



Transport for Greater Bristol Alliance

Campaigning for
Integrated Transport

A RAPID TRANSIT PLAN FOR BRISTOL AND BATH

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v51 17-09-20

Map by Tick Ipate

EXECUTIVE SUMMARY

These proposals for a twenty-first century transport system are not from a single-issue lobby group; **Transport for Greater Bristol (TfGB)** offers a comprehensive package of transport and environment measures which builds on the emerging good practice found across the region such as **MetroWest**, the **City Bus Deal** in Bristol and the well-organised **bus-rail interchange** at Bath Spa.

As we emerge from the special circumstances of the Covid crisis we need modern transport planning for active travel, health, opportunity, inclusion, social justice, and action on climate change. It's also good for business.

Mass transit is again being discussed in the West of England but we are in danger of making poor decisions. TfGB's contribution brings together experienced residents and campaigners. It is citizen-created, reflecting the concerns and observations of TfGB supporters and others, for their community and their environment.

Our ***Rapid Transit Plan*** is part of a holistic approach. It should be read in conjunction with the TfGB ***Traffic Management Plan*** and the proposals for 'liveable neighbourhoods' led by Sustrans and others. The *Plan* also represents a further evolution of the TfGB ***Bus Plan***, the last iteration of which was published late in 2018. Modifications to that plan are implied in our ***Rapid Transit Plan***.

Our *Plan* is not final or complete. It cannot be. It is well considered and indicative, but needs to be developed and implemented by a team of professional planners supported by political commitment from decision makers.

Bristol should do what modern cities do, including Bordeaux and Hannover our twin cities, and opt for modern trams, integrated with bus services and rail. Nearer home we have good examples in Nottingham, Sheffield, Manchester, the West Midlands, Edinburgh, Croydon and very soon Cardiff. We should still be developing parts of our bus network with radials on dedicated bus lanes and orbitals with bus-priority traffic signals, and interconnecting them with suburban and city centre bus hubs including at all local rail stations. However, the more densely used routes can be better provided as on-street tram routes, with buses feeding into them as well as operating where trams are not practical.

A mass transit system with some underground features does not feature in our plan. A significant rationale for underground running is to not interfere with

surface car traffic. Yet the climate emergency demands a significant reduction in car traffic in urban areas in 15 years. There is no need for more roads, or to maintain current highway capacity, or for an Underground. Any underground section would be unnecessarily expensive, have too few stops/stations, and be inconvenient for the disabled.

Trams are more accessible than an Underground, and have more frequent stops. Building and operating an Underground is also highly carbon intensive, disruptive, and extremely expensive. Bristol Temple Meads, one of the proposed Underground stations, rather requires a coherent interchange for the surface trams, buses and active travel, and the remodelling of adjacent highways to facilitate this.

Our proposed tram 'lines' would be phased in, to an agreed on-going investment programme of a decade or more, each building upon the success of the previous ones. The *Plan* should be carried out within corridors in tandem with WECA's **MetroWest** local rail improvements, TfGB's (now WECA's) **Bus Plan**, and Bristol Cycling Campaign's (now Bristol City Council's) **Cycling Strategy**; in tandem too with TfGB's **Traffic Management Plan** designed to manage reduced traffic levels.

We are pleased to say that the *Plan* in many ways overlaps both with WECA's own proposals in their *Joint Local Transport Plan 4*, and the Mayor of Bristol's stated aim of four rapid transit lines serving each of the southwest, southeast, northeast and northwest sectors of the conurbation. Like Cardiff, and already Nottingham, Sheffield, Manchester and Edinburgh, we would agree with the *JLTP 4*'s support for "transformational infrastructure in the form of mass transit (e.g. light rail, tram, tram-train or underground)"; we disagree that it is 'challenging to achieve on-street running', or that it will take 10 – 20 years. The on-street trams and rail conversions of comparable cities – paid for by the government's Department of Transport – are our precedent, and good enough for Bristol and Bath.

We plan to create everyday modern public transport, and a '**modal shift**' for everyone in the West of England region. Modern trams, combined with appropriate traffic management measures and the rail network, can provide a more **reliable**, **faster** and more **frequent** service than either today's congested bus or car options.

We omit a tram route to the airport for business travellers and holiday makers. We should be planning for reduced air travel, not more, if climate change is to be

taken seriously, as recognised by North Somerset Council in turning down the airport's expansion proposal.

On the other hand our proposals do include a route connecting South Bristol with the employment opportunities of **Sevenside**; such a route is designed to grow a market and create social benefit for a deprived area and promote the economic viability of Sevenside, whilst reducing the use of private traffic to access employment. An equivalent route might serve disadvantaged remoter East Bristol utilizing the currently car-focused infrastructure of the Avon Ring Road.

Both the **Avon Ring Road** and the **M32** provide convenient alignments for efficient longer-distance tram services. Currently they simply pour car traffic and air pollution into the city. We envisage these roads downgraded as car commuter arteries. The M32 should be, as has long been envisaged, **de-motorwayed**. Its space should then be repurposed and not just for trams, but for other uses such as cycleways and amenity space; and its ageing infrastructure of grade-separated junctions replaced at surface level. This cost will one day fall on either Highways England or WECA in any case, and should ideally be planned for now. We propose too, making use of the ready infrastructure offered by the existing **railfreight lines** to Portbury/**Portishead**, to Avonmouth via **Henbury**, to Tytherington (formerly the **Thornbury** line) and to the Westerleigh oil depot; and in addition the abandoned Yatton to **Clevedon** rail line and the lines to **Radstock** (the last not discussed in this paper). Considerable costs will of course be involved in returning these lines to passenger use, and business-like negotiations required with the Port of Bristol and other commercial concerns. But unless this is achieved, more distant commuters and visitors cannot conveniently be offered rapid transit options into the twin cities of Bristol and Bath. These days they should not expect less. We are planning for the rail and tram renaissance of the West. Many other cities have already showed us how to do it.

To the city's many committed car drivers we say: If places like Bristol are to have a future, car dependency must come to an end. More car drivers and passengers should be on the buses, trams or their bikes. Our plans ultimately assume that Central Government must intervene to curb car dependency (except for the disabled and those who live in remote locations), even if all cars are electrified.

INTRODUCTION: BRISTOL DESERVES RAPID TRANSIT

Bristol is a fine city: its hills, its buildings, its arts, its universities, its popularity. But in terms of transport it is less than perfect.

Other cities suffer congestion and air pollution. Bristol simply has it worse. It is more car-dependent. Manchester, Sheffield, Nottingham, Croydon in South London have their trams. So do many similar-sized European cities. Cardiff is in the process of tying together the railways from the Valleys and running them as a tramline across the city centre.

Avon County Council (before it was abolished in 1996) had a tram plan; one which Bristol City Council tried to continue for a while, before being blocked by South Gloucestershire. Since then, the West of England Combined Authority has built roads: the South Bristol Link, the Stoke Gifford Bypass (both built using 'MetroBus' money). Yet since the 1970s transport planners have recognised that more roads lead to more traffic, not less.

What we can do to attract the funding

Bristol does have a serviceable transport plan, called '**MetroWest**': the upgrading of the suburban railways to Clifton Down and Avonmouth; the re-opening of the rail line to Portishead, and of the lines through Henbury to Bristol Parkway and Filton Abbey Wood; the re-opening of stations at Ashley Down, St Anne's and Ashton Gate; and the return of frequent train services to Bedminster and Parson Street stations. All this is good. It just isn't happening. Instead, the West of England plans more roads, and has found time and money to build a 'guided rail' MetroBus overpass in Ashton Gate, and a new bridge (little used) over the M32.

MetroWest is proceeding painfully slowly. The West of England and North Somerset Council have failed to properly plan the Portishead line. The Department of Transport regards MetroWest as poor value for money. It is right. A train every half-hour on a couple of suburban branch railways will not radically alter transport habits in Bristol.

Cardiff and Nottingham will get the money for their Rapid Transit expansions. They push stronger, design better. So here's how we do it.

Combining local rail and on-street trams

Most Bristolians know Bristol used to have trams. Lines ran out to Horfield, Fishponds, Kingswood, Hanham, Brislington, Knowle, Bedminster Down, Ashton Gate, Hotwells and Westbury on Trym, on Gloucester Rd, Stapleton Rd, Lawrence Hill, Bath Rd, Wells Rd, Bedminster Parade, Hotwell Rd, Whiteladies Rd, with a few one-track stretches and several stabling depots and works sites (the old map is available at <http://wpehs.org.uk/bristol-tramways>). Bristol was built not just around its railways, but its trams. Bristol's twin cities Bordeaux and Hannover both have trams.

We achieve by being positive. Let's not say that Gloucester Road is 'too narrow for trams' – West St in Sheffield (which has trams) is narrower, as is Leidsestraat in Amsterdam and various streets in Krakow. Bath has an active tram campaign, and Bath & North East Somerset Council recently paid the consultants Atkins to do a scoping study for trams in Bath (available at <https://democracy.bathnes.gov.uk/documents/s49556/TramReport.pdf>). In Bristol to date we have lacked a campaign for trams, but instead have concentrated on the buses, railways or air quality (all excellent causes in themselves). But railways and trams need to be seen as an integrated system, as in Manchester, Croydon, and Cardiff.

MetroWest, the obvious way forward, potentially serves northwest and southwest Bristol well, and ties the city to its main partners Bath, the North Fringe, Yate, Portishead, Nailsea, Weston super Mare, Thornbury. But it cannot reach all parts of the city, and those it doesn't are well suited to a Bristolian tram revival. The corridors of Bath Rd, Wells Rd, Kingswood, Fishponds Rd, Gloucester Rd were built around trams and need them back. Plus, waiting to be repurposed are those monuments to the Car Age: Temple Way, Easton Way, the Avon Ring Road, the M32. Today these concrete highways pour congestion, bad air, noise and severance into a defenceless inner city and city centre. We can make them useful. Bristol after all does have its bypasses: the M4 and M5. It just needs to unclog its arteries.

Rolling-stock, depots, platform heights

Three required technical decisions will be rolling-stock, platform height and power transmission. 'MetroWest' will probably have to involve more than one type of vehicle. Those services using solely existing railways, all or in part shared with Regional or InterCity rail services, will have **heavy rail** vehicles; but some or all local rail services potentially could operate with '**tramtrain**' lighter vehicles, notably if

they also have partially on–street routes. Other services running purely on–street can be standard European–style **trams**. To an extent, the less variation the better for procurement purposes.

Different types of rolling–stock, and potentially discrete lines, will lead to a need for extra **depots** (for which land has to be found). On this issue, see under ‘General notes for Bristol’ (p. 27).

Different rolling–stock could allow a variation of **platform height**. Existing railway stations have a standard platform height to which all rolling–stock door height necessarily conforms. Street–tram ‘stations’ can be built to the same height, with approach ramps. However, lower door heights would be preferable on–street. Where a ‘tramtrain’ vehicle is used both on shared heavy rail lines but also on–street, one solution is to have an extra length of railway platform at a lower height (if the site allows).

Another, partially aesthetic issue is whether to have **overhead power cables**, or else on–board batteries or a sunken (within the carriageway) power source. Solutions can be mixed, if the rolling–stock is designed to allow this. This may be an issue in Bristol, but certainly is in Bath.

Beefing up a WECA Transport Plan

The West of England Combined Authority (WECA) has expressed interest in combined rail and tram plans. A recent background document for WECA’s *Joint Local Transport Plan 4* envisaged running services from the reopened Henbury rail line down Gloucester Rd into the city centre as a tram. This is the kind of thinking the city needs more of.

WECA is now the Transport Authority. It needs to accept its potential rail planning powers, as Combined Authorities do in other metropolitan regions.

An essential step will be the appointment of more experienced staff. Bristol can learn from the mistakes of Sheffield or Edinburgh in engineering preparations and contractual arrangements. The West deserves access to consultants with European or Far Eastern light rail expertise, and a Head of Service with practical experience of trams and rail re–openings elsewhere.

A corridor approach

Transport for Greater Bristol therefore offers a draft *Rapid Transit Plan* – a **MetroWest** update. It is not the answer; but it is a start. It must be considered in parallel with TfGB's draft *Traffic Management Plan* dealing with the general traffic on the roads some tram routes are obliged to use – the two are to some extent interdependent.

Phasing will be crucial. The first phases must be relatively straightforward to achieve, very clearly useful, and attract a budget (mostly from government). Once the first service has been initiated, we would expect to see strong support for proposed additions. 'Rail is good' has become the watchword across Europe, in other British metropolises, even in North American cities that used to be incurably car-dependent. Later phases can deal with the trickier corridors. Lines need to reach out to the four corners of the city, including its less-fashionable parts.

Some corridors suit rail lines that MetroWest already plans to revitalise, like that to Portishead. Others don't, but have a history of trams or have recent highway alignments crying out for re-purposing. For some corridors a tactical choice presents itself. The varied demand generators around Filton could be served either by local rail services use of the main rail line through Filton Abbey Wood, or else on-street tram via Gloucester Rd. Both may in time prove practical, especially since Filton Bank on the high-speed main rail line to both London and Birmingham inevitably has future line capacity limitations. Bath too might eventually be connected both by the main rail line (planned for high-speed), and by the A4 Bath Rd on-street. The northeast sector of the city has three options: the old Midland rail line (better known as the Bristol & Bath Cycle Path), Fishponds Rd (formerly with trams), or else the M32 and Avon Ring Road (both already having vulnerable bits of bus-lane). Any of them could reach the expanding zone around Emerson's Green, as indeed the successful MetroBus service via the M32 already does; an on-street service could utilise the M32 and the Avon Ring Road but thereafter the existing Westerleigh freight line (retaining a cycleway alongside) to reach Yate station – thus neatly avoiding the choke point of the high-speed Winterbourne viaduct on the main London to Wales rail line. This route could be extended to Thornbury via the Tytherington freight line, as already proposed by campaigners in Thornbury.

Existing hard-to-alter car commuter desire lines might be met by a bit of lateral thinking. The employment opportunities of Severnside would be well served by an upgraded MetroWest Avonmouth service, but South Bristol linked in by a service

from South Bristol via Brunel Way and Portway (either via the South Bristol Link or Hartcliffe Way/Winterstoke Rd); initially perhaps by 'MetroBus', then if justified, by tram. Eventually outer East Bristol might similarly be connected to Severnside via using stops on the Avon Ring Road.

A first draft of a *Rapid Transit Plan*, embracing these provisos, appears below. Regarding the cost of developing rapid transit, estimates vary from a total all-in cost (including land acquisition, services diversion, legal costs, etc. as well as track and rolling-stock) of perhaps £25m/km for on-street situations, to £10m/km for adapted existing rail track, with development on undeveloped land an intermediate cost. We have not attempted to cost our full rapid transit proposals for Bristol or Bath, but anticipate it unlikely to be high compared to the funds currently willingly allocated by Government towards highway building. The latter activity tends to worsen rather than better traffic conditions, and is inherently 'regressive' in social terms, especially in an urban or quasi-urban context as in the West of England. In practice, regional rail and urban rapid transit investment is in direct competition for funds with further highway building; but is more equitable (assuming the fares are right).

A PHASED PROGRAMME: AN EXPANDED METROWEST PROPOSAL *(Bristol only)*.

Each service is envisaged with an at least 10–15 minute frequency, to achieve capacity sufficient to impact upon Bristol's 'modal split', and to rival the car alternative.

Tranche 1. Initial schemes built upon Bristol's existing bus and rail networks.

1. **Sevenside Line.** A tram line giving access to Sevenside from South Bristol. Routed inbound via Portway, thence via either (or both) of the A370/South Bristol Link road, or Winterstoke Rd/Hartcliffe Rd, to outer South Bristol. Interconnects at Hotwells with the Long Ashton Line into the Centre (see below). *This route should be initiated immediately as an interim MetroBus bus service.*

At some date, a parallel initial Avon Ring Road MetroBus service from Keynsham, via Longwell Green, Warmley and Emerson's Green around to Bristol Parkway and thence connecting with the Sevenside service. Conceivably later converted to a MetroWest tram service.

2. **Bristol orbital MetroBus routes.**
First trial services (see TfGB's Bus Plan).
3. **MetroWest Henbury Line.** Upgraded local rail services Henbury and the Arena to Temple Meads via Filton Abbey Wood; also to Bristol Parkway via existing freight line. Jointly named perhaps the '**Brabazon Line**'.
New/reopened stations at Henbury, Fishpool Hill, Charlton Rd, North Filton (for Brabazon Arena), A38 P&R (at Filton diamond SW quadrant?), Horfield Constable Rd, Ashley Down new stations.

Subsequently expanded to **MetroWest Avonmouth / Henbury Loop**, with services to both Bristol Parkway and Temple Meads.
Additional stations at Chittingen, Moorend Farm Ave, M49 P&R, Hallen Rd. Connections to Severn Beach from St Andrews Rd (either by shuttle or by diverted services). Would benefit from an M49 new Park&Ride site.

4. **Local rail ('MetroWest') Frome – Westbury – Bath – Bristol – Weston super Mare Line.**

Increased frequency. Saltford and St Anne's station reopenings with passing loops; later other stations.

5. **MetroWest Portishead Line.**

Ashton Gate and Pill station reopenings; serve Parson St and Bedminster. Subsequently an M5 rail P&R station.

*Tranche 2. Re-establishing a **tram** system in Bristol: partially on-street as in the past, partially on new alignments on or alongside newer highways. Requiring longer design time and greater political will. Tranches 1 and 2 collectively named **MetroWest**.*

6. **M32.** A Park&Ride service to the city centre Cabot Circus and Centre public transport hubs.

Initially MetroBus from a temporary Park&Ride site (undefined location), via continuous bus-lanes on the M32 and with stops on Junction sliproads. This could be moved to Tranche 1.

*M32/M4 Park&Ride site required (initially a temporary site if necessary). Subsequently upgrade to **MetroWest** tram from a permanent site, as part of de-motorway-ing of the M32.*

To coincide with de-motorwaying of M32, whose grade-separated junctions should be replaced at surface level with pedestrian crossings.

Further expanded to become the **MetroWest Yate Line**.

via M32, UWE, Avon Ring Road to Emerson's Green (thus a), thence via Westerleigh freight line to **Yate**. With, dependent upon M32 Park&Ride site, a branch to M4/M32 P&R.

Subsequently extend from Yate via Tytherinton freight line to **Thornbury**. *Operated by tramtrain to be compatible with rail usage at Yate.*

7. **MetroWest Filton Line.** Tram, from Aztec West via Cribbs Causeway, A38 Gloucester Rd to city centre Haymarket and Centre hubs. Possibly diverting via Southmead Hospital A possible spur to Brabazon Stadium, via West Way.

Pedestrianise Gloucester Rd at Bishopston (see TfGB Traffic Management Plan).

Subsequently extend as the **MetroWest City Centre Ring** – a tram circuit via Centre, Baldwin St, Bristol Bridge, Victoria St, Temple Meads, Temple Way, Bond St., Haymarket.

Include cost of subsurface services re-alignment and possibly rebuilding of Bristol Bridge. (See TfGB Traffic Management Plan). This may be moved to scheme 6.

8. **MetroWest Hengrove Park Line.** Tram upgrade of MetroBus M1, from Hengrove Park hub via Hartcliffe Way, Bedminster Parade, Redcliffe Hill, Redcliffe Way to Temple Meads hub.
Pedestrianise Bedminster Parade (see TfGB Traffic Management Plan).
9. **MetroWest Bath Rd Line.** Bath Bus Station to Temple Meads hub via Lower Bristol Rd, A4 Bath Rd, Keynsham.

10. **MetroWest Clevedon Line.** Local rail, or tramtrain, from Clevedon to Temple Meads via Yatton, Nailsea, etc..
Reopen Yatton–Clevedon rail line. Some compulsory purchase or realignment necessary in Yatton, and a bridge over the M5; new Clevedon station site at Kenn Rd with local bus connections into Clevedon. Halts possible at Lampley Rd (North End) and a Park&Ride site at Arnold’s Way (Yatton). New stations on the main line at Long Ashton (Wild Country Lane) and Flax Bourton.

11. **MetroWest Long Ashton Line.** Long Ashton Park&Ride, rerouted towards former Park&Ride bus route but via Bower Ashton roundabout, A370, Jessop Underpass, Ashton Ave Bridge, Merchants Rd Bridge, Hotwell Rd, Anchor Rd to Centre hub. *(Need not await rebuilding of Brunel Way bridge; but will be compatible with same).*

Further expansion of the tram network is possible: to **Emerson’s Green/ Fishponds, Warmley/Kingswood, Longwell Green (possible P&R)/Hanham, Whitchurch (P&R) and Cribbs Causeway /Westbury on Trym.** These would otherwise be upgraded as MetroBus services (see TfGB’s *Bus Plan*). **Southmead** could be served as a branch of Gloucester Rd or Whiteladies Rd tram routes.

MAIN PAPER

AIMS AND CONSTRAINTS

1. Transport aims

A Rapid Transit system would have these features:

- Have a marked effect on **modal split** (ie. get people out of their cars, and integrate with the bus system for network comprehensiveness).
- Be comparable to plans and existing systems in Cardiff, Nottingham, Manchester, Sheffield, Croydon, Newcastle.
- Benefit **city-dwellers** not just **rural inbound commuters**.
- Improve **accessibility** to places that hitherto are largely car-dependent. These include outer suburbs like Bradley Stoke, but also major public open spaces, several out-of-town shopping centres including Cribbs Causeway, some in-town centres like AvonMeads. Accessibility by public transport enhances equality of opportunity.
- Quieten and civilise Bristol **Centre** by replacing shoals of buses with trams.
- Create new links to the main rail interchanges **Temple Meads, Bath Spa** and **Bristol Parkway**.
- Given the structure and building densities of Bristol, a full network would cater for each of the following **corridors**, either by tramline, trainline or main bus route: A4 (both ends), A38 (ditto), A 37, A370, A4018, A 431, A420 and M23. That is, up to 10 radial routes. More than one orbital service is desirable.
- In Bristol, the following suburban and employment **hubs** and out-of-town retail centres should be served: Brislington, Knowle, Hengrove Park, Bedminster, Shirehampton, Avonmouth, Clifton Down, Westbury on Trym, Southmead Hospital, Cribbs Causeway, Aztec West, Filton, Emersons Green, Fishponds, Eastgate, Kingswood, Longwell Green. In addition the main public open spaces The Downs, Ashton Court and Blaise Castle. Bath hubs include Royal United Hospital and the University.
- Ideally, a **Park and Ride** on each corridor should be fed into the network, in both Bristol and Bath (the latter including the A4, east).

- Have an at least **10 or 15 minute frequency**. **Capacity** can be increased by vehicle size or service frequency, or the existence of longer-distance express services.
- Be accompanied by:
 - an expansion of **Park & Ride** schemes,
 - a **replanning of bus services** to integrate with (and in some corridors be replaced by) the tram network; bus services from satellite towns to terminate at Park & Ride sites or stations,
 - **suburban public transport hubs**, and likewise at rail stations where possible,
 - **feeder bus** services to suburban hubs, as fully-accessible and demand-responsive services,
 - a **Workplace Parking Levy** or **Road User Charge**,
 - complete **Residents & Businesses Only Parking Schemes**,
 - **city centre access-only plans**,
 - a West of England integrated pre-paid bus/tram/rail **ticketing system**,
 - comprehensive **tram/bus priority traffic management**,
 - **20 mph speed limit**,
 - closure of traffic **rat-runs**, banning of footway parking; low-cost Home Zones,
 - comprehensive **cycleway** and **pedestrian networks**, and workplace or public cycle purchase/hire schemes,
 - **cycle-parking** at suburban bus and trams stops, stations, and at retail, workplace, park and entertainment centres,
 - **public transport maps** publically available at bus/tram stops,
 - a disabled persons' **taxicard** system and restarted **disabled travel website**,
 - free **wheelchair hire** at retail centres,
 - a republished **lorry drivers access map** of the West.

ONLY if implemented in tandem with the **WHOLE** of this set of transport measures will a Rapid Transit system achieve economic

viability, a considerable shift in modal split, and an **equitable** transport system in which movement needs are met into future years and under varying economic conditions. These combined measures need a co-ordinated design and public consultation process conducted by WECA as a **Combined Authority** with a full staff and adopting all Transport Authority powers. This precondition does not obtain at present. We propose that Mayors, committee members and WECA staff (plus the University, UWE, Business West, NHS Trusts, Somerset & Avon Constabulary, etc.) study-visit a comparable city or cities (say, Utrecht, Bordeaux or Cardiff) to learn how it is done.

The ultimate aim is to clear **the public space that is our roads**: for play, talking, walking, cycling and trading, but at the same time to build up a public transport system with two features: fast from the fringe and beyond, but inside the city a crisscross network of potential interchanges (like the intersection bus-stops in rectilinearly planned Toronto or Manhattan) able to **compete with the car's** ability to take you from anywhere to anywhere.

2. Practicalities

A Rapid Transit system must:

- attract **government funding**;
- maximise the use of **existing infrastructure**. However, the Winterbourne viaduct is an unimprovable (except at enormous cost) mainline pinch point, as is the Severn Tunnel; these mainline sections are in effect unavailable to MetroWest. Aside from Regional Rail services, a different route needs to be found between Bristol and Yate. New potential infrastructure does exist: including residual freight-only rail lines at Portbury, Henbury, Westerleigh and Tytherington, requiring, unless freight usage ceases, heavy rail rolling-stock or (when combined with on-street running) 'tramtrain' operation as in Sunderland and Rotherham. There also are usable excessive highway alignments: notably the M32, Avon Ring Road, Temple Way, Bond St, Centre. These highways can and should be rethought: to 30mph (20mph within the city), **de-motorwayed**, with tramtrain routes as part of the repurposing for delivery access to the city centre, amenity provision and landscaping. Part of this will involve replacing the

grade-separated junctions with surface levelling and pedestrian access.

- not (within reason) interrupt **Regional** or **InterCity** rail;
- not be so **expensive** as to cause funding problems, delays or a reduction in aspiration; nor so low a budget as to cause design problems;
- require **passing loops** possibly at new station on main rail lines (including perhaps Royal Wootton Bassett, Corsham, Saltford, St Anne's, Parson St.);
- have cross-town routes as they demand less space than city centre termini, though the first may be vulnerable to long-route traffic delays – a **city centre ring** makes either options viable;
- an **administrative** distinction (as in other Combined Authority metropolitan areas) between Regional Rail and MetroWest services and perhaps stations, with WECA assuming control of the latter and of tram lines. **Professional staff** equivalent to the teams in other Combined Authorities will be essential;
- have access for each MetroWest and tram line to sufficient **depot** facilities, and convenient changeover sites for drivers;
- some streets advantageously **semi-pedestrianised** as part of street-running;
- former tram **alignments** being valuable information (both in terms of urban layout and street form), as to a lesser extent are former rail alignments; either may reduce construction costs. However, new highways have created additional alignment potential (once lane-space ie reallocated to public transport);
- use **compulsory purchase** (albeit sparingly) where required;
- tram routes – **lines** – with roughly **balanced demand** at both termini so as to balance capacity;
- possibly a choice of **vehicle type**. Ideally only one type if at all possible. May also need to joint run with freight, may need to run on-street. 'Tramtrain' may be best option if both situations overlap on a single route. Need to choose floor height, re street and railway platform height – might vary per route.

3. Politics

To reach implementation, a Rapid Transit system necessarily will:

- displace current proposals for a tram to Bristol Airport, and another direct to the Filton Airfield development – both schemes currently align with private developer commercial interests while attempting to draw funding from the government’s allocation towards public transport in Bristol. These proposals represent a severe ‘**opportunity cost**’ to the city, since if government grant is tapped off it cannot go to more socially useful and more widespread investment;
- be environmentally sensitive, and take account of views of **groups such as** cyclists and those who dislike overhead-wires;
- have a logical **phasing**, with growing public support generated;
- not put **developers’ interests** or those of **rural commuters** before those of city residents. A valid social balance is required;
- persuade the **powers that be** that it is not against their interests, and commands public support;
- not **unnecessarily upset** or inconvenience lorry drivers, white van drivers, disabled drivers, taxis, disabled pedestrians, cyclists or anti-social hours commuter car users; need maximum **public involvement** from the start, using suitably attractive materials to convey the essential ideas;
- nudge us towards a reinvention of Avon County Council, able to operate like other **Passenger Transport Executive/Combined Authorities**;
- involve the **transport and public service trade unions** as partners (since they know how things work in practice);
- establish a MetroWest **Passengers’ Forum** from the start, with a rotating elected chair and local district members.

PROPOSED RAPID TRANSIT LINES

BRISTOL RAPID TRANSIT LINES *(In no order)*

New stations shown in italics. Tram/bus hubs in bold. Intermediate destinations underlined.

Sevenside Line

A tram route connecting south Bristol with the work opportunities of Sevenside.

OPTION (a). *via the South Bristol Link Road, Brunel Way and Portway. via:*
Stockwood – Whitchurch – Hengrove Pk Hosp. – Whitchurch Lane – Hengrove Way – Anton Bantock Way – King Georges Hill – Colliters Way – A370 – Brunel Way – Portway – Sevenside (a new route through Sevenside parallel to the Severn Beach line but to the east of it) – Pilning station/Park&Ride site.

stops include: **Hengrove Pk Hosp.** – Hartcliffe – Bishopsworth – Highridge – **Ashton Gate P&R** – Ashton Gate Stadium – Cumberland Basin – Sea Mills – **Portway P&R** – Avonmouth – Sevenside (several stops) – Pilning station/Park&Ride.

OPTION (b). *via Hartcliffe Way and Winterstoke Rd; thereafter as Option (a). via:*
Hengrove Pk Hosp – Imperial Pk – **Parson St sta.** – Winterstoke Rd – Ashton Gate Stadium – (as Option a).

The two options could operate in tandem as a branched line. Interchanges with the Long Ashton Line at Hotwells, for the city centre. This service should be initiated immediately as an interim MetroBus bus service.

MetroRail City Centre Ring (tram upgrade of MetroBus Park & Ride city centre circuit).

Temple Meads sta. – Temple Way – **Old Market** – **Cabot Circus** – Bond St – **Haymarket /Bus sta.** – Lewin’s Mead – **Centre** – Baldwin St – **Bristol Bridge** – Victoria St – **Temple Meads sta.**

MetroWest Frome – Temple Meads – Weston–super–Mare (heavy rail).

stations : Frome – **Westbury** (connections to Salisbury) – **Trowbridge** (connection to Melksham) – (stations to) – **Bath Spa** – *Saltford* – Keynsham – *St Anne’s* – **Temple Meads** – Bedminster – **Parson St** – *Long Ashton* – *Flax Bourton* – Nailsea & Backwell – *Yatton* (for future

reopened line to Clevedon) – Worle – Weston Milton – Churchill Rd – Weston–super–Mare – Uphill (for Weston General Hosp) .*

*** Reopened Clevedon Line** (MetroWest rail or tramtrain; partial replacement of bus X7).

stations: Clevedon (Kenn Rd, bus connection into town) – Lampley Rd – Arnold’s Way (Yatton rail P&R) – Yatton.

(Or operate as a tram/tramtrain, into central Clevedon).

Simultaneously reopen stations on the main line at Flax Bourton and Long Ashton (Wild Country Lane).

MetroWest Avonmouth – Bristol Parkway (heavy rail or tramtrain).

*via : Temple Meads – (all stations to) – Avonmouth – St Andrews – Chittening (for connection to Severn Beach)** – Moorend Farm Ave – M49 P&R (at Hallen junction) – Hallen Rd – Henbury (bus transfer to Cribbs Causeway) – Fishpool Hill – Charlton Rd – North Filton (for Brabazon Arena – A38 P&R (at Filton diamond SW quadrant?) – [Stoke Gifford depot 2 Rapid Transit at Filton diamond NE quadrant?] – Bristol Parkway.*

**** Severn Beach Line** (MetroWest heavy rail or tram/tramtrain).

Retained connection to Avonmouth–Henbury Line at *Chittening*.

Options: operated either as some services from Temple Meads via Avonmouth. Or perhaps better, as a link service *Chittening – Severn Beach [a single rail-based vehicle stored on-line; relocate old Chittening station].*

MetroWest Henbury Line (heavy rail or tramtrain).

via : Henbury/Cribbs Causeway (bus transfer) – (as Line 2a) – North Filton (for Brabazon Arena) – A38 P&R (see above) – Filton Abbey Wood – Horfield Constable Rd – Ashley Down – Stapleton Rd – Lawrence Hill – [St Phillips depot, several site options at existing/former sidings?] – Temple Meads.

M4/ M32 Park & Ride Line (initially MetroBus; thereafter MetroRail tram).

via: M4/M32/Avon Ring Road P&R (site to be determined PDQ) – M32 (de-motorised) – Bond St – Cabot Circus/Haymarket.

stops include: M4/M32/Avon Ring Road P&R – Eastgate – St Paul's/Easton – Cabot Circus/Haymarket.

(Notes. P&R site requires Compulsory Purchase. Whole character of the M32 and Avon Ring Road need rethinking – see Aims and Constraints).

MetroRail Yate and Thornbury Line (tramtrain upgrade of bus T1).

3 route options:

OPTION (a) (preferred). *(Upgrade of MetroBus M3 and T1). Thornbury, via Thornbury and Westerleigh Freight Lines, Avon Ring Road and M32 to Cabot Circus/Haymarket. (Change at Yate for Temple Meads).*

via: Tytherington M5 P&R – Iron Acton – Yate – Westerleigh – M4/M32 P&R – Emerson's Green – Bristol & Bath Science Pk – Badminton Rd – Bromley Heath Rd – [M32 P&R, if located at ARR] – UWE – Snuff Mills/Stoke Pk – Eastgate – Easton/St Paul's – Cabot Circus/Haymarket. [New depot off Emerson's Gn – Iron Acton section?].

OPTION (b) (MetroWest tramtrain). *via MIDLAND LINE (Bristol & Bath Railway Path) into Temple Meads.*

via: as Option (a) to Westerleigh, then new bridge over Avon Ring Road and onwards on reopened Midland rail line, via Pomfrey Hill – Mangotsfield sta. – Staple Hill – Fishponds – Whitehall Rd (interconnecting with Lawrence Hill sta.) – The Dings – via replaced Avon footbridge into Temple Meads.

OPTION (c) *via FISHPONDS RD (tramtrain upgrade of bus 49) to Old Market.*

As Option (b) to *Fishponds* – (via Fishponds Rd) – Royate Hill – Stapleton Rd sta. (connecting with) – Stapleton Rd/Easton Way – Old Market.

Notes. Options (a) and (b) require elements of street-running, and thus tramtrain operation. See Line 3 re Avon Ring Road and M32. The M32 P&R could be partially sited on land currently occupied by the M32.

MetroWest Portishead Line (heavy rail or tramtrain upgrade of bus X3).

via: Portishead – M5 P&R. – Pill – Ashton (for both Ashton Gate Stadium and Ashton Court) – Parson St – Bedminster – Temple Meads. [Depot at Pile Hill, west Totterdown sidings?].

MetroRail Bath Road Line (tram upgrade of bus 394).

via: Bath bus station – Saltford – Keynsham – A4 Bath Rd – Temple Gate – Temple Meads.

stops within Bristol include: Brislington P&R – Arno’s Vale / AvonMeads – Three Lamps – Temple Meads.

Hengrove Park Line (tram upgrade of MetroBus M1).

via: Hengrove Park Hospital – Whitchurch Lane – Hartcliffe Way – Bedminster Rd – St John’s Lane – Sheene Rd – Malago Rd – Bedminster Parade – Redcliffe Hill – Redcliffe Way – Temple Meads sta.

stops include: Hengrove Park Hospital – Imperial Pk – Parson St. – Bedminster Parade – St Mary Redcliffe – Temple Meads.

MetroRail Swindon and Melksham Lines (heavy rail).

via: Swindon – Chippenham – Royal Wootton Bassett – Corsham – Bath Spa sta. – (via Line 1 stations to) – Temple Meads.

Branch from Chippenham to Westbury via Melksham and Trowbridge (upgraded rail service).

MetroWest Filton line (tram upgrade of bus 75).

via: Park Ave – A38 Gloucester Rd – Highwood Rd – Hayes Way – A38 Gloucester Rd – Monks Pk Ave – Southmead Hosp. – Dorian Rd – A38 Gloucester Rd – Stokes Croft – Haymarket.

stops include: Aztec West – The Common – Coniston Rd – Cribbs Causeway – Filton Airport – Rolls Royce – Filton College (for Airbus/Brabazon Arena) – Southmead Rd – Northville Rd – Southmead

Hosp. – Horfield Cn/ Leisure – The Wellington – Filton Ave/Memorial Stadium – HM Prison – Gloucester Rd – Bishopston – Viaduct/Montpelier sta.– Cheltenham Rd – Stokes Croft –Ashley Rd – Stokes Croft – Haymarket.

MetroRail (or MetroBus) Fishponds Line (tram upgrade of bus 49).

via: Westerleigh Rd – Downend Rd – Fishponds Rd – Stapleton Rd – Old Market.

stops include: Emerson’s Green – Downend – Fishponds/*Fishponds sta.* – Stapleton Rd sta. – Easton – Easton Way – Old Market.

MetroRail (or MetroBus) Whitchurch Line (tram: partial upgrade of bus 376).

via: Whitchurch P&R – A37 Wells Rd – Temple Meads sta.

stops include: Whitchurch P&R – Whitchurch – Ridgeway Lane – Airport Rd/Callington Rd – Broadwalk Knowle – Totterdown – Three Lamps – Temple Meads sta.

MetroRail (or MetroBus) Kingswood Line (tram upgrade of bus 43).

via: A420/Avon Ring Road roundabout Warmley – A420 Hill St – Two Mile Hill Rd – Church Rd – West St/Lawfords Gate (one-way) – Old Market.

stops include: Warmley – Kingswood – St George’s – Redfield – Lawrence Hill sta. – Old Market.

MetroRail (or MetroBus) Hanham Line (tram upgrade of bus 45).

via: Longwell Gn (possible P&R) – A431 Hanham High St – Summerhill Rd – A420 Church Rd then as Line 11a).

stops include: Longwell Gn retail pk – Hanham – Redfield.....(as 11a).

MetroRail (or MetroBus) Westbury on Trym Line (tram upgrade of bus 1).

via: Cribbs Causeway hub (San Andreas roundabout) – Merlin Rd – A4018 Cribbs Causeway – Station Rd – Crow Lane – Passage Rd – Falcondale Rd – Canford Lane – Westbury Hill – Westbury Rd – Whiteladies Rd – Clifton Down – Triangle East hub – Park Row – Lower Maudlin St – Haymarket.

stops include: Cribbs Causeway – The Wild Place – Henbury station Castle – Crow Lane – Greystoke Ave – Henbury Rd – Westbury on Trym – Redmaid’s – Brecon Rd – Parry’s Lane – Blackboy Hill – Cotham Hill (for Clifton Down station) – Triangle – BRI – Haymarket.

MetroRail (or MetroBus) Long Ashton Line (tram upgrade of MetroBus M2).

3 route options:

OPTION (a) (preferred). (*Modified upgrade of former Park&Ride service*). *via:* Long Ashton P&R – A370 – A369 roundabout – A370 – Jessop Underpass – Ashton Ave Bridge – Merchants Rd Bridge – Hotwell Rd – Anchor Rd – Centre.

stops include: Long Ashton P&R – Bower Ashton (for Ashton Court and Ashton Gate stadium) – Cumberland Basin – Hotwells – Mardike – @Bristol – Centre.

Requires inbound bus-lane on Hotwell Rd. Releases Ashton Vale MetroBus viaduct for repurposing as a sky walkway/exhibition space.

OPTION (b). (Upgrade of former Park&Ride service). As (a) but crosses River Avon via Brunel Way bridge.

Awaits rebuild of Brunel Way bridge.

OPTION (c). (*Upgrade of MetroBus M2*). *via:* Long Ashton P&R – Ashton Vale MetroBus viaduct – Ashton Ave Bridge – Cumberland Rd – Redcliffe Hill – Redcliffe Way – Temple Meads.

stops include: Long Ashton P&R – Ashton Gate (for stadium) – Cumberland Basin – Spike Island – Bathurst Basin – Redcliffe Hill – St Mary Redcliffe – Temple Meads.

RESIDUAL METROBUS SUB-RADIALS, BRISTOL.

Outwards from central or suburban hubs.

- **Triangle (or Cabot Circus/Haymarket) to:**
 - Stoke Rd to Sea Mills, **Shirehampton, Avonmouth sta.**
 - Henleaze Rd to Southmead, **Southmead Hosp.**
- **Viaduct/ Montpellier sta. (or Stokes Croft/Haymarket) to:** Filton Ave, **Filton Abbey Wood, UWE.**

- **Eastgate (or Cabot Circus/Haymarket):** Romney Ave to: Lockleaze, UWE.
- **Old Market** to: Fishponds Rd to Fishponds, Down End, Bristol & Bath Science Pk., Emerson's Gn.
- **Lawrence Hill (or Old Market)** to: Summerhill Rd to Hanham, Longwell Gn,
- **Arno's Vale (or Temple Meads)** to: Sandy Pk Rd Brislington, Broomhill.
- **Broadwalk Knowle (or Temple Meads)** to: Sturminster Rd to Stockwood.
- **Bedminster Parade** to: Wedmore Vale to Knowle West, Imperial Pk, Hengrove Pk Hosp.

Notes: ideally each interchange or turning-point should itself be a local destination, though this might not always be possible. For bus frequency and capacity purposes, it may be practical to take services on to the next hub towards the city. Frequency should not fall below 15 minutes.

COMPLEMENTARY ORBITAL METROBUS LINES, BRISTOL.

To create a 'go anywhere' public transport system, when combined with radial and demand-responsive feeder routes. See TfGB *Bus Plan*. These routes interconnect suburban bus hubs (shown in bold); other significant destinations are underlined. Initially bus operated, some might merit tram conversion in the future.

Inner Ring (partial replacement of buses 24, 71).

via: **Long Ashton P&R** – A369 roundabout – Winterstoke Rd/Marsh Rd/Ashton Rd – North St Southville – Cannon St – Sheene Rd – St John's Lane – Wells Rd – Priory Rd – Talbot Rd/Kensington Pk Rd – Bath Rd – St Phillips Causeway/Easton Way – Lower Ashley Rd – Ashley Rd – Stokes Croft – Marlborough St (later, Haymarket – Lower Maudlin St) – Park Row – Triangle – Jacob's Wells Rd – Hotwell Rd – Merchants Rd – McAdam Way – Brunel Way – A369 roundabout – A370 – **Long Ashton P&R**.

stops include: **Long Ashton P&R** (*interconnect with Middle Ring*) – Bower Ashton/Ashton Court – Ashton Gate Stadium – North St Southville – **East St Bedminster** – Victoria Pk – **Broad Walk Wells Rd** – **Wick Rd/Bath Rd** (*interconnect with Middle Ring*) – **Arno's Vale** –

AvonMeads – Lawrence Hill (*connection to sta.*) – Stapleton Rd – junction 3 (former) M32 – St Paul’s – Stokes Croft/ Haymarket (*interconnect with City Centre Ring*) – Bus Station – BRI – Triangle – Hotwells – Harbourside – Bower Ashton/Ashton Court – Long Ashton P&R (*interconnect with Middle Ring*)

Notes. Interconnects with Bus Station, City Centre Ring and Middle Ring. Extensive bus priority measures, speed control and junction improvement is desirable for this route, co-incidentally reducing general traffic capacity in this inner city, poor air quality zone, but greatly increasing urban connectivity. Restructure Haymarket. St Phillips Causeway/Easton Way requires similar treatment to that recommended for Avon Ring Road and M32: see Practicalities.

Middle Ring (partial replacement of buses 24A, 75/76, 36, 17, 3).

via: Long Ashton P&R (*interconnect with Inner Ring*) – A369 roundabout – Winterstoke Rd – Bishopsworth Rd – Bedminster Down – Whitchurch Rd – Hareclive Rd – William Jessop Way – **Hengrove Pk Hosp.** – Whitchurch Lane – Imperial Pk – Hengrove Way – Airport Rd – Callington Rd – **Brislington P&R** – A4 Bristol Hill – Wick Rd – Newbridge Rd – Netham Rd – Blackswarth Rd – Chalks Rd – Whitehall Rd – **Fishponds Rd** – Muller Rd – Filton Ave – Gloucester Rd – Dorian Rd – **Southmead Hosp.** – Monks Pk Way – Southmead Rd – Eastfield Rd – Water Lane – Canford Lane – Sylvan Way – Shirehampton Rd – Avonmouth Rd – **Avonmouth sta.** (*interconnect with Outer Ring*)

stops include: Long Ashton P&R – Bower Ashton/Ashton Court – Ashton Gate Stadium – Winterstoke Rd – **Parson St sta.** – Bishopsworth – Hartcliffe – **Hengrove Pk Hosp.** – Imperial Pk – Hengrove Leisure Centre – Airport Rd/Callington Rd – **Brislington P&R** – Brislington Retail Pk/trading estate – Sandy Pk Rd **Brislington** – **St Anne’s sta.** – **Redfield** – **Fishponds Rd** – **Eastgate** – **Ashley Down sta.** – **Horfield Cn/ Horfield Leisure Centre** – **Southmead Hosp.** – Southmead – **Westbury on Trym** – Blaize Castle estate – Sea Mills – Kings Weston estate – **Shirehampton** – **Avonmouth sta.** (*interconnect with Middle Ring*)

Notes. Partly as Inner Ring. Not a route to be travelled any length, but locally enables connections to several significant hitherto car-based retail and employment centres, hospitals, leisure centres, major public open spaces, MetroWest stations and the large otherwise isolated low-

income residential areas of Hartcliffe, Knowle West, Southmead and Sea Mills.

Outer Ring (partial replacement of buses 3, 18/19, 48A, 17).

via: **Avonmouth sta.** – Avonmouth Rd – Kings Weston Ave – Long Cross – Kings Weston Rd – Henbury Rd – Station Rd – **Cribbs Causeway** – Hayes Way – Gypsy Patch Lane – Hatchet Rd – **Bristol Parkway sta.** – Gt Stoke Way – Avon Ring Road – Coldharbour Lane – Stoke Lane – Frenchay Pk Rd – Blackberry Hill – Fishponds Rd – Lodge Causeway – Lodge Rd/Soundwell Rd – Kingswood (one-way system) – Hanham Rd – High St – Bath Rd – Keynsham Rd – **Keynsham sta.** – **Keynsham.**

stops include: **Avonmouth sta.** – Lawrence Weston – Blaize Castle – Henbury – **Henbury sta.** – **Cribbs Causeway** – Aerospace Bristol – Rolls Royce – **Bristol Parkway sta.** – UWE – Stoke Pk estate – Snuff Mills – Glenside UWE – Fishponds/Fishponds sta – Kingswood – Hanham – Longwell Green – Willsbridge Mill – Keynsham

Notes. Provides direct orbital connections between Cribbs Causeway, Bristol Parkway station and UWE. Also serves significant public open spaces. Ties in Avonmouth, Kingswood and Keynsham. (An express variant – Keynsham – Avon Ring Road – Bristol Parkway – Cribbs Causeway – appears below as part of a connecting route to Severnside).

MetroBus Severnside Line.

A route connecting south Bristol with the work opportunities of Severnside.

OPTION (a). *via the South Bristol Link Road, Brunel Way and Portway.*

via: Hengrove Pk Hosp. – Whitchurch Lane – Hengrove Way – Anton Bantock Way – King Georges Hill – Colliters Way – A370 – Brunel Way – Portway – a new route through Severnside parallel to the Severn Beach line, but to the east of it – *Chittening sta* – Severn Beach line to Severn Beach.

stops include: **Hengrove Pk Hosp.** – Hartcliffe – Bishopsworth – Highridge – **Ashton Gate P&R** – Ashton Gate Stadium – Cumberland Basin – Sea Mills – **Portway P&R** – Avonmouth – Severnside – *Chittening sta.* – Severn Beach sta.

OPTION (b). *via Hartcliffe Way and Winterstoke Rd; thereafter as Option (a). via: Hengrove Pk Hosp – Imperial Pk – Parson St sta. – Winterstoke Rd – Ashton Gate Stadium* – (as Option a).

The two options could operate in tandem as a branched line.

MetroBus Avon Ring Road Line.

A parallel initial Avon Ring Road MetroBus service linking Severnside to the far East Bristol. Conceivably later converted to a MetroWest tram service.

via: Keynsham – Keynsham Rd – A431 – Marsham Way – Avon Ring Road – A38 Gloucester Rd – Hayes Way – Cribbs Causeway – Hallen Rd – Severn Rd.

stops include: **Keynsham – Keynsham station – Longwell Green – Warmley – Emerson’s Green** (interconnecting to Yate Line) – Bristol & Bath Science Park – Badminton Rd – Bromley Heath Rd – [M32 P&R, if located at ARR] – **Bristol Parkway – Cribbs Causeway – Henbury station** – Severnside (connecting with Severnside line).

FEEDER BUS SERVICES (Bristol MetroBus locals)

Demand-responsive and feeding into suburban tram/bus hubs. The aim (adopted in the past by Bristol City Council) is for all households to be within 400m of a bus-stop Ideally. Ideally, 10–15 minute frequency short-distance circuits, operated by single-decker or minibus, will terminate at **suburban hubs** like Staple Hill, Kingswood, Broadwalk Knowle, Hengrove Park Hosp., Southmead Hosp., Bristol Parkway sta., Avonmouth sta., Bedminster Parade, etc.. The extent of the feeder network is dependent upon the extent of the ‘tails’ decided for trunk tram and radial bus routes.

Shorter feeders can run with minibuses, as does currently Community Transport. They should be **Demand Responsive** services, serving the needs also of the disabled. There will need to be a considerable increase in bus fleet and mix, and in staff; though offset by replacement by trams. The extent to which multiple-vehicle journeys are acceptable to users is highly dependent upon interchange locations, interchangeable ticketing, and the frequency of services. Funding of feeder services is the issue to be solved.

Demand Responsive services can likewise connect nearby rural areas with Bristol's **Park&Ride** sites for onward travel.

General notes for Bristol

MetroWest rail and tramtrain.

1. The MetroWest rail and tram lines necessarily will evolve an approximate **phasing** of implementation: ie. of commercial viability, political will and outside aligned interests. See the proposed investment tranches (pp. 9 and 35).
2. Reopening of Clevedon Line would require the enactment of a Safeguarding Line, perhaps involving some Compulsory Purchase in Yatton, or realignment.
3. YTL (developers of **Brabazon Arena**) may be interested in joint ventures for items 3 and 7 in the suggested programme tranches: the MetroWest Henbury and Filton tram lines, all serving Brabazon Arena, Filton Airport and Cribbs Causeway. Also the Outer Ring bus service. Car-parking at the Arena and at **Cribbs Causeway** should be constrained for environmental reasons.
4. Early decisions on **MetroWest rail depot safeguarding** are crucial. Network Rail must be approached re possible depot locations at existing and former sidings. These include: East Depot (Brislington) accessible from the Bath mainline; the abandoned eastern half of West Depot (Bedminster Down); Filton diamond; sidings by Totterdown; Avonmouth; Chittening; Westbury (Wilts.); and a reallocation of the various St Phillips Marsh sidings. New trackside greenfield depot facilities may be possible alongside for example the Thornbury, Hallen, Westerleigh, Flax Bourton and Clevedon tracks. Presumably the fewer depots the better; but each MetroWest line must be efficiently linked to its depot.
5. '**Train paths**' (time allocations) already owned by the Bristol Port Company on both the Portbury/Portishead and Avonmouth/Henbury lines must not be allowed to crowd out (or fleece) future MetroWest passenger operations. Similarly, unnecessarily high planned **operating speeds** for electrified High Speed and Regional rail services must not

be allowed to crowd out MetroWest passenger frequencies on the Swindon, Birmingham and Taunton main lines.

6. Given the three previous points, early negotiations are required with **Network Rail** (including their estates and High Speed managers), **YTL** and **Bristol Port Company**. To date, WECA and the Local Authorities have a poor record (whether through inexperience or compromised interests) in such negotiations. Firm but mutually beneficial negotiations are essential, and will require active government support and perhaps the involvement of local MPs.
7. There similarly has been a reluctance to plan **Safeguarding Lines**, or contemplate **Compulsory Purchase**. This too must change, if WECA is to hold its head up as a genuine **Combined Authority** with transport powers. To date, failure in this regard has dogged the West. Nothing is impossible: in the past Bristol City Council has successfully bought the Wapping Wharf line and safeguarded tram routes and rail sidings. These skills must be revived. Avon County Council planned a tram system. WECA has to catch up with the other English and Welsh metro authorities' planning and implementation capabilities and, importantly, political will.

On-street trams and buses.

8. The suggested tram routes follow fairly closely the city's former on-street tram network (visible online at <http://curlybrackets.co/blog/2016/03/23/bristol-tramways/>), except in the city centre and outer fringe. (For today's bus routes compare: <https://www.firstgroup.com/bristol-bath-and-west/routes-and-maps/network-maps>). Throughout the main radial routes, '**green wave**' bus/tram priority traffic signal systems should be installed, except at bus/tram-gates.
9. While most stretches of tram route are anticipated to be on-street, this being the traditional option and well suited to garnering passenger patronage, the less expensive **off-street** option may be possible for some stretches. Where so, this can sometimes be considerably less expensive. However, opportunities are limited in inner Bristol, and where they exist – as on the Hengrove, Wells Rd and Fishpond routes – have to be balanced against the preservation of greenspace. Severnside offers more opportunity.

10. Equally crucial are **tram depot** needs. The original tram system had depots at the outer ends of its lines at Brislington, Eastville, Staple Hill, Ashley Down, Bedminster, Brislington, St George's and Kingswood. Current options include the BCC-owned former tram depot at Brislington (Arnos Vale) (though vehicle width may be an issue), and at the existing Lawrence Hill and Hengrove bus depots operated (owned?) by First Bus. Probably there will be a shortage of capacity unless additional sites are identified and safeguarded. **First Bus** should be brought in at an early stage. If trams gradually replace many (but not all) trunk bus routes, there will need to be a move away from double-deckers towards possibly single-decker and demand-responsive minibus feeder services terminating at suburban hubs; this will impact upon future **bus depot** requirements. Extra net depot capacity will be required as service frequencies and rolling-stock fleets increase.
11. Radial tram and bus routes are open to redesign, and for instance might have outer **suburban loops** as in Nottingham: for example. Otherwise outer suburbs need be served by frequent feeder buses).
12. The suggested **Orbital MetroBus lines** (refer to the TfGB *Bus Plan*) could in part or whole eventually be converted to tram operation. Either way, intersections between radial and orbital routes, and MetroWest stations, must be designed (including details of their stops) so as to allow ease of **interchange**, ideally at suburban public transport hubs. The extent to which this is possible may define the Orbital lines' viability. All routes should be subject to an experimental period and modified as experience develops. An initial service with single-decker buses might be appropriate, but frequency should be less than 15 minutes if they are to be attractive to potential passengers. Some improvements to road junctions may be required, together with bus priority measures at congestion points including bus-triggered pre-signals, parking control and bus-gates; under current traffic conditions these routes would simply not work. Unfortunately, the political will and professional capability to tackle the urban car nuisance has not been evident in Bristol since the demise in 1996 of unified transport planning under Avon County Council. This must change.

13. WECA statements re the unsuitability of some **road-widths** for trams (eg. Gloucester Rd) are misguided, given experience elsewhere including West St in Sheffield, and in Amsterdam, Krakow and elsewhere. Officers require a more formal tram-wise retraining; while councillors and officers might go on more **study tours** (including to Bristol's twinned cities of Bordeaux and Hannover, but equally to Manchester, Nottingham, Sheffield, Croydon and Cardiff) as already suggested above.
14. Later phase tram lines can operate in the interim as trunk **MetroBus** lines, which must be embraced within the overdue replanning of the city's bus networks, including orbital services, suburban hubs and feeder bus services (see TfGB *Bus Plan*).
15. Detailed work is needed on the detailed planning of **bus hubs**: their siting, vehicle capacity, turning-points, facilities, the environmental carrying-capacity of approach streets, etc..

PROPOSED RAPID TRANSIT LINES FOR BATH

The suggested lines match pretty well both with the city's former tram services, but also the draft network proposed by Professor Lesley for the Bath tram group (available at <https://bathtrams.uk/solving-baths-traffic/one-set-of-proposals-for-a-new-tram-layout/>): namely, lines to Newbridge P&R (with a branch to Royal United Hospital), Lansdown P&R, the A4 eastwards (and a needed P&R), University of Bath, Odd Down P&R, and the A4 to Bristol, with all linking to Bath Bus Station/Bath Spa railway station and some sort of city centre ring. No route is as yet discussed for the Oldfield Pk/Twerton/Whiteway sector. Combe Down might remain bus-served. Bath Spa University can link to the A4 tram by a short shuttle bus to The Globe.

A capable report has been prepared by consultants Atkins for B&NES Council in 2017 (available at <https://democracy.bathnes.gov.uk/documents/s49556/TramReport.pdf>); this likewise is broadly compatible with these proposals; as a professional study it is inclusive of demand, cost and environmental assessments. Its suggested corridors and routes mirror those shown here, but omit the University Line. Atkins made no specific suggestions for city centre routings; nor for depots (but heavily suggested the latter be located beside the P&R sites as in Nottingham – which does seem appropriate).

Tram/bus hubs in bold; intermediate destinations underlined.

To Bristol, Swindon, Frome (MetroWest rail). *See Bristol section.*

A4 Lower Bristol Rd Line (tram). *See Bristol section.*

via : Bristol Temple Meads sta. – Temple Gate – A4 Bristol Rd via Arno's Vale and Brislington– Keynsham –Saltford – Lower Bristol Rd – Dorchester St (or Midland Br Rd – Charles St).

stops include: **The Globe** (for Bath Spa Univ shuttle bus connection) – Windsor Br Rd – Pines Way (or Green Park Station) – **Bus station/Bath Spa station.**

Bath City Centre Ring (tram)

Bus station/Bath Spa station – Dorchester St – **St James Par**/Monmouth St (eastbound) / **James St West** /Charles St (westbound) – Chapel Row – **Queen Squ** – Gay St – **George St** – Broad St – High St/**Orange Grove**

(northbound) / Bridge St/**Grand Par** (southbound) – Mavers St – **Bus station /Bath Spa station** (*approx. stops – city centre public transport hubs – in bold*). See notes, below.

Newbridge (tram).

via : A4 Newbridge Rd – Upper Bristol Rd – Monmouth Pl – Charlotte St – Queen Squ.

stops include: **Newbridge P&R** – Victoria Pk – **Queen Squ.**

Weston Line (tram).

via : Weston High St – Crown Rd – Combe Park – Newbridge Hill – Upper Bristol Rd (thence as Newbridge Line).

stops include: Weston – Royal United Hospital – Victoria Pk (thence as Newbridge Line).

Lansdown Line (tram).

via : Lansdown Rd – Broad St.

stops include: **Lansdown P&R** – George St.

Batheaston Line (tram).

via : Batheaston – A46/A4 P&R (wherever sited) – London Rd – Walcot St – High St – Orange Grove / Grand Par.

stops include: Batheaston – **A46/A4 P&R** (wherever sited) – Walcot St – Orange Grove / Grand Par.

University of Bath Line (tram).

via : Univ of Bath – Bathwick Hill – Pulteney Rd South – North Parade Rd – Mavers St

stops include: Univ of Bath – Bathwick Hill – Bath Rugby / Cricket grounds – **Bus station/Bath Spa station.**

Odd Down Line (tram).

via : Odd Down P&R. – Wellsway – Wells Rd – Dorchester St

stops include: **Odd Down P&R.** – Frome Rd – Bear Flat – **Bus station/Bath Spa station.**

Midsomer Norton/Radstock/Peasedown Line (tram)?

(No route is discussed at this time).

General notes for Bath

1. The first two items likely would come first. Otherwise no **phasing** is attempted here.
2. Lines might best operated cross-city, using parts of the City Centre Ring, thus reducing terminus needs in city centre.
3. **City Centre Ring** routing needs discussion. Both the former network and Professor Lesley's routes penetrate the city centre more tightly than the above proposal. Accessibility considerations have to be balanced against environmental ones including fuller pedestrianisation (eg. at Theatre Royal).
4. The City Centre Ring could operate either one- or two-way (some sections are local one-ways). Could operate either merely through cross-city linking of the various tram Lines, and/or have its own circular City Centre Ring Line.
5. Throughout Bath including the city centre the existing **bus stops** seem designed more around the needs of general traffic than public transport. They could be re-sited to facilitate bus/tram/rail interchange.
6. **Unofficial commuter carparks** – like Weston Rd – should be closed.
7. Both the **A4/A46** and the **A36** lack **Park&Ride** carparks currently. If the latter is achieved, a tram route to Bathampton becomes justified.
8. No suggestions have been made for Bath tram **depot facilities**, but several could be by Part&Ride sites.
9. Bath needs a **parallel road hierarchy and traffic re-evaluation**. This could define the traffic levels to be allowed on roads including Queen Square, George St, London Rd, Walcot St, Pulteney Rd South, Lower Bristol Rd, James St West where tram conflicts might occur, and environmental conditions including air quality have already become poor. Local improvements to these roads for residents, pedestrians and cyclists can be sold as part of the benefits of investing in a tram system. Tram/bus priority traffic signals would be desirable; but so too is a clamp-down on private and public on- and off-street parking in the city centre, an expansion of P&R capacity, and improved rail and bus services from Bristol, Trowbridge, Frome, Corsham, Keynsham, Radstock, Midsomer Norton, etc.). The cited roads also act as inner ring roads and quasi-

bypasses to the city; a wider traffic plan is therefore required of B&NES for the whole of Bath and its environs (including the A420, A39, A46/36, A363, M4), to disincentivise this usage.

STAFFING, ORGANISATION AND NEGOTIATIONS

Bristol would benefit from a genuine study of the type Atkins has done on trams for B&NES (albeit its status is unknown). **MetroWest** planning must be united with a tram and a bus study: thus achieving an integrated public transport plan, which itself would require a strong **highways traffic management** element and rigorous city **parking policies**. This considerable exercise cannot be done soon enough, and would be welcomed by the **DfT**. Neither WECA nor the Local Authorities yet have the necessary professional staff in-house as other Combined Authorities do. **Consultancy** will be required initially. Or WECA could be nudged into becoming a real Combined Authority, acquiring **adequate in-house staff**, and somewhere finding the **political will**. Until this happens, serious DfT infrastructure cash will prove elusive in the West (except, inappropriately, for roads). If **Highways England** were drawn in (as it needs to be), this might help things along: they have long been hoping to **de-motorway the M32**, given its aging infrastructure and marginal role in the national motorway network. They are very aware that local traffic continues to overload the M4/M5 junction and the M5 Avon bridge; anything (excluding dangerous 'smart' ie. no hard shoulder motorways) would be better. In the end the West's illegal levels of **air pollution**, and its worsening **car and van congestion**, may prove the catalysts.

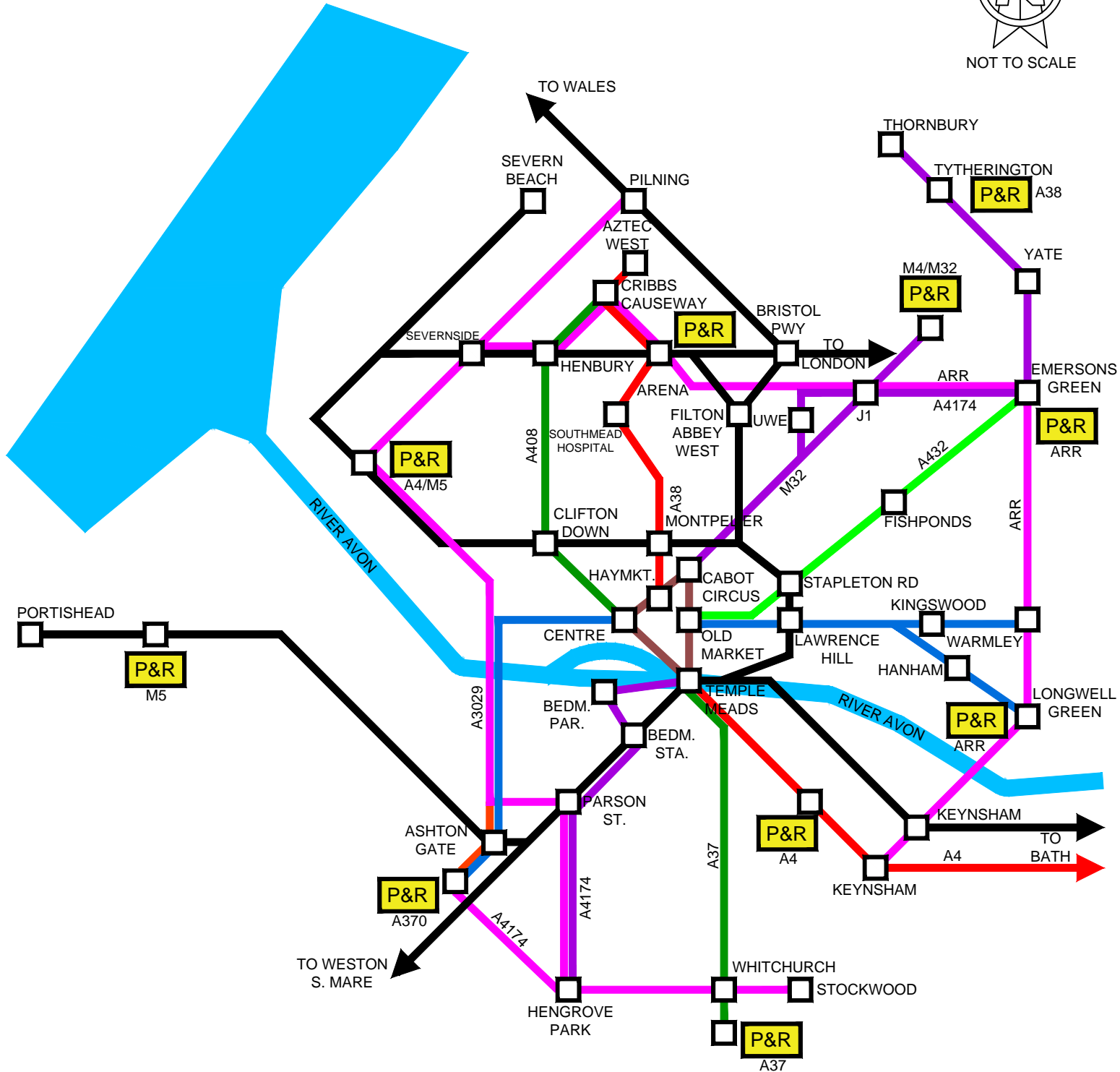
SUGGESTED PROGRAMME (*Bristol area only*)

The prioritized investment programme given on page 9 (above) is an attempt to meld technical, political, funding and environmental factors into a single outcome. It can be modified, and doubtless will be.

It builds upon the current WECA/BCC desire to see **Rapid Transit** service to four corners of Bristol, but does so by combining and integrating **MetroWest** heavy rail upgrades with selective corridor **tram** reinstatements. However it deliberately **omits** a service to **Bristol Airport**, whose expansion has been turned down by North Somerset Council and which is already served by the airport bus. It omits also any expensive and rather inaccessible **Underground** sections.

RAPID TRANSIT PLAN FOR BRISTOL - MAP 1

TfGB 6/20



RAIL
PORTISHEAD
SEVERN BEACH
HENBURY
BATH
WESTON S. MARE

TRAM	
BATH A4	FISHPONDS
FILTON	AVON RING ROAD
WESTBURY O.T.	SEVERNSIDE
WHITCHURCH	ASHTON
M32 P&R	KINGSWOOD
YATE	HANHAM
THORNBURY	CITY CENTRE RING
HENGROVE PK.	

PARK & RIDE
P&R