (the Metro) in the future. This proviso applies to line speeds, signalling capacity and gantry sites, and must cater for future points and platform locations.
- **Opportunities.** The same electrification offers the chance at an early stage to electrify also the local lines (as is proposed for the neighbouring Valley lines in South Wales), greatly facilitating the early development of a true Metro.

### **Interchanges.**

**Ticketing.** A subregional (or wider) integrated public transport ticketing system – the equivalent of London’s oystercard – is a precondition.

**Rail/bus interchanges.** Logical rail/bus interchange locations include Temple Meads, Bristol Parkway, Filton Abbey Woods, Bedminster, Parson St, Clifton Downs, Montpelier, Stapleton Road, Lawrence Hill, Bath Spa, Keynsham, Yate. Interchange facilities must be planned. Particularly urgent are Temple Meads and Filton Abbey Wood.

**Rail-based Park & Ride.** Planned at Portway (M5/A4), but desirable also at Portbury (M5), Bathampton (A37) and Flax Bourton (A370). A 15 minute service frequency is desirable; and the capacity to enlarge the car park. Most rural Metro stations should be provided with car and cycle parking.

**Bus/bus interchanges.** These – whether conventional bus or street-running tramtrain – are required in addition, to feed towards the rail

interchanges. Desirable sites include local major shopping centres. See TfGB Bus Metro paper (forthcoming).

**Cycle parking at stations.** As cycling increases, carriage of cycles on rush-hour trains will become increasingly impractical (though should be maintained for off-peak). Each Metro station needs adequate cycle parking.

### **Phasing.**

It is assumed that investment would occur on a phased **line-by-line** basis over a period of perhaps up to 10 years.

For any one line there is a choice of initial investment either in the final scheme, or of **interim phases** which might include ULR or non-electrified heavy rail operation.

### **Administration.**

**Policy.** Neither the individual Local Authorities nor the West of England Partnership have shown particular alacrity in planning for an expansion of local rail services – the push coming rather from the public including FoSBR, the Portishead line and Saltford station campaigns, and TfGB. Indeed, the abandoned tram plans of the former Avon County Council remain more progressive than those currently under debate. WEP's 'Metro' policy arguably fails to demand a true Rail Metro as discussed here. Most observers (including DfT) agree that something equivalent to the **Integrated Transport Authority (ITA)** organisation of other metropolitan cities is essential before coordinated subregional rail planning is likely in this subregion. See *An Integrated Transport Authority for the Greater Bristol Sub-Region*, TfGB, 2012.

**Opportunities.** Three important opportunities have now arisen:

- Negotiations around preparation of replacements for the **Great Western train operating franchise** (now divided into short- and longterm),
- DfT's announcement of the possibility of a **decentralisation of rail powers** to consortia of Local Authorities. This has yet to be

taken up by WEP.

- The government's aware of **City Deal** status to the WEP authorities, whose associated income can be spent on rail development.

These opportunities must be fully grasped – which is something new to the Local Authorities concerned – and the required planning driven up a notch.

**Structure and staffing.** The necessary expert staff must be taken on. This is true whether or not the subregion is successful in achieving ITA status.

**Marketing.** It is vital that the Local Authorities alert the public to the potential of Metro development, and market it as it develops.

## **Funding.**

There are several potential sources of funding for implementing the Rail Metro Plan. These include:

- **Rail decentralisation monies.**
- **Train operating companies.**
- **City Deal.**
- **Local Authorities' Local Sustainable Transport Fund.**
- Other development related **Community Infrastructure Levy** contributions through the landuse planning system.
- **Workplace Parking Levy or Road Charge** (if adopted by the mayor of Bristol).
- **Joint commercial investment** by other interested bodies (eg. Port of Bristol, Severnside development consortia).

These various sources should be integrated with regard to their impact upon the development of a Rail Metro, and the different controlling interests brought together at an early stage, either by the Bristol mayor or WEP.

## PART 2. EXISTING LOCAL 'METRO' PRECEDENTS

There are several:

- The subregional **heavy rail network**, c. 1940.
- The Bristol city **tram network**, c. 1940.
- LRT proposals not enacted, notably:
  - the **Advanced Transport for Avon (ATA)** LRT scheme of 1990 (largely utilising local heavy rail lines, but including street-running in South and North Bristol and in Bristol city centre);
  - **Avon County Council's** Westway scheme of the mid 1990's (initially to use the heavy rail line to Filton Abbey Wood thence on-street into the North Fringe, plus an on-street loop through central and South Bristol roughly following the 76 bus route and the old Whitchurch rail line);
  - **Bristol City and South Gloucester Councils'** adaptation of the Avon scheme in the mid 2000's.
- The **West of England Partnership's** current Greater Bristol Metro scheme – a 30 minute frequency local heavy rail plan.
- **Metro and tramtrain** schemes elsewhere in Britain and Europe.

The current WEP scheme is felt to be insufficiently ambitious, and to have been adversely limited by the Partnership's parallel 'Bus Rapid Transit' (partly guided-bus) proposal now being re-evaluated, which obstructed agreements on the Henbury loop and on Ashton Gate station.

Again, these various precedents are not mutually exclusive. Elements of any of them offer useful precedent for planning the West of England Metro.

### References

- [http://en.wikipedia.org/wiki/Template:Bristol\\_railway\\_map](http://en.wikipedia.org/wiki/Template:Bristol_railway_map) (*rail map*);
- [http://en.wikipedia.org/wiki/Bristol\\_Tramways](http://en.wikipedia.org/wiki/Bristol_Tramways) (*tram map*);
- *Bristol Tramways* (<http://www.tramdev.clara.net/hist.htm>) (*a history of LRT schemes*);
- *Westway – South Bristol Route Study*, Avon CC, 1995;
- *The Westway Rapid Transit Project: Project Audit*, Steer Davies Gleave, 1995;
- <http://greaterbristolrail.com/supporting-information/bus-rapid-transit-and-metro-rail> (*Greater Bristol Metro updates*).



## APPENDIX 1: LINE-BY-LINE OPTIONS.

### Rail alignments.

#### Weston super Mare line.

- Shared with Intercity and Regional Rail services – likely to remain heavy rail (preferably electrified).
- Requires 4-tracking Temple Meads – Parson St. Some passing loops thereafter.
- Options include new stations (Long Ashton, Flax Bourton), and an LRT or ULR spur to Clevedon.
- A370 Park & Ride potential at Flax Bourton.
- Regional Rail services terminating at Weston should be stopping trains; those to Bridgewater, etc., should be semi-fast.
- Small depots sites at South Liberty Lane, Bedminster Down or Totterdown.

#### Portishead line.

- Preferably electrified for tramtrain.
- Interim option is diesel heavy rail: decision may be influenced by possible need for a bridge at Quays Ave in Portishead. ULR is impracticable due to need to share track with freight.
- Routing via either Bedminster main line, or Wapping Wharf line. Via Bedminster would be the easiest way to increase services there and at Parson St stations.
- Passing loops and resignalling required, reopened stations including Ashton Gate, and reopening link to Portishead.
- M5 Park & Ride potential at Portbury.

#### Wapping Wharf line options.

- Possible routing for Portishead services. Or retain for Harbour (heritage) Railway, and/or an experimental ULR scheme between MShed and Ashton Court.
- Extension of a ULR scheme from MShed to Temple Meads has been proposed, but could be problematic.
- Potential for Park & Ride at Ashton Meadows.

### **Avonmouth / Henbury loop.**

- Preferably electrified for tramtrain; interim option of diesel heavy rail.
- Passing loops, plus resignalling and reopened stations required on Henbury line.
- Partially dependent upon 4-tracking of Filton Bank to Temple Meads (with Metro using the outside tracks) and reopening and rebuilding mainline stations.
- Intercity electrification must be designed to be compatible.
- Option of ULR conversion of Severn Beach spur, with segregated new station at Chittening.
- Equivalent spur to Cribbs Causeway (or bus connection).
- Potential depots at Days Rd and Filton triangle.
- Development of Portway Park & Ride.

**Severn Junction / Newport line.** Intercity and Regional Rail. Limited practicality for Metro services, due to capacity of Severn Tunnel?

### **Yate line.**

- If interworking (with passing loops) with Intercity services at Winterbourne viaduct is too problematic, an alternative routing is via a Mangotsfield line extension reopening via the Yate–Oakleigh Green spur (rerouting and bridge at Avon Ring Road required); otherwise dependent upon 4-tracking of Filton Bank (see above).
- Reopening of Coalpit Heath station as Park & Ride site.
- Depot site at Filton Triangle (also planned as the Intercity depot).
- Terminating services can turn at Yate within Thornbury spur.
- Preferably electrified as tramtrain.

### **Thornbury line.**

- Reopening of Thornbury spur, either as tramtrain or ULR.
- New site required for Thornbury station.

### **Chippenham via Bath Spa (Swindon line).**

- Likely to remain Regional Rail, interworking with Intercity services. But partial reversion to 4-track could enable Metro onto the Westbury line (though this option threatened by Intercity electrification works?)

- Reopened stations including St Anne's, Saltford, Corsham.
- Some passing loops – with Intercity electrification designed to be compatible.
- Potential depots (see Westbury line).

#### **Mangotsfield / Warmley.**

- Reopened line and stations possible if negotiated with cycle planners (as on Bitton section).
- Tramtrain or ULR.

#### **Westbury / Frome / Radstock.**

- (See Chippenham notes, above).
- Preferably electrified tramtrain. Interim diesel heavy rail plus Regional Rail services.
- Some passing loops may be necessary to interrun with Regional Rail services.
- Bathampton station reopened, with potential for Park & Ride.
- Radstock branch reopening, either as tramtrain or ULR.
- Potential depots at St Philip's and Brislington (East Depot).

#### **Whitchurch.**

- Theoretically possible reopened line and stations as far as Whitchurch – but Compulsory Purchase Orders or large land acquisition budget required.
- Tramtrain or ULR.
- Park & Ride potential at Whitchurch (A37).

### **Bristol on-street alignments**

Possible tramtrain approaches to city centre. Embracing potentially:

#### **City centre loop;**

- One-way tramtrain; but paralleled by two-way bus services from other corridors.
- Possible route: Temple Meads / Friary / Victoria St / Bristol Bridge / Baldwin St / Centre / Haymarket / Bond St / Temple Way / Temple Back East / Temple Meads.

Connected to the mainline rail network via:

- Temple Meads plot 3/6; or
- M32 (from link to main line by Stapleton Rd station);
- Redcliffe Hill (from link to main line by Malago Rd / Bedminster station).

**Within suburban Bristol**, trams or LUR potentially on Bedminster Parade, Hartcliffe Way, Wells Rd, Bath Rd, Church St Redfield, Fishponds Rd, Gloucester Rd, Whiteladies Rd, Hotwells Rd.

Connecting to the city centre via:

- Redcliffe Hill.
- Wells Rd,
- Bath Rd,
- Old Market,
- M32,
- Stokes Croft,
- Park Row / Lower Maudlin St,
- Anchor Rd.

## APPENDIX 2: TECHNICAL NOTES

### Track capacity

- **Rebuilding capacity.** Removed track and stations must in many instances be replaced, either in whole or in part.
- **Maintenance.** The historic underinvestment in the local railway infrastructure (eg. bridge painting) must be addressed immediately by Network Rail. An audit is urgent.
- **Line speeds (re tramtrain).** Where tramtrain top speed is similar to maximum line speed capacity is increased slightly. Where line speed is higher, then more care is needed to ensure any LRV stops are off the main line and possibly other passing places to ensure trains are not impeded. It would be useful to know the proposed line speeds (after electrification) to Weston–super Mare & Yate.

### Rolling–stock definitions.

- **Tramtrain:** A tram with greater structural integrity to meet railway standards; Probably dual mode (AC/DC or Diesel/DC); fitted with appropriate train protection systems.
- **LRV:** A tram intended for longer journeys mainly on segregated track
- **Tram:** In US a Streetcar
- **ULR:** A tram built to lighter standards intended for where the patronage would be insufficient to warrant a normal tramway.

### ULR compatibility

- ULR may be an option for some **branch lines** (eg. Severn Beach from Severnside; Radstock from Frome; Thornbury from Yate), or as ULR experimental sites (eg. the Wapping Wharf line from MShed to Ashton Gate). Dependent upon adequate interchange, maintenance facilities and staffing being provided.