Is an improved bus service an adequate alternative to a bypass for Hereford?

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Contents

Abstract

Whether or not Hereford should receive a bypass is one of the most controversial topics of Herefordshire politics. In this project, the existing evidence is examined, and the bypass is contrasted with a novel proposal for an enhanced bus network. Whilst the latter is found to be unlikely to meet Herefordshire Council's intended goals, the project concludes that there is nonetheless sufficient justification for many of the bus network's improvements to be implemented.

Introduction

Hereford, the primary settlement in rural Herefordshire, adjacent to the Welsh border, is a small Cathedral city of roughly 62,000 residents.[1] Herefordshire is the fourth least densely populated local authority in England,[2] which naturally challenges aspirations for public transport provision – there are only four railway stations in the county, and bus patronage is the third lowest in the England, having almost halved since 2010.[3] This is not surprising – the network is discordant, with six different operators running services in the city alone,[4] no multi-operator tickets, no central bus station, infrequent timetables[5] and poor connections with other services and transport modes.

Hereford is also the largest city in England without a bypass.[6] At present, almost all of its through traffic – and a huge amount of its local traffic – is directed over Greyfriars Bridge, via the National Highways-controlled A49, which runs directly through the city centre, with significant resulting problems. Whilst there have been considerable improvements over the last decade (Nitrogen Oxide levels in Hereford City Centre did not exceed national objectives in 2023[7]), there are still concerns regarding the impact of traffic on air quality, water quality and biodiversity. Congestion is also a major fear – particularly for business[8] and the emergency services.

Hereford's transport network (public and private) is, as few would disagree, inadequate, and what to do about it is one of the largest points of discussion in the county.

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[1] Understanding Herefordshire, Herefordshire Council, 2024, https://understanding.herefordshire.gov.uk/population/population-around-the-county/ [accessed 12th September 2024].

[2] Local Government Association (data from the Office of National Statistics), Population density, persons per hectare, 2023, https://lginform.local.gov.uk/reports/lgastandard?mod-metric=176&mod-period=1&mod-area=E92000001&mod-group=AllSingleTierAndCountyLaInCountry_England&mod-type=namedComparisonGroup [accessed 12th September 2024].

[3] Department for Transport, BUS01f, November 2023, https://www.gov.uk/government/statistical-data-sets/bus-statistics-data-tables [accessed 12th September 2024].

[4] DRM Bus, Newport Bus, Sargeants Brothers, Stagecoach West, TrawsCymru (Stagecoach South Wales) and Yeomans Canyon Travel. These are the operators of routes into and around Hereford that run more frequently than once daily. There are others who run less frequent services.

[5] Most town routes are hourly during the day, with no evening service. There are some exceptions, but these are inconsistent and not necessarily that useful as routes.

[6] Cabinet Office, List of Cities, August 2022, https://www.gov.uk/government/publications/list-of-cities/list-of-cities-html [accessed 3rd October 2024]. Bypass provision assessed by Google Maps!

[7] Broughton G, Air Quality Data Management, Herefordshire Air Quality Data Ratification 2023 and the LAQM statistics, January 2024, https://www.herefordshire.gov.uk/downloads/file/26139/air-quality-data-for-the-hereford-and-leominster-air-quality-stations-2023 [accessed 18th September 2024]. Geoff Broughton is a former Civil Servant and air quality specialist, providing analysis for many local authorities, lending some credence to this council claim that has an otherwise perverse incentive.

[8] Herefordshire Business Board, Traffic Congestion, c.2021? https://www.herefordshirebusinessboard.co.uk/projects/traffic-congestion/ [accessed 10th September 2024].

Impacts of bypasses and literature review

There is no shortage of potential alleviations to Hereford's transport problems. Perhaps the most lasting suggestion, though, is that of a bypass, allowing through traffic to avoid the city centre, hopefully relieving congestion.

Despite efforts to construct a Western Bypass dating back to the early 1990s,[9] plans have repeatedly failed to materialise. In 2021, following an unsupportive report published by consultants WSP, which found that only 7% of vehicle movements consist of through traffic,[10] the (Independent and Green coalition) Council voted to formally cease work,[11] as it was inconsistent with the "declared climate and ecological emergency", eliminating the possibility of a new road before the end of the decade.[12]

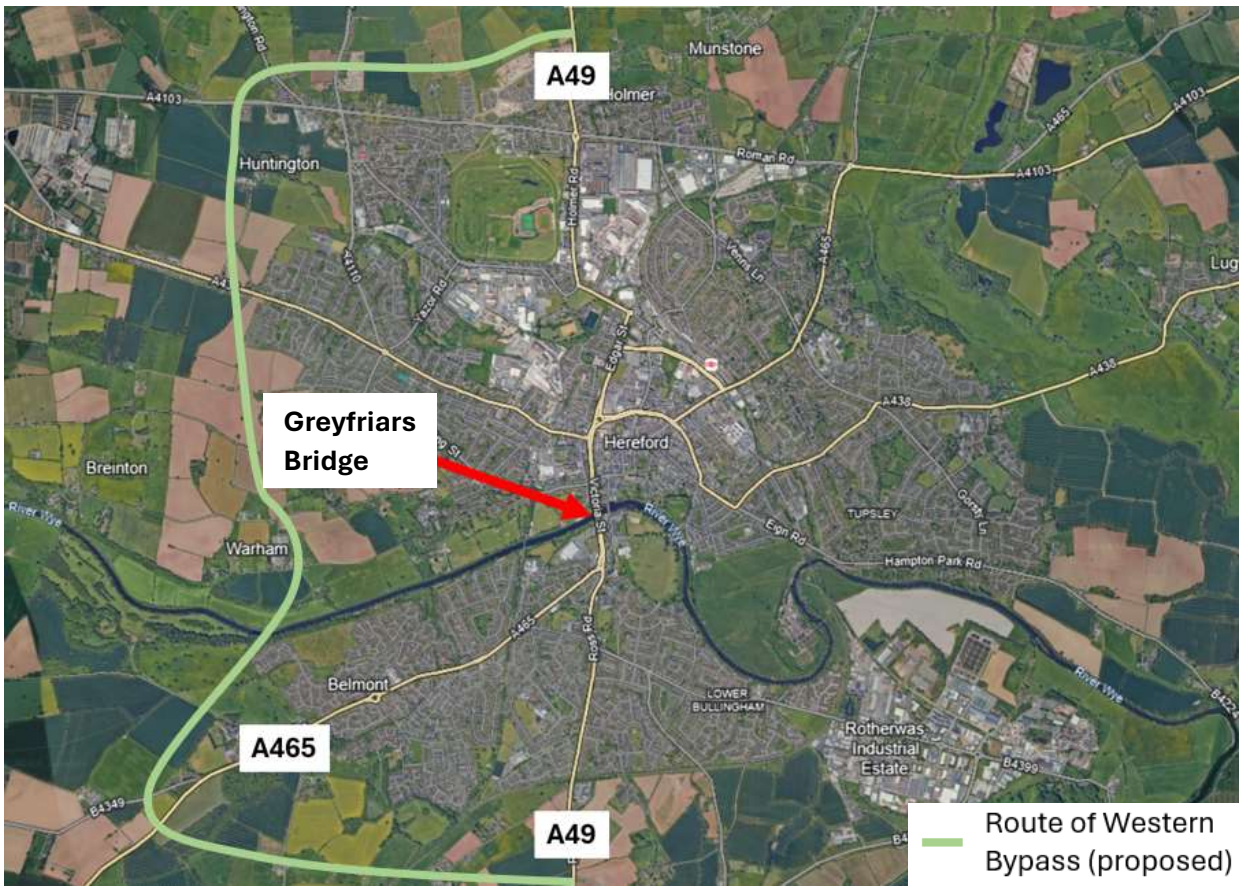

Figure 1 – planned route of the Hereford bypass.

[9] Hughes S, Hansard, January 1993, Vol. 217, https://api.parliament.uk/historic-hansard/written-answers/1993/jan/20/hereford-bypass [accessed 3 October 2024].

[10] WSP on behalf of Herefordshire Council, Hereford Transport Strategy Review, 2020, page 23, https://councillors.herefordshire.gov.uk/documents/s50090720/Appendix%201%20Hereford%20Transport%20Review%20Technical%20Report%20WSP%20November%202020.pdf [accessed 1 July 2024].

[11] Herefordshire Council, Work on Bypass Ceases, February 2021, https://www.herefordshire.gov.uk/news/article/1092/work-on-bypass-ceases [accessed 18th September 2024].

[12] Herefordshire Council, New Road Strategy for Hereford, March 2024, page 20, https://councillors.herefordshire.gov.uk/documents/s50117361/New%20Road%20Strategy%20for%20Hereford%20JC.pdf [accessed 10 September 2024]. Estimate of 2033 given. If anything, Herefordshire Council are incentivised to give an overly optimistic estimate.

However, in the intervening years, the Council has returned to Conservative and Liberal Democrat control, parties which support the bypass' construction. Accordingly, plans have recommenced, with detailed motivations beyond just congestion relief. They can be roughly summarised as:[13] [14]

- Improving resilience of the road network in case of disruption events (such as flooding).
- Reducing journey times and traffic congestion within and around Hereford.
- Improving air quality.
- Supporting growth of business (via increased potential for goods traffic and customers).
- Supporting population growth (by providing infrastructure for new dwellings).

Whether a bypass would be able to achieve these goals is highly contested, however. The 2021 cancellation was controversial enough to be labelled "a phenomenal failure for which [the former council] must never be forgiven" by a local MP,[15] yet the former council leaders themselves declared the project a "zombie" in response, that would benefit "only a few landowners, developers and people who don't live or work in Hereford".[16]

Such politicisation of bypasses is not unique to Hereford and makes objective analysis difficult. But there may be merits to the Independents' and Greens' arguments. In the case of road network resilience, for example, benefits would indeed be largely confined to through traffic not serving Hereford at all. If Greyfriars Bridge – still the only bridge into the city (see Fig. 1) – or its surroundings were to flood,[17] travel into and around Hereford would still be extremely challenging, regardless of whether a bypass exists or not.

Their points on landowners and developers may also carry some weight. There is a very real risk that developments around the bypass (considered a key reason for building it) will be car-orientated unless the council embarks on an ambitious agenda of planning reform, which, considering their budgetary pressures[18] and general lack of discussion of the subject, appears highly unlikely.

This is not merely theoretical. A *Campaign to Protect Rural England*-commissioned report exhibited many examples of exclusionary car-centric development spurred on by new road construction,[19] and such developments can have wider economic impacts, too. As early as 1991, some transportation

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[13] Herefordshire Council, Cabinet agrees to progress Hereford Western Bypass, March 2024, https://www.herefordshire.gov.uk/news/article/1728/cabinet-agrees-to-progress-hereford-western-bypass [accessed 19 September 2024].
[14] There are also separate objectives of the broader Local Transport Plan, but these will not be directly considered here.
[15] Wiggin B, Hansard, Vol. 743, Rural Transport, January 2024, https://hansard.parliament.uk/commons/2024-01-08/debates/FB09F302-E943-4D33-8E49-D153130F0294/RuralTransport [accessed 14 June 2024].
[16] McEwan G, Hereford Times, quoting Councillor Liz Harvey, March 2024, https://www.herefordtimes.com/news/24203418.herefords-bypass-shouldnt---wont---built-party-leaders/ [accessed 19 September 2024].
[17] This is not particularly uncommon: Herefordshire 2019/20 Section 19 Report, Balfour Beatty and Herefordshire Council, https://www.herefordshire.gov.uk/downloads/file/23209/herefordshire-flooding-section-19-report-2019-20 [accessed 19 September 2024]. As before, if anything, the Council is incentivised to downplay the risks of flooding, making it effectively certain that there they are considerable.
[18] Herefordshire Council, Budget Consultation 2023/24, https://www.herefordshire.gov.uk/budget-proposals2023 [accessed 10 September 2024].
[19] Sloman L, Hopkinson L, Taylor I, Transport for Quality of Life/CPRE, The Impact of Road Projects in England, March 2017, https://www.hedgehogcycling.co.uk/cpre-roads-report.pdf [accessed 19 September 2024].

engineers even suggested a direct link between unrestricted development around bypasses and the decline of many US city centres.[20]

Unfortunately, if not surprisingly, bypasses and road construction are complex topics, and it is impossible to answer conclusively if they are able to meet their objectives. The discussion's polarised nature means that British studies are often funded by organisations with pre-existing points of view (the *Campaign to Protect Rural England* report, for example) and thus, despite convincing analysis, it is difficult to fully trust their conclusions.

Even international research contains very little agreement as to bypass impact. In Israel, it has been found that bypasses can have considerable positive effects on wealthy, larger cities, but disadvantaged small towns may see "destructive" results.[21] The level at which a town is considered "disadvantaged" is indeed drastically different between Israel and the UK, but this study nonetheless highlights bypass' contrasting effects on different places.

Returning to a UK specific context, the highly respected *American Journal of Public Health* studied many schemes and found notable reductions in social disturbance (fumes, noise etc.) on existing settlements after the construction of bypasses in the UK,[22] supporting the council's objectives of improved air (and general environmental) quality. However, regarding the primary aim of reducing congestion, the widely accepted, intuitive and demonstrable (though not always applicable)[23] [24] [25] phenomenon of "**induced demand**" can quickly undermine any improvements in traffic congestion – and the council has acknowledged this risk.[26]

Construction cost is another major concern raised by the bypass' opponents. The council's most recent estimates suggest that the western bypass would cost between £275-313 million, accounting for inflation.[27] This is potentially more than the £300 million invested in Bus Service Improvement Projects between 2023 and 2025 *across the entire country*.[28] The obvious response to such knowledge

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[20] Edwards JD, 2001, Traffic and Land Use Planning and the Decline of the Central Business Districts, *Institute of Transportation Engineers*, Vol. 61 (12), pages 247-279.
[21] Elias W, Shiftan Y, Haifa, 2007, The influence of a bypass road on urban development.
[22] Egan M, Petticrew M, Ogilvie D, Hamilton V, 2003, New Roads and Human Health: A Systematic Review, *American Journal of Public Health* Vol. 93 9), pages 1463-1471.
[23] Noland R, 2001, Relationships between highway capacity and induced vehicle travel, *Transportation Research Part A: Policy and Practice*, Vol. 35 (1), pages 47-72, https://www.sciencedirect.com/science/article/pii/S0965856499000476 [accessed 19 September 2024].
[24] Hymel K, Small K, Van Dender K, 2010, Induced demand and rebound effects in road transport, *Transportation Research Part B: Methodological*, Vol. 44 (10), pages 1220-1241, https://www.sciencedirect.com/science/article/pii/S0191261510000226 [accessed 19 September 2024].
[25] Collins M, Weisbrod G, 2000, Economic Impact of Freeway Bypass Routes in Medium Size Cities, *Economic Development Research Group,* pages 1-16.
[26] Price P, 2024, Cabinet Minister for Transport – "I fully recognise that building new road capacity can lead to induced demand and additional traffic." Herefordshire Council, Supplement to the agenda for Cabinet, page 6, https://councillors.herefordshire.gov.uk/documents/b26076/Public%20and%20Member%20Questions%20Thursday%2028-Mar-2024%2014.30%20Cabinet.pdf?T=9 [accessed 10 September 2024]
[27] McEwan G, 2024, Hereford Times, quoting Councillor Philip Price, Cabinet Member for infrastructure, New Hereford bypass plan: six key questions answered, https://www.herefordtimes.com/news/24200080.new-hereford-bypass-plan-six-key-questions-answered/ [accessed 10 September 2024]. The figure given in the text is the sum of the bypass ("phase 2") and the "phase 1" Southern Link Road, which is a precondition of the bypass.
[28] Department for Transport, 2024, National Bus Strategy: 2024 Bus Service Improvement Plans, page 5, point 7, https://assets.publishing.service.gov.uk/media/65a6becf96a5ec000d731aa9/bus-service-improvement-plans-guidance-to-local-authorities-and-bus-operators-2024.pdf [accessed 19 September 2024].

is to question if any alternative measures could be implemented to achieve (and possibly better) the bypass' goals for a lesser sum of money.

A potential bus plan

Herefordshire presently has a very low base of bus usage, down from much higher levels in the past,[29] so it appears plausible that large increases could be seen. *The Institute for Transportation and Development Policy* (ITDP, a US-based Non-Governmental Organisation) suggests that **modal shift** from cars to buses can be around 20% on congested roads with few existing services, but that where there is a "deteriorated bus system that is underused", as there is in Hereford, increases as high as 100% could be seen.[30] However, such growth will almost certainly require meticulous planning, and considerable investment. Fortunately, funding already exists, in the form of a £102 million Central Government grant for general transport improvements,[31] on top of £19.9 million for a "transport hub" (bus station) at the railway station and unspecified "bus routes along Blueschool Street and Newmarket Street."[32] This will be used as an effective budget in costings.

There are many barriers to bus usage, and methods to increase patronage must be multi-faceted. However, there are several apparent priorities in Hereford:

- Frequency. People desire freedom and awkward schedules prevent this – this was the most important factor for travel identified by a 2021 survey of Herefordshire citizens.[33] Naturally, there are some practical limitations to frequency given Hereford's small size, but existing frequencies are evidently inadequate.
- Speed. The Downs-Thomson Paradox, though not universally applicable, states that traffic congestion can only decrease in the long term when public transport (or other alternatives

[29] Department for Transport, 2023, Bus Statistics, BUS01f, https://www.gov.uk/government/statistical-data-sets/bus-statistics-data-tables [accessed 19 September 2024].
[30] Institute for Transportation & Development Policy, 2017, BRT Planning Guide, 4.3, Basic Methods for Estimating Public Transport Demand, https://brtguide.itdp.org/branch/master/guide/demand-analysis/basic-methods-for-estimating-public-transport-demand [accessed 19 September 2024]. This document is extremely detailed and well informed, but is intended for a global audience. Whilst these figures should be applicable to the UK, it is impossible to say so with certainty.
[31] Norman J, quoted by Abergavenny Chronicle, 2024, MP Jesse Norman applauds £102m local transport fund allocation to Herefordshire, https://www.abergavennychronicle.com/opinion/mp-jesse-norman-applauds-ps102m-local-transport-fund-allocation-to-herefordshire-669026 [accessed 15th June 2024]. The specifics of these funds are uncertain. Their existence has been confirmed by Council officials when the author visited their offices, though he is not entirely sure if it is ringfenced to a particular project. Their wording implied that it is not, though it is restricted to capital spending.
[32] Department for Transport, Hereford City to receive £19.9 million transport investment, https://www.gov.uk/government/case-studies/hereford-city-to-receive-199-million-transport-investment-levelling-up-fund-2 [accessed 20 September 2024].
[33] Herefordshire Council, 2021, Herefordshire Enhanced Partnership Plan and Scheme for Buses, https://www.herefordshire.gov.uk/downloads/file/23621/herefordshire_enhanced_partnership_plan_and_scheme_for_buses [accessed 20 September 2024].

to driving) become faster than the private car.[34] [35] At present, many services take slow and circuitous routes and/or get stuck in traffic, deterring usage.
- Simplicity. A large factor behind low bus usage is a lack of knowledge or consideration of alternatives to driving,[36] and simpler timetables, routes and service patterns can make publicity easier, and buses better known.
- Comfort. With higher-than-average car ownership,[37] increasingly comfortable private cars are the main source of competition for Herefordshire's buses. By making buses more luxurious, they become more likely to attract wealthier (and more politically engaged) passengers, both increasing revenue and raising the profile of buses on the political agenda.

The many other aspects of service delivery that can aid a network transformation are far more subtle and would be beyond the scope of this report.

Routes

Herefordshire is presented with a difficult set of circumstances for planning bus routes. The city is small and much of its workforce travel in from surrounding villages, requiring relatively long (and thus expensive to operate) routes. However, these distances should not be overstated. Roughly 35% of commutes in Hereford are less than 2km, considerably above the national average of 18%,[38] and few travel more than 20km. In some ways, this harms bus use – people often do not travel far enough to require a bus – but it demonstrates that the city's rural challenges may be overstated.

In light of the aforementioned factors, a potential reorganisation of routes can be designed.

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[34] Takeuchi K, 1999, The problem of the chicken and the egg in deteriorating public transport: the mechanism of Downs-Thomson paradox and its examination, *International Journal of Transport Economics / Rivista Internazionale Di Economia Dei Trasporti*, Vol. 26 (1), pages 91–108, http://www.jstor.org/stable/42747357 [accessed 23 May 2024]. This is a dated study, and one funded by the East Japan Railway Company, which obviously has a vested interest in funding being given to public transport over road construction. However, the paradox is documented by other researchers, e.g., in source 35.

[35] Zhang F, Lindsey R, Yang H, 2016, The Downs-Thomson paradox with imperfect mode substitutes and alternative transit administration regimes, *Transportation Research Part B: Methodological,* Vol. 86, pages 104-127, https://www.sciencedirect.com/science/article/abs/pii/S0191261515300175 [accessed 20 September 2024]. "The paradox can occur if the operator maximises welfare subject to a self-financing constraint" – as, effectively, Hereford's bus network does.

[36] Kenyon S, Lyons G, 2002, The Value of Integrated Multimodal Traveller Information and its Potential Contribution to Modal Change, *Transportation Research Part F: Traffic Psychology and Behaviour,* Vol. 6 (1), pages 1-21, https://www.sciencedirect.com/science/article/abs/pii/S1369847802000359 [accessed 20 September 2024]. This, even if old, study from a respected university in the field provides a large and diverse sample size across England, and found that mode choice is often a result of poor awareness of other modes.

[37] RAC Foundation, 2012, Car ownership rates per local authority in England and Wales, https://www.racfoundation.org/assets/rac_foundation/content/downloadables/car%20ownership%20rates%20by%20local%20authority%20-%20december%202012.pdf [accessed 20 September 2024]. Old figures, but they are unlikely to have changed significantly. Herefordshire is ranked 70 out of 348 local authorities by cars per 1000 people.

[38] WSP on behalf of Herefordshire Council, 2020, Hereford Transport Strategy Review, page 21, https://councillors.herefordshire.gov.uk/documents/s50090720/Appendix%201%20Hereford%20Transport%20Review%20Technical%20Report%20WSP%20November%202020.pdf [accessed 1 July 2024].

Starting with trunk, interurban, services, routes largely meet their requirements already, though frequency increases are desirable. Below is a potential base:

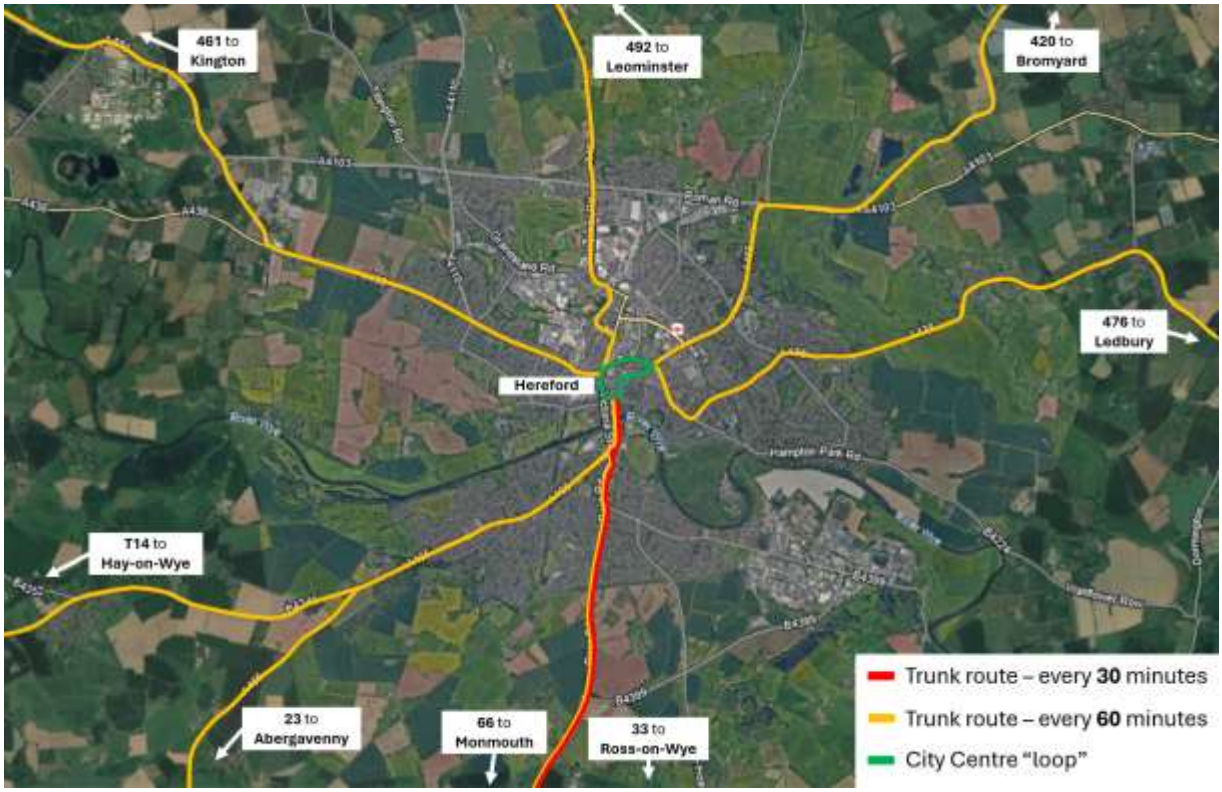


Figure 2 – proposed trunk routes into Hereford.

The 2021 (county-wide) Council survey found that 57% of users were satisfied with journey length, which is not at all impressive, but this statistic may be skewed by slow journeys within Hereford, and it was nonetheless ranked the strongest aspect of Herefordshire's bus network.[39] Its frequency and hours of operation, meanwhile, satisfied only 18% and 13% of passengers respectively. This is not surprising – to give an impression of standards, Herefordshire Council classifies a route as "frequent" if it has more than 5 return buses a day.[40] Thus, it seems advisable to increase trunk routes to a base frequency of at least once an hour, with two if it seems likely that the route has demand.

The next "tier" to be layered on is semi-rural buses, which radiate from Hereford to serve surrounding villages. Some additional rural services would remain, at frequencies similar to their present ones but, in general, routes to villages marked on this map would be withdrawn and replaced by the new services.

[39] Herefordshire Council, 2021, Enhanced Partnership research and policy document, page 14, https://www.herefordshire.gov.uk/downloads/file/23621/herefordshire_enhanced_partnership_plan_and_scheme_for_buses [accessed 23 September 2024].
[40] Herefordshire Council, 2024, County Bus Map, https://www.herefordshire.gov.uk/downloads/file/1595/herefordshire-county-bus-map-updated-march-2024- [accessed 23 September 2024]. Many of the routes marked in red are not hourly.

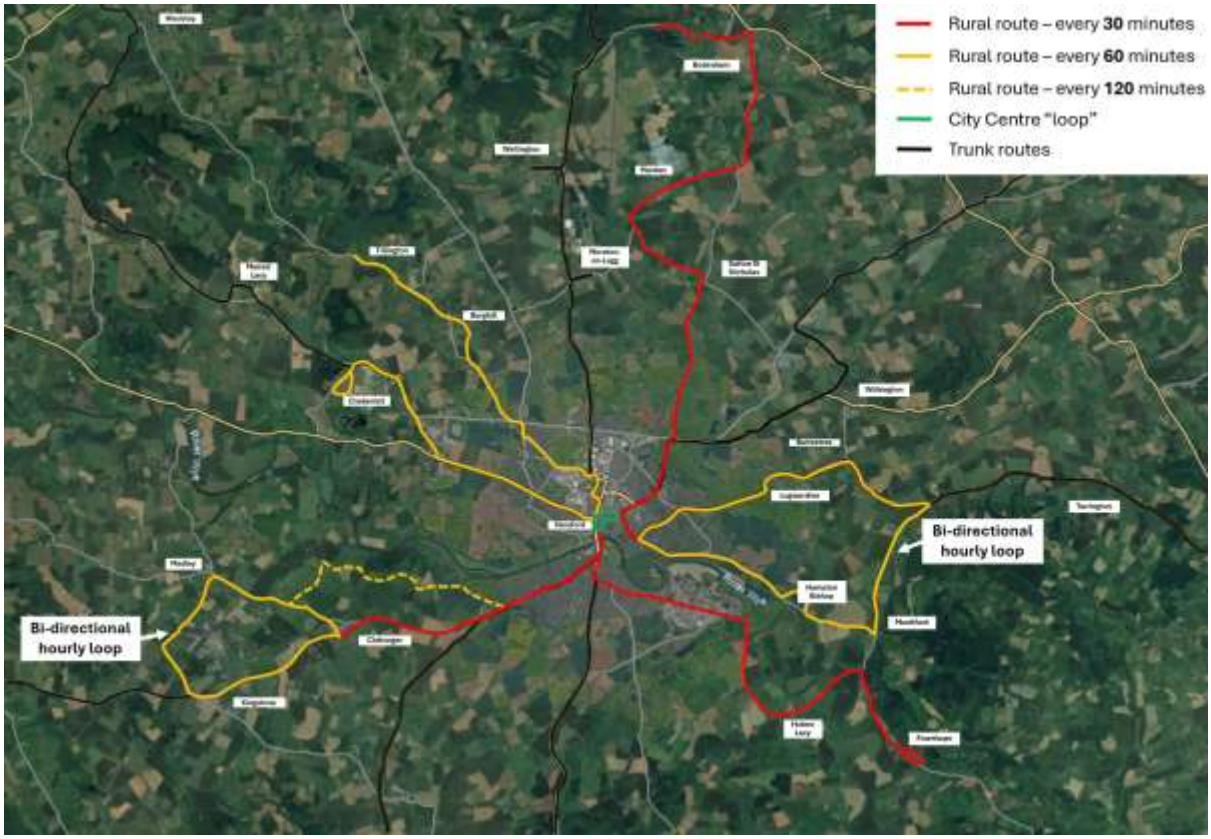
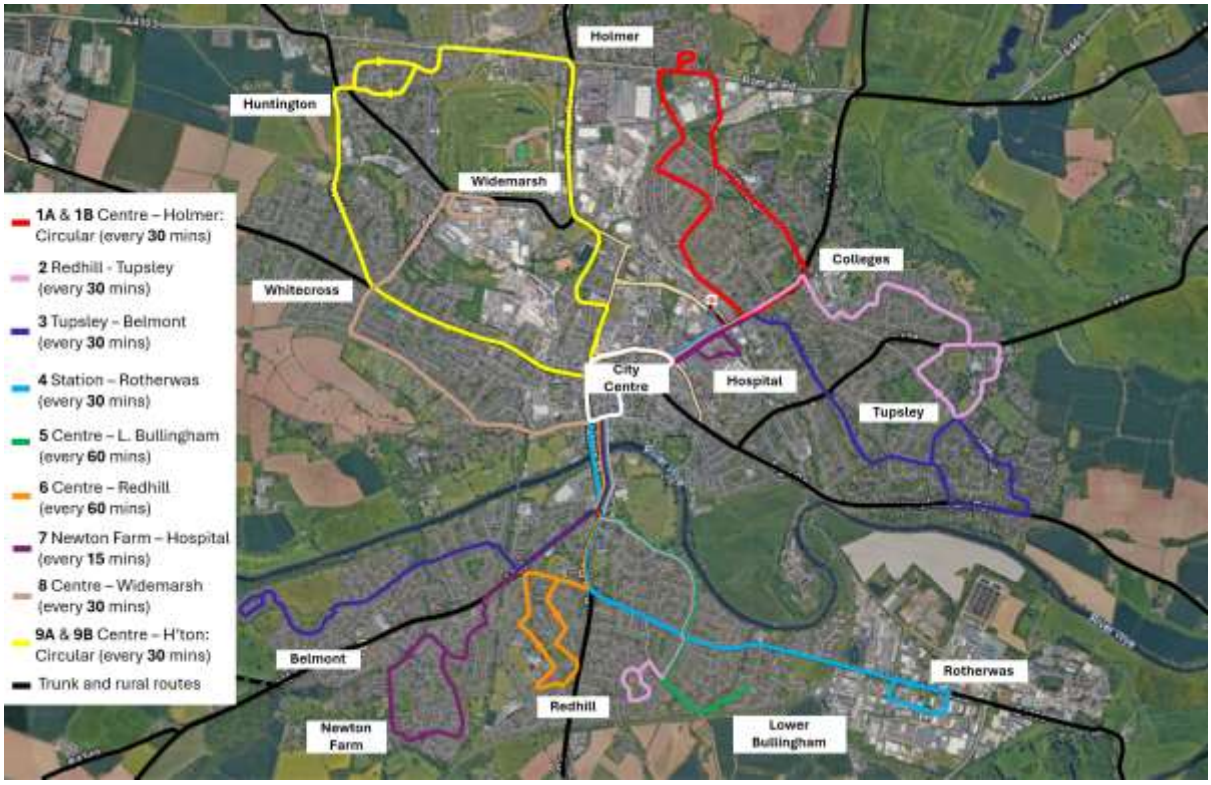
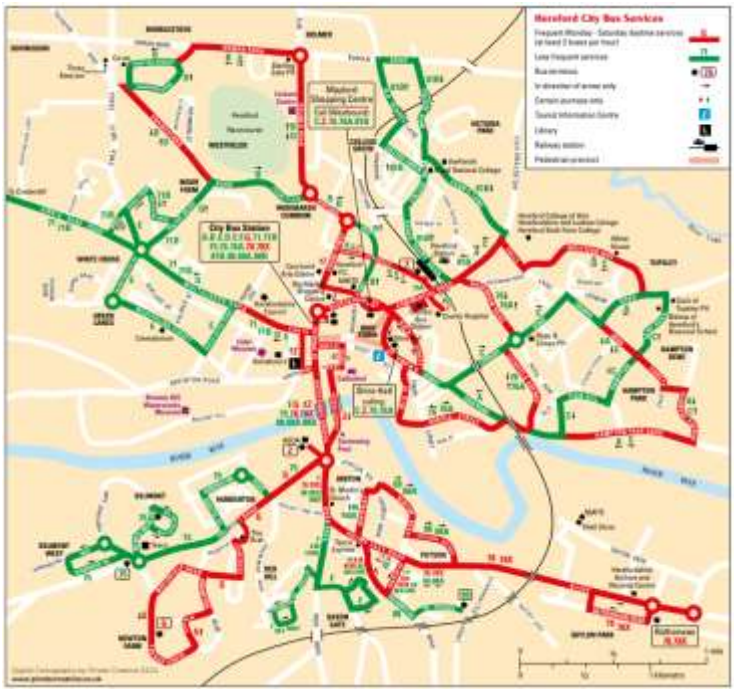


Figure 3 – proposed semi-rural routes into Hereford.

Finally, Hereford's city routes can be added. These would replace the existing city services, greatly simplifying the network. To better convey this simplification, routes can be assigned colours, aiding navigation and making buses more appealing to new users, as Nottingham and Norwich have adopted.[41] [42]

[41] Nottingham City Transport, 2023, Your frequent city bus network map, https://images.nctx.co.uk/2023-09/Nottingham%20Colour%20Coded%20Map%20%28web%29.pdf [accessed 23 September 2024].
[42] First Bus, 2024, Network Norwich, https://www.firstbus.co.uk/norfolk-suffolk/routes-and-maps/network-norwich [accessed 23 September 2024].





Above: *Figure 4 – proposed route map and frequencies of the new Hereford network.*

Left: *Figure 5 – Existing Hereford City bus network map. As can be seen, it is vastly more complicated than that proposed. (Herefordshire Council)*

The planning of routes is, as can be seen, relatively straightforward and can be altered according to requirements. However, they would require significant speed increases to be competitive with the automobile and thus reduce congestion as per Herefordshire Council's objectives. The UK Government's Bus Priority guidelines outline that "the key to [increasing bus patronage] is making

them faster and more reliable,"[43] in other words, **bus priority**. Indeed, an investigation by accounting firm KPMG and Greener Journeys (an environmental think tank) found that every £1 spent on priority measures typically generates £3.32 in returns, a finding consistent with other studies.[44]

Bus Priority

The primary challenge regarding bus priority in Hereford is identifying sufficient space. There are few roads with more than one lane per direction, and little room for widening. In the areas where there is space, present congestion would make the conversion of mixed traffic lanes to bus lanes politically challenging, so sections must be chosen with care to maintain public support. Shown below (in green) are the areas of road that both have the space for bus priority, and see sufficient traffic congestion to justify it, in the view of the author. Some, namely around Whitecross, Belmont and Ross Roads, would require road widenings to accommodate new lanes, but all others would only demand repainting, making installation costs marginal. Indeed, operational costs would decrease following installation of bus priority, as faster services both attract more passengers, increasing revenue, and require fewer buses to maintain frequencies, decreasing expenditure.

[43] Department for Transport, 2024 Local Transport Note 1/24: Bus User Priority, page 7, https://assets.publishing.service.gov.uk/media/65f48b65811225001a579f7c/local-transport-note-124-bus-user-priority-report.pdf [accessed 23 September 2024]. A government source is likely to be reliable, though given the political circumstances at the time of its writing, may attempt to play down the value of buses.

[44] Greener Journeys (now Greener Vision), 2014, A National Statement on Local Bus Infrastructure Executive Summary, pages 6-7, https://greener-vision.com/wp-content/uploads/2014/06/Bus-infrastructure-report-June-2014.pdf [accessed 2 September 2024].

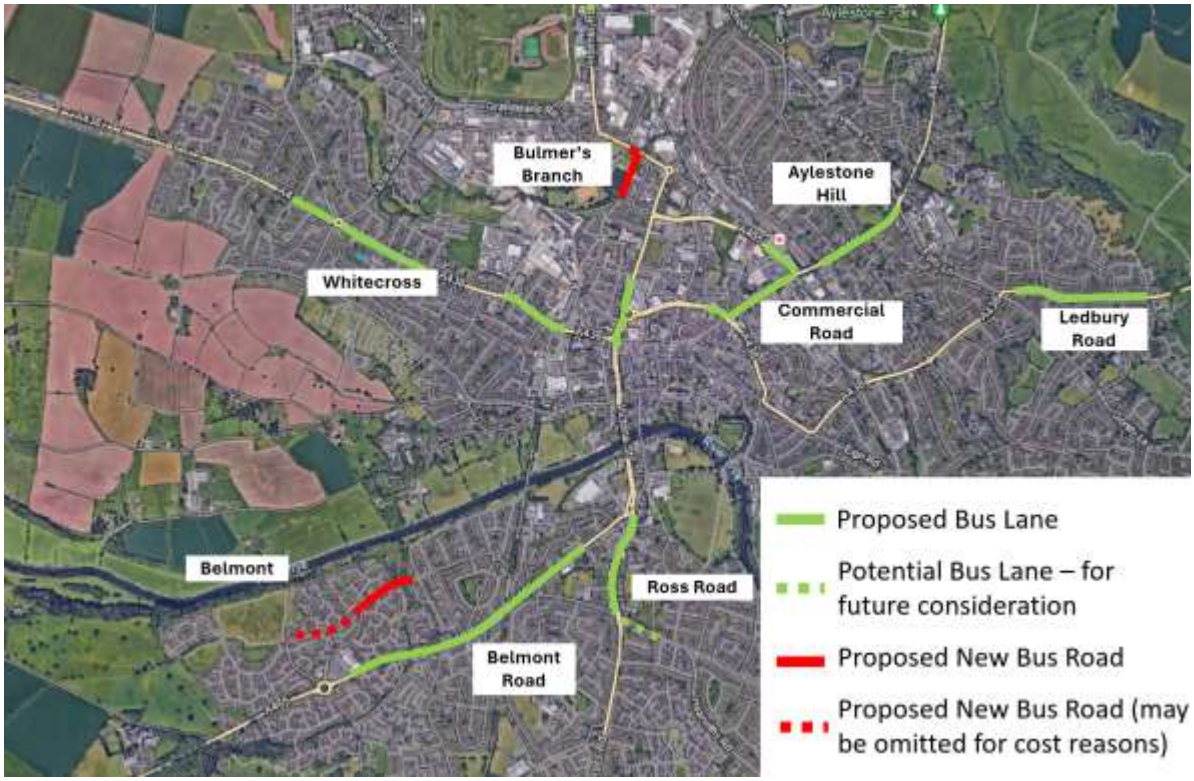


Figure 6 – proposed bus lane map.

Concerns regarding bus lane installation

Belmont Road and Whitecross Road would see some street parking removed to make space for the new bus lanes. This can be managed in the former by a purchase of the now vacant plot of the demolished 80 Belmont Road, which can be converted into parking for displaced residents (a planning application was approved for new apartments there in 2018[45] – whilst the last public movement on the development was in October 2021[46], there is no reason to believe that the developer does not intend to progress the project. Purchase of the land would therefore need to include speculative value, possibly raising the cost to as high as £1 million[47]).

[45] Herefordshire Council Planning Application P180474/F, March 2018
[46] Herefordshire Council Planning Application P211919/F, July 2021
[47] Based on the sale price of new-build 1-bedroom apartments in Hereford – a new retirement apartment, for example, cost approximately £185,000. Existing buildings varied from £80,000 to £255,000. Even giving a generous value to all 4 apartments to be sold of £250,000, the value of potential properties on the land will not exceed £1 million.

Above: *Figure 7 – Google Street View of the parking to be removed from Belmont Road. No.80 is visible in the mid-distance.*

Left: *Figure 8 – Belmont Road bus priority (only where parking is to be altered).*

There is no such luxury along Whitecross Road, however, and the owners of parked vehicles would have to find other spaces – an agreement could possibly be reached with Hereford Squash Club, though residents of the adjacent dwellings should be consulted.

Figure 9 – Whitecross Road bus priority.

The situation on Ledbury Road is yet more complicated – installation of a bus lane would require the removal of an advisory cycle lane in the Ledbury direction. This would be no particular loss, however, as the lane is frequently blocked by parked cars and provides little protection from traffic even when not. Some lay-by parking spaces may either be narrowed or removed in front of Tupsley Co-Operative (houses here have off-street parking), which, though undesirable, is likely an essential compromise, given the very heavy traffic that forms on this road and its strategic importance to the bus network.

Figure 10 - Cars parked in the cycle lane on Ledbury Road.

Figure 11 - Parking bays in front of the Co-Op on Ledbury Road.

By far the most contentious change would be the conversion of one (out of two) mixed traffic lanes on the A49 (Ross Road) to a bus lane. Congestion is heavy here, and it is an important corridor for buses, such that held-up vehicles would have significant implications on cost, punctuality and service attractiveness. A traffic survey conducted on Ross Road by the author on the 21st May 2024 just following the "rush hour" detailed that, despite forming just over 0.5% of traffic, buses provided 17% of passenger capacity.

	Low Occupancy Vehicle (of which had 2+ passengers)	Heavy Goods Vehicle	Light Goods Vehicle	Bus
Vehicle Numbers (per direction, per hour)	820 (202)	76	210	6
Passenger Capacity (per direction, per hour)	1,312*	N/A	N/A	272**

*assuming average vehicle occupancy rate of 1.6, as per DfT data NTS0905, 2019
**based on maximum seating capacity of the models of buses surveyed

Figure 12 – table displaying results of a traffic count on Ross Road, 21st May 2024, 30 minutes from 9:04 AM to 9:34AM. Hourly numbers result from a doubling of those recorded.

Figure 13 – A bus stuck in traffic on Ross Road.

However, a conversion of one lane to a bus lane and introduction of the proposed timetable detailed above would see hourly passenger capacity for the whole road reduced to roughly 1,000 (again, using the same assumptions on bus models), compared to 1,584 today. Whilst there is a possibility of increased frequencies being introduced in the future, there is no reason to assume that this is the case. Further, in order to maintain the same level of congestion, private vehicle numbers would have to halve, a prospect that seems extremely unlikely.

To alleviate this, taxis, emergency vehicles and HGVs could be permitted travel in the bus lane (the latter would require Department for Transport authorisation), both reducing congestion and making it appear "fuller", minimising opposition.[48] Regardless, this method of bus priority on Ross Road is difficult to see as a balanced or politically acceptable option, and it is unlikely that National Highways (the road's owner[49]) would agree to a measure that reduces capacity.

Thus, the alternative option of partial, "queue jump" priority, in the form of an extra lane where space allows, may be more appropriate, even though this would require road widenings over what is presently embankment, increasing cost substantially. The Highways Authority owns most of the land,[50] though some small acquisitions of private land would need to be made as well. Given the resurfacing and redesign of the similar-length St Owen's Street cost approximately £1.2 million,[51] it does not appear an unrealistic expectation that the additional lane, with the associated earthworks and land purchases, should not exceed £7 million. This is likely an over-estimate, as the City Link Road, a wide and ambitious highway which followed a new right of way involving over £16 million in land purchasing, cost "just" £34 million[52] for more than twice the length of the Ross Road project. The bus lane would thus be closer in scope to St Owen's Street.

[48] Department for transport, 2024, Local Transport Note 1/24, pages 57-60, https://assets.publishing.service.gov.uk/media/65f48b65811225001a579f7c/local-transport-note-124-bus-user-priority-report.pdf [accessed 1 October 2024].

[49] National Highways, Strategic Road Network Map, 2023, https://nationalhighways.co.uk/media/u4apnjvk/nh-srn-simplified-map-2023.pdf [accessed 1 October 2024].

[50] National Highways, Operational Highway Boundary Red Line Map, July 2023, https://opendata.nationalhighways.co.uk/datasets/highwaysengland::redline-outline/explore?location=52.047434%2C-2.720040%2C18.73 [accessed 1 October 2024].

[51] Herefordshire Council, Commissioning works to progress the St Owen Street cycle contraflow as part of the Hereford City Centre Improvements (HCCI), November 2022, https://councillors.herefordshire.gov.uk/ieDecisionDetails.aspx?ID=9168 [accessed 1 October 2024].

[52] Herefordshire Council, An Update on the Hereford City Centre Transport Package, July 2021 https://www.herefordshire.gov.uk/news/article/1182/an-update-on-the-hereford-city-centre-transport-package [accessed 1 October 2024].

*City Link Road (**left,** figure 14) and the relevant section of Ross Road (**right,** figure 15). Lengths given as 816m and 353m respectively.*

The installation of bus priority will likely be the most contentious aspect of this proposal. Whilst vital, it must be well managed in order to maintain widespread support.

New Roads

In some cases, the best solution for bus priority is not to convert existing road space or even to widen roads for the installation of bus lanes. Rather, parallel rights of way may exist, which separate buses entirely from mixed traffic, often providing faster routes. In Hereford, there are two key locations for this.

Firstly, the disused section of railway between the Bulmers' (now Heineken) cider factory and the existing station. It follows a convenient route that bypasses the frequently congested "bottleneck" of Edgar Street, and, as earthworks are already in place, would be relatively cheap to convert to a bus-only road. A similar project was undertaken on a much larger scale between Gosport and Fareham in Hampshire, where, in 2012, 4.5km of disused railway was converted into bus-only road at a cost of £20 million[53]. Adjusting for inflation[54], the cost for 303m (the length required for the Bulmer's branch) would be roughly £1.35 million, though the actual figure would likely be higher, due to relatively fixed design and planning costs. Strengthening the case for this, however, is an approved planning application for a new apartment building on a section of disused land next to the former railway.[55] A high-quality bus service to it would reduce its environmental impact and adverse effects on traffic congestion.

[53] Hampshire County Council, 2012, South East Hampshire BRT Future Phases Study, page 4, https://www.fareham.gov.uk/PDF/planning/new_community/EV61_Atkins-Transport-Report.pdf [accessed 1 October 2024].
[54] Approximately £28 million, according to the Bank of England's Inflation Calculator.
[55] Herefordshire Council, 2023, Planning Application P211931/F, https://www.herefordshire.gov.uk/info/200142/planning_services/planning_application_search/details?id=211931 [accessed 1 October 2024].

Figure 16 – Proposed Bulmers' new bus road, with Google typical traffic flows (afternoon peak) displaying the congested section of Edgar Street to be avoided. The new apartment plans have been superimposed (Berrys').

Secondly, there is potential for a new bus-only road along the course of an existing footpath that runs parallel to the A465 (Belmont Road). At present, this area of the city is characterised by discontinuous cul-de-sacs that provide no through connections, but the new road would help remedy this, providing many benefits:

- Local buses would see considerable speed increases from avoiding traffic congestion on the A465 (and the associated cost savings).
- Only one local service North of the A465 in Belmont would be required (as it could serve multiple developments), reducing operating costs with no adverse impact on revenue.
- Buses would be afforded an evidently more direct route than cars, psychologically benefitting their passengers.

Frequencies on the new road would be relatively low, such that a narrow "single track" carriageway could be provided, reducing the visual impact on the footway, which would remain alongside. Using the same cost estimates – and qualifications – as before, this would cost in the region of £4.55

million for the full road in Figure 15. Whatever length is chosen, some form of link across Newton Brook is essential, to avoid extremely circuitous, expensive and unattractive services.

Above: Figure 17 – *proposed Belmont new busway, with Google typical traffic flows (morning peak) overlayed. Note that much of Belmont Road has bus priority under this scheme.* **Below:** *Proposed Belmont buses (**right,** figure 19), showing considerable simplification relative to the present (**left,** Figure 18) (existing bus map via Herefordshire Council).*

Integration, fares and structure

Fares

Integration, whilst not being the largest concern, is a point of irritation for bus users, and a deterrence for non-users (69% and 67% respectively agreed that a multi-operator ticket should be a priority in Herefordshire's 2021 BSIP[56]).

[56] Herefordshire Enhanced Partnership Plan and Scheme for Buses, 2021, Table 2, Page 15 https://www.herefordshire.gov.uk/downloads/file/23621/herefordshire_enhanced_partnership_plan_and_scheme_for_buses [accessed 3 July 2024].

In any case, a 2009 study of many cities worldwide by the then Passenger Transport Executive Group (now the Urban Transport Group, a cross-authority body of transport executives) found that integrated ticketing increases passenger numbers by anywhere from 6% to 40%.[57] Crucially, a study by the University of Leeds' respected Institute for Transport Studies found that integrated ticketing has a positive effect on modal shift towards public transport, suggesting that the resulting increased bus trips are not just new journeys, but are also actively reducing congestion by encouraging car drivers to change mode.[58]

One option for integrated ticketing is a simple flat fare per journey. There is evidence from multiple sources that flat fares can increase passenger numbers (though this may be more as a result of increased awareness and simplicity than reduced prices),[59] [60] [61] but the wide variety of journey lengths in Herefordshire undermines the potential for a cap to be particularly economical – the Government's own £3 scheme is likely too high, so a cap would have to be locally funded, in a manner which seems absurd given the length of some potential journeys. That said, there is merit to the idea of a highly simplified fares system, possibly via a zonal system.

Alternatively, an approach similar to London's "Hopper" fare could be taken, whereby zones and single tickets are abandoned in favour of a ticket that permits the boarding of any bus within a set time after issue, likely forty-five minutes in Herefordshire. This would encourage multi-bus journeys, giving a much more cohesive network. It is difficult, though, to envisage a situation in which operators agree to this system, as it would inevitably involve passengers who previously purchased multiple tickets only buying one, with one route (or operator) receiving no reimbursement for their leg of the passenger's journey.

Structure

The only viable implementation of this system or something similar would likely involve franchising, as has been seen in Manchester recently, and in London for decades, which comes with considerable upfront cost – approximately £143 million in the former case.[62] The figure would be far lower in Hereford due to its small size, but still significant. It is worth noting, though, that the new Labour Government has announced support for "every community to take back control of buses through

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[57] Booz&Co on behalf of the Passenger Transport Executive Group, 2009, The Benefits of Simplified and Integrated Ticketing in Public Transport, page 20, https://www.urbantransportgroup.org/system/files/general-docs/integratedticketingreportFINALOct09.pdf [accessed 3 July 2024].

[58] Alhassan IB, Matthews B, Toner JP, Susilo YO, 2023, Examining the effect of integrated ticketing on mode choice for interregional commuting: Studies among car commuters, *International Journal of Sustainable Transportation,* Vol. 17 (3), pages 245-257, https://www.sciencedirect.com/science/article/pii/S1556831822001095 [accessed 3 July 2024].

[59] Booz&Co on behalf of the Passenger Transport Executive Group, 2009, The Benefits of Simplified and Integrated Ticketing in Public Transport, page 4, https://www.urbantransportgroup.org/system/files/general-docs/integratedticketingreportFINALOct09.pdf [accessed 3 July 2024].

[60] Department for Transport, 2023, Evaluation of the £2 bus fare cap, https://www.gov.uk/government/publications/evaluation-of-the-2-bus-fare-cap/2-bus-fare-cap-evaluation-interim-report-february-2023 [accessed 4 July 2024].

[61] French R, former Managing Director of Brighton & Hove Buses, 2024, speaking for the Foundation for Integrated Transport, approx. 25:15 – 27:00, https://www.youtube.com/watch?v=QFL3DelnPp8 [accessed 1 October 2024].

[62] Thomas E, BBC News, 2024, Is franchising the future of buses?, https://www.bbc.co.uk/news/articles/c0w6g311dppo [accessed 10 July 2024].

franchising or public ownership."[63] Government support for franchising would ease the transition considerably and may even see Central Government pay for some of the costs – though this is by no means guaranteed.

Full public ownership should also be considered. The two main operators of city and rural buses around Hereford are Yeomans Canyon Travel and Sargeants Brothers, which have a combined net worth of £3 million.[64] [65] An acquisition above the market rate would, whilst a considerable expense, likely be affordable, and may lead to noticeable cost savings in future, through complete access to profits and centralisation of resources like branding, vehicles and depots.

If all such interventions were deemed undesirable, a revised enhanced partnership (EP) could be developed such that operators ran the above routes, but retained full commercial independence, with all funding shortfalls being directly subsidised by the Council, and no cross-subsidy. This would likely involve substantially higher operating costs, and would leave routes vulnerable to the operators' decisions, but require less upfront investment and political capital.

In any case, a change to operational structure (apart from an EP) would require a full assessment,[66] and it is not immediately obvious which would be ideal. It is apparent, though, that greater Council intervention in buses will require some alterations to their current relationship, and these should be considered as a priority.

Of course, integration encompasses more than fares alone. Integrated timetables, branding and interchanges are all important in growing usage, as seen in most British cities with successful public transport networks, such as London, Nottingham and Reading.[67] Manchester, too, has recently seen significant rebranding as part of the establishment of its Bee Network of franchised buses, and this saw 8% passenger growth within the first month.[68]

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[63] Department for Transport, 2024, Transport Secretary kickstarts 'bus revolution' as she promises to support local leaders to deliver better buses up and down the country, https://www.gov.uk/government/news/transport-secretary-kickstarts-bus-revolution-as-she-promises-to-support-local-leaders-to-deliver-better-buses-up-and-down-the-country [accessed 11 July 2024].
[64] Company Check, Financials of Yeomans Canyon Travel Ltd. (data from Companies House), December 2023, https://companycheck.co.uk/company/02225073/YEOMANS-CANYON-TRAVEL-LIMITED/companies-house-data [accessed 11 July 2024]. This data, and that of below, are by no means infallible, though it is sourced from Companies House, as reliable as one can reasonably hope to find. They should be treated as good estimates, but not much beyond.
[65] Company Check, Financials of Sargeants Brothers Ltd. (data from Companies House), December 2023, https://companycheck.co.uk/company/02470523/SARGEANTS-BROTHERS-LIMITED/companies-house-data [accessed 11 July 2024].
[66] Department for Transport, 2024, Setting up a bus franchising scheme, https://www.gov.uk/government/publications/bus-services-act-2017-bus-franchising-creation/setting-up-a-bus-franchising-scheme [accessed 11 July 2024].
[67] Department for Transport, 2021, Bus Back Better (National Bus Strategy), examples' successes referred to continually, https://assets.publishing.service.gov.uk/media/6086912fd3bf7f013c8f4510/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf [accessed 3 July 2024].
[68] Passenger Transport, 2020, Bee Network journeys rose 8% in first month, https://www.passengertransport.co.uk/2023/11/bee-network-journeys-rose-8-in-first-month/ [accessed 3 July 2024].

City Centre Integration

Integration, somewhat obviously, also involves connections between buses and connections to other modes, like trains. At present, this is poor: the two bus stations, the Country and City bus stations, are both too far from the railway station to be convenient, given the large and unpleasant City Link Road that severs the railway station from the city centre.[69]

Figure 20 – Hereford's transport interchanges.

Following the opening of the Transport Hub adjacent to Hereford railway station, four stands for terminating buses and two for through buses will be added, though this is clearly inadequate for all terminating traffic in Hereford.[70] It is thus concerning that Herefordshire Council's bus strategy, to the extent that it exists at all, appears to depend near-entirely on the Transport Hub.[71] The Country Bus Station, meanwhile, is located in an inconvenient position that is both far from the railway station and the city centre. It has poor facilities and would likely require a rebuild if it were to be

[69] Naturally, there is a degree of subjectivity to any claim of "pleasantness". But very few people would disagree with this statement.

[70] Hereford Civic Society, 2024, Hereford Proposed Transport Hub, https://councillors.herefordshire.gov.uk/documents/s50118312/233009%20-%20HEREFORD%20RAILWAY%20STATION%20STATION%20APPROACH%20HEREFORD%20HEREFORDSHIRE%20HR1%201BB%20-%20appendix%201.pdf [accessed 12 July 2024]. Whilst Hereford Civic Society make some subjective comments, and are fundamentally a group of (albeit well-informed and organised) amateurs, they otherwise expand on the inadequacies of the Transport Hub in great detail, and have good logic.

[71] This is a bold claim, and one that cannot exactly be proved with physical evidence. The author can attest, however, through his involvement with Rail and Bus for Herefordshire, a pressure group regularly consulted on plans, that the Council has refused to give any clear explanation on what further provisions (if any) will be made to enhance the bus network.

retained, akin to that deemed necessary by Rossendale Borough Council in Rawtenstall.[72] In light of the cost required for this, it appears pragmatic to use the funds to centralise on a bus station in the city centre, in the absence of a large transport hub at the station.

Figure 21 – Rawtenstall Bus Station.

[72] Rossendale Borough Council, 2024, Spinning Point Rawtenstall Project, https://www.rossendale.gov.uk/regeneration-3/ongoing-regeneration-projects-rawtenstall/4 [accessed 23 July 2024].

Figure 22 – The tasteful interior of Rawtenstall Bus Station. Note the live information on bus times and clear route branding.

The City Bus Station may provide a good location for this – in the Tesco car park just inside the former City Wall. It presently has significant space constraints, though there is the potential for expansion over the existing surface car park. The land is owned by a private investment firm,[73] which may well welcome the prospect of increased access (and thus land value) resulting from an enlarged bus station.

[73] Griffiths Eccles, Tesco, Bewell Street, Hereford, 2021, https://griffithseccles.com/wp-content/uploads/2023/09/Griffiths-Eccles-Investment-Tesco-Hereford.pdf [accessed 23 July 2024]
It is also worth noting that there is already interest in changing the land use here – Herefordshire Council's Hereford City Masterplan details a long term ambition of using the land for flats, so a relatively small re-organisation of existing transport land (a car park) into a bus station is not an unreasonable aim: Herefordshire Council, 2023, Hereford City Draft Masterplan, https://councillors.herefordshire.gov.uk/documents/s50108560/Appendix%201%20-%20Hereford%20City%20Masterplan%20a%20Vision%20for%20Our%20City%20in%202050%20Consultation%20Draft%20Spring%202023.pdf [accessed 23 July 2024]. That said, progress on the Masterplan appears to have stalled.

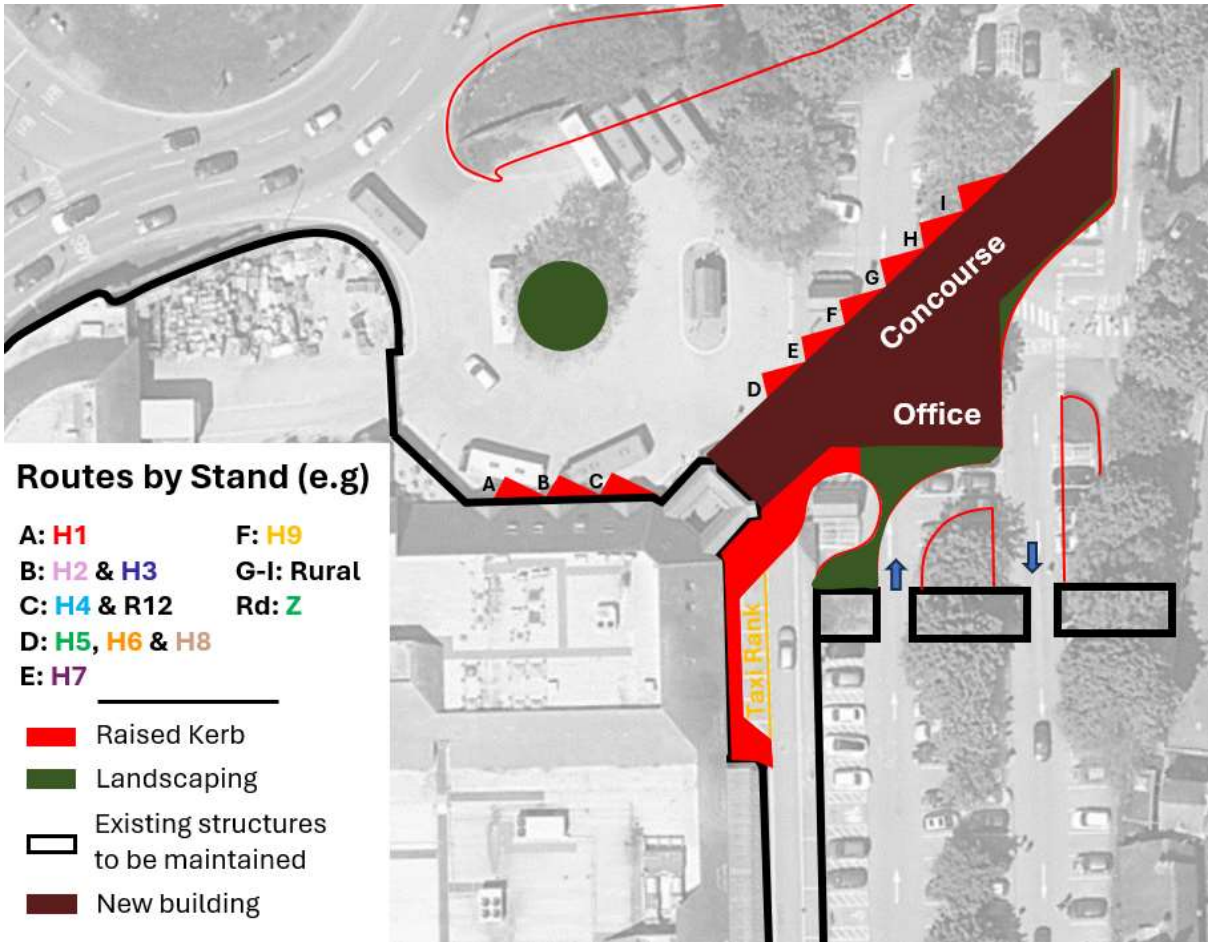


Figure 23 – Hereford City Bus station proposed layout.

The plan shown in Fig.21 would require the loss of 71 parking spaces to make way for the bus station. However, this should be of minimal concern for business, as there is still a large underground car park and some above ground parking left unaffected, and the bus station would, running to the proposed timetable, see over 1,000 seats arriving every hour.

To accommodate buses not using the city bus station, a "loop" around the city centre, created by reversing the one-way East and West Streets (Fig.22/23), could enable buses to circulate around the ring road to the North of the centre, down to the Shire Hall (soon to be converted to a library and the site of several bus stands – almost a "mini bus station" – before following East Street to Broad Street by the Cathedral. The loop would give inter-urban services extensive city centre coverage without requiring expensive land acquisitions for a larger city centre bus station.

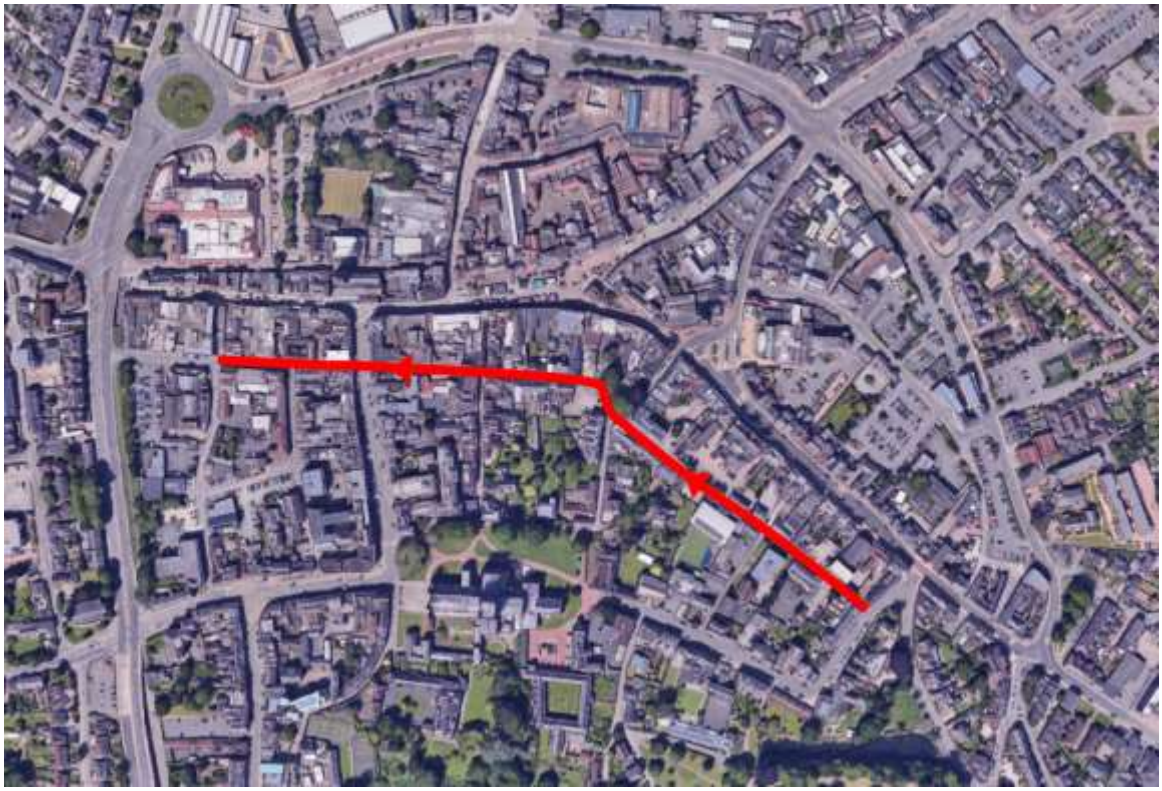


Figure 24 – the sections of East and West Street to be reversed.

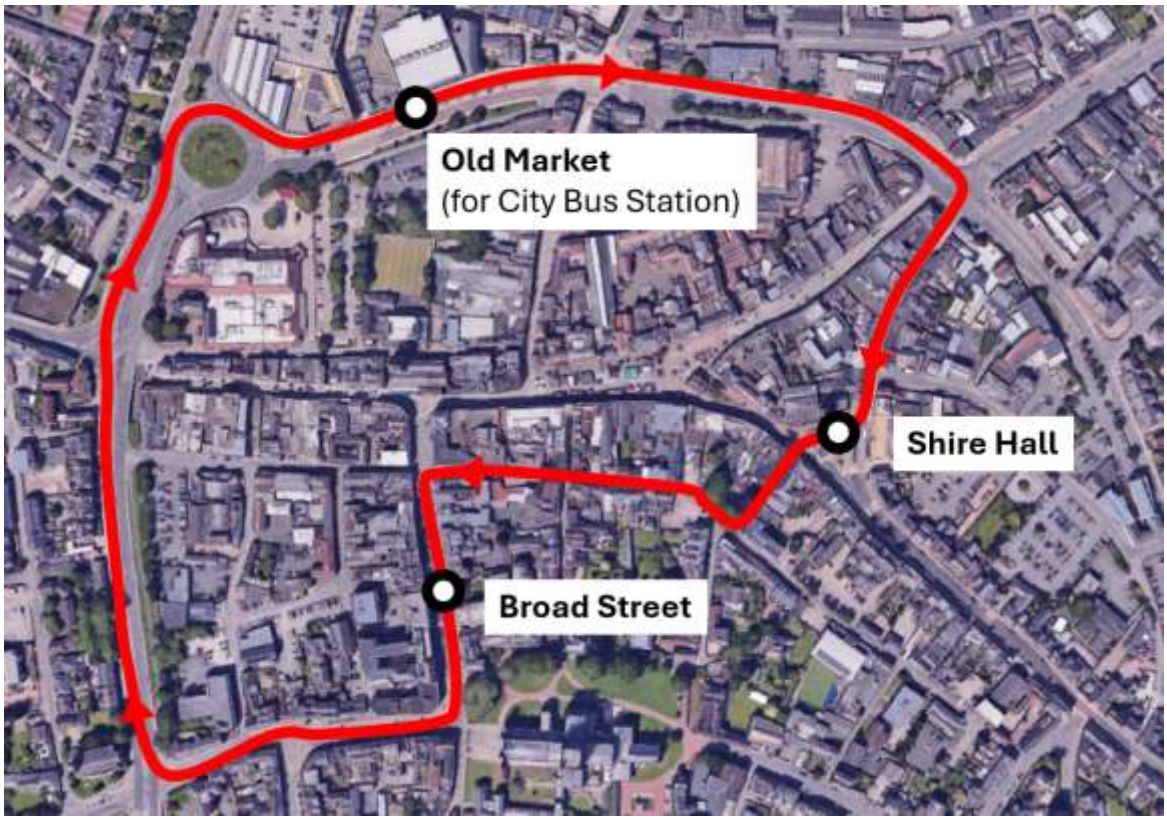
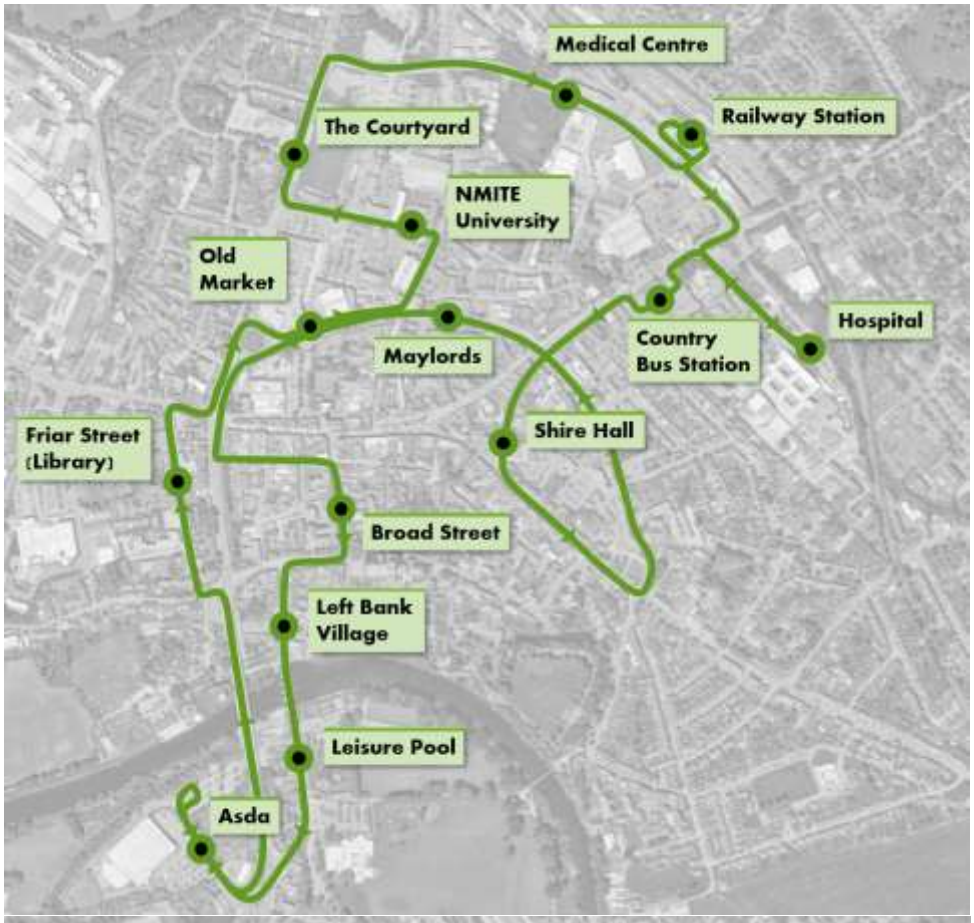


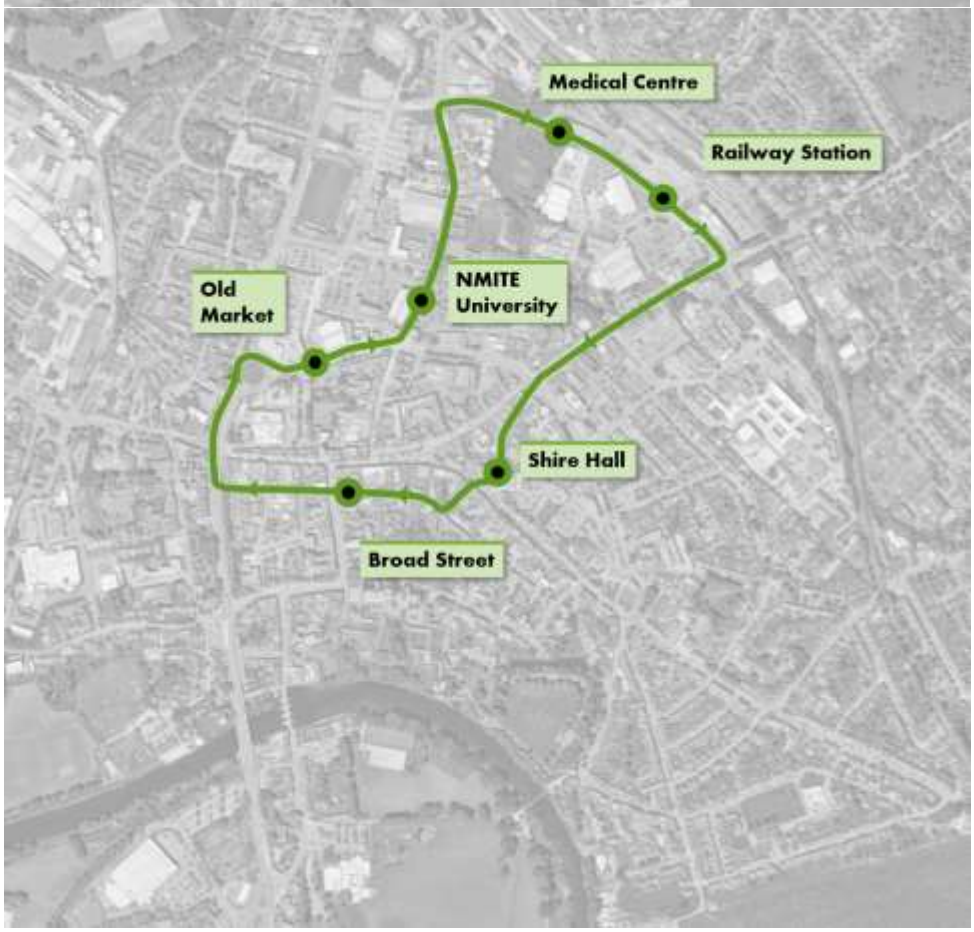
Figure 25 – the city centre "loop", with potential stops marked.

Figure 26 – Modifications to the built environment by the Shire Hall to allow for conversion into a "mini bus station".

This still leaves various disparate nodes, however and the existing **Hereford City Zipper** can be used to connect them following a route redesign.[74] At present, it is a long route that requires three buses to maintain an every 15 minute frequency, though, after the network reorganisation, there should be less of a need for the Zipper to serve destinations outside of the city core, allowing it to better serve one of its intended purposes as an intermodal connector.[75]

[74] The Hereford City Zipper is a free to use bus that currently circulates the city centre. It has a dedicated fleet of three electric buses, and was joint funded by Central and local Government as part of the Stronger Towns fund. It currently integrates poorly into the existing network and suffers, in the author's opinion, from attempting to cover too many destinations, such that the route is slow, poorly integrated and not particularly useful for those with alternative means of transport – it is generally faster to walk.
[75] Kerry S, for Hereford City Council, 2021, Hereford Zipper Final Business Case, via Freedom of Information Request on whatdotheyknow.com https://www.whatdotheyknow.com/request/hereford_city_zipper_contract [accessed 24 July 2024].





*Current Zipper route map (**above**, Figure 27), and proposed new route (**below**, Figure 28).*

It is worth emphasising, however, that if any way can be found to halt progression of the planned transport hub at the railway station in favour of a larger alternative, then it must be pursued. This would almost certainly be considerably cheaper than any of the options listed above (as only one bus station would be required), and would vastly improve the passenger experience, as connections between different buses and trains could all be made in one location. Designer Darren Ray developed a variety of different bus station proposals that would increase capacity relative to the existing plans, improve road safety and enhance the built environment, demonstrating that alternatives are possible.[76] There is no valid reason to progress with the current design, as made evident by its aforementioned low capacity, which will be insufficient for growth.[77]

[76] Hereford Civic Society, 2024, Hereford Proposed Transport Hub Formal Representation and Scheme Development, pages 19-24, https://councillors.herefordshire.gov.uk/documents/s50118312/233009%20-%20HEREFORD%20RAILWAY%20STATION%20STATION%20APPROACH%20HEREFORD%20HEREFORDSHIRE%20HR1%201BB%20-%20appendix%201.pdf [accessed 26 August 2024]

[77] Hereford Civic Society, 2024, Hereford Proposed Transport Hub Formal Representation and Scheme Development, https://councillors.herefordshire.gov.uk/documents/s50118312/233009%20-%20HEREFORD%20RAILWAY%20STATION%20STATION%20APPROACH%20HEREFORD%20HEREFORDSHIRE%20HR1%201BB%20-%20appendix%201.pdf [accessed 12 July 2024]. As per reference 70, the Civic Society is a volunteer organisation, but their criticisms are the most extensive available, and founded on many experienced members.

Vehicles and branding

Branding as a cohesive network is vital, and operators not part of the council-led network would likely recognise this if sufficient support was provided, and thus be willing to adopt a unified Herefordshire brand – as in Leicester and Cornwall, for example.[78] [79] [80] There are several national design firms capable of good branding, though local designers and artists should be involved as much as possible, as they have been with the 232 Daffodil Line in Eastern Herefordshire. The ideal result would involve material from both national and local companies, potentially even with co-operation.

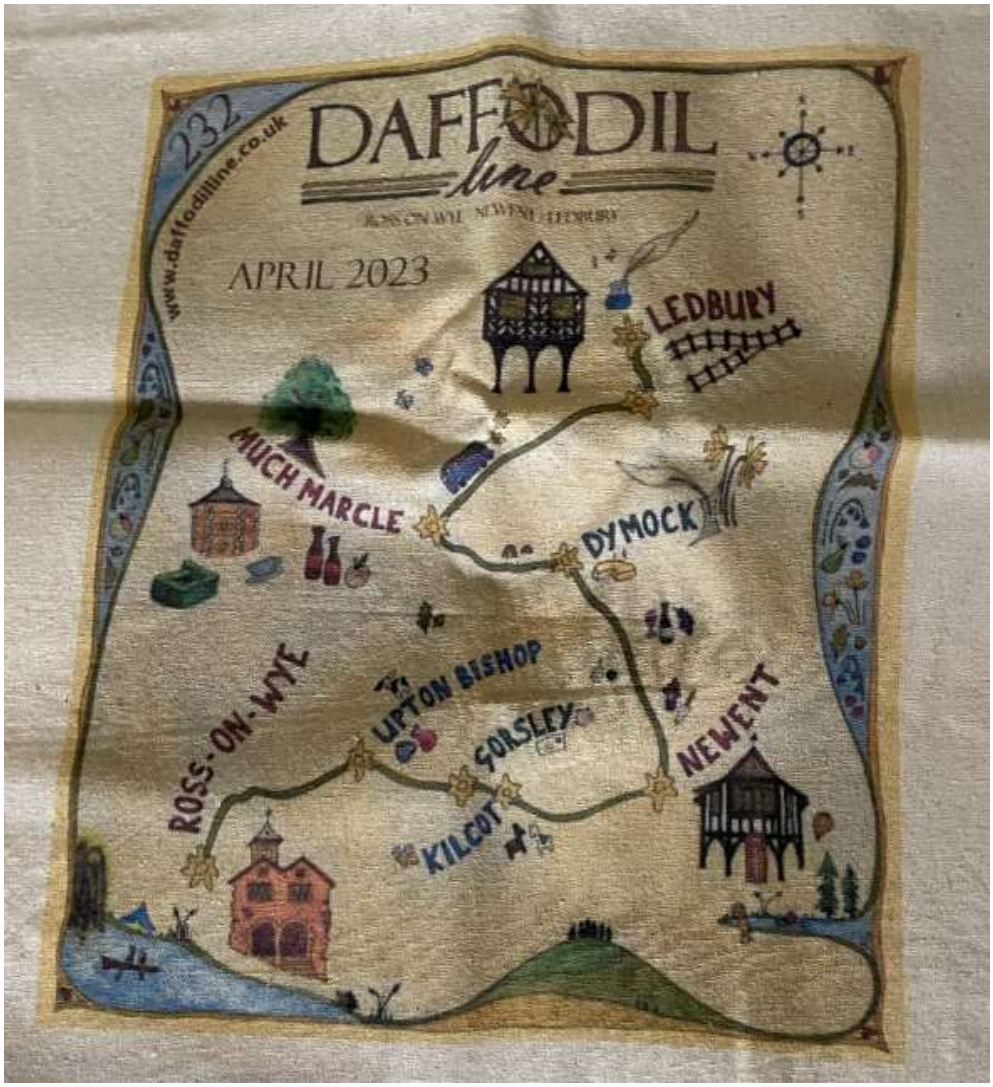


Figure 29 – Map drawn by a local artist of the Daffodil Line, printed on a tote bag handed out on the launch day.

[78] Leicester City Council, 2022, Leicester Enhanced Bus Partnership Plan 2022-2030, page 77, https://static1.squarespace.com/static/61e96a60fcd80d05b81c5cbb/t/625eb276c94eb70e4c41c29b/1650373264237/enhanced-bus-partnership-plan-2022-2030.pdf [accessed 5 August 2024]. Additionally, former Herefordshire Council officials have confirmed in conversations that such a prospect is achievable if adequate trust was built up between operators and the council.

[79] Williams-Pears R, 2024, An explanation of Cornwall's scheme from the (then) Councillor in charge of transport: How Cornwall is winning the bus game, https://bettertransport.org.uk/blog/how-cornwall-is-winning-the-bus-game/ [accessed 2 October 2024].

[80] Transport for Cornwall, 2024, Website of the Transport for Cornwall brand, https://www.transportforcornwall.co.uk/ [accessed 2 October 2024].

Route branding should also be considered. Evidence on its use is mixed, with some successful networks, like London's, avoiding it, whilst others, like Lancashire's, have shown it to be effective in growing passenger numbers.[81] Furthermore, an Australian study found that branded routes are indeed more attractive for the public, who often have greater awareness of them, but this is qualified by the general correlation between branded routes and high frequency or fast services.[82]

In Herefordshire's case, routes typically only have a small number of vehicles operating them, making maintaining different brands for most impractical. It may well be desirable for interurban routes, however, especially the 33 to Gloucester, which would likely benefit from increased publicity, as, even now, it is fast, comfortable and relatively frequent.

Vehicles are a key part of a brand, of course, and an overhaul and expansion of the fleet will be essential to deliver increased service and improve public perceptions of buses.[83] There is enormous potential to grow the market for bus travel with a comfortable fleet, as has been demonstrated by Transdev Blazefield in the North of England. Despite initial concerns about vandals targeting luxurious interiors, the company experimented with large, leather seats on the route 36 in the early 2000s and found enormous success – over the past 15 years, passenger numbers have more than doubled, in stark contrast to national trends.[84] This has proved repeatable, if not infallible, with many of Transdev's routes now being operated by very high specification vehicles.

[81] Peacock M, Route ONE, 2019, Rosso reports passenger numbers rise by 15%, https://www.route-one.net/uncategorized/rosso-reports-passenger-numbers-rise-by-15/ [accessed 26 August 2024]. Rosso had launched several new route brands in the year before the increase, such as the 464, Lakeline, Tottington Line and Trax. The Red4 was also launched, though later cut due to heavy losses – route branding is not guaranteed to work.

[82] Devney J, 2011, Changing Perceptions of the Bus with Branded Services, Institute of Transport Studies, Monash University, Australia, https://www.worldtransitresearch.info/cgi/viewcontent.cgi?article=5593&context=research [accessed 2 October 2024].

[83] There is a shortage of academic studies regarding vehicle age and quality. However, Roger French, former Managing Director of Brighton and Hove Buses over a period of huge passenger growth, has regarded modern vehicles as a cornerstone of success. He advises complete, but gradual, fleet renewal over fifteen years. In Herefordshire's case, though, rapid expansion would necessitate a much more complete fleet overhaul. French R, 2024, speaking for the Foundation for Integrated Transport, approx. 29:55, https://www.youtube.com/watch?v=QFL3DelnPp8 [accessed 1 October 2024].

[84] Halford P, Route ONE, 2023, The Transdev 36 – still blazing a trail two decades later, https://www.route-one.net/features/the-transdev-36-still-blazing-a-trail-two-decades-later/ [accessed 26 August 2024]. There may be some slight bias in this piece – the industry is very supportive of the general 36 project. The figures, however, are inarguable, and are reported by the Government in their National Bus Strategy.

Figure 30 – High specification Transdev buses leave Rawtenstall Bus Station, presenting an attractive mode of transport.

Much of the existing fleet could be retained and refurbished, though new vehicles would be needed to permit for increased service. Further details are provided in the costings document (appendix 1).

In summary, there is no clear "best" strategy of branding or vehicle design, but there are many methods of enhancing service attractiveness, which can be used in conjunction with one another where appropriate.

Funding

As per the costings document, the proposed scheme would cost between £79.8 million and £92.8 million in one-off capital investment, and approximately £3.8 million in revenue spend per annum. Unspent capital funds from the £102 million Local Transport grant could, providing permission from Central Government, be converted into revenue funds and provide 2-6 years of network operation.

Beyond this period, there are several options to continue funding the system:

1. **Direct Government Grants**. It should be hoped that, after several years of operation, tangible benefits could be demonstrated, and that Central Government would be willing to fund the scheme's continuation. However, given the Government's current financial restraints, this cannot be relied upon.[85]
2. **A Workplace Parking Levy (WPL)**. WPLs see employers taxed for provision of car parking spaces, with exemptions where appropriate, such as for disabled spaces. Whilst many cities, such as Bristol and Cambridge, have considered it,[86] it is a relatively unpopular policy, with a representative, if limited sample size, study of Cardiff employers and employees finding that just 57.3% would deem a WPL "totally or fairly acceptable".[87] Most notably, respondents felt that improved public transport was essential before any implementation, which would be the case in Hereford, but its rural setting would likely exacerbate any opposition. As a result, only one UK city has successfully implemented a WPL, Nottingham, but it has been studied extensively, and most of the negative effects feared, such as harm to business, have not developed. Indeed, a detailed study conducted by the University of Loughborough, in conjunction with various experts and the City Council, concluded that Nottingham's strong growth since the introduction of the WPL, as well as direct comments from businesses, suggest that improvements to public transport funded by the WPL have been more significant in attracting business than the scheme has been in deterring them.[88] This is an innovative idea and may be useful, but revenues would likely not be sufficient to fund bus operations in their entirety.
3. **Property development** (in the longer term). Strategic housebuilding along bus routes, in a manner that prioritises public transport, would provide an increase in passenger numbers and council tax revenue all without adding excessively to traffic congestion. If Right to Buy legislation were to be altered, buildings could even be owned and rented by the council/bus company, allowing them to reinvest profits from rent into the bus service, in a similar

[85] Gov.uk, 2024, Fixing the Foundations: public spending audit 2024-25, https://www.gov.uk/government/publications/fixing-the-foundations-public-spending-audit-2024-25/fixing-the-foundations-public-spending-audit-2024-25-html [accessed 2 September 2024].
[86] Dale S, Frost M, Ison S, Budd L, 2019, The impact of the Nottingham Workplace Parking Levy on travel to work mode share, *Case Studies on Transport Policy*, Vol. 7 (4), pages 749-760, https://doi.org/10.1016/j.cstp.2019.09.001 [accessed 2 September 2024].
[87] Santos G, Hagan A, Lenehan O, 2020, Tackling Traffic Congestion with Workplace Parking Levies, Cardiff University, https://orca.cardiff.ac.uk/id/eprint/130013/3/G%20Santos%202020%20tackling%20traffic%20congestion%20pub%20ver%20(1).pdf [accessed 2 September 2024].
[88] Dale S, Frost M, Ison S, Nettleship K, Warren P, 2017, An evaluation of the economic and business investment impact of an integrated package of public transport improvements funded by a Workplace Parking Levy, *Transportation Research Part A,* Vol. 101 (2017), pages 149-162, https://repository.lboro.ac.uk/articles/journal_contribution/An_evaluation_of_the_economic_and_business_investment_impact_of_an_integrated_package_of_public_transport_improvements_funded_by_a_Workplace_Parking_Levy/9438953?file=17060519 [accessed 2 September 2024].

method to that used by Japanese rail companies.[89] This would, however, take several years before returns could be made.

4. **Reallocation of council budgets**. Perhaps the simplest funding option is to merely redistribute funds presently assigned elsewhere to bus funding. Excluding Department for Transport grants, the Council will spend £24.5 million of its own money on highway maintenance in 2025/26,[90] and it does not seem unreasonable that a relatively small proportion of this could be spent on buses, especially seen as this figure has increased drastically since 2019/20, from £7.3 million, a period over which the bus network has seen significant contraction.

Immediate funding is, under these circumstances, readily available. There may be challenges in the long-term, but this is unlikely to be an insurmountable problem.

[89] JR East, Financial Data 2024, https://www.jreast.co.jp/e/environment/pdf_2024/financialdata2024.pdf [accessed 2 September 2024].
[90] Herefordshire Council, 2024, Herefordshire road investment, https://www.herefordshire.gov.uk/roads-1/herefordshire-road-investment/2 [accessed 23 April 2025].

Conclusion

Significant improvements to Hereford's bus network are entirely achievable. However, whether they would be capable of meeting the bypass' objectives is more nuanced, and they ought to be examined individually:

- Improved resilience: Buses would do virtually nothing to improve the resilience of the road network.
- Reducing journey times and congestion: The proposed bus network may well limit congestion in the longer term following a **modal shift**, but, more importantly, would significantly mitigate the effects of it from "day one." Buses, emergency vehicles and potentially even taxis – vehicles for which traffic congestion is of the greatest concern – would all benefit from priority lanes. Whilst the medium-term effects on congestion would likely be greater from a bypass, major modifications to Hereford's road network would be required to sustain this in the long term (due to **induced demand**), at great cost and with similar scope to that proposed here.
- Improving air quality: Electric buses, especially if they lead to a **modal shift**, will have a positive impact on air quality. However, this will probably be lesser than that provided by a bypass – HGVs in particular would not be diverted without one. That said, air pollution from roads is an issue likely to partially "solve itself" in the longer term, given the transition to electric vehicles.
- Supporting growth of business: It is difficult to determine which option would be more beneficial. Even in 2018, when the bus network was much more extensive than present, businesses were citing poor public transport as a potential barrier to recruitment,[91] but the Herefordshire Business Board, which represents the county's businesses, is firmly in favour of a bypass.[92] Even if better buses were to improve access more than a bypass would, that is not the perception of many businesses, and this may have a negative impact on investment. Extensive marketing to convince those who are sceptical would be required for a new bus network.
- Supporting population growth: Improved buses would enable housing to be built strategically along high frequency bus corridors, encouraging bus usage and increasing sustainability. This is vastly preferable to development enabled by a bypass, which would likely be car-centric and add to traffic congestion on existing roads.

In conclusion, an improved bus network would likely not fulfil all the objectives set out by Herefordshire Council in their justification of a bypass. However, this does not invalidate it as a policy to be pursued. Even if all funding were guaranteed, a bypass would not open until 2033 at the earliest,[93] far enough away for the congestion problem to worsen considerably, jeopardising the city's economic aims. Measures must be implemented in the intervening period and buses would provide a sensible option for this. If they were to prove successful, and it were concluded that a bypass was no longer necessary, then the money and emissions associated with its

[91] UK Parliament, 2018, Note of Committee Visit to Herefordshire, https://publications.parliament.uk/pa/ld201719/ldselect/ldrurecon/330/33017.htm [accessed 10 September 2024].
[92] Herefordshire Business Board, c.2021?, Traffic Congestion, https://www.herefordshirebusinessboard.co.uk/projects/traffic-congestion/ [accessed 10 September 2024].
[93] Herefordshire Council, 2024, New Road Strategy for Hereford, page 20, https://councillors.herefordshire.gov.uk/documents/s50117361/New%20Road%20Strategy%20for%20Hereford%20JC.pdf [accessed 10 September 2024].

construction could be saved. If it were still deemed essential, construction could proceed as planned.

However, perhaps the most conspicuous omission from the Council's objectives is any reference to climate change. Despite declaring a climate emergency in 2019,[94] they have admitted to pursuing a project that will almost certainly increase private car usage,[95] when transport is now the single largest source of carbon emissions in Herefordshire, with concerningly little reduction over time.[96]

Ultimately, it is somewhat difficult to determine if a bypass will ever be constructed at all. It would be dependent on a large central government grant that does not appear likely given the current political situation, and a return to an Independent/Green administration would almost certainly see the project aborted. Whatever the authorities favour, there should at least be a credible alternative.

[94] Herefordshire Council, 2019, Our climate emergency declaration, https://www.herefordshire.gov.uk/climate-2/climate-change [accessed 11 September 2024].
[95] Price P, Cabinet Minister for Transport, 2024 – "I fully recognise that building new road capacity can lead to induced demand and additional traffic." Herefordshire Council, Supplement to the agenda for Cabinet, page 6, https://councillors.herefordshire.gov.uk/documents/b26076/Public%20and%20Member%20Questions%20Thursday%2028-Mar-2024%2014.30%20Cabinet.pdf?T=9 [accessed 10 September 2024].
[96] Midlands Engine Observatory, CO2 emissions – Herefordshire, County of, 2021, https://app.powerbi.com/view?r=eyJrIjoiZTQ3MjQ1M2MtMDI3Zi00ZGE3LTllZmUtN2FlYjliMTUwZjJhIiwidCI6ImNhM2RjZDRiLTRiNDUtNGUyMi1iODFhLWQ5NjMzZDVhOGM5ZSJ9&pageName=ReportSection7195e9fe0673c050b9b8 [accessed 11 September 2024].

Glossary

Bus Priority – Measures used to give buses priority over other traffic. These can consist of many techniques, such as priority at junctions, but often manifest in the form of dedicated bus lanes.

Hereford City Zipper – A free, circular bus route around the city centre introduced in 2023, funded by the then Government's Levelling Up scheme. It runs every 15 minutes, using new electric buses, but follows a long and complex route.

Modal shift – The process of "shifting" journeys from one mode of transport to another, usually from private cars to more sustainable methods, like public transport or bicycles.

Route Branding – a method of marketing buses that involves giving individual routes their own identities. Its usage varies, but often includes route-specific paintwork, interiors, promotional offers or enhanced bus stops.

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Appendix 1: Route timings and frequency calculations

Calculations for the timetables and number of vehicles required are detailed below. Times are from Google Maps driving predictions or bustimes.org with reasonable modifications. It should be noted that this assumes Herefordshire's allocation of Bus Service Improvement Plan funding has been implemented, increasing the frequency of the 476 to hourly. The 420 has also been given a long extension to Tenbury Wells and Ludlow.

Route	Round trip time (min)	Frequency (min)	Buses required, weekday (relative to today)
H1A & H1B*	80 (+5 wait between circles)	30	3
H2	50 (+5 wait between legs)	30	2
H3	50 (+5 wait between legs)	30	2
H4	27 (very little flexibility)	30	1
H5 & H6	50 (+5 wait between legs)	60	1
H7	27 (+3 wait between legs)	15	2
H8	25	30	1
H9A & H9B	45-50 (varying waits)	30	2
R10	55	30	2 (dependent on local business)
R11A & R11B & 492	180	60	3
R12	55	30	2
R13A & R13B	110	60	2
R14	57	120	<1 (shared with an existing small route)
R15	55	60	1
R16	45	60	1
T14 (Hfd-Hay)	120	60	2 (+1? Complex)
23 (full route)	300	60	5 (+2(?) from today, complex)
33 (full route)	220	30	8 (+4, 4 funded by Hfds)
66 (full route)	115	60	2 (+1)
420 (Hfd-Lud)	180	60**	3 (+2, 2 funded by Hfds)
461/462	230	60	4 (no change)
476	90	60	2 (no change)
City/Rural Total			**26 (of which 1 is funded by other organisations)**
Trunk Total			**26 (of which 9 are funded by other organisations, and 15 are new)**

Figure 31: Proposed bus routes and their durations/frequency, such that the buses and costs required can be roughly calculated.

Appendix 2: Costings

Given their inherent variability, all costings are approximations only.

Capital Investment

Infrastructure

Investment	Estimate (£ millions)	Explanation
Ross Road Widening	7	Explained in text.
Whitecross Road Widening	15	Similar to Ross Road, albeit proportionally longer (giving £13m), and in a more complex environment, so rounded up.
Belmont Road Widening	9	Similar to Ross Road, albeit proportionally shorter (giving £9.15m, and with only small widenings, so rounded down.
Bulmer's Branch new road	1.5	Explained in text (rounded up).
Belmont new road (full)	5	Explained in text (rounded up).
Other Bus Priority schemes	1.6*	Greener Journeys Case Studies,[97] adjusted for inflation,[98] then adjusted for the length required in Hereford.[99]
Purchase and conversion of 80 Belmont Road	1.1	Explained in text, surfacing highly unlikely to exceed £100,000.
New bus station (city or station)	12*	Cost of Hereford Transport Hub is expected to be £9.8m,[100] and the slightly larger but otherwise comparable Exeter bus station cost £8m in 2021 prices.[101], approximately £9.6m today.[102] Increased slightly to accommodate possible difficulties with the location.
New bus stops/bus stop refurbishments	1.5	Transport for London 2022 bus stop installation figures (upper end assumed, to account for inflation).[103] Estimated that roughly 100 bus stops with shelters would be replaced or built, given the

[97] Greener Journeys, 2014, A National Statement on Local Bus Infrastructure Executive Summary, Page 15, https://greener-vision.com/wp-content/uploads/2014/06/Bus-infrastructure-report-June-2014.pdf [accessed 2 September 2024].
[98] Bank of England inflation calculator, https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator [accessed 2 September 2024]. Price per km of bus lane was found, by Greener Journeys, to be £250,000 in 2010 prices, £374,147.31 today. This was rounded up to £400,000 to account for any extra modifications required, including, but not limited to, new traffic islands or lights.
[99] Distances calculated from Google Maps – roughly 4km.
[100] Herefordshire Council, Council – Friday 26th July 2024 10AM, 20:21, https://www.youtube.com/watch?v=PGNBDbBjNB8 [accessed 3 September 2024].
[101] BBC News, 2021, Exeter's new bus station opens to passengers, https://www.bbc.co.uk/news/uk-england-devon-57955042 [accessed 3 September 2024].
[102] Bank of England inflation calculator, https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator [accessed 2 September 2024].
[103] London Assembly, 2022, Cost to install a bus stop, https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/cost-install-bus-stop [accessed 3 September 2024]. £14,500, including shelters and flags, but not kerbside modifications.

		around 500 bus stops in the county worthy of QR codes or timetables.[104] Figures rounded up.
Total	**40.7 to 53.7**	

* May be (at least partially) covered by a separate Government grant, which has been awarded for the Transport Hub and bus priority on Blueschool/New Market Streets.[105]

Vehicles

Investment	**Estimate (£ millions)**	**Explanation**
Refurbished and re-liveried buses	2.7	Figures difficult to find, Transdev's 36 buses were rebuilt at a cost of £80,000 per vehicle in 2011, however these were double deckers and saw equipment like engines replaced.[106] The cost was assumed to be 70% (£80,500) of the inflation adjusted sum (£115,000).[107] 23 vehicles to be retained from the existing fleet - 6 Optare MetroCities from Sargeants, and 17 Optare Solos from Sargeants and Yeomans.
New urban/rural fleet (electric)	16.2	Cost per bus of new Norwich Electrics (£539,000), including depot upgrades.[108] Given that this fleet consists of large buses, mainly double deckers, the cost in Hereford would likely be much lower. 30 new buses (the existing 17 will be loosely earmarked for other services).
New double deck fleet (electric)	12	Same as above, albeit with cost per bus increased to £600,000 to account for high specification. 20 new buses.
Sale of existing fleet.	-0.3	Pessimistically, bus sales for circa 2010 Solos are around £15,000.[109] Obviously, not all vehicles are Solos (many are larger and likely worth more), but multiplying this by the 20 vehicles to be disposed and this gives approximately £300,000 in income.
Total	**30.6**	

[104] Herefordshire Council, Bus Services, Real-time information at your bus stop, https://www.herefordshire.gov.uk/public-transport-1/bus-travel [accessed 3 September 2024].
[105] Gov.uk, 2024, Hereford City to receive £19.9 million transport investment, https://www.gov.uk/government/case-studies/hereford-city-to-receive-199-million-transport-investment-levelling-up-fund-2 [accessed 3 September 2024].
[106] Coach & Bus Week, 2011, Transdev relaunch no.36 route fleet, https://cbwmagazine.com/transdev-relaunch-popular-route-fleet/ [accessed 3 September 2024].
[107] Bank of England inflation calculator, https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator [accessed 2 September 2024].
[108] Norfolk County Council, 2024, First Bus completes transformation of Roundtree Way to all-electric bus fleet, https://www.norfolk.gov.uk/article/57394/First-Bus-completes-transformation-of-Roundtree-Way-to-all-electric-bus-fleet [accessed 5 September 2024]
[109] Coach and Bus Market, 2024, Vehicles for sale (Optare), https://www.coachandbusmarket.com/vehicles-for-sale/buses/?_vehicle_manufacturer=optare [accessed 2 October 2024].

Miscellaneous

Investment	Estimate (£ millions)	Explanation
Branding, advertising and artwork	0.5	There are, naturally, no clear indications as to the cost of branding. An extremely generous estimate has thus been given.
Acquisition of Yeomans and Sargeants	7	Explained in text. Could be avoided via a sophisticated enhanced partnership, or franchising, but these would come with additional implementation and revenue costs.
Depot modifications etc.	1	To ensure that depot provision is adequate for the new fleet. Figures uncertain, given that costings are often included with buses, as in Norwich.
Total	**8.5**	

Operational spending

Investment	Estimate (£ millions)	Explanation
Annual operating costs, urban/rural (buses and drivers)	5.45	Assumed that bus speeds will average 25km/h. Charging costs assumed to be 20p per kWh, which is below the price cap but accounts for charging mainly being conducted at night, and potential business rates. Energy efficiency for the Enviro 100 is 0.54kWh/km,[110] and 0.67kWh/km for the double decker Enviro 400.[111] It shall, thus, be assumed that the Enviro 200 (a mid-size bus, similar to those in Hereford) lies somewhere in the middle, at approximately 0.6kWh/km. This gives a rough energy cost of £3/hour. Drivers' wages were placed at £23.50/hour to account for sick pay, holiday pay etc., given the average Herefordian bus driver pay of £17.67/hour, according to an anonymous survey via Indeed.[112] [113] Therefore, raw operating costs are £26.50 per bus, per hour.

[110] Alexander Dennis, 2024, Enviro 100 EV specification, https://www.alexander-dennis.com/site-content/uploads/2024/08/Enviro100EV-2024-08.pdf [accessed 6 September 2024]

[111] Alexander Dennis, 2024, Enviro 400 EV specification, https://www.alexander-dennis.com/site-content/uploads/2024/03/Enviro400EV-2024-03.pdf [accessed 66 September 2024]. Both these figures are taken from Alexander Dennis promotional material, but the testing meets the "UK Bus Cycle" standards, which are externally specified.

[112] Indeed, 2024, Bus driver salary in Hereford, https://uk.indeed.com/career/bus-driver/salaries/Hereford [accessed 6 September 2024]. Whilst this is a very small sample size (3), there are unlikely to be many variations across the county, and this is clearly an acceptable rate.

[113] The ratio of hourly rate to total expenditure by the operator is given as roughly 10:13 by the later detailed coach operator. Mark Williams, 2019, Bus & Coach Buyer, On Target 10 – Costing contracts, https://www.busandcoachbuyer.com/on-target-10-costing-contracts/ [accessed 15 September 2024].

		Operating hours assumed as 6AM to 10PM (at full frequency to account for positioning moves) Monday to Thursday (16 hours), 6AM to midnight on Friday and Saturday (18 hours) and 7AM to 9PM on Sunday (14 hours). Sunday operating costs approximated at two thirds of the normal hourly expense, to account for reduced frequency. Given 26 buses operational, this amounts to approximately £690 per hour. £11,000 a day Mon-Thu, £12,500 Fri-Sat and £6,400 on Sundays. £75,400 a week. 52 operating weeks a year assumed, calculated as 51 to account for days with no/reduced service such as bank holidays. According to a 2019 article written by an anonymous coach operator, for every £79 spent on "direct" costs, around £33 is spent on "hidden" costs, like maintenance and cleaning, but excluding vehicle depreciation as buses would be purchased outright.[114] This has been factored into the figures. Almost certainly an overestimate given reduced frequencies at quiet times.
Annual operating costs, trunk (buses and drivers)	3.92	As above, albeit using the 0.67kWh/km figure for the ten Herefordshire-funded electric buses. This gives operating costs of £27.50/hour per bus, and £275 for the electric fleet. The remaining seven diesel buses were assumed to have twice the energy costs per bus, giving operating costs of £220 an hour. £495 an hour for both. This gives £7,900 a day Mon-Thu, £8,900 Fri-Sat, and £4,600 on Sundays. £54,000 a week. Average bus speeds assumed as 30km/h (including layovers etc.), 51 operating weeks a year and same "hidden cost" estimates as before.
Annual fare revenue, urban/rural	-4.37	65 "trips" per hour. At any given point, bus occupancy in English non-metropolitan areas is approximately 10.[115] Pessimistically, it is assumed that an average of 8 passengers will travel onboard a bus during its journey, paying an average fare of £1.50, to account for concessionary passes, weekly tickets etc. This gives roughly £780 of revenue per operational hour.

[114] Williams M, 2019, Bus & Coach Buyer, On Target 10 – Costing contracts, https://www.busandcoachbuyer.com/on-target-10-costing-contracts/ [accessed 15 September 2024].
[115] Redwood J/Maclean R, 2021, Average seat occupancy on public bus services, https://johnredwoodsdiary.com/2021/09/13/average-seat-occupancy-on-public-service-buses/ [accessed 15 September 2024].

		Weekly operating hours are 110 (Sunday's hours multiplied by 2/3 and rounded up, to account for reduced revenue), giving £85,800 in weekly revenue. 51 operational weeks a year, as before, giving £4,376,000 revenue.
Annual fare revenue, trunk	-3.7	11 "trips" per hour. Country buses are typically much fuller than their urban counterparts, so average occupancy shall be assumed as 20. Average fare of £3.00, to account for concessionary passes, weekly tickets etc. This gives roughly £660 of revenue per operational hour. Weekly operating hours are 110, giving £72,600 in revenue per week. 51 operational weeks a year, giving £3,702,600 revenue.
Miscellaneous overhead costs, e.g. managers, general insurance	2.5	This is a very vague estimate, loosely based on the total general overhead of an anonymous independent bus and coach operator (approximately £1.5 million).[116] It has been increased to account for larger depot sizes and inflation.
Total annual costs (pessimistic)	**3.8**	

As a general rule, costs have been rounded up, and revenue has been rounded down, though there are some exceptions that are artificially "corrected" in the final costing for being too low, namely daily operating costs.

Total upfront capital investment: £79.8 million to £92.8 million

Total annual subsidy: £3.8 million

[116] Williams M, 2019, Bus & Coach Buyer, On Target 11 – Adding overheads, https://www.busandcoachbuyer.com/on-target-11-adding-overheads/ [accessed 15 September 2024].

Evaluation

I set about on this project with the intent of coming to some conclusions about the much debated, yet probably under-researched, matter of a bypass around Hereford. It is, of course, a significant issue of local interest, with real consequences for my life, those of fellow Herefordians, and the broader economy. Thus, I hoped to be able to answer many of my own questions on the matter, but also, potentially, provide some useful analysis for others. I think that I have had some success in this regard, but I do wish that more conclusive data existed, and the project's impact is likely to be very limited – I do not exactly have much of a platform, and a sixth former's work is not exactly considered the peak of reliability, something that I do acknowledge.

Considering secondary effects, my critical thinking and planning skills have undeniably improved, as well as, of course, my proficiency with academic writing. In particular, a good understanding of referencing will be immensely valuable.

Time management was generally easier than I expected it to be, but with hindsight, I should have chosen a much smaller scope for the report. The question I opted for was rather all-encompassing, and necessitated some otherwise useful – but quite niche – information and analysis being removed. A discussion of just one corridor of travel, for example, would have been more easily manageable, and permitted some insightful examination.

I like to think that the project is readable, though it may not seem particularly relevant for those unfamiliar with Hereford. It might have thus been wise to include more context, or photographs, but, again, the wordcount limits this somewhat.