Economic and Technical Report

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- **Four Track Option** – An EWR Co proposed enhanced running project, which optimises the use of all four existing tracks north of Oxford through installation of five mainline crossovers.

- **Partial Fifth Track** – An EWR Co proposed partial fifth track that re-joins the Up Oxford Relief north of Walton Well Road bridge to reduce the scope of works and the negative impacts of a full fifth track.

Next Steps

10.2.11 The next step is to undertake operational modelling and further development in collaboration with Network Rail and other stakeholders, to determine the EWR solution at Oxford, with further details to be presented at the statutory consultation.

10.3 Bicester London Road Level Crossing

10.3.1 The Theory of Change analysis demonstrated a need to operate four EWR tph in each direction between Oxford and Bletchley (see section 9.2), a doubling of services to be provided under CS1. This would increase the number of trains passing through the London Road level crossing in Bicester town centre and, consequently, increase the level crossing barrier down time. This has the potential to cause increased congestion and driver frustration.

10.3.2 However, mitigation for the effects of EWR on road users – in the form of a bridge or underpass – would be costly as well as challenging to construct given the relatively dense urban fabric surrounding the location of the crossing. Additional analysis has been undertaken to identify the preferred solution, including a review of previous work in support of the CS1 Transport and Works Act Order (TWAO)[102].

10.3.3 At the 2021 consultation, it was set out that the assumed introduction of a 4tph passenger service by EWR would likely require the level crossing to be closed. Six concepts to mitigate the closure were presented at the 2021 consultation.

- Concept 1: accessible bridge for non-motorised users

- Concept 2: road underpass at London Road

- Concept 3: road bridge at London Road

- Concept 4: road underpass alongside London Road

- Concept 5: road bridge alongside London Road

- Concept 6: alternative road crossing locations

[102] https://www.networkrail.co.uk/running-the-railway/railway-upgrade-plan/key-projects/east-west-rail/bicester-to-bletchley-milton-keynes/

10.3.4 All concepts presented design and construction challenges. Construction of either a bridge or an underpass within the town or near the level crossing would pose significant difficulties: access to nearby roads and properties would be affected and work would be disruptive. Also, the completed crossing would have the potential to be highly intrusive in terms of visual impact and amenity, especially if a vehicular bridge was provided. However, the feedback received during the 2021 consultation strongly expressed the local community's desire to maintain the link between the south east of Bicester and the rest of the town by keeping the level crossing open.

Estimated Level Crossing Down Time

10.3.5 The focus of the ACP assessment was on establishing if closure of the level crossing (with associated mitigation) was required and hence whether there was a better value alternative. This was dependent on a 4tph train service and whether the consequential impacts would be acceptable. An assessment of the impact of operating 3tph over the level crossing was also undertaken to determine the incremental impact of the fourth tph.

10.3.6 Although further technical analysis is required to determine a definitive down time for a 3-4 EWR tph service frequency in each direction, it is possible to provide an indicative range based on previous assessments[103]. This is summarised for an average hour as follows:

- EWR 3tph: 21.7 – 36.0 minutes; most likely: 25-30 minutes.
- EWR 4tph: 26.4 – 48.0 minutes; most likely: 30-40 minutes.

10.3.7 The CS1 Transport and Works Act Order (TWAO) is already consented, and the application considers a barrier downtime of 26.4 minutes per hour to be comparable to other busy level crossings around the UK. It is likely that running either three or four EWR tph will result in an average barrier down time each hour which exceeds the TWAO value of 26.4 minutes.

10.3.8 Given the above and noting that the jobs and growth envisaged in the Theory of Change determines a need for 4tph through the level crossing, an updated level crossing risk assessment is required including barrier down-time assessment and traffic modelling. This will enable a decision on whether the level crossing should be closed.

Mitigation Options for a 4tph EWR Service

10.3.9 The concepts presented at the 2021 consultation were further developed and assessed, resulting in the following options being considered in case it should be needed to address increased barrier downtime and/or the need to close the crossing. The final confirmation of a preference would be dependent on the outcome of an updated risk assessment and completion of an Equality Impact Assessment, enabling these considerations to be taken into account.

[103] Network Rail Downtime assessment in Aug 2015. A physical site census was done in Sept 2016 , after which the report was updated.

A. Keep the crossing open, implement improvements which reduce barrier down time and crossing risk

10.3.10 If the level crossing risk assessment permits, the crossing could be kept open for a four tph EWR train service. Potential improvements could be made to the current signalling arrangements to reduce barrier down time, possibly combined with a reduction in line speed. Additionally, the existing road layout could be enhanced to provide greater separation between stopping points and the barriers, reducing the risk of vehicles overrunning the stopping points and causing a barrier strike. Further, additional pedestrian signals could be installed to improve the warning system when approaching from Langford, as the existing footpath joins directly at the crossing. These enhancements would reduce the safety risk at the crossing by reducing the likelihood of vehicles and pedestrians encroaching onto the crossing.

10.3.11 Option A may still result in a barrier down-time that exceeds acceptable durations, particularly in peak periods. This would result in less time available to use the crossing and increase the risk of misuse. Additionally, the enhancements proposed above have not yet been assessed and may enable the crossing to be operated safely. Further modelling and investigation are required to determine the feasibility of keeping the crossing open, with mitigation measures in place. However, it is possible that, upon further investigation, this solution would be found not to be feasible or safe. In that case, this option could not be pursued.

B. Keep the crossing open, implement improvements which reduce barrier down time and crossing risk, install non-motorised user overbridge or underpass at or near London Road

10.3.12 The measures outlined above in Option A could be complemented with a new accessible Non-Motorised User (NMU) bridge or underpass provided at the crossing. This would allow pedestrians and cyclists to cross during barrier closure and so preserve the connection for NMUs. It would help to reduce the risk of pedestrian misuse which accounts for the greatest number of incidents at the crossing and would also make the extended down time less inconvenient for the public. Reconfiguration of station car parking would be required if it were to be located at the level crossing. This approach would be dependent on an acceptable barrier down time for vehicles, and other conditions, as outlined above in Option A, and a satisfactory level crossing risk assessment. Again, this may not be acceptable in practice as vehicle users would still have limited time available to use the crossing and this would increase the risk of vehicular misuse.

C. Keep the crossing open. Implement improvements which reduce barrier down-time and crossing risk. Provide a non-motorised user bridge or underpass at or near London Road and an offline road bridge to allow vehicles to cross the railway.

10.3.13 This option builds on Option B with the addition of a road bridge to allow vehicles to cross the railway when the barriers are down. At present, a preferred option for the location of a road bridge has not been identified and further feasibility work needs to be completed to refine

the preferred option. As with the other options this would be dependent on further level crossing risk assessment and traffic modelling.

D. Close the crossing, provide a diversion, and construct a non-motorised user bridge or underpass at or near London Road

10.3.14 This option would entail closure of the crossing, vehicle diversion and provision of an accessible NMU bridge or underpass at or near the current crossing location. Vehicles would be diverted across the railway via existing roads including the A41; a distance of up to 4km. There is significant public and stakeholder opposition to this approach, as many people believe road connectivity should be maintained in the London Road area to avoid excessive journey time, the division of the town and the risk of 'rat running'.

E. Close the crossing, provide a non-motorised user bridge or underpass at or near London Road and an offline road bridge to allow vehicles to cross the railway.

10.3.15 The final option – to be selected if a vehicular road diversion (as per Option D) is judged to be unacceptable – is to close the crossing and provide both a bridge for vehicles and a bridge or underpass for non-motorised users. A road tunnel or underpass was discounted due to the likely impact on a significant number of local properties to achieve the required inclines on the approaches and the high cost involved. Potential locations for a new vehicular overbridge are being investigated.

10.3.16 This option would provide the least inconvenience to those wishing to cross the railway whilst enabling an increase in train frequencies. However, in addition to the high cost of this solution, a large structure in this location would have an adverse environmental impact.

Bicester London Road Level Crossing – Current Proposal

10.3.17 A review of down time estimates at the level crossing suggests there is likely to be a requirement for its closure, as the maximum down time of 26.4 minutes presented for a 'Growth' scenario equivalent to 4 EWR tph through Bicester as part of the CS1 TWAO, is likely to be exceeded.

10.3.18 Option E (close the crossing**,** provide a non-motorised user bridge or underpass at or near London Road and an offline road bridge) is the most likely outcome and, therefore, EWR Co's working assumption. This is because it provides a means to cross the railway for both NMUs and vehicles whilst removing the risk of level crossing misuse. However, this is not yet a conclusive position and requires further feasibility work. Therefore, further investigation is proposed to understand the potential to maintain the existing crossing for local traffic. This will require an updated risk assessment, to evaluate whether a compliant risk level for or 4tph can be achieved with the crossing remaining open. In addition, the selection of the preferred option will be subject to an Equality Impact Assessment.

10.3.19 The preferred option will be presented in detail at the statutory consultation to enable stakeholders, including residents, business owners and current users of the crossing to provide feedback on the proposal.