

## Executive Summary

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The Surrey Rail Strategy highlighted that there are major issues on the rail network that are hindering the achievement of Surrey's development objectives. One of the most significant is continued demand growth and crowding on the South West Main Line (SWML) into London Waterloo.

In the short term, Network Rail and South West Trains are addressing this through small-scale capacity enhancements and train lengthening. However, a longer term solution is needed.

The Crossrail 2 project would address these issues by providing vital new transport capacity on the SWML to accommodate growth and by improving transport links to provide better connectivity between housing and employment areas.

The conclusion of this study is that Surrey County Council and its stakeholders should strongly support the Crossrail 2 project, taking into account the recommendations in this report on configuration of the services.

However there should also be an awareness that Crossrail 2 represents a major investment, and it will only produce a positive business case if appropriate levels of development are supported along the route.

### **The Crossrail 2 scheme**

Crossrail 2 is a new cross-London rail line being developed by TfL with Network Rail. The scheme is intended to support economic regeneration by providing the infrastructure needed to build new homes and encourage additional employment.

Although the route alignment is subject to ongoing review and revision, an almost entirely tunneled central core has been safeguarded between Wimbledon and New Southgate and Tottenham Hale. There are various possible routes to the north into Hertfordshire, and to the southwest into Surrey using existing rail lines.

The service would operate at a high frequency of 30 trains per hour (tph) through the core tunnel section during peak periods, with around 10tph terminating at Wimbledon and 20tph continuing into south west London and Surrey. It would be a stop-all-stations suburban service, along the same lines as the Crossrail 1 model.

In addition, the availability of additional track capacity between New Malden and Waterloo will allow for released capacity on the SWML that can be used for an increased number of long distance and fast services to Waterloo station. As a result, an additional 6-7tph will be available through released capacity, which can be used to improve connectivity and capacity on these existing lines.

Crossrail 2 has the potential to benefit Surrey in two ways: 1) new direct Crossrail 2 services, cutting journey times and improving connections to central London, and 2) additional longer distance services on the SWML providing additional capacity into Waterloo and reducing journey times.

Although journey times will be reduced for some routes given the enhanced connectivity to Central London, the real benefit for much of Surrey will be

through the additional capacity. For example, Woking would not experience journey time benefits from direct Crossrail 2 services (as the station is served by faster services already), but it will benefit from additional capacity and crowding relief for services into Waterloo.

## Crossrail 2 services in Surrey

A detailed assessment of the proposed Crossrail 2 routes has been undertaken for this study, as well as consideration of other potential route options for Surrey. The recommendations emerging from the route assessment are as follows:

- **Shepperton Route:** currently served by 4 trains in peak hours to Waterloo (2 via the SWML direct to Waterloo and 2 via Twickenham). A Crossrail 2 connection would replace the SWML services with 4tph onto the Crossrail 2 network. The journey times to most locations across Central London would be improved (such as Shepperton to Victoria, which will be reduced from 50 to 43 minutes).

Although journey times will be reduced and the connection is operationally straightforward (Shepperton station acts as a terminus), rail demand levels are comparatively low and there is limited development potential, so the case for connecting Crossrail 2 along the Shepperton route is considered to be borderline.

- **Hampton Court Route:** is a branch line serving only two stations, and is currently served by 2tph into Waterloo during the peaks. Crossrail 2 would provide a more frequent 4tph into Central London, removing the direct Waterloo connection.

Journey times will be significantly reduced for most journeys, such as 48 minutes to 33 minutes from Hampton Court station to Euston. Journey times into Waterloo will be increased given the need to interchange on the SWML (from 33 to 41 minutes). However, Waterloo is not the final destination for the majority of passengers, and most people will benefit from reduced journey times to other Central London destinations.

There is a strong evidence base for linking Crossrail 2 to Hampton Court and the connection is supported. In addition to the journey time benefits, the link would allow for development and growth potential to be realised.

Operationally the link is also straightforward and the existing infrastructure is sufficient to accommodate the service.

- **Epsom-Dorking Route:** currently served by 6tph to Waterloo, with a mixture of semi-fast and slow services. A Crossrail 2 link would likely retain 4tph of the existing services, in addition to introducing 4tph Crossrail 2 services through Central London which could commence along the route, most likely at either Epsom or Dorking given operational capabilities. Our assessment has therefore looked at two sections of this route: SWML to Epsom (as per the current Crossrail 2 proposals), and Epsom to Dorking (not included in the current Crossrail 2 proposal):

There is a very strong evidence base to support providing a route from the SWML to Epsom, underpinned by substantial journey time savings (such as

51 to 32 minutes from Epsom to Euston), high levels for existing rail usage and significant growth forecasts.

Our assessment indicates that there is potentially a case for extending beyond Epsom to Dorking. Journey times will be improved to Central London locations, but growth and development potential is lower, although there is potential in Leatherhead. Further, infrastructure upgrades may be required to provide track capacity that can deliver the increased service frequency to this section of the route – but this merits further study.

- **South-West Main Line Route:** there are currently 4tph starting from Woking or West Byfleet to Waterloo, in addition to the longer-distance fast and semi-fast services. The current Crossrail 2 service proposal does not extend beyond Surbiton. Journey time benefits to stations served by semi-fast and fast services will not be improved by Crossrail 2 (Woking is 35 minutes to Victoria including interchange time, and would be 49 minutes via a direct stop-all-stations Crossrail 2 service). However, less well-served stations would benefit significantly from a Crossrail 2 connection (such as Walton, Weybridge and West Byfleet, the latter would reduce from 52 to 46 minutes).

There is a strong evidence base for supporting a Crossrail 2 connection to serve these SWML stations as far as Woking, which acts as the only feasible terminus from an operational standpoint. The route has existing high passenger demand and significant development growth potential. However the operational aspects of this route do require further investigation and need to be balanced with SWML service patterns and use of released capacity. This does however merit further study.

- **Guildford New Line:** there is no case for a Crossrail 2 connection on this route, given relatively low demand and limited development potential on this route. Journey times will also not be improved, such as Cobham & Stoke D'Abernon which would remain faster to Central London via the existing services (45 minutes including an interchange, compared to 53 minutes using a stop-all-stations Crossrail 2 service).

## Crossrail 2 released capacity in Surrey

Crossrail 2 introduces six tracks between Wimbledon and New Malden, which allows for a more optimised distribution of slow, semi-fast and fast service patterns. This will create a number of additional train paths (likely to be 5-6tph if slow trains are introduced, or 6-7tph if semi-fast or fast trains are introduced).

To fully utilise this released capacity, other interventions are required on the route, such as Waterloo capacity enhancements, Woking flyover (grade-separation at the junction of SWML and Portsmouth Direct Line) and the European Train Control System (ETCS) improved signalling system.

The additional services could be used for additional long distance trains (such as West of England or Portsmouth services), or for shorter distance trains (such as Alton or Haslemere services). Surrey could therefore benefit from additional capacity and crowding relief, but the local needs should be balanced with the needs of the wider southwest route.

We have assessed the potential use of released capacity to enhance services in Surrey, and our recommendations are as follows:

- **South West Main Line:** currently served by 11tph into Waterloo, and released capacity likely to provide an additional 2tph. It is suggested that Byfleet and New Haw and Walton-on-Thames are considered for additional semi-fast service calls, as these stations are comparatively underserved by the current timetable given the magnitude of existing rail usage and growth forecasts.
- **Portsmouth Direct line:** currently served by 8tph into Waterloo, and released capacity likely to provide an additional 3tph. Smaller stations on the Portsmouth Direct Line would benefit from an additional service, and an additional Haslemere starter is recommended.
- **Alton Line:** currently served by 3tph, and released capacity likely to provide an additional 1tph. The Alton Line is comparatively underserved and there is significant growth potential in the Farnham area. An additional 2tph should be considered, with 1tph commencing at Alton (given the single track section), and 1tph starting at Farnham.
- **Camberley Route:** not currently connected to the SWML but is comparatively underserved. Would need infrastructure works to deliver a direct (grade-separated) connection to the SWML. We recommend this is the subject of a separate feasibility study to understand costs and benefits.
- **West of England Line (via Salisbury):** currently served by 2tph into Waterloo, and released capacity likely to provide an additional 1tph fast or semi-fast service. It is recommended that the additional service calls at Woking station in Surrey as a minimum.
- **Woking and Guildford** are each served by a number of existing routes and will benefit from stops on the additional services recommended above to support growth and development potential, and to alleviate crowding issues.

### Summary of recommendations

In summary, it is recommended that Surrey County Council actively support the following:

- Crossrail 2 services:
  - Support the current proposals for a Crossrail 2 connection to Hampton Court and Epsom;
  - Request further investigation into amendments to the current proposals: firstly to test the operational feasibility of an extended service beyond Epsom to Dorking, and secondly to understand the development benefits and operational implications of a service along the SWML to Woking; and
  - Seek stakeholder support for the case for a Crossrail 2 connection to Shepperton, which currently has a borderline case and may be subject to scrutiny. Local commitment to delivering development and growth would benefit the case for connection.

- Released SWML capacity:
  - Support the case for providing additional station calls for semi-fast trains at Surrey locations that are currently comparatively underserved (namely Walton and Byfleet and New Haw);
  - Support the case for providing additional station calls for fast trains at Surrey locations that are subject to high rail demand and growth forecasts (namely Woking and Guildford); and
  - Support the case for providing additional starting services at Surrey destinations with growth potential, namely Alton/Farnham and Haslemere.

## Benefits for Surrey

A key issue for rail in Surrey is the constrained capacity on the SWML, with substantial crowding levels expected to be compounded with forecast rail growth (40% increase forecast by 2043).

Crossrail 2 will provide capacity benefits through enabling released capacity on the SWML. This will allow for less crowded trains and more frequent services into Waterloo from Surrey stations.

Crossrail 2 will provide journey time benefits for locations nearer to London, but it should be recognised that it will be a stop-all-stations service, and therefore in some instances existing services will remain faster (such as from Woking, Guildford and other well-served locations) and have more capacity available.

Crossrail 2 should therefore be supported as a scheme, and it is recommended that the variations to the preferred route are proposed by Surrey County Council during the next consultation process.

Crossrail 2 will act as a catalyst to encourage new homes and jobs to be created along the routes, and this opportunity will need to be embraced in order to make the case for the investment on routes in Surrey. The Epsom and SWML routes are the main growth areas with the highest potential development benefits.

## Next Steps

The recommended next steps for Surrey County Council and its stakeholders are as follows:

- Use the evidence base and recommendations collected through this study to provide informed input to the Crossrail 2 consultation process in late 2015; and
- Engage with stakeholders to build knowledge and consensus at a local level, and to ensure that the nature of Crossrail 2 and potential impacts and benefits to Surrey are understood.