Coffee Shop

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Title: **Prediction of passenger numbers - train journeys to and from Melksham Station**
Post by: **grahame** on **February 24, 2020, 09:56:02 am**

I (CV at end) have been asked - as part of the Melksham Neighbourhood Planning, and as a resident of Melksham with some background knowledge on the subject - to predict railway station passenger numbers 5 and 15 years into the future, and to provide backup material and references for predictions.

Melksham Railway Station - prediction of passenger numbers for next decades

Management overview

10 years ago, there were around 3,000 passenger journeys per annum made to and from Melksham Station. In the year to March 2019 (the most recent figures), there were 75,000 passenger journeys.   What will the numbers be like in 5, 10, 15, 20 years?

I would estimate that passenger numbers will probably rise to somewhere between 260,000 per annum and 600,000 in the foreseeable future, subject to caveats which I will add in my full report.

Current passenger journeys per head of population per annum (Journeys per person per annum - JPPPA) at Melksham is 2.9; nearest equivalent town with an appropriate train service for the town is Warminster, where the figure is 18.4. Should Melksham not grow in population, and achieve just 10.0 journeys per person, the passenger numbers would rise to 260,000. Both of the inputs there have been underestimated, so you should consider this a low figure. If the population of Melksham reaches 40,000 in the next decades, and journeys rise to 15.0 per person, you have 600,000 journeys per annum. Even this is a low estimate if you consider moves away from private cars to more carbon friendly public transport. Even without any population increase, Melksham passenger numbers would be well in excess of one million if we had an uptake of 50 journeys - quite possible; Bradford-on-Avon is already nearly there; much of it comes down to service level and the social and demographic changes it would bring. In the unlikely (but not impossible) event of no train service improvement at Melksham and no changes from outside influences such as climate change driving people to public transport, passenger numbers could be expected to peak at around 250,000 (as per Frome example) prior to scaling for increased population.

Giving a timescale on the growth is more difficult, as it depends on step factors which will change in jumps rather than smoothly. However, an 11% per annum average compound growth would give passenger numbers of 126,000 in 5 years, 213,000 in 10 years, 359,000 in 15 years and 605,000 in 20 years.
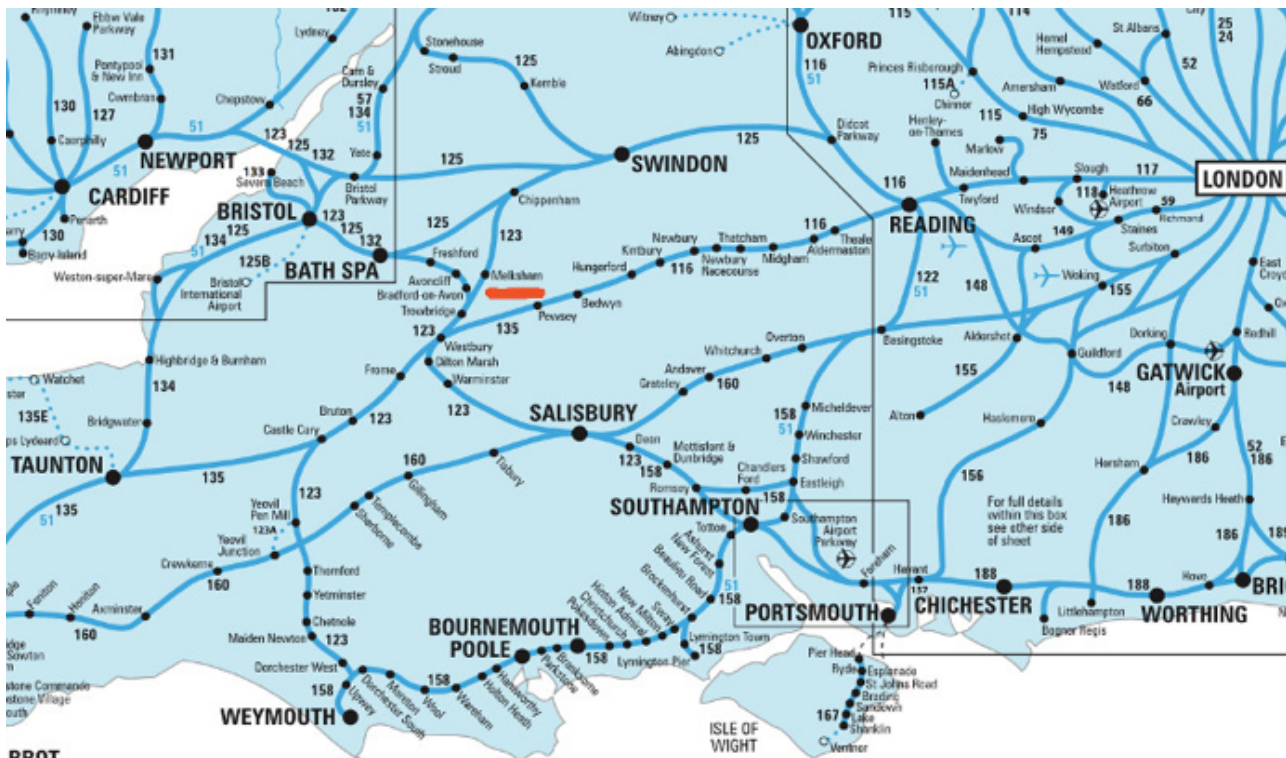
Please note that these estimates are based on current data and are in line with planning for future rail provision by the Swindon and Wiltshire Local Enterprise Partnership in conjunction with Wiltshire Council, and by the TransWilts Community Rail Partnership.
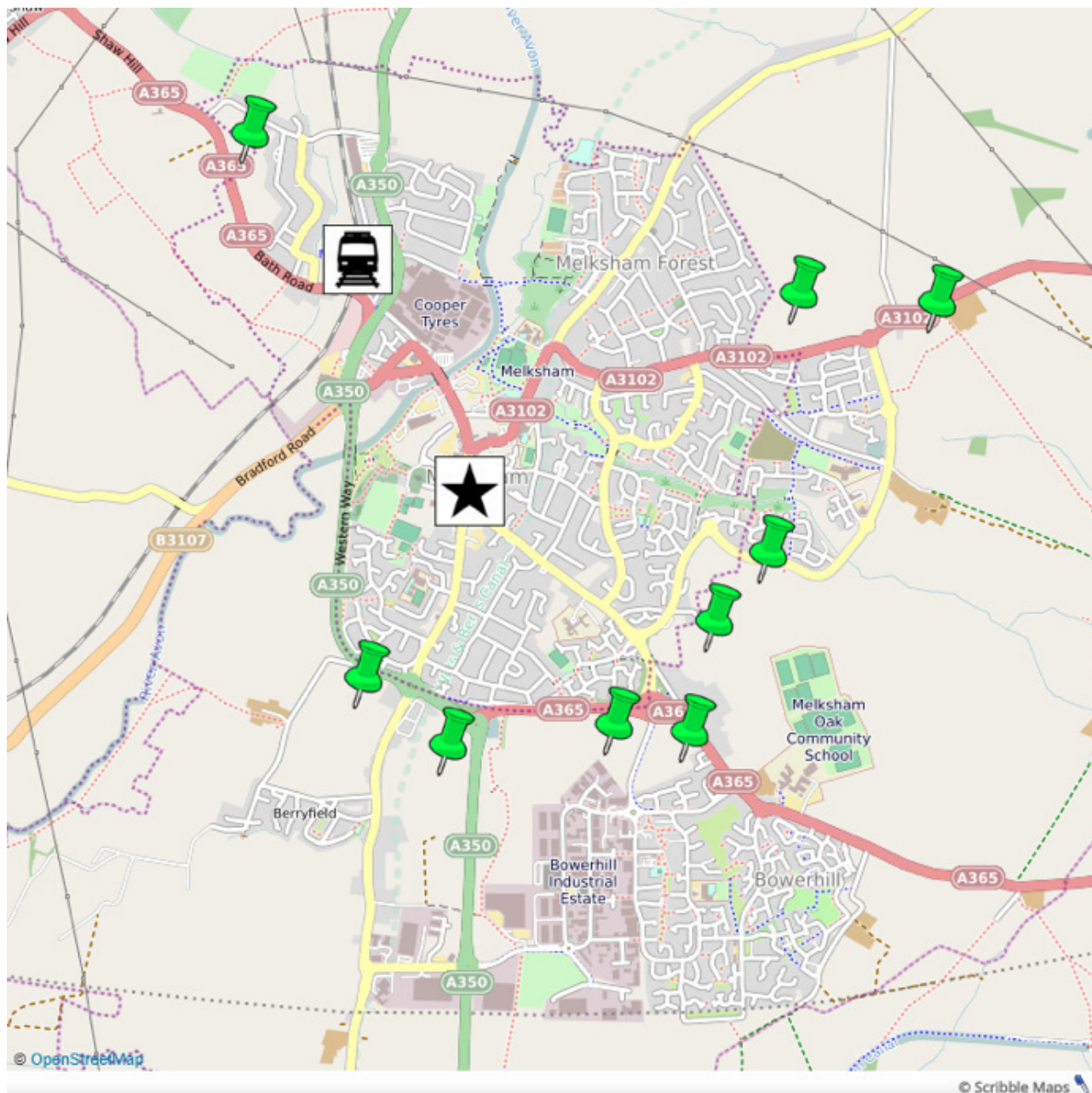
Maps

(http://www.wellho.net/pix/gwrmap.jpg)
Rail Network (GWR passenger services) putting Melksham into context

(http://www.wellho.net/pix/natrmap.jpg)
Alternative Rail map (more geographic) putting Melksham into context

(http://www.wellho.net/pix/mkmnptmap.jpg)
Melksham - Town Centre, Station, and new build housing underway (green pins)

Background

Questions to ask when forecasting future passenger volumes

a) What are the sort of passenger numbers we should expect with an "appropriate" service, based on current numbers / populations of similar nearby towns that already have an appropriate service?

b) Will service and capacity be increased to those same appropriate levels enjoyed by other comparable towns?

c) At what sort of rate will passenger numbers grow? (from (a) we can see where the ceiling might be - (c) suggests how quickly we can reach it

d) Is there anything different about the Melksham ceiling to ceilings at other towns?

Base data

Town	pop. 2019	journeys 2010	journeys 2019	JPPPA 2019	notes
Melksham	26000	3000	75000	2.9	a
Best comparisons:					
Frome	28000	135000	201000	7.2	c
Trowbridge	36000	652000	934000	12.9	d
Warminster	19000	337000	349000	18.4	b
Other nearby towns / less useful comparisons:					
Westbury	18000	378000	549000	30.5	e
Chippenham	48000	1520000	1972000	41.1	f
Bradford-on-Avon	11000	377000	534000	48.5	g
Pewsey	4000	182000	222000	55.5	h

Notes:

a) Melksham Station was closed from 1966 to 1985 when it re-opened with a service targetted specifically and only at the commuter flow to Swindon, and not at general use. There were a number of short-lived experiments with more services, but none had sufficient depth and backing to make the station into a "general use" one until December 2013, when the service was raised from specific flow (and working poorly for that) to general use - again a very thin service but enough to make it work. Passenger numbers have rocketed, JPPPA was risen from 0.1 to 2.9. It has not been growing further in the last 2 years because of (i) Trains full - no room for more passengers (cured) (ii) Services not running for 62 days (due to engineering works) (completed) and (iii) unreliability with lack of train crew being the main cause (!!). Early signs are that crew issues have been mostly addressed, but growth to the levels of other stations will require service levels to be increase to match those other stations.

b) Warminster is perhaps the closest comparator to Melksham in Wiltshire. It has an hourly service each way (twice that of Melksham) with some extras, and its service runs into the late evening (as opposed to Melksham's final trains being mid evening, removing "evening out" opportunities). Noting a large military presence in Warminster, that depresses the JPPPA figure because of a substantial segment of residents living and working in the town. On the other hand, military tends to generate longer distance traffic and the income to the rail industry per passenger will tend to be higher.

c) Frome is a very close comparator to Melksham. Although in Somerset, the town logically fits in with Wiltshire. Like Melksham's service, there are long gaps in services at Frome, which helps to explain its low JPPPA of 7.2 - just 2.5 times that of Melksham at present. That's still over 200,000 journeys per annum versus 75,000 at Melksham and gives a clue as to where Melksham might go without service improvements. Like Melksham, a major flow of passengers is to Bath; it's a direct service from Frome, but a relatively long journey around and buses offer an excellent alternative especially considering their frequency. Like Melksham, Frome's station is not all that far from the town, but psychologically is considered to be "out of town" by many, and like Melksham the station is not connected into the bus network.

d) Trowbridge is a bigger town and the county town. Some 10,000 staff work for Wiltshire Council, around 4,500 not in schools across the county. That represents a considerable number of employees and dependents based in the town over and above other (none-county) towns and helps keep the JPPPA low at 12.9; also to note that Trowbridge station

is central and residents who drive to catch a train are likely to choose Westbury (with more trains going to other places) or Bradford-on-Avon as their railheads.

e) Westbury has a higher JPPPA (30.5) due to its position as a major junction with services heading off in six directions, and good (recently expanded) car parking to give it a large catchment from surrounding countryside. With the extra parking and extra capacity on the hitherto-overcrowded services to Bath and Bristol, significant passenger number growth at Westbury is likely.

f) Chippenham has a half hourly express service to Swindon, Reading and London, and also to Bath and Bristol. It is now a major commuter town and the passenger numbers show what can be done. In December 2019, new peak none-stop services to London were introduced, and planning for new residences within the station catchment will help fill those and other services. It should also be noted that a significant proportion of Melksham residents who travel by train for work or meetings in London choose to drive to Chippenham to catch the train due to the infrequent and early-finishing services back to Melksham. These passengers would transfer to Melksham if a similar service were offered; realistically that will not happen, but with services increased at Melksham, there will be some transfer - it would hardly dent Chippenham numbers, but it would make a noticeable impact on the much lower Melksham numbers.

g) Bradford-on-Avon station serves as a commuter station (and park and ride) for Bath and Bristol, as well as providing for the traffic generic to the town. The JPPPA of nearly 50 is exadurated by the relatively small size of the town (less than a half of Melksham) coupled with the half hourly (with some extra!) trains calling in both directions. It's though provoking that if the current B-o-A JPPPA were applied to Melksham with the potential town growth in Melksham, we would have 2 million journeys per annum - 25 times what we have at present. That is not something I would expect, rather it's an extreme outlier case.

h) Pewsey provides a railhead for a huge area of mid-Wiltshire, though the town itself is small (the residents prefer to use the term "village"). Over the years, train services have grown and so have journey numbers. The JPPPA figure should not be used as a comparator because of the large catchment, unique for a Wiltshire station.

Also note - previous figures also available from Office of Road and Rail (ORR). Populations based on 2011 Census data with local uprating as appropriate. Base passenger number for Melksham Station for 2009/10 of 3,000 are derived from ORR ticket data which show 10,000 tickets but was distorted by significant sales of Melksham to Bristol tickets to passengers making the shorter but more expensive journey from Trowbridge or Bradford-on-Avon to Bristol and not coming anywhere near Melksham in the process. The 3,000 conclusion was reached in association with personal observation of around 5 people in total arriving, and 5 people leaving, each day. That number also matches passenger numbers from the late 1990s. Care must be taken when extrapolling from the 3,000 figure as this was passenger numbers on a very limited service that was not practical for most people to use.

Conclusion on JPPPA figures used in forecasts.

I have used a low figure of 10 JPPPA for future forecasts - that's below the current figure of all sample stations that have an appropriate service. My high figure of 15 is still well below the figure of the closest other comparator. No uplift from current JPPPA levels has been applied for social and environmental uplifts which are probable in coming years, but using the JPPPA comparator does assume an uplift at Melksham to services and facilities in line with those already in place in other Wiltshire towns with stations.

Caveats

In order for a public transport service to work, everything must join up. A failure in any one department can lead to the service as a whole failing. This section lists caveats - things that need to happen or could go wrong which would impact passenger numbers.

1. The service needs to be safe and reliable

There has been no issue with safety on the railway itself, though safety at the station and in getting there has been raised as an issue. The station is set in the back of the business / industry area and at present is deserted at night.

The train service itself is also safe from significant reduction for the immediate future - perhaps the safest public transport in Melksham. Hard work and support by the Department for Transport, Wiltshire Council, Great Western Railway, Network Rail, SWLEP, TransWilts CRP, Melksham Rail User Group and others have grown the service and enhanced the facilities in recent years, and passenger numbers have more than matched targets. Recent investments include longer platforms, and the provision of longer trains. The nature of the rail industry with its franchising model ensures a stability of provision which is absent from the bus industry. Changes are expected to the model following the Williams review, but the overall strategy of a stable and growing rail system remains. The line through Melksham is now (and should remain) a key element of the national network, included as a part of the core in policies such as the SWLEP rail policy and the Local Transport Plan.

The service has been one of the least reliable anywhere over the last two years. Planned engineering works with rail replacement buses put people off somewhat, but unplanned cancellations on the day seriously disrupt people's journeys and are put people off long term. In the week just gone (Monday to Friday), 12 trains out of 90 scheduled were cancelled - a 13.3% cancellation rate; a reasonable target is 2%.

2. Capacity needs to increase in line with demand

Until 2018, our peak train was a single carriage and it was so full that people had to squash to get on (stories of people being left behind too). We're now up to 2 carriages and it's coping, but clearly capacity of trains needs to increase along with passenger number growth.

3. Frequency needs to increase so that the average wait time if you just turn up at the station is less than the travelling time

A train every 2 hours and with longer gaps (07:52 to 10:01 to Swindon, 15:19 to 17:36 back) for a journey that takes about 30 minutes requires people to change their plans to suit the trains.   As a rule of thumb, people will continue to be put off in significant numbers until the train runs as frequently as the length of the journey - so in this case every 30 minutes. We can and should step towards that goal; note the earlier section and compare passenger numbers at Frome with Warminster to see the effect.

Stepping up from every 2 hours or so to every hour is a first necessary step towards meeting forecasts over and above current Frome JPPPA levels. A further increase may come later.

4. Fares need to be at a sensible level

Present peak day return - Melksham to Swindon - £10.50. Peak return fare Bath to London - £208.80 . That's 18p per mile Melksham to Swindon, but 94p per mile Bath to London. My predictions assume that fare levels will remain at around the current pence per mile rates, allowing for inflation. Raised to 94p per mile (over £50 return to Swindon),

traffic would haemorrhage. With free travel (Dunkerque, Luxembourg, Tallinn examples) passenger numbers would rise; that could also be the case if the free bus pass scheme were extended to rail (or scrapped on the buses).

5. Information systems and fare regimes need to be good

Information (timetables) on alternative network routes for public transport journeys, and on the fares for such journeys - and indeed the fare regimes themselves - are significant barriers to growth. This "caveat" is that things don't get even worse - no expectation of a magic wand sorting out the issue that make public transport a challenge for many to to use; if it WAS sorted out, expect growth towards or beyond the upper end of my forecasts.

6. It needs to be easy and to get to the station and to leave your vehicle there if you wish, and in sufficient numbers.

As well as train and service capacity, cycle storage, bus, car parking and car drop-off facilities need to be grown along with usage of the train service. Bus and car drop off are especially important in Melksham, where the station is to the north west of the town centre, and the residential growth is primarily to the south and east.

7. It should not be duplicating other new transport

Added "for the record" ... I don't see any new truly competitive players for major parts of the public transport network on the horizon.

For journeys to Bath, bus is (and will likely remain) a good alternative to the train, and for local journeys to Chippenham and Trowbridge it will often be the mode of choice - with daytime frequency and town centre convenience having it win over the train for many. Return tickets valid back on either bus or train (whichever was used for the initial journey) could - if marketed effectively - lead to an increase of use of both modes as public transport overall frequency and length of day jostles private car journeys out.

8. Growth rate estimates

Not only do we need to consider the ceiling of passengers numbers (what it should reach) but also how quickly it will get there. Data from ACoRP suggests that Community Rail lines and stations grow by 5% above the growth of lines and stations that do not have community rail, and our line has both the TransWilts Community Rail Partnership and the Melksham Rail User Group as ACoRP members. The estimate used of 11% has been exceeded by stations in the Bristol area which have also seen significant service increases - Severn Beach (up from 74,712 to 251,994 passengers in 10 years) and Parson Street (up from 46,670 to 149,700). Even where services have not increased, passenger numbers have risen by 8% compound per annum at stations such as Keynsham (257,000 to 511,646).   We can be pretty clear on where we will end up given the caveats and plans; when is somewhat harder to forecast. I am comfortable with 11% provided that the frequency / capacity / reliability ceilings are not hit.

Foreseen

1. Buses to station

Growth will happen anyway, but will be significantly pressed towards the upper end of forecasts if town buses connect with trains. See Caveat no. 6 - and this is especially relevant to Melksham

2. Double tracking or equivalent

The line through Melksham is single track, realistically limited in its current form to one train each way per hour - and in some hours that will be a freight train. The SWLEP and other rail strategies look to enhancing the capacity.

Professional input suggest that double tracking all the way would be expensive - with major issues at Thingley junction where the camber of the main line would make a conventional double junction impractical without slowing London to Bristol expresses, at Melksham Station where a second platform and accessible access to it would be needed, and over the river Avon near Staverton where the bridge is single track. Better to provide long ("dynamic") passing loops such as you'll find on the Borders railway - either between Dunch Lane and Lacock, between the rear of Asda and the River Avon, or both. Signalled 2 ways, the loops would have the added benefit of providing a freight train lay-by; one of the current issues with full and robust service is that once a freight train leaves Westbury, it can't be put out of the way until Swindon. There are precedents for what is essentially double track with short single track sections - for example from St Budeaux to Saltash, and at Marazion, on the Cornish main line, iand at Ribblehead on the Settle and Carlisle line. There are also precedents for single lines through stations on otherwise double track lines, such as at Malton where train services run every half hour in each direction - the very highest level suggested for Melksham in this document, well into the future.

Other rail capacity enhancements are also likely in due course if the need arises - re-instatement of a third platform at Chippenham and a fourth at Westbury.

3. Hourly each way

It's in all the various plans - more "when" than "if". See SWLEP and TransWilts papers, and SWR report to DfT.

4. Swindon to Southampton

Service expansion onwards from Westbury is also likely; 2 trains a day at present timetabled to carry on to Southampton and it makes sense for (nearly) all services to carry on - might not apply to alate train at circa 23:00 from Swindon.   Similarly, trains from Westbury to start back at Southampton (including the airport station) with the possible exception of the 05:17 Westbury to Swindon.

These extended service would replace Westbury to Warminster / Southampton local trains, and also Salisbury to Romsey via Romsey and the Southampton - Eastleigh - back to Romsey loop. No extra rolling stock needed; biggest problem is that you're combining services in two franchises. Likely to happen as it would give Swindon, Chippenham and Trowbridge direct trains to a major regional airport (and one where the station is adjacent to the passenger terminal). Fly in ointment - Western Gateway SnTB as Southampton airport is outside their territory so that are promoting Bournemouth Airport instead.

Possible

None of these is a requirement for base case predictions

1. Direct Oxford services

Extension of the Swindon service to Oxford. Useful and sensible for the whole area - and indeed possible to extend beyond Oxford to Bletchley, Bedford and Cambridge. Individually for Melksham - no huge effect on passenger numbers

2. Direct Bristol services

At present, rail passengers for Bath and Bristol from Melksham need to change at

Chippenham or Trowbridge. Bath is only 10 miles, Bristol just 20 and they are popular journeys. Journey by public transport - especially to Bristol - slow and messy. See http://www.passenger.chat/22917.

A line connecting the southwest bound line from Melksham into Trowbridge with the westbound line from there to Bath and Bristol (the "Bradford North Curve") was removed in 1990 and there have been many calls over the years for its re-instatement. This should be encouraged but only to happen after Caveat no. 3 - frequency of service (via Westbury) - is addressed fully. Sending some train south from Melksham to Bath and Bristol rather than Trowbridge and Westbury would seriously damage Swindon and Chippenham to Trowbridge and Westbury traffic which we rely on at present to make our service viable. Once we hit frequency goals on the core service, additional trains to Bath and Bristol extended to Swindon and with a new station that's possible at Royal Wootton Bassett would be logical. such trains in addition to the Swindon - Southampton service would provide RWB with a half hourly service to Swindon and to Chippenham (and Melksham, but not a big demand for that) and hourly through services to Trowbridge, Salisbury, Bath, Bristol and Southampton.

3. Direct London services
and
4. Electrification

Don't rule these two out! Chippenham is already a London commuter town and the Department for Transport sees fast services to London as key for growth (ref - Chris Heaton-Harris to GWR Stakeholder conference, October 2019). In December 2019, Melksham gained a new early morning service to Swindon allowing an early arrival in Paddington, and the final evening train has been pushed back to allow a later London departure. We may end up as a London dormitory town. Beyond Melksham, the same trains would serve Trowbridge - also with a currently slow and infrequent service to London.

Electrification of the London to Bristol main line has been paused just to the east of Chippenham, with power cabled from Melksham National Grid substation. There is logic in a rolling program of electrification which we may see in the future; extension from Cockelbury Lane (Chippenham) through Melksham to Westbury makes sense.

Main line trains across the UK are increasingly being standardised on class 800, 801 ad 802 IETs (intercity express trains), with classes 800 and 802 being electric with diesel capability beyond the electrified lines. Even without electrification through Melksham, London trains are possible. Such trains already run here on diversion; they could become daily and become useful to the town by stopping for scheduled passenger use rather than slowing to go around the corner.

Social changes

1. Reduction in 5 day a week commuters

Rail use has grown (UK from 750 million to 1750 million journeys per annum) in past 20 years - and yet season ticket sales (which make financial sense if you're commuting at peak times 5 days a week) have dropped by 9%. This is in line with many more people working from home on one or more days per week, made possible by internet connectivity.

Commuters travelling one, two, or three days a week can realistically live further from their office - they don't mind a longer commute if it's not 'daily' - and this brings Melksham very much into the London "belt". We are seeing such regular travellers, not necessarily to Central London but rather Greater London. Regular travellers (at least once a week) to the Midlands and North have not been observed so far; although Melksham to Birmingham is

about the same distance as Melksham to London, by public transport it takes 150 minutes to Birmingham but only 90 minutes to London.

2. Increase in leisure travel

There is an increase in leisure time and travel. Part of that has come as the working week has reduced and 4 or 4.5 days are not uncommon. Part has come with a higher proportion of people now being retired (especially the active early-seniors). The rail industry has been very successful in selling senior railcards, 16-25 railcards, 25-30 railcards etc to encourage leisure travel by these groups.

3. Climate and international issues.
3a. Move away from the private car

We're hearing all about Climate Change, zero carbon, etc. And we're getting fed up with being stuck in traffic jams. Do we want to fly, and if we do, do we want the hassles of visas, immigration, etc ... of arranging overseas health insurance, etc, that this decade will bring?

These wider social changes will - more likely than not - slant us towards shared public transport, and with more of a bias towards destinations in our own country rather than medium or long haul.

4. Public transport as useful time

In my youth, commuting time on a train was perhaps spent reading the daily paper. Homework done on the train was frowned upon because the teacher couldn't read the scrawny writing and felt it had been rushed. Driving a car and doing anything other than concentrating on the road (perhaps listening to the radio) was frowned upon.

With improved on-train facilities, and with almost everyone now having mobile electronic devices, the train has turned into a mobile office and time spent travelling is no longer "wasted" in quite the same way. Certainly when compared to driving a car - not only can you work but sleep, read, watch a video, eat. And so public transport becomes more attractive, even where journey times are longer.   Drivers are also saved the hassle of finding a parking space, and by taking the train can have a drink before they head home.

Similar (but not totally the same) for buses. They tend to be less smooth, and different bus companies have different rules about eating and drinking. And bus journeys almost inevitably take significantly longer that the train.

Summary

The above is an evidenced and explained case predicting passenger number growth using Melksham station for the next two decades. From around 3,000 passenger journeys per annum 10 years ago, numbers have risen to 75,000 now and will continue to grow subject to appropriate and total product provision and to between 260,000 and 600,000 in our timeframe.

We are in a changing world - growing towns, climate change, a redefinition of the role of the UK in Europe, and work and leisure patterns changed both by an ageing population and The Internet. My initial calculations took into consideration only very limited considerations from that list (Melksham's possible growth) but I have noted each of the changing world issues in my background text. Predominantly, each of these considerations is likely to result in higher rather than lower passenger numbers than my base prediction.

To the best of my knowledge, my workings and assumptions fit in with our proposed

Neighbourhood plan, and the strategic planning of Wiltshire Council, the Swindon and Wiltshire LEP, and (though it is very new and not fully set on public transport) the Western Gateway SubNational Transport Body. They build on work being done by the TransWilts Community Rail Partnership (in particular in relation to facilities at Melksham Station and line development) and the promotional work of the Melksham Rail User Group. Also work undertaken (and to be undertaken soon) by Network Rail and Great Western Railway.

References

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and other sources accessed via links on those sites and pages

This page written by Graham Ellis, 24th February 2020. Prior to publication, the data and conclusions have been reviewed by several other community members with some knowledge on the topic (thank you, John, John, Bob and Reuben)

Graham is a director of TravelWatch SouthWest and of Railfuture, webmaster at the Great Western Coffee Shop, vice chair of the Melksham Rail User Group and a member of the West Wilts Rail User Group, of the TransWilts CIC, and of Friends of Bristol Suburban Railways. Graham is a past president of the Melksham Chamber of Commerce, running his IT training business and hotel in the town from 1999. Now almost-retired, he still runs occasional courses and spends much of the rest of his time on championing the approporiate development and use of public transport. On this page, Graham has written personally but in line with the current policies and direction of the bodies mentioned herein to the best of his knowledge.

This page may be found at a permanent link at http://www.passenger.chat/22954 . Graham may be contacted via graham@wellho.net and found via Facebook or on 07974 925 928. He is happy where relevant to discuss and explain his base data and conclusions for neighbourhood planning or other purposes.