# Making Meaningful Connections

## Consultation Technical Report
## Chapters 1 – 7

**East West Rail Consultation:**
**31 March – 9 June 2021**

This document contains the full Consultation Technical Report, without the Appendices. To access the Appendices, please visit **www.eastwestrail.co.uk**

# Glossary

| | Term | Description |
|---|---|---|
| A | **A428 Improvement Scheme** | The scheme promoted by Highways England to upgrade the A428 between Black Cat roundabout east of Bedford and Caxton Gibbet roundabout west of Cambourne |
| | **Air Quality Directive** | European Directive 2008/50/EC on ambient air quality and cleaner air for Europe |
| | **Air Quality Management Area** | An area designated by a local authority, where it believes the Government's objectives for air quality will not be achieved without additional interventions |
| | **Alternative** | In this report, 'alternative' is used when referring to a possible solution that has been considered but has been discounted and is not expected to be taken forward |
| | **Assessment Factors** | The factors used to assess and compare different options for the Project |
| | **Oxford-Cambridge Arc (the Arc)** | The area between Oxford and Cambridge, incorporating the county areas of Oxfordshire, Buckinghamshire, Bedfordshire, Northamptonshire and Cambridgeshire |
| | **At-grade junction** | A railway junction where tracks cross at the same level. Also known as a flat junction |
| B | **Balancing pond** | A pond into which water drains, with the intention of ensuring that local watercourses are not overloaded during periods of heavy or prolonged rainfall |
| | **Ballast** | Stone or gravel used to form the bed of a railway track |
| | **Biodiversity net gain** | An approach to development that leaves biodiversity in a better state than before the development took place |
| | **Blockade** | The closure of a rail route for an extended period (typically more than two to three days) |
| | **Bridleway** | A route over which the public have rights to pass on foot, cycle and on horseback |
| | **Business case assessment** | An assessment to determine the justification for undertaking a project by considering benefits, costs and risks |

| | Term | Description |
|---|---|---|
| C | **Cambourne North Station** | Option for a new station to the north of Cambourne |
| | **Cambourne South Station** | Option for a new station to the south of Cambourne |
| | **Cambridgeshire Autonomous Metro** | A proposed transit system connecting Cambridge to Alconbury, St Neots, Mildenhall and Haverhill |
| | **Capital costs** | Cost incurred during delivery of a project in purchasing buildings, land, construction works, and equipment as opposed to the costs of operating, maintaining or decommissioning the project |
| | **Clearance** | Space available around a moving train |
| | **Clock-face timetable** | A timetable arranged so that trains arrive or depart at the same times in the hour, every hour (for instance at 10, 30 and 50 minutes past the hour) |
| | **Code of Construction Practice (COCP)** | A public document which will provide contractors and suppliers with details of the measures, controls, and standards of work that they must follow |
| | **Conflicting movements** | A movement that requires a train to cross another route on the railway, at the same level, or trains to travel in opposite directions on the same route, in order to continue a journey |
| | **Congested Infrastructure** | An element of railway infrastructure for which demand for infrastructure capacity cannot be fully satisfied during certain periods, even after coordination of different requests for capacity. Defined by The Railways (Access Management and Licensing of Railway Undertakings) Regulations 2016 |
| | **Connection stage** | Work will be divided into three connection stages which relate directly to a full journey and not just a piece of track:<br>Connection Stage 1 (CS1): Oxford - Bletchley and Milton Keynes (services may be first opened to Bletchley in a two-phased approach)<br>Connection Stage 2 (CS2) : Oxford - Bedford<br>Connection Stage 3 (CS3): Oxford - Cambridge |

| | Term | Description |
|---|---|---|
| C | **Conservation Area** | An area of notable architectural or historic interest or importance in relation to which change is managed by law |
| | **Core Section** | The section of the Project between Clapham Green and The Eversdens, also referred to as Project Section D in this report |
| | **Critical path** | The longest sequence of activities in a plan or programme which must be completed on time in order to achieve completion of a project on a due date |
| | **Crossovers** | A connection between two tracks where points/switches on each track allow trains to pass from one track to the other |
| | **Culvert** | A tunnel carrying a stream or open drain |
| | **Cut and cover** | Earth and similar material that needs to be excavated as part of construction works (for example to form a cutting) |
| | **Cut** | Earth and similar material that needs to be excavated as part of construction works (for example to form a cutting) |
| D | **Development Consent Order (DCO)** | Order made by the relevant Secretary of State to authorise the construction, operation and maintenance of a nationally significant infrastructure project (NSIP). In relation to East West Rail, this would be the Secretary of State for Transport |
| | **Department for Transport (DfT)** | Government department responsible for the English transport network and a limited number of transport matters in Scotland, Wales and Northern Ireland that have not been devolved |
| E | **Earthworks** | General term for the excavation and placement of soil, rock and other material; or for existing cuttings and embankments |
| | **East Coast Main Line (ECML)** | Railway line running from London King's Cross to Edinburgh through Sandy and St Neots |
| | **East Midlands Railway (EMR)** | Train operator running services between London, the East Midlands and Yorkshire |
| | **East West Rail EWR** | A proposed new rail link, which would connect communities between Oxford, Milton Keynes, Bedford and Cambridge |

| | Term | Description |
|---|---|---|
| E | **East West Rail Company Ltd (EWR Co)** | Company set up by the Secretary of State for Transport to develop East West Rail |
| | **Embankment** | An earthwork construction that allows railway lines to pass at an acceptable level and gradient above the surrounding ground that is generally composed of soil and rock |
| F | **Fare revenue** | Income generated from passenger fares |
| | **Fill** | Earth and similar material that needs to be placed as part of construction works (for example in new embankments) |
| | **First-mile journey** | The first part of a journey between the starting point and a railway station, regardless of its actual length |
| | **Flat junction** | A railway junction where tracks cross at the same level. Also known as an at-grade junction |
| | **Floodplain** | An area of low-lying ground adjacent to a river, which is subject to flooding |
| | **Ftph** | Freight trains per hour |
| G | **Gauging analysis** | Analysis to determine the space available (clearance) between a moving train and surrounding infrastructure and between two trains on adjacent tracks |
| | **Generalised journey time** | A representation of the total time or cost of travelling, taking account of time spent waiting for or interchanging between trains |
| | **Greenhouse gas (GHG)** | A gas that contributes to the 'greenhouse effect' because it absorbs infra-red radiation (for example, carbon dioxide) |
| | **Grade-separated junction** | A railway junction where tracks cross at different levels |
| | **Great Western Main Line (GWML)** | The main railway route between London, Didcot, Bristol and South Wales |
| | **Govia Thameslink Railway (GTR)** | Govia Thameslink Railway, a train operating company |

| | Term | Description |
|---|---|---|
| H | **Headway** | The distance, or time, between one train passing a given point and the following train passing the same point. |
| | **High Level Station** | Where a station has platforms at different levels, the parts of the station at the higher level |
| | **Highways England (HE)** | The Government body responsible for managing the Strategic Road Network in England |
| | **HMT** | Her Majesty's Treasury, a Government Department |
| | **Hotspots** | Areas where critical engineering or environmental constraints were identified or areas where there were multiple constraints in close proximity to the alignment being developed |
| | **HS2** | High Speed 2, the new railway line under construction between London and the West Midlands, and beyond |
| I | **Impact Risk Zone (IRZ)** | A zone around a Site of Special Scientific Interest (SSSI) used to make an initial assessment of the potential risks posed to that Site by development proposals |
| | **Indicative Alignment** | The indicative, concept alignment within each Route Option used for the comparison of Route Options A to E in the previous stage of design |
| | **Infrastructure Maintenance Depot** | A depot at which staff and equipment involved in maintaining rail infrastructure are based and from which maintenance operations are coordinated |
| | **In-service hazards** | A potential source of harm arising from the operation of the railway |
| | **Interchange** | A station at which passengers may change between trains serving different routes and destinations |
| | **Island platform** | A platform between two railway tracks, where passengers may board trains on either track |
| K | **Km** | Kilometres |
| | **Kph** | Kilometres per hour |

| | Term | Description |
|---|---|---|
| L | **Last-mile journey** | The last part of a journey, between a railway station and the final destination, regardless of its actual length |
| | **Level crossing** | A location at which vehicles and pedestrians may cross railway tracks at grade (at ground level). This definition includes accommodation crossings which provide access to specific properties; and crossings which are operated by their users rather than automatically |
| | **Level crossing Risk Assessment** | An assessment undertaken periodically by Network Rail at level crossings to establish risks and measures required to mitigate those risks |
| | **Listed building** | A building placed on a statutory list, because of its architectural or historical interest, in relation to which change is managed by law |
| | **London & North Western Railway (LNWR)** | Historic British railway company, the original owner and operator of the West Coast Main Line |
| | **Loading gauge** | The maximum height and width for railway vehicles and their loads to ensure that they can pass safely through tunnels and under bridges and keep clear of trackside buildings and structures |
| M | **m** | metres |
| | **Maintenance Access Plan** | A plan identifying how the railway will be accessed by vehicles and staff for maintenance purposes |
| | **Manually Controlled Barrier (MCB)** | A barrier at a level crossing whose raising or lowering is controlled by a signalman, rather than occurring automatically |
| | **Marston Vale Line (MVL)** | The existing line and services operating between Bletchley and Bedford |
| | **Ministry of Housing, Communities & Local Government (MHCLG)** | UK government department responsible for housing, community and local government matters in England |
| | **Midland Main Line (MML)** | The main railway route between London St Pancras, Nottingham and Sheffield |

| | Term | Description |
|---|---|---|
| M | **Modal shift** | Change in travel behaviour that results in a journey being made by a different, usually more sustainable, mode of transport (for example, a car journey that is now made by cycle) |
| | **Mph** | Miles per hour |
| N | **National Infrastructure Commission (NIC)** | Executive agency responsible for providing the government with impartial, expert advice on major long-term infrastructure challenges facing the UK |
| | **National Policy Statement for National Networks (NNNPS)** | Sets out the need for, and the Government's policies to deliver, development of nationally significant infrastructure projects (NSIPs) on the national road and rail networks in England, and is the primary basis against which the Secretary of State for Transport will assess and determine DCO applications for new railways pursuant to section 104 of the 2008 Act |
| | **Nationally Significant Infrastructure Project (NSIP)** | A large-scale development (relating to energy, transport, water, or waste) of national significance that meets the thresholds set in Part 3 of the Planning Act 2008 |
| | **Network Rail (NR)** | Network Rail Infrastructure Limited, the organisation which owns the majority of the railway infrastructure in England |
| | **Net zero carbon** | The approach of balancing greenhouse gas emissions, offsets or carbon sequestration (for example tree planting or carbon capture schemes), to achieve a net zero state |
| | **Non-fare revenue** | National Infrastructure Commission |
| | **Non-fare revenue** | Income from sources other than passenger fares |
| | **Non-motorised users** | People travelling on foot, by cycle or on horseback; or by any other means which is not motorised |

| | Term | Description |
|---|---|---|
| O | **Office of Rail and Road (ORR)** | A non-ministerial Government department which is the economic and safety regulator for Britain's railways |
| | **Off-line alignment** | An alignment that does not follow an existing railway or railway corridor, or in the case of a road, that is diverted from the existing alignment of the road |
| | **Overhead Line Equipment (OLE)** | The wires, known as catenary, suspended above railway lines to provide electrical power to trains, and their supporting structures |
| | **On-line alignment** | An alignment that follows an existing railway or railway corridor or, in the case of a road, the existing alignment of the road |
| | **Operating costs** | Costs incurred in the day-to-day running of the railway |
| | **Operational resilience** | The ability of the railway to respond to an adverse event (for example flooding or a failure of the infrastructure) while minimising the level of disruption to normal operations |
| | **Option** | In this report, 'option' is used to refer to a possible solution that has been considered and is being taken forward for further design and/or assessment |
| | **Oxford Worcester and Wolverhampton Railway (OWWR)** | The railway route between Oxford and Wolverhampton, via Worcester |
| P | **PA 2008** | Planning Act 2008 |
| | **Passing loop** | A section of track used to allow one train to be passed by another train travelling behind it in the same direction |
| | **Performance allowances** | Extra time allowed within the timetable to provide a margin for late running |
| | **Permitted Development Rights** | Development that may be carried out by certain categories of (for example) statutory undertaker (such as Network Rail) under deemed planning permission ("Permitted Development Rights"), for certain types of work. Permitted Development Rights also benefit other statutory undertakers |
| | **Plain line** | A section of track without points/switches and crossings |
| | **Points** | A junction between two railway lines, that can be set to guide a train to or from either of those lines. Can also be referred to as a switch |

| | Term | Description |
|---|---|---|
| P | **Possession** | A temporary closure, or partial closure, of the railway to allow construction or maintenance works to be carried out |
| | **Preferred Route Option E** | The Route Option previously selected as the preferred area between Bedford and Cambridge in which to seek alignments in this phase of developing the Project |
| | **Preliminary Environmental Information Report (PEIR)** | A report which provides information about the expected impacts of the Project on the environment based on information that EWR Co has available to it at the time of the Statutory Consultation |
| | **Programme-Wide Output Specification (PWOS)** | A document containing detailed requirements for the Project, agreed with the Department for Transport |
| | **Programme risk** | The risk of a delay to the programme for design, procurement, construction and operation for a project |
| | **The Project** | The infrastructure, systems, rolling stock and organisational arrangements which need to be created or modified to deliver East West Rail and its intended outcomes |
| | **Project Section** | The infrastructure, systems, rolling stock and organisational arrangements which need to be created or modified to deliver East West Rail and its intended outcomes |
| | **Public Rights of Way (PRoWs)** | A way over which the public have a right to pass and repass |
| R | **Reference Alignment** | The alignment option against which the performance of other alignment options is assessed |
| | **Regionally strategic utilities apparatus** | Equipment related to the supply of power, water and telecommunications which has more than local significance – which may include pipelines, cables, overhead electricity transmission lines and substations |
| | **Rolling stock** | Any vehicle which can run on a railway track |

| | Term | Description |
|---|---|---|
| R | **Route Corridor, Route Option and Route Alignment** | Route Corridors are the broad areas within which the new railway might be located, identified as part of the initial 'sift' of possibilities in 2016.<br><br>Within the preferred Route Corridor, several narrower Route Options were identified and a Preferred Route Option was announced in 2020.<br><br>The Project is now at the stage of selecting a Route Alignment. |
| S | **Safety risk** | The risk of unsafe practices or situations occurring on the railway that may lead to accidents |
| | **Scheme** | A project or a group of projects being promoted or undertaken by a party or parties other than EWR Co with objectives which do not directly facilitate, but may be related to, East West Rail |
| | **Scheduled monument** | A historic building or site considered to be of national importance, placed on a list kept by the Government and requiring Government approvals for any works which might affect the scheduled monument |
| | **Siphon** | A pipe or tube that allows water to flow beneath an obstruction then up and out the other side |
| | **Shepreth Branch Royston (SBR) line** | The line that connects Cambridge to Hitchin via Shepreth |
| | **Skew** | The angle at which a structure passes over or under a railway, road or river |
| | **Source Protection Zone (SPZ)** | SPZs are defined around large and public potable groundwater abstraction sites. The purpose of SPZs is to provide additional protection to safeguard drinking water quality through constraining the proximity of an activity that may impact upon a drinking water abstraction |
| | **Site of Special Scientific Interest (SSSI)** | The land notified as an SSSI under the Wildlife and Countryside Act 1981, as amended. SSSI include the most important sites for wildlife and natural features in England, supporting many characteristic, rare and endangered species, habitats and natural features |

| | Term | Description |
|---|---|---|
| | **Stabling point** | A place where rolling stock can be stored when not in service |
| | **Statutory Consultation** | A stage of consultation which a promoter of a nationally significant infrastructure project is required to undertake, under section 42 the Planning Act 2008 |
| | **St Neots South Option A Station** | Option for a new station in the St Neots area. Both St Neots station options would be located to the south of St Neots. This would be in addition to the existing St Neots station |
| | **St Neots South Option B Station** | Option for a new station in the St Neots area. Both St Neots station options would be located to the south of St Neots. This would be in addition to the existing St Neots station |
| | **Subcatchment divide** | Topographic ridge or ridges that separate distinct tributary areas in a river catchment |
| | **Switch** | A junction between two railway lines, that can be set to guide a train to or from either of those lines. Can also be referred to as points |
| T | **Tempsford Option A Station** | Option for a new station in the Tempsford area. Both Tempsford station options would be located to the north-east of Tempsford |
| | **Tempsford Option B Station** | Option for a new station in the Tempsford area. Both Tempsford station options would be located to the north-east of Tempsford |
| | **Thameslink** | Train operator running services between the south coast of England, Bedford and Cambridge |
| | **Thameslink Core** | The part of the Thameslink route between London St Pancras and London Blackfriars station |
| | **The 2005 Act** | The Railways Act 2005 |
| | **The 2020 Order** | The Network Rail (East West Rail) (Bicester to Bedford Improvements) Order 2020 – a TWAO obtained by Network Rail authorising works to the railway to enable EWR services to run between Oxford and Milton Keynes |
| | **Tph** | Trains per hour |

| | Term | Description |
|---|---|---|
| T | **Train path** | The planned timing and route of a train |
| | **Turn around allowance** | Time allowed within the timetable for trains to be prepared after completing one service before commencing another service |
| | **TWA 1992** | Transport and Works Act 1992 |
| | **Transport and Works Act Order (TWAO)** | A Transport and Works Act Order made by the Secretary of State under the TWA 1992 alongside a deemed planning permission, allowing works to a railway or other transport project to be undertaken |
| U | **Utility company** | A company that owns equipment which carries and distributes water, electricity, gas or telecommunications. These commodities are collectively known as 'utilities' |
| W | **West Anglia Main Line (WAML)** | The main railway route between London Liverpool Street and Cambridge |
| | **West Coast Main Line (WCML)** | The main railway route between London Euston and Glasgow |
| | **WLC** | Whole Life Costs |
| | **WTT** | Working Timetable |

# 01. Introduction

## 1.1 Chapter summary

**1.1.1. This Technical Report contains detailed, technical information which supports the Consultation Document. It sets out how we have assessed options during design development, and how we have considered environmental factors.**

**1.1.2. Each Chapter in the report is introduced by a summary that highlights the main points of the section.**

**1.1.3. This Chapter introduces East West Rail (EWR), the work needed (the Project) to deliver EWR and the role of East West Railway Company (EWR Co) in the Project.**

**1.1.4. It explains the Project, which is being delivered in four stages that allow services to run between Oxford and Bicester (already completed); then between Oxford and Milton Keynes; then between Oxford and Bedford; and, finally between Oxford and Cambridge.**

**1.1.5 It summarises the scope of, and background to, the non-Statutory Consultation that this Technical Report informs and briefly describes the six Project Sections that are used to explain the infrastructure proposals included in the non-Statutory Consultation.**

**1.1.6. It sets out the purpose and structure of this Technical Report.**

## 1.2 East West Rail

1.2.1. EWR is a proposed new rail link, which would connect communities between Oxford, Milton Keynes, Bedford and Cambridge.

1.2.2. By increasing connectivity across the Oxford-Cambridge Arc (the Arc) and boosting the local economy, the new railway line is part of the Government Agenda to create a range of opportunities for people right across the area and help to spread prosperity across the UK.

1.2.3. The East West Rail Consortium, formed in 1995, brought together local authorities and local enterprise partnerships in a collaborative partnership that has actively made the case for the development and delivery of East West Rail for over 20 years.

1.2.4. The Sponsor of the Project is the Secretary of State for Transport who, through his Department, owns the Project and has overall responsibility for its success.

1.2.5. EWR Co is a government-owned company set up by the Secretary of State for Transport in 2018. Previous plans for East West Rail were developed by the Department for Transport, Network Rail and the East West Rail Alliance (formed by Network Rail, Atkins, Laing O'Rourke and Volker Rail). EWR Co is now responsible for:

- Overseeing and developing work already underway between Oxford and Bletchley (delivered by the East West Rail Alliance);
- Developing all aspects of the Project between Bletchley and Cambridge.

1.2.6. In undertaking this role, EWR Co has been given a remit by the Government to challenge industry norms including seeking to implement new delivery and operational models.

1.2.7. Although they are sometimes referred to as being part of EWR, proposals to improve the railway between Cambridge, Ipswich and Norwich, to enable EWR services to continue eastwards and to improve capacity for freight, are not part of the Project and are not in the remit of EWR Co.

## 1.3 The Project

1.3.1. Delivery of the Project is being promoted in four stages with an ambition for trains to be running the full length of the line between Oxford and Cambridge by the end of the decade.

1.3.2. The first stage (already in operation) has improved the link between Oxford and Bicester and was completed in 2016. This part of the Project was delivered by the Chiltern Railway Company Limited under the Chiltern

# The full proposed East West Rail link


Figure 1.1: Proposed East West Rail Route between Oxford and Cambridge


Nottingham
Edinburgh
Norwich
Bedford
St Neots South / Tempsford
Ipswich
Cambourne
Cambridge
London
London
London
Key:
Proposed East West Rail route
Proposed East West Rail station
Potential future section of East West Rail
Note: Current and potential stations between Bletchley and Bedford not shown

Railways (Bicester to Oxford Improvements) Order 2012, made under the Transport and Works Act (TWA) 1992.

1.3.3. The next stage will extend EWR further north and east, allowing services to run between Oxford and Milton Keynes. Creating this link requires the reinstatement of an out-of-use railway line between Gavray Junction at Bicester and Bletchley including a new bridge over High Speed 2 (HS2). It also requires an upgrade to the existing Bletchley Rail Flyover and addition of two new, high-level platforms at Bletchley station. In 2020, Network Rail obtained the Network Rail (East West Rail) (Bicester to Bedford Improvements) Order 2020 (the 2020 Order), made under the TWA 1992. The 2020 Order authorises the construction, operation and maintenance of works to the railway between Bicester and Bletchley and major civil engineering construction work has commenced. These works[1] will enable the introduction of two trains per hour in each direction between Oxford and Milton Keynes plus additional freight capacity and future EWR service capacity.

1.3.4. The third stage would upgrade the existing railway between Oxford and Bedford to meet the Project Objectives detailed in Chapter 3. These works go beyond those authorised by the 2020 Order obtained by Network Rail so will require a new, separate consent. Enhancements to the railway between Oxford and Bicester, to the Marston Vale Line between Bletchley and Bedford, and to Bedford station form part of EWR Co's proposals. Additional works to those being delivered in the previous stage may be required between Bicester and Bletchley.

1.3.5. The fourth stage would provide an entirely new railway infrastructure between Bedford and Cambridge. This would include two new stations: one in the vicinity of St Neots or Tempsford on the East Coast Main Line (ECML, the line between London, York and Scotland); and one at Cambourne. The Government has directed that the works required between Bedford and Cambridge are a nationally significant infrastructure project (NSIP). This means that they must be authorised by the process as set out in the Planning Act 2008 (PA 2008). EWR Co will apply to the Secretary of State for Transport for a Development Consent Order (DCO) to authorise the works.

1.3.6. EWR Co will include its proposals to upgrade the existing railway between Oxford and Bicester, and between Bletchley and Bedford, within the DCO application. Works between Oxford and Milton Keynes within the existing railway corridor may not require planning permission or development consent.

1.3.7. A potential new 'Cambridge South' station, which the new EWR railway could also serve, is being promoted by Network Rail[2] and will be subject to a separate consent process. There are also several schemes being developed in the Oxford area. EWR Co recognises that a number of these schemes may require further consultation by Network Rail and will be subject to a separate consent process.

[1] https://www.networkrail.co.uk/running-the-railway/railway-upgrade-plan/key-projects/east-west-rail/east-west-rail-western-section/east-west-rail-western-section-phase-2/

[2] https://www.networkrail.co.uk/running-the-railway/our-routes/anglia/cambridge-south-station/

## 1.4. Consultation

1.4.1. The PA 2008 requires the promoter of any NSIP to consult with stakeholders and communities on its proposals, providing an appropriate level of information to explain the project and its impacts upon the environment and local communities. This includes the provision of a Preliminary Environmental Information Report (PEIR). This is carried out through what is known as a Statutory Consultation. However, EWR Co is committed to early and ongoing engagement on its proposals as they develop and has therefore chosen to consult at this stage on options and alternatives which are being considered, before presenting a more detailed design at the Statutory Consultation. The current consultation is therefore described as a 'non-statutory' consultation.

1.4.2. This 'non-statutory' consultation includes EWR Co's proposals for the upgrade to the railway between Oxford and Bicester, and between Bletchley and Bedford, and the new railway between Bedford and Cambridge (i.e. the third and fourth stages of the Project). It also considers the way that services may be operated and accessed across the whole Project.

1.4.3. EWR Co has previously consulted on its proposals for works between Bedford and Cambridge. A Route Corridor, the broad areas within which the new railway might be located, was identified as part of the initial 'sift' of possibilities in 2016. Between January and March 2019, EWR Co asked for views on five potential Route Options for the new railway within the overall Route Corridor identified in 2016. These Route Options were still broad areas within which the stations and Route Alignment, i.e. the tracks and associated infrastructure, might be constructed to connect Bedford and Cambridge. Following a recommendation made by EWR Co, having regard to matters including feedback provided during the consultation exercise, the Government has since selected a Preferred Route Option (Route Option E). Further details about the process to get to and selection of Route Option E can be found in Chapter 5 - Approach to developing the designs. Public information events were held in early 2020 to understand the views, concerns and priorities of communities across the area, following the Secretary of State's announcement of Route E as the Preferred Route Option. When Government guidelines created in response to the Covid crisis made further in-person meetings impossible, we reached out to parishes across the area to understand how best we could communicate remotely, and have continued to work with these groups and local authorities over the past year.

1.4.4. Using their advice and feedback on how best to gather views, we are now publishing options for the proposed alignment of the railway and station locations between Bedford and Cambridge.. Now that Route Option E has been decided upon, we want to seek your views on the proposed alignment of the railway and station locations between Bedford and Cambridge.

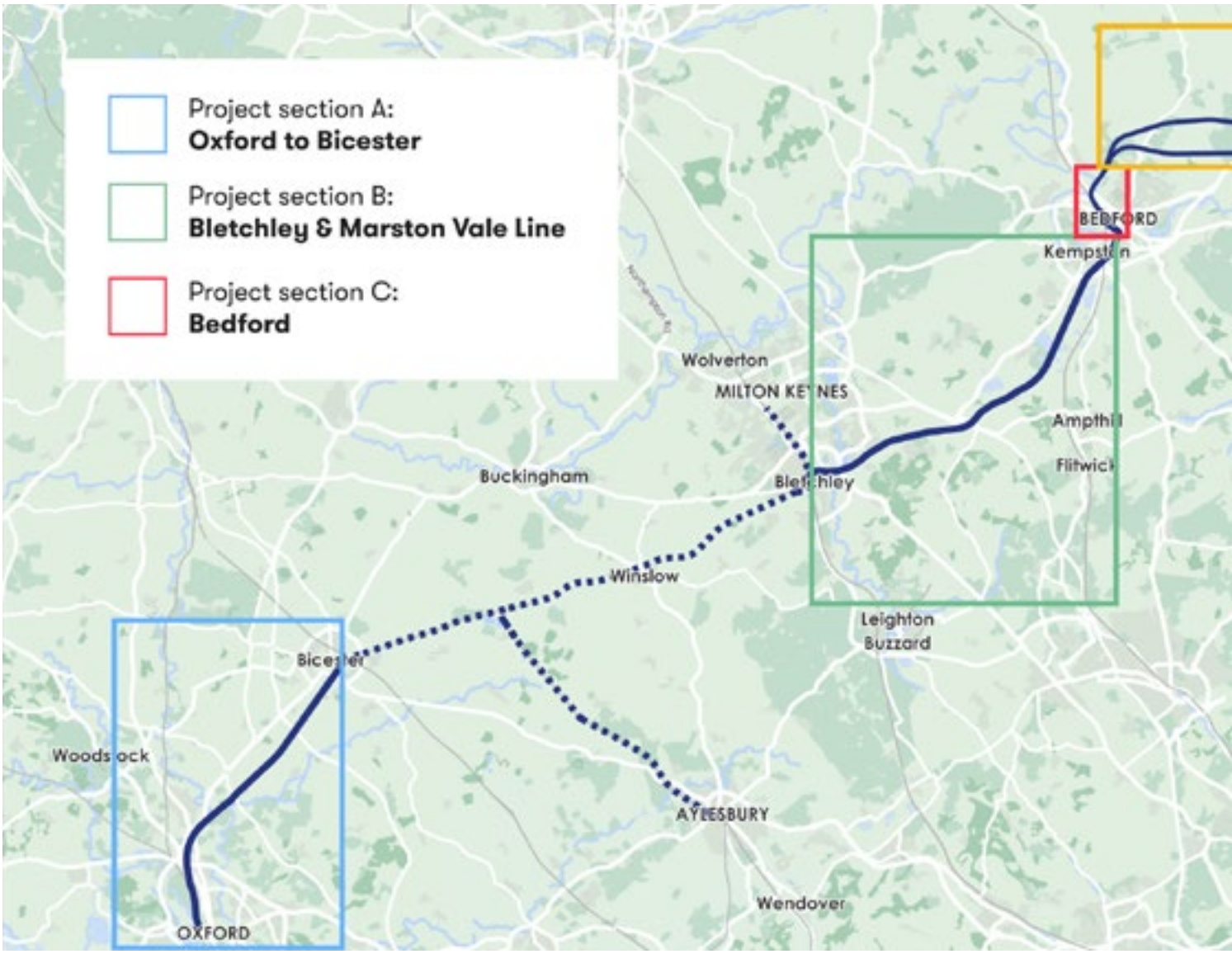
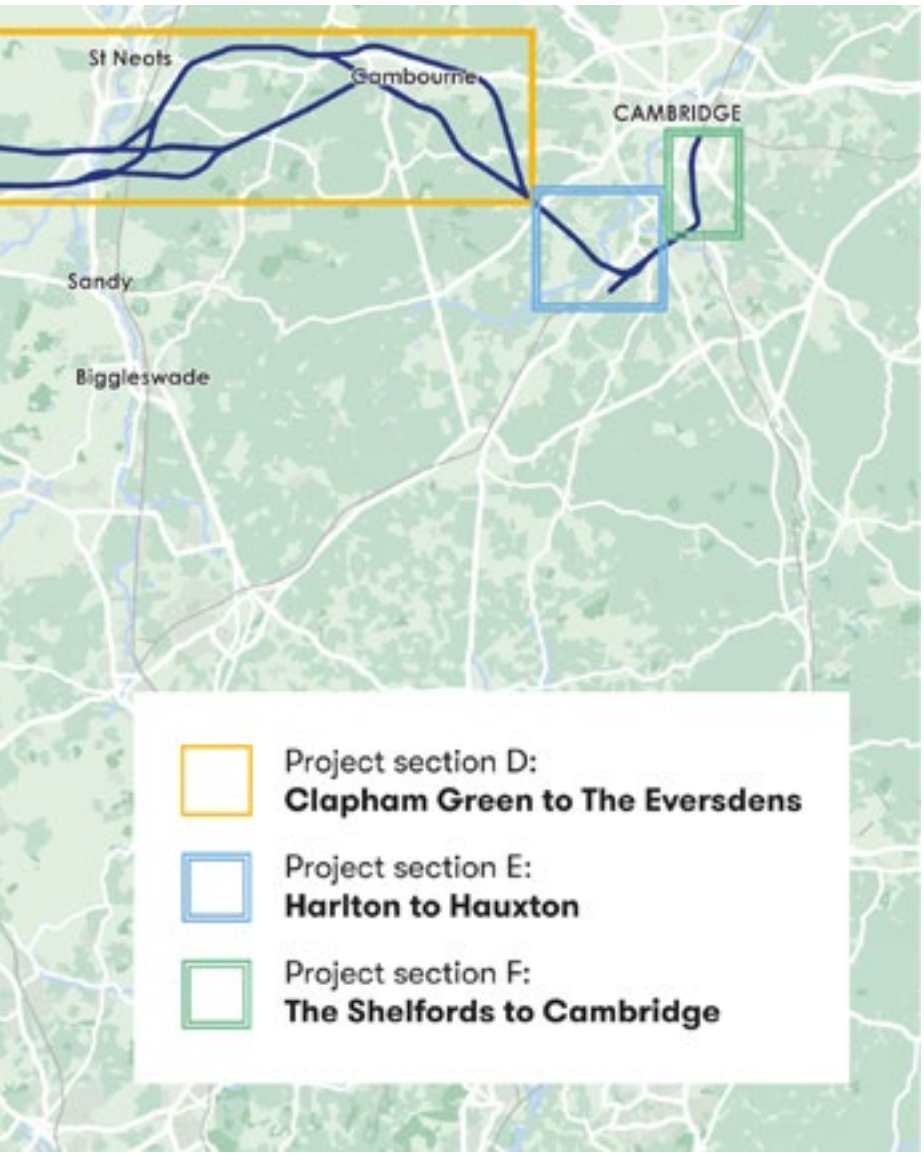



Figure 1.2: Project Sections Oxford to Cambridge

1.4.5. This is the first time that EWR Co has consulted on its own proposals for works between Oxford and Bicester and between Bletchley and Bedford (i.e. the proposals which would be the subject of EWR Co's DCO application, depending on the outcome of the consultation).

1.4.6. The infrastructure proposals in this consultation are divided into six Project Sections. Each of these Project Sections can be considered independently with all areas forming a single alignment for the railway between Oxford and Cambridge once preferred options have been identified. Figure 1.2 shows the Project Sections.




1.4.7. **Project Section A (Chapter 6): Oxford to Bicester: improvements to the existing railway and stations:**

- Improvements to Oxford, Oxford Parkway and Bicester Village Stations, to accommodate more trains and passengers;
- Changes to the way vehicles and pedestrians cross the railway around London Road in Bicester, to improve safety and ensure the trains run a faster, more reliable service.

1.4.8. **Project Section B: Bletchley and the Marston Vale Line (Chapter 7): improvements to the existing railway and stations:**

- Options for the pattern of train services between Bletchley and Bedford and possible changes to station locations so that the railway can benefit more people;
- Changes to the way vehicles and pedestrians cross the railway in the area, replacing level crossings with safer alternatives to ensure the trains run a faster, more reliable service;
- Improvements to track, including the reinstatement of a second track between Bletchley and Fenny Stratford.

1.4.9. **Project Section C: Bedford (Chapter 8): improvements to the existing railway and a new section of railway:**

- Changes to the track alignment south and west of Bedford, including addition of a second track;
- Relocated Bedford St Johns station, moved to fit with proposed new track alignment;
- Improvements to Bedford station including to create more platforms and a better experience for passengers;
- Works adjacent to the Midland Main Line (MML) north of Bromham Road;
- A section of new railway leaving the MML and heading eastwards past Clapham and the northern outskirts of Bedford.

1.4.10. **Project Section D: Clapham Green to The Eversdens (Chapter 9): new railway and new stations:**

- Construction of a new railway;
- A new station in the area near Tempsford and St Neots, in addition to the existing station on the ECML, which could provide an interchange between EWR and the ECML;
- A new station at Cambourne.

1.4.11. **Project Section E: Harlton to Hauxton (Chapter 10): new railway and a new railway junction:**

- New railway infrastructure southwest of Cambridge including a new railway junction near Harston and Hauxton.

1.4.12. **Project Section F: The Shelfords to Cambridge Station (Chapter 11): improvements to the existing railway and Cambridge Station**

- Improvements or closure of level crossings in the vicinity of The Shelfords;
- Additional tracks to the West Anglia Main Line (WAML) between Shepreth Branch Junction and Cambridge Station and modification of Shepreth Branch Junction;
- Additional platforms at Cambridge Station.

## 1.5. Technical Report

1.5.1. This Technical Report forms part of the 'non-statutory' consultation and should be read in conjunction with the Consultation Document and accompanying maps.

1.5.2. The objective of this Technical Report is to present details relating to the proposals in each Project Section being consulted upon. The overall case for EWR and its objectives are presented so that the reasons for the options presented and any emerging preferences can be understood. The Technical Report uses Assessment Factors to assist in identifying which options best meet the Project Objectives.

1.5.3. The report is structured as follows:

- Chapter 2 presents the case for EWR;
- Chapter 3 and Chapter 4 set out the Project Objectives, and considerations of additional works and construction, used to develop the options presented;
- Chapter 5 explains the Assessment Factors used to ensure options are consistent with the Project Objectives and the case for EWR, and it sets out how the design has been developed to reach the options presented;
- Chapter 6 to Chapter 11 present each of the Project Sections in turn – describing the area, the options being considered, any options that have been discounted, the assessment of the options, and a conclusion on the relative performance of the options;
- Chapter 12 summarises the next steps in the development of the proposals.

# 02.
# The case for East West Rail

## 2.1 Chapter summary

**2.1.1. This Chapter explains the case for East West Rail (EWR) as a means of enhancing connectivity, expanding the employment catchments and supporting housing growth in the Oxford to Cambridge Arc ("the Arc"). It draws on work undertaken by the National Infrastructure Commission (NIC), which provides impartial, expert advice on major long-term infrastructure challenges.**

**2.1.2. The Chapter also summarises the benefits of new rail connections, rather than road connections, to serve this corridor.**

## 2.2 The overall case for East West Rail

2.2.1. Oxford and Cambridge are centres of world-class education and together with Milton Keynes are collectively home to world-leading research, innovation and technology businesses and institutions. In addition to being economically highly productive, each of these places has seen considerable growth in recent times. However, the economic success of the Arc has led to a demand for homes that is not currently being met by supply, which has led to high house prices and is diminishing the ability of companies to attract talent, which is further exacerbated by poor east-west transport connections. This problem was identified by the NIC in their 2017 report "Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc".

2.2.2. In March 2016, the NIC was asked to consider how to maximise the potential of the Cambridge – Milton Keynes – Oxford corridor as a single, knowledge-intensive cluster that competes on a global stage, protecting the area's high-quality environment, and securing the homes and jobs the area needs. Recognising the national economic importance of the Arc, the NIC found that the Arc's economic potential is constrained by a lack of suitable housing and poor east-west connectivity – by around £93[3] billion (2020 prices) each year by 2050 without major intervention[4]. The Arc's economic success is in part driven by highly productive industries, which cluster in towns and cities across the Arc, providing employment opportunities and strengthening the UK's international competitiveness.

2.2.3. Making the case for EWR, the NIC concluded that it "will enhance connectivity across the Arc, expanding the labour markets of key towns and cities" and "can play a key role in tackling the Arc's housing crisis, unlocking major new development locations and enabling transformational growth around existing towns and cities[5]."

2.2.4. The NIC reached these conclusions before the recent Covid-19 outbreak. In the short-term, the Covid-19 outbreak has significantly cut demand for rail travel, but most of the sections of EWR being consulted on would not enter service until the end of the decade. The long-term impact on rail demand (amongst other uncertainties such as technological change) is uncertain and it is possible that some people will permanently change their travel patterns – this acts as a downside risk to the business case. As the purpose of EWR is to enhance connectivity across the Arc rather than to provide additional capacity on an existing service, it is expected that the impact of this would be relatively small. However, EWR Co, working with the Department for Transport (DfT), and will further investigate these risks in future business case iterations, in particular on the long-term trends for demand growth once the lockdown restrictions are eased. This analysis could use scenario planning techniques.

2.2.5. In any event, EWR will better connect Oxford and Cambridge which, with their world-class reputations in life sciences and biotech, are both now at the forefront of the global endeavour against Covid-19.

[3] This has been converted into 2020 prices which is the equivalent of the NIC reported £85m in 2011 prices

[4] NIC (2017) Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc, page 25 https://www.nic.org.uk/wp-content/uploads/Partnering-for-Prosperty.pdf

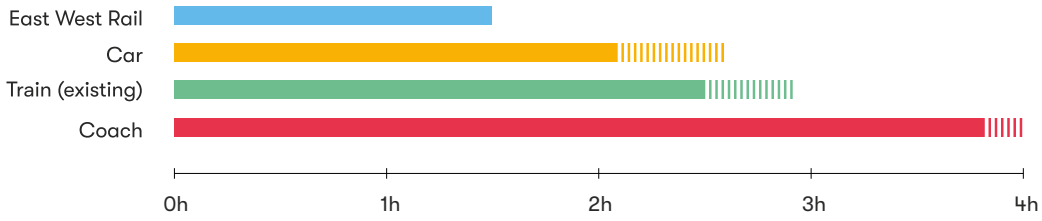
[5] NIC (2017) Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc, page 8 https://www.nic.org.uk/wp-content/uploads/Partnering-for-Prosperty.pdf

For example, it is Oxford University and AstraZeneca (head-quartered in Cambridge) who were two of the world leaders in developing a vaccine for the virus. EWR will provide better connectivity between these globally significant business clusters.

2.2.6. Existing rail connections across the Arc are limited. The only existing east-west rail connection is a slow, stopping service between Bletchley and Bedford, provided on a branch between the West Coast Main Line (WCML, the route between London, the West Midlands, Northwest England and Scotland) and the Midland Main Line (MML, the route between London, Nottingham and Sheffield).

2.2.7. Currently, for example, the fastest route by rail between economic centres across the Arc is often via London. Travelling from Oxford to Cambridge by rail takes almost three hours and requires passengers change trains between London stations, which involves crossing London using another mode of transport, such as the London Underground or London Busses , adding to the journey's susceptibility to delay or cancellations as well as its inconvenience. Figure 2.1 compares the average range of journey times between Oxford and Cambridge using existing modes of transport, to the indicative EWR journey time assumption[6]. This demonstrates that a less sustainable mode of travel is favoured by the status quo. Journey times would also be improved by longer distance journeys traversing the Arc using interchange to and from EWR services.

Figure 2.1: Oxford to Cambridge minimum and maximum journey time comparison by mode




2.2.8. The benefits of EWR have been identified by the NIC in their report "Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc"(2017)[7]. It states on page 31: "National investment in the East West Rail project...present[s] a once in a generation opportunity." By improving connections through quicker journey times, the value of EWR rests on enabling it to:

- "Increase the labour market catchment areas for the Arc's key towns and cities, opening up new opportunities for collaboration and job growth" (page 31);
- "Open up new sites for development, improving the supply of accessible, developable land and supporting the delivery of new homes at affordable prices for all workers" (page 31) and, if delivered at pace, "tackle the Arc's housing crisis...aligned to the development of major new and expanded settlements" (page 32); and, with other strategic interventions,
- "Deliver a step-change in national connectivity, creating truly national level transport benefits", used as a link to "create an alternative strategic connection between East Anglia, southern and central England, as well as

[6] The Route Alignment design and therefore journey times are still in development so are subject to change as the Project progresses.
[7] NIC (2017) Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc, pages 31-40 https://www.nic.org.uk/wp-content/uploads/Partnering-for-Prosperty.pdf

South Wales – each providing the opportunity for passenger and freight movement at a national scale" (page 40).

2.2.9. By supporting local aspirations for, and the delivery of, new homes and communities, EWR would enhance the economic potential of the Arc. Housing growth in the Arc has failed to keep pace with demand, contributing to rapidly increasing house prices and pressure on firms to increase wages to attract skilled workers. The NIC's 'Partnering for Prosperity' report (page 59) notes that, in absence of new interventions, further population growth in suburbs combined with increasing labour demand in the key cities and towns in the region will place even greater demands on the existing infrastructure.

2.2.10. Well-placed transport links can unlock new areas of land for housing development that are constrained by existing infrastructure at present, as well as support further housing growth and town centre regeneration efforts in existing settlements.

2.2.11. The case for EWR includes its important role in supporting the wider transformation of the Arc. From its initial response to the NIC report in 2018[9], through to the Budget in March 2020, the Government has made public its commitment to the Arc. The Arc has been designated as a key economic priority. The Government has confirmed its support for the NIC's vision for up to a million additional homes and the additional infrastructure (including EWR) required to ensure communities and businesses are better served and better connected. Her Majesty's Treasury's (HMT) National Infrastructure Strategy[10], published in November 2020, additionally identified the need for supporting institutions to prioritise growth in the region – a Spatial Framework to develop a plan for long-term growth, and up to four Development Corporations[11].

2.2.12. Moreover, all the local authorities in the Arc support EWR as a vital enabler of transformation in the Arc, and it sits at the centre of England's Economic Heartlands' Transport Strategy.[12] Indeed, the new railway is seen by many stakeholders as a totemic strategic commitment by the Government to the wider plans.

[9] Government's response to NIC report: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752040/Government_response_to_Partnering_for_Prosperity_a_new_deal_for_the_Cambridge-Milton__Keynes_Oxford_Arc.pdf

[10] HMT Treasury (2020), National Infrastructure Strategy https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938539/NIS_Report_Web_Accessible.pdf

[11] https://www.gov.uk/government/publications/budget-2020-documents/budget-2020

[12] Connecting People, Transforming Journeys - https://www.englandseconomicheartland.com/transport/our-strategy/

## 2.3 Benefits of railways

2.3.1. The development of stronger, more integrated transport networks across the Oxford to Cambridge Arc is a critical driver of economic growth. The East West Rail scheme enhances connectivity, links communities and reduces journey times. Interchange between road and rail will become easier and more convenient as a result of the scheme.

2.3.2. The particular benefits of providing east-west rail connectivity across the Arc include:

- Providing faster journey times into city centres, particularly for commuters and others at peak times when roads are increasingly congested;
- Providing faster journey times over longer distances, for example for business travel between Cambridge, Oxford, Bedford, and Milton Keynes, as well as through interchanging to the wider rail network;
- Enabling commuters and business passengers to spend their travel time on more productive work;
- Making the labour market more accessible for people who do not drive; and
- Spreading demand for housing outside of towns and cities, particularly benefitting younger workers (between a quarter and a third of whom do not hold driving license[13]).

2.3.3. Travelling by train is one of the most carbon-efficient ways to travel[14]; it is intended that EWR will help to reduce road congestion and pre-emptively help to avoid increases which may otherwise be associated with new housing or economic development, in favour of a more sustainable form of transport, as a result of quicker and more reliable journeys over long distances encouraging modal shift to rail from private vehicles.

2.3.4. These factors are reflected in the increasing popularity of rail travel among commuters and businesses passengers, particularly those working in highly productive industries such as those in the Arc's industry clusters. As noted in paragraph 2.2.4, work is still ongoing to understand how the Covid-19 pandemic may affect commuter travel patterns over the long-term.

[13] Driving licence holding and vehicle availability dataset (from the National Travel Survey), DfT - https://www.gov.uk/government/statistical-data-sets/nts02-driving-licence-holders#table-nts0201

[14] DfT (2020) Decarbonising Transport: setting the challenge, page 26 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932122/decarbonising-transport-setting-the-challenge.pdf

# 03.
# Project Objectives

## 3.1. Chapter summary

**3.1.1. Development of the Project is guided by a range of Project Objectives, which are described in this Chapter.**

**3.1.2. The Project Objectives comprise the Sponsor's Requirements and the Programme Wide Output Specification (PWOS). The Sponsor of the Project is the Secretary of State for Transport who, through his Department, owns the Project and has overall responsibility for its success. The Sponsor's Requirements are therefore set by the Department for Transport (DfT) and cover the outcomes and benefits that the DfT expects EWR Co to deliver through delivery of the Project (which have built on the Strategic Objectives, as reported at the last consultation on the Bedford to Cambridge section). The PWOS provides a more detailed set of objectives.**

3.1.3. This Chapter presents pertinent objectives from these two documents. They include requirements for safety and how the Project will perform environmentally. There are various operational objectives including the East West Rail (EWR) train service pattern; connectivity to other railway routes; the type of customer experience; how EWR train services are powered; consideration of freight services; the need to maintain and store trains at depots and stabling facilities; and the provision of telecommunications.

## 3.2 Introduction

3.2.1. Reflecting the findings of the NIC as referenced in paragraph 2.2 above, the DfT established Strategic Objectives applying both to elements of EWR between Oxford and Bedford and from Bedford to Cambridge. The Strategic Objectives set by the DfT and stated in the consultation in relation to Route Options were as follows:

- Improve east-west public transport connectivity by providing rail links between key urban areas (current and anticipated) in the Oxford-Cambridge Arc ("the Arc");
- Stimulate economic growth, housing and employment through the provision of new, reliable and attractive inter-urban passenger train services in the Arc;
- Meet initial forecast passenger demand;
- Consider and plan for future passenger demand, making provision where it is affordable;
- Contribute to improved journey times and inter-regional passenger connectivity by connecting with north-south routes and routes beyond Oxford and Cambridge;
- Maintain current capacity for rail freight and make appropriate provision for anticipated future growth; and
- Provide a sustainable and value for money transport solution to support economic growth in the area.

3.2.2. These Strategic Objectives underpinned the development of Route Options that prioritised serving locations that could support growth and new homes, over fast end-to-end journey times, while still resulting in significantly faster journey times than would otherwise be available (e.g. connections via London).

3.2.3. The Sponsor's Requirements, presented in Appendix A, are set by the DfT and cover the outcomes and benefits that the DfT expects EWR Co to deliver as a result of the Project.

3.2.4. The Sponsor's Requirements apply to the whole Project and build on the Strategic Objectives that were used to develop and decide on a Preferred Route Option between Bedford and Cambridge.

3.2.5. The PWOS, presented in Appendix B, has been developed by EWR Co and agreed with the DfT. This adds detail to the Sponsor's Requirements.

3.2.6. The versions of the Sponsor's Requirements and the PWOS presented in the Appendices were drafted to set the direction of the design and contain draft proposed requirements on the delivery of the Project which the Project, as described in this Technical Report,

has sought to meet. As the design is at an early stage, the PWOS does not contain formalised requirements that must be met, nor does it signify that decisions have already been taken. Indeed, this Technical Report considers options different from those in the PWOS because other approaches may be desirable and the DfT and EWR Co are evolving the solution to meet the Sponsor's Requirements. As such, there is scope for the PWOS to be amended.

3.2.7. Similarly, some of the objectives contained in these documents may not be achievable, for example due to budgetary or programme constraints to be decided by the Government, and may need to be traded-off against each other. The requirements on the delivery of the Project will be confirmed as the design evolves and option decisions are made.

3.2.8. Particularly relevant objectives from the Sponsor's Requirements and the PWOS are set out in the following paragraphs.

## 3.3. Other Government policy

3.3.1. In 2021, the Ministry of Housing, Communities and Local Government (MHCLG) published its report, "Planning for sustainable growth in the Oxford-Cambridge Arc: An introduction to the Oxford-Cambridge Arc Spatial Framework"[15].

3.3.2. This document sets out how the Government proposes to develop a spatial framework for the Arc. The document describes how the spatial framework will be both a planning policy and a transport policy. EWR Co intends to work with MHCLG in order to ensure that the policy reflects the evolution of EWR. As EWR Co continues to develop the Project it will take account of the emerging spatial framework.

## 3.4 Safety

3.4.1. Safety is of vital importance. EWR Co would deliver a safe railway, for passengers, staff and all those that would live near or interact with it.

3.4.2. Level crossings have a significant impact on the safety of the railway. The Office of Rail and Road (ORR) (the safety regulator for the railway industry) acknowledged, in 2011[16], that "level crossings account for nearly half of the catastrophic train accident risk on Britain's railways". For this reason, in line with ORR guidance (and the need to comply with outcomes of the ORR's consultation), EWR Co is not proposing to provide any new level crossings. EWR Co is proposing to close existing level crossings between Oxford and Bedford and, where required, will provide new rights of way to replace those affected by these crossing closures.

## 3.5 Environment

3.5.1. In terms of sustainability, the Arc's attractive natural and built environment is one of its key assets. EWR Co has taken a proactive approach to environmental considerations and put them at the core of the Project, using environmental data as a fundamental part of developing proposals that avoid, mitigate and

[15] HM Government (2021): Planning for sustainable growth in the Oxford-Cambridge Arc https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962455/Spatial_framework_policy_paper.pdf

[16] Level Crossings: A guide for managers, designers and operators, ORR, December 2011 (https://www.orr.gov.uk/media/10713)

compensate for potential impacts on the environment. Under the Network Rail (East West Rail) (Bicester to Bedford Improvements) Order 2020, covering Connection Stage 1, this part of the scheme committed to a 10% biodiversity net gain and consistent with this, as well as current and developing Government policy for biodiversity net gain, EWR Co will achieve biodiversity net gain in the construction of EWR.

3.5.2. EWR Co also aims to deliver a net zero carbon railway, in line with existing and developing net zero carbon policy, legislation and commitments at a global, national and local level. These commitments include The Climate Change Act 2008 (2050 Target Amendment) Order 2019 which requires the UK to reach net zero greenhouse gas emissions by 2050. In 2018, the Government challenged the rail industry to produce a vision for the removal of all diesel-only trains from the network by 2040. At a local level, Bedford Borough Council has pledged to become Carbon Neutral by 2030. Cambridge City Council has also declared similar net zero carbon aspirations. Any decision to grant development consent for the Project will need to demonstrate that it would not have a material impact on the ability of the Government to meet its carbon reduction targets. This will also include having regard to the Paris Agreement on Climate Change.

3.5.3. EWR Co will consider the importance of environmental sustainability in its activities and the decisions it makes, as specified in the PWOS in Appendix B.

3.5.4. EWR Co has followed the environmental mitigation hierarchy and implemented a decision-making process which seeks to 'design out' potential for environmental impacts. This has been done at the earliest stage of design to ensure that all aspects of environmental sustainability are robustly addressed, through embedding environmental design principles into the design requirements. In implementing this, all alignments have avoided direct impacts on key national features including ancient woodland, listed buildings, scheduled monuments and registered parks and gardens. Where it has not been possible to avoid impacts, design development of the alignments has applied a hierarchical approach to minimising and reducing environmental impacts.

## 3.6 EWR services

3.6.1. EWR services would be introduced in Connection Stages (CS) as follows, in each direction:

- CS1: Two passenger trains per hour between Oxford and Milton Keynes; Connection Stage 1 will be achieved when the current project to construct the new railway between Bicester and Bletchley is completed. The works to establish this connection stage do not form part of this consultation exercise.
- CS2: An additional two passenger trains per hour between Oxford and Bedford; and
- CS3: Extension of the two passenger trains per hour between Oxford and Bedford to Cambridge and an additional two passenger trains per hour between Bletchley and Cambridge.

3.6.2. EWR Co aims to develop an attractive, predictable 'clock-face' service at regular intervals. This means that trains would call at most stations at the same minutes past each hour all day, and that train services would be evenly spaced as far as possible.

3.6.3. EWR Co aims to provide a frequent passenger service through designing a flexible railway, with two railway tracks for EWR service use throughout, allowing the new services to offer attractive journey times. The indicative

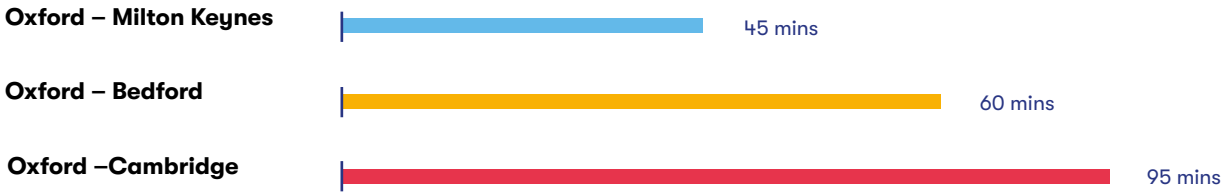



Figure 3.1: Indicative target maximum journey times

target maximum journey times are set out in Figure 3.1. These are based on indicative route and infrastructure studies and are being validated as the Project progresses.

3.6.4. EWR Co aims to provide a reliable service and, to help protect EWR services and customers from the impact of wider railway disruption, the new railway lines would be independent from the existing rail network as far as possible, whilst maximising connectivity.

3.6.5. Extending EWR services east of Cambridge is not in the remit of EWR Co. However, the development and assessment of options seeks to ensure that decisions taken now do not create obstacles to this in the future. This is important because, otherwise, what EWR Co decides could make it more difficult to extend EWR services eastwards due to the cost and disruption associated with changing what has been constructed.

3.6.6. Final decisions on the frequency of services, station calling patterns and journey times will depend on further development and consideration of operational issues and the likely demand for EWR services.

## 3.7 Connectivity

3.7.1. EWR would connect to six north-south routes, including provision for a potential new passenger interchange with the East Coast Main Line (ECML) at either Tempsford or St Neots (as a new station, not replacing the existing station). This would provide passengers going to and coming from destinations beyond the Arc with alternative options to the longer routes via London.

## 3.8 Customer experience and stations

3.8.1. EWR Co aims to set new standards for customer experience. Delivering a better customer experience has been embedded into designing and developing the Project. The proposed overall customer journey experience, including the experience at stations, is presented in the 'Shaping customer experience and railway operations' section of the Consultation Document. Station locations are discussed within the relevant Project Sections below.

## 3.9 Powering EWR services

3.9.1. EWR Co is aiming to deliver a net zero carbon railway and will be considering conventional and emerging technological solutions for powering trains when all EWR services are fully operational. Operating electric trains powered by overhead electric lines is one way that carbon emissions can be reduced. It is not yet clear if other technologies are likely to be sufficiently mature by the time a firm decision needs to be taken on EWR's long term fleet and so it is not yet known whether such conventional electrification is required.

3.9.2. For the purposes of appraising the environmental impacts of each option (and particularly options in Section D), the reasonable worst-case scenarios of electrification or diesel-powered trains have been used. This is to ensure that for each topic the reasonable worst-case approach is adopted when considering the impacts arising from each alignment. The use of diesel-powered trains is not a Project Objective.

3.9.3. To inform the next stage of design, including potential land requirements, the assumption is that overhead electrification may be provided for the Project. EWR Co will develop the proposed approach and provide more details at the Statutory Consultation.

## 3.10 Freight on EWR

3.10.1. EWR is being designed to maintain current capacity for freight trains on the existing railway and the design is considering the potential for future growth in demand for rail freight both as a result of, and independent of, EWR.

3.10.2. The capacity for freight trains is defined by the number of "freight paths" made available in the timetable such that freight and passenger trains can run along the same tracks whilst minimising the risk of delay to passenger services. The capacity can be enhanced by providing additional sections of track known as "passing loops" to make it possible for passenger trains to overtake freight trains (or slower passenger trains).

3.10.3. The capacity for freight trains can vary during the day and the number of freight paths available is not necessarily the number of freight trains that run. Rail freight is operated on an "open access" basis, which means that where freight paths are available, operators such as freight operating companies can seek to take advantage of that capacity when there is demand for freight to be moved by rail. In addition to demand, the number of

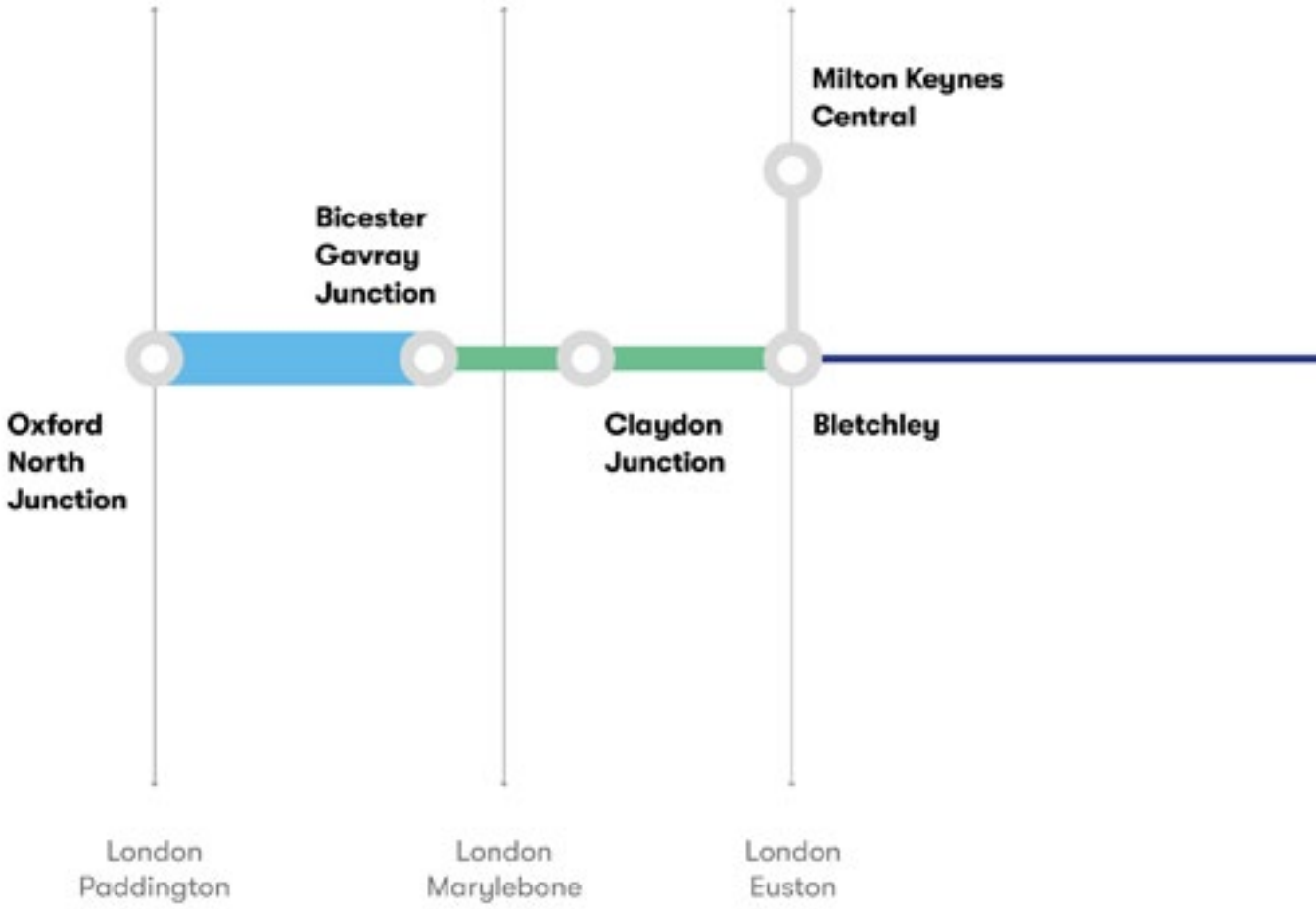
freight trains that run can be limited by the infrastructure, in particular the connections between lines, and the policies of the infrastructure operator and the Government.

3.10.4. The current number of freight paths per day, combined with the additional capacity being delivered in Connection Stage 1 by works authorised under the 2020 Order between Bicester and Bletchley, is shown in Figure 3.2. The number of freight paths per hour is shown as an average to provide an indicator of the number of freight trains that could use the railway if they were spread across an 18-hour operational day and that level of demand existed.

3.10.5. At this stage of the Project, timetable modelling is not sufficiently advanced to be able to quantify the freight paths that might be available once EWR is completed and no decisions have been made on the times of day that freight (and passenger) trains would run. More detailed timetabling and consideration of the need for passing loops will be undertaken at the next design stage, considering how the railway would be operated and maintained, and feedback received from this non-Statutory Consultation on matters such as Route Alignment and passenger train service provision. Engagement has been undertaken and will continue with the rail freight industry to help EWR Co understand the interest in running freight services on EWR. The number of freight paths that could be available should be known by the time of the Statutory Consultation but, as explained above, the number of trains that would use EWR is dependent on market forces and Government policy, as well as the infrastructure.

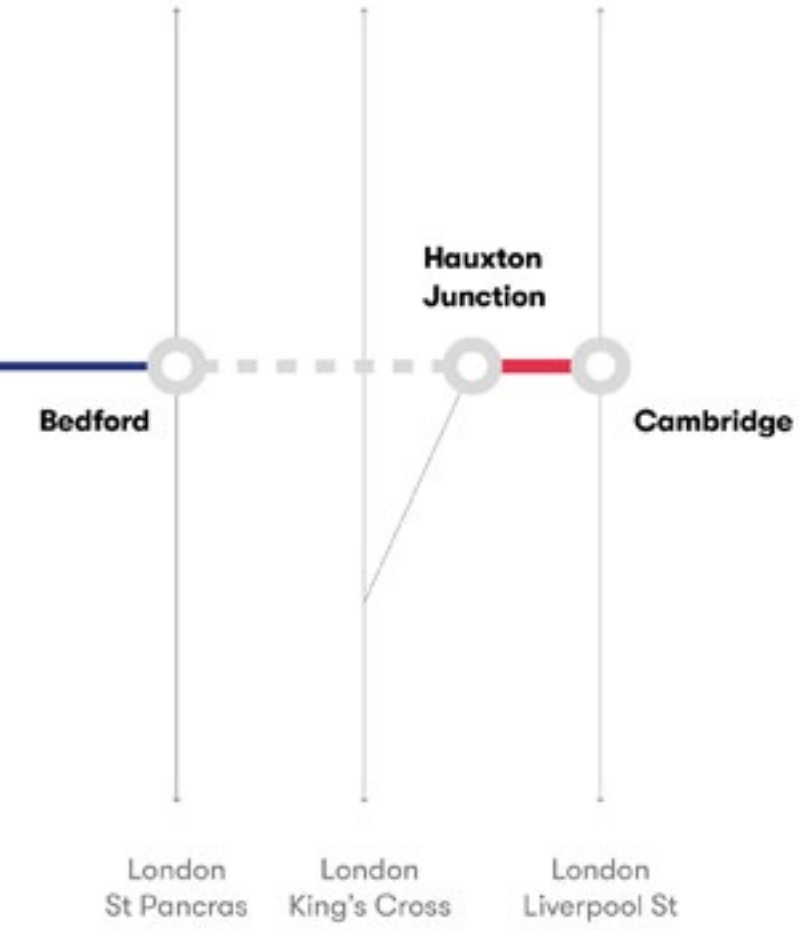
3.10.6. Whilst the objectives for EWR are focused on provision of passenger services, new infrastructure would be capable of accommodating freight trains with a height and width up to and including that required to carry full size shipping containers on standard height railway wagons, and with a length of up to 775m. The maximum gradient of the railway would be no steeper than 1 in 80 to allow most types of freight train to use the railway without significant risk of operating at such slow speeds that passenger trains might be delayed. New passing loops would only be provided if demonstrated to be affordable and value for money, including evidence of future growth in demand.

3.10.7. It is reasonable to expect that there will be demand for freight paths on the new railway between Bedford and Cambridge. The extent of this demand, and the actual number of freight trains that would run between Bedford and Cambridge, would be dependent on additional changes to the existing railway network, such as alternative connections to and from EWR at Bletchley and Bedford, which do not currently form part of the Project. Network Rail has advised




| Oxford North to Gavray (sum of both directions) | | Gavray to Bletchley (sum of both directions)* | | Bletchley To Bedford (sum of both directions) | | Hauxton to Cambridge (sum of both directions) | |
|---|---|---|---|---|---|---|---|
| Paths/day | Paths/hour | Paths/day | Paths/hour | Paths/day | Paths/hour | Paths/day | Paths/hour |
| 49 | 2.7 | 23 | 1.3 | 5 | 0.3 | 9 | 0.5 |

Figure 3.2: 2024 Freight Paths[17]




that, if these additional changes to the existing railway network are made, there may be demand by 2043/2044 for around 24 freight trains per day in each direction, which equates to about 1.3 freight trains per hour in each direction if they were spread across an 18-hour operational day. This is based on unconstrained growth forecasts and it has not yet been decided whether EWR will provide the capability (i.e. necessary infrastructure) to meet this demand. As discussed in Project Section D (9.2.9), the design of the infrastructure has taken a reasonable worst-case approach to considering the number of passing loops that may be required. Passing loops are allowed for at two locations, with a passing loop either side of the main route at each location.

3.10.8. Further detail will be provided on the freight strategy, and the approach to avoiding or reducing potential impacts from freight trains which may run on EWR, at the Statutory Consultation.

[19] Path data provided by Network Rail (2020)

## 3.11 Depots and stabling

3.11.1. Stabling and depot facilities are required along the Route Alignment to facilitate the maintenance and storage of infrastructure and rolling stock. Three types of stabling or depot site have been identified which are detailed below.

### Infrastructure maintenance depot(s)

3.11.2. One or more depots could be needed to store materials, equipment and rolling stock needed to maintain the railway. These depots would need to be connected to the railway. When identifying suitable depot locations, potential impacts on local communities and the environment will be considered, as well as operational requirements.

### Rolling stock maintenance depot

3.11.3. This depot is needed to carry out maintenance of the passenger trains for the railway. The current assumption is that Bletchley Train Maintenance Depot, an existing depot facility, will be modified and used as the main depot location for the EWR fleet. Currently, the scope of work for the depot is being jointly designed, developed and delivered with West Midlands Trains, the Depot Facility Owner, and it is assumed that this will be carried out using existing powers available to Network Rail and the Depot Facility Owner (Permitted Development Rights).

### Train stabling location(s) or sidings

3.11.4. Train or rolling stock sidings provide space to store trains when they are not in use, such as overnight, and for carrying out light servicing activities. These sidings would need to be connected to the railway and have provision for various activities for example interior and exterior cleaning of the trains, refilling water tanks and servicing the train toilets. When identifying suitable locations for sidings, potential impacts on local communities and the environment have been taken into account, as well as operational requirements.

3.11.5. Currently we believe that the most suitable location for stabling some of EWR's trains is in the general Cambourne area. We would try to avoid impacts on the existing community when we are deciding where this would go. Further details will be shared during the Statutory Consultation when the alignment of the Project in that area has been established.

## 3.12. Telecommunications

3.12.1. Telecommunications masts are likely to be placed along the new railway between Bedford and Cambridge where essential to support the operation of the railway. As design progresses EWR Co will be mindful of the impacts of telecommunication masts and would consider environmental issues and local communities when choosing where to place them. Details about the placement of telecommunications masts will be provided at the Statutory Consultation.

# 04.
# Additional works and construction

## 4.1. Chapter summary

**4.1.1. This Chapter outlines the works needed to highways, other Public Rights of Way (PRoW), private access roads and utilities as a result of construction of the railway, and how EWR Co would construct all elements of the Project.**

## 4.2. Additional works

### Introduction

4.2.1. To meet the Project Objectives, the Project would need to include further works in addition to those needed to deliver the railway, in particular works to highways, PRoW, private access roads and utilities. As is usual for this stage of project development, consideration of these works is still at an early stage, so assumptions have been made in developing the options presented in this non-Statutory Consultation. The need for additional works, their extent and design will be examined in more detail at the next stage of design and will be contained in the proposals presented at the Statutory Consultation.

### Highways, PRoW and private access roads

4.2.2. EWR Co has considered the impact of the Project on existing highways, PRoW and private access roads as part of the design and assessment of Route Alignment Options for the new railway between Bedford and Cambridge. EWR Co is seeking to maintain existing highway connections wherever feasible. EWR Co is not proposing to provide any new level crossings, as explained in paragraph 3.4.2. Where it is not feasible to retain existing highways, PRoW and private access roads in their current location, EWR Co will ensure that a suitable alternative is available which minimises the impact on communities.

4.2.3. EWR Co is still considering its approach for maintaining highways and PRoW which cross the existing railway between Bicester and Bedford. Options are outlined in Project Sections A and B (Chapters 6 and 7) of this Technical Report.

4.2.4. Provision will be made during construction to maintain connections that are intended to be retained after the Project is completed, even if they have to be temporarily diverted. Arrangements for these diversions will involve discussion with appropriate parties at relevant stages with the aim of both mitigating disruption to the local community and enabling reasonable conditions for the progression of the works.

4.2.5. EWR Co will consult in more detail on proposals for individual highways, PRoW and private access roads at the Statutory Consultation.

### Statutory utility works

4.2.6. It is inevitable that in constructing a project of this type, existing underground and overhead services (such as electricity, gas, water and communications) will need to be relocated. This work is usually, but not always, undertaken in advance of the main construction works.

4.2.7. EWR Co will engage with utility companies with the aim of minimising any disruption that may be associated with utility works. This will cover both existing utility supplies to local communities and extension of services to contractor worksites. Any necessary interruptions to services will involve liaison with relevant parties in advance to discuss appropriate mitigation.

4.2.8. Designs for any utility diversions that may be required to deliver the Project

will be discussed and agreed with the relevant utility companies and will be set out at the Statutory Consultation where appropriate.

## 4.3. Construction

### Introduction

4.3.1. This part of the Chapter explains how EWR Co would construct the Project, looking to minimise disruption to local people, communities and the natural environment whilst ensuring that the works are carried out in a safe, efficient and cost-effective manner.

4.3.2. At this stage in the development of the Project, the construction methodology has not been considered in detail, so this Chapter focuses on the general principles which EWR Co expects would be applied.

### General principles

4.3.3. All major construction projects require the movement of people, equipment, and materials to and from the worksite and inevitably this will cause a degree of inconvenience to people and communities at certain stages in the delivery of the project. However, the way in which the team delivering the Project consult and engage with those affected by the works to establish ways of working that minimise inconvenience and disturbance, can have a very significant effect upon communities and their experience of the works.

4.3.4. Major construction works also present potential risks to the environment. However, again, through good planning and an effective understanding of the critical environmental issues, much can be done to mitigate the effect of construction works on the surrounding area.

4.3.5. EWR Co will ensure that the needs, expectations and concerns of the neighbouring communities and businesses are considered at every stage in the construction of this railway. This means engaging early, during the planning stages, to build up a clear understanding of what is important to local people and to develop an approach to construction which addresses the concerns that have been expressed.

4.3.6. EWR Co will employ experienced and capable contractors to construct the works and will select as its partners only those companies who can demonstrate a mature and considerate approach to delivery, considering people, communities and the environment first when deciding how to construct the works.

4.3.7. EWR Co will prepare a Code of Construction Practice (CoCP) which will set out its expectations of those it employs to deliver the works. The CoCP will provide contractors and suppliers with details of the measures, controls, and standards of work that they must follow to minimise their impacts upon existing railway users, businesses, other people and the natural and historic environment. It will also set out how they must work with local communities and their representatives throughout the construction and testing periods.

4.3.8. The CoCP will be a public document that all those with an interest in the Project will be able to access and read.

## Planning and logistics

4.3.9. EWR Co will work closely with its contractors and suppliers to plan the construction activities to minimise their impact on people, communities, and businesses and to mitigate damage to the natural and historic environment.

4.3.10. EWR Co will develop a comprehensive logistics strategy that must be adopted by all contractors and suppliers. This will enable EWR Co to plan the way in which people, materials and equipment are moved to and from the various worksites along the route of the proposed railway, working with local authorities and other developers to ensure that EWR Co's use of the local highway network is managed and to ensure that construction traffic is restricted to those routes which have the capacity to safely accommodate the additional traffic.

4.3.11. EWR Co will ensure that, wherever possible, its contractors move materials and equipment within the site itself, constructing temporary access roads to avoid using the public highway where possible and using the railway itself as a means of transporting construction materials.

4.3.12. EWR Co will encourage its contractors to make use of components which are manufactured at locations away from the construction site wherever possible, to reduce the number of activities which have to be carried out at site. This will help to minimise noise, dust and vibration whilst also being a cost-effective way to deliver. Where operations need to be undertaken on site, EWR Co will consider the noise, vibration, and other impacts that these activities might have and plan the work to minimise these effects.

4.3.13. Highway routes to and from the site will be carefully planned, in consultation with the local highway and planning authorities, and permitted routes for construction traffic will be agreed. Where it becomes necessary to temporarily close or divert a highway or other PRoW, EWR Co will communicate its plans well in advance and consult locally to ensure that suitable options have been considered. This will incorporate arrangements at level crossings, which will be managed in conjunction with planning construction logistics.

4.3.14. Construction compounds, depots and site offices will be sited at locations which take into consideration not only convenience to the Project but also locations which are able to minimise congestion, disruption and other nuisance for people and communities. Light pollution from construction compounds can sometimes be an issue and EWR Co will work with the contractors to ensure that this is avoided.

4.3.15. Where it is necessary to obtain materials for constructing railway embankments and other earthworks features EWR Co will, where possible, obtain materials from locations on or adjacent to the site rather than transporting them from remote

locations.

4.3.16. EWR Co will set the working hours within which its contractors and suppliers are permitted to carry out construction activities on site, to manage its impact on local people and communities. For example, site activities may be generally limited to the hours of 08:00 to 18:00 on weekdays and 08:00 to 13:00 on Saturdays, excluding public holidays. Occasionally EWR Co will need to work at other times, but it will always keep individuals and communities informed of any plans to do this. Exceptions to this are likely to be required where major overnight possessions of the railway or a motorway might be needed. Usually, there will be start-up and shut-down periods of no more than an hour at either end of the working day to maximise the productivity of the supply chain.

4.3.17. This is a major project which will employ a large number of people during the course of its delivery. A green travel plan will be drawn up prior to the start of main works to determine the best way for the workforce to travel to, from and around worksites. EWR Co will control the use of offsite parking to minimise the impact on residential areas and is likely deploy bus services to bring much of the workforce to site.

## Communities and people

4.3.18. EWR Co wants to minimise the impact of construction works as far as reasonably possible and will work with people, businesses and the community to thoroughly understand the issues and concerns of those people who are likely to be affected by its activities.

4.3.19. EWR Co and its contractors will deploy suitably experienced personnel whose role will be to work with the community to manage the impacts of construction. It is important that communications between the EWR Co team and the community are effective and that EWR Co's plans and activities are explained, allowing individuals and community representatives the opportunity to work with EWR Co in a proactive way to minimise disruption.

4.3.20. EWR Co and its contractors will ensure that advance notice is given of the works planned and that the scope and expected duration of the works will be explained. It will provide this information using a variety of physical and online methods and a community helpline will be set up to deal with queries on the plans. Information will also be provided using the local media and a process for handling complaints will be set up prior to the start of works.

## Impacts on the environment

4.3.21. The potential temporary environmental impacts associated with the Project will be controlled and managed through the CoCP as far as is reasonably practicable. It will outline the site controls and monitoring processes that will be implemented to protect the environment and limit nuisance. Examples of impacts to be covered are construction noise and vibration, air quality, contaminated land, ecology, historic environment, construction traffic, tree protection,

surface and groundwater management, waste management and general site operations. In addition, it will state permissible contractor working hours.

4.3.22. EWR Co will employ Best Practicable Means to minimise noise and vibration impacts during the construction phase and schedule activities which are likely to produce high levels of noise to weekday daytime hours wherever possible. Occasionally it will be necessary to work at other times and EWR Co will engage with local people and communities to agree on arrangements which are least disruptive.

4.3.23. Dust from construction activities can sometimes be a problem, particularly in dry weather, and EWR Co will work with its contractors to ensure that appropriate dust suppression measures are introduced. This will often include the use of bowsers to spray roads which are used by construction plant, but where possible EWR Co will find ways of working that minimise the amount of dust which is generated.

4.3.24. Other air quality impacts in the vicinity of EWR worksites will also be carefully controlled. EWR Co will maximise the use of sustainable energy sources to provide on-site power supplies and to minimise the use of diesel for local generation of power. It will require contractors to deploy electric vehicles and plant wherever possible. EWR Co will monitor air quality and emissions throughout the Project and will prohibit the lighting of open fires to dispose of construction waste.

4.3.25. Construction sites can often become muddy and EWR Co is conscious of the need to ensure that the surrounding road network is kept clean and free of mud from construction vehicles. It will therefore ensure that contractors deploy wheel-washing facilities at exits from EWR sites and that road-cleaning equipment is deployed on surrounding roads.

4.3.26. Vibration can sometimes be a nuisance, particularly for those residents and businesses who are closest to the worksite. Again, EWR Co will seek ways to construct the works that minimise vibration but inevitably some activities, such as piling (the construction of deep foundations for structures), will be necessary. In such instances, EWR Co will ensure that working hours are limited and that where properties are likely to be affected, surveys will be carried out to assess and manage the risk to homeowners.

4.3.27. Care will be taken to ensure that contractors work in ways which avoid risk of pollution to watercourses and groundwater. Contractors will need to demonstrate that for each activity in which there is a risk of possible pollution, they have properly assessed the risks and introduced satisfactory measures to manage those risks. This will include consideration of the methodology for that activity and the use of physical barriers to prevent the unplanned leakage of contaminants. Monitoring will be carried out to ensure that water quality is maintained, and plans will be drawn up to ensure that an accidental run-off or discharge can be mitigated quickly and effectively.

4.3.28. EWR Co will ensure that measures are in place to protect the flora and fauna of the corridor through which construction works will take place. Extensive surveys are already being undertaken to identify the species which inhabit these areas and contractors will be provided with comprehensive information on the particular species that are present and the measures that will need to be taken to protect them and their habitats. Often this will involve the use of physical barriers and occasionally will require the relocation of species to an alternative location.

4.3.29. EWR Co will take all relevant precautions to protect listed buildings adjacent to the railway, working with associated authorities to ensure compliance with regulations and best practice.

4.3.30. EWR Co will take all relevant precautions around handling materials which may have become contaminated, for example from previous industrial activities. Relevant regulations and best practice will be adhered to with regard to safe disposal of any contaminated or hazardous waste.

4.3.31. In addition to the temporary measures which EWR Co will enforce during the construction of the works, the longer-term environmental impacts will also be considered in the design solution. The design of the works, therefore, will consider specific measures to minimise the impact of the Project on the surrounding environment – for example the use of landscaping and screening to minimise visual intrusion, and bunds or noise barriers to reduce railway noise.

## Works on existing railways

4.3.32. The Project works will affect different sections of the existing railway network to varying extents. EWR Co will plan all works at the major stations including Oxford, Bedford and Cambridge such that reasonable and safe access can be maintained for the travelling public. Works are anticipated to make use of times when fewer trains are running, for example at night and over weekends and public holidays.

4.3.33. Other examples of works interfacing with existing railway operations are the likely rearrangement of Thameslink train stabling close to Bedford station, and the junction with the Shepreth Branch Royston (SBR) line (the line between Cambridge and Hitchin via Shepreth). The interface with the East Coast Main Line (ECML) will also be complex and important to manage. Due consideration of relevant factors for these and other existing railway activities will be explored and consulted upon with associated organisations before decisions are made; these plans often need to be developed well in advance to gain maximum efficiencies with other railway works.

4.3.34. Opportunities are being sought to establish how best to access the Project works via the existing railway network and thus reduce the amount of construction road traffic required. As an example, rail-connected materials facilities in the Bletchley area could serve the construction both east of Bletchley, in Project Section B, as well as to the west in Project Section A. The impact of modifying existing trackside facilities on other parties will be weighed up with the merits of establishing totally new facilities which may have less impact on third parties but possibly attract higher set up or maintenance costs.

4.3.35. The impact of all works on the live railway is considered for all construction stages. This is because it is difficult to carry out works to a functioning railway line without effects on safety and the timetable of trains that are using it. The easiest way to manage these key interfaces is through periods of time when the railway is closed to public trains, sometimes just locally. These periods are sometimes referred to as “possessions” or “blockades” depending upon their duration.

4.3.36. Studies are being undertaken to explore the optimum number and length of railway closures bearing in mind the impact on local communities and overall costs and timetable. The following paragraphs outline how the proposals are being developed.

4.3.37. The works on the existing Marston Vale Line between Bletchley and Bedford consist of an upgrade to the existing line, potential rationalisation and configuration of stations, and dealing with existing level crossings so that planned train paths and line speed increases can be accommodated. These works will require access to the railway infrastructure across one or more significant periods, the length of which will vary based on how construction is ultimately planned to proceed.

4.3.38. There are many factors to consider in deciding the nature of railway closures for construction works. One aspect is the time taken to establish a safe working environment and then to return it as a safe operational railway at the end of the period; another is the level of disruption to railway users if trains are cancelled or replaced temporarily by other transport modes (such as buses, which may themselves be delayed or disrupted by project works on public highways). Noise from construction activities during unsociable hours and various costs are potential factors too. Periods of closure can be anything from a few hours long overnight to many months and even in excess of a year. One option being considered for works on the Marston Vale Line is to close much or all of it over an extended period so that works can be carried out as efficiently and quickly as possible and thus minimise the overall period of disruption along the length. The merits of this are being considered, across many factors, versus using a number of shorter closures. Multiple parties will be engaged before deciding on the eventual strategy for temporary closures to undertake works on the Marston Vale Line.

## Working with other scheme promoters

4.3.39. It is almost inevitable that other construction works will be undertaken in the same general corridor as EWR during the period of construction. EWR Co will work with local authorities and other scheme promoters to ensure that works are coordinated and that the combined impacts are minimised.

4.3.40. EWR Co is already engaging closely with High Speed 2 and Highways England (HE) in relation to their schemes in the region to ensure that works are coordinated and the cumulative impacts of development are controlled.

4.3.41. HE is promoting a scheme to extend the A428 trunk road between the A1 Black Cat Roundabout, to the north-east of Bedford, with the existing trunk road at Caxton Gibbet. EWR Co is, as described elsewhere in this report, considering Route Alignment Options which follow this corridor and is working closely with HE to identify opportunities to work in ways which reduce the cumulative impact of the two projects. This is likely to include plans to coordinate works done to relocate statutory utilities and in the overall sequencing of construction activities.


Woburn Sands station

# 05. Approach to developing the designs

## 5.1 Chapter summary

**5.1.1. This Chapter describes the approach EWR Co has taken to developing the designs for the Project.**

**5.1.2. It explains the Assessment Factors which form part of the design development process and have been used to assess the performance of options that are presented in this report. They provide a consistent framework and basis for decision-making around design options and a framework for identifying preferred options. The Chapter explains why the Assessment Factors are needed and describes what they cover. It also summarises how the Assessment Factors have been applied in each of the Project Sections A to F.**

**5.1.3. The Chapter then sets out how options have been developed, discussing first the approach to developing options that upgrade existing railway in Project Sections A and B (from Oxford to Bedford), then the approach to developing options for the new infrastructure (Project Sections C, D and E from Bedford to Hauxton Junction), and finally, the approach to developing Project Section F (from The Shelfords to Cambridge).**

## 5.2. Assessment Factors

### Approach and history

5.2.1. **Why and what**: In order to ensure the options being developed and consulted on meet the Project Objectives, and that there is a robust evidence base and consistent approach supporting decision-making, a range of Assessment Factors have been developed. Assessment Factors are a set of topics in relation to which relative performance of options can be compared. The Assessment Factors (and underlying Considerations that support them) are listed in paragraph 5.2.10, and further details are available in Appendix C. The outcome of the appraisal of options against each Assessment Factor is presented in each Project Section Chapter (Chapters 6 to 11).

5.2.2. **Considerations**: Each Assessment Factor is supported by a number of 'Considerations' that represent particular aspects or issues relating to that Factor. Each Consideration is examined individually; for a given Assessment Factor the performance of an option against each of the relevant Considerations is considered in the round (with no particular weighting applied) and forms the basis for drawing conclusions on overall performance against that Assessment Factor. Further details of Considerations and the assessment approach are contained in Appendix C.

5.2.3. **Application**: The Assessment Factors can be applied to the new infrastructure and changes to existing infrastructure. Alternatives that do not meet the DfT's Programme Wide Output Specification (PWOS), a series of objectives that ensure the Project meets the DfT's 'Sponsor's Requirements', or that are likely to perform worse against the Assessment Factors, may in some cases be discounted prior to applying Assessment Factors. Remaining options have been assessed against the Assessment Factors to determine how well they perform. All Assessment Factors are taken into account, although some may assist to a greater extent than others in differentiating between options. Where that is the case, this is clearly noted.

5.2.4. **Approach to assessment**: Where assessments have been undertaken, technical experts have made qualitative assessments of the performance of options against Assessment Factors using some supporting quantitative indicators. The assessment was undertaken by experts for each Assessment Factor and were checked by a reviewer. The results were then reviewed as a whole by the multidisciplinary project team to ensure a consistent approach as far as possible and proportionality. In preparing for the Statutory Consultation and Outline Business Case submission to the Government, which will show the case for the preferred option, further quantitative analysis will be undertaken.

5.2.5. **Reference Case**: Where there are options to choose between, each option is compared on a consistent basis. This requires a reference option against which to assess its performance. Where there is an existing scenario such as an existing railway line, then this forms the reference option. However, where there is no comparable existing scenario, a reference option is used that is derived from an initial engineering proposal. A scenario of 'no railway' is not used to compare against because the comparison across options (the focus of this stage of project development and this report) would not differentiate between options. Alternatives can be compared with the reference option to establish whether the alternatives perform better, the same, or less well than the engineering proposal contained in the reference option. This comparison against a reference option is used in presenting options in Project Section D (Clapham Green to The Eversdens) and Project Section E (Harlton to Hauxton).

5.2.6. **Other schemes in the Reference Case**: The options have been assessed on the basis that other identified and planned infrastructure changes will have gone ahead (or will be progressing) as planned. For example, it is assumed that the Highways England A428 Improvement Scheme between the A1 Black Cat roundabout and Caxton Gibbet will be underway and that EWR infrastructure enabling services from Oxford to Milton Keynes, and the Cambridge South Station scheme, are progressed as planned.

5.2.7. **Differentiators**: How every Assessment Factor may apply has been or will be considered for every option assessed. In many cases, the performance of alignment options may be closely clustered for a given Assessment Factor. In those circumstances, the appraisal of the Assessment Factor in question does not assist in differentiating between alignment options. This report focuses on those Assessment Factors that differentiate or will assist in differentiating between options. Therefore, Assessment Factors that do not differentiate significantly (i.e. are more or less the same for all options) are not generally presented in this report, which is explained in each Project Section Chapter (Chapters 6 to 11).

5.2.8. **Weight**: The Assessment Factors and the Considerations that underpin them will all be taken into account in relation to decisions made in respect of EWR. In addition, decisions will take account of responses to consultation and other representations, as well as any other important and relevant considerations that come to light. When taking Assessment Factors and other matters into account, some Assessment Factors will be more useful in making decisions – these are differentiators. This is because they allow decision-makers to distinguish between options where the application of Assessment Factors has not produced a clear preferred option. Among these, there may be different performance between options so that one may perform better than another in relation to one Assessment Factor, but less well in respect of a different Assessment Factor. To resolve this, some Assessment Factor results may be

attributed greater weight than others because they are considered to be particularly important. This weighting considers the purpose of EWR, the Project Objectives and outcomes of previous consultations. A decision-maker (like EWR Co, in making its recommendation) and the Secretary of State (in making a decision) can apply weight to Factors in this way, and the amount of weight it decides to apply is a matter of discretion. It may be the case that lesser or greater weight would be applied to one or more Factors depending on the element of the Project being considered. Where weighting has been applied in decision-making this is explained in the relevant Chapter.

5.2.9. **History**: The Assessment Factors have been agreed with the Government and are designed to apply throughout the development of EWR. For the new infrastructure between Bedford and Cambridge, the same Assessment Factors were used to decide upon Route Option E (see map in Figure 5.3 below) as the Preferred Route Option to ensure consistency in decision-making. As the design for the new infrastructure has moved on a stage, the information and Considerations supporting each factor are more detailed (for example vertical and horizontal alignment design enabling earthworks quantities to be estimated which leads to improved cost estimation accuracy).

## The Assessment Factors

5.2.10. The full list of Assessment Factors is given here with further detail in Appendix C:

- Transport user benefits – the benefits experienced by passengers particularly in terms of journey time savings and modal shift (where users change the mode of transport they use to make a journey);
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land;
- Capital costs – the upfront costs, including consideration of risk, to implement each option;
- Operating costs – the costs incurred in the delivery of the train service;
- Overall affordability – the financial implications of the options in terms of costs and incomes, over the whole life of the railway, also encompassing capital and operating costs;
- Short distance connectivity to support commuting travel into key employment hubs (current and future);
- Short distance passenger services;
- Rail passenger connectivity to existing main lines – the ease of interchange;
- Long distance passenger services – the extent to which EWR facilitates long distance passenger services beyond Oxford and Cambridge;
- Satisfying existing and future freight demand;
- Performance – the ability of the railway to meet or exceed customer expectations in terms of service reliability;
- Alignment with wider railway strategy / infrastructure;
- Safety risk (construction and operation);

- Environmental impacts and opportunities; and
- Consistency with Local Plans[20].

## Application of the Assessment Factors

5.2.11. This Technical Report presents options at varying stages of development and Assessment Factors apply in different ways according to the stage of development.

5.2.12. In Project Sections A, B and the Bedford St Johns and Bedford station parts of Project Section C, designs are at an early stage of development. Although there are emerging options and a narrative is provided around potential performance against differentiating Assessment Factors (or what the differentiating Assessment Factors may be where options are far enough advanced to do this) a full appraisal against Assessment Factors has not yet been completed. This will take place in continuing design of the Project, with the outcomes being presented for consultation when the Statutory Consultation takes place. In respect of those options, consultation presents information that is available, the initial thinking developed by EWR Co and the Considerations and Assessment Factors that seem likely to inform differentiation and decision-making between emerging options. The outputs from the further development of the options will be presented at the Statutory Consultation.

5.2.13. In the North Bedford part of Project Section C, the need to balance the objectives of the railway against EWR Co's aim to avoid or minimise residential land acquisition and the demolition of properties is such that all options are presented and discussed using differentiating Assessment Factors. Discounted variants of the options are presented and explained in relation to the Assessment Factors. A single preferred option is emerging as the best performing option.

5.2.14. For Project Sections D and E (Clapham Green to The Eversdens and Harlton to Hauxton), the Assessment Factors have been applied to the options presented in this report and they are discussed in full in Chapters 9 and 10.

5.2.15. For Project Section F (The Shelfords to Cambridge Station) Assessment Factors have not been considered because the option decisions are likely to rest on operating constraints and the constraints of the existing Network Rail infrastructure.

[20] This has been expressed previously (in the Preferred Route Option Report and the 2019 Consultation Technical Report) as "Consistency with plans for the location of settlements"

## 5.3. Developing designs in Project Sections A and B: identifying the need for upgrade works (Oxford to Bedford)

5.3.1. EWR Co has examined the capabilities of the existing railway infrastructure between Oxford and Bedford (including those elements of it that are currently being constructed to provide the Oxford to Milton Keynes services, the subject of the 2020 Order) and compared this to infrastructure required to deliver the level of services that are planned between Oxford and Cambridge reliably and safely. Those services are derived from the Project Objectives described in Chapter 3 above.

5.3.2. This work included considering capacity, potential services, the condition of the existing infrastructure and undertaking safety risk assessments. In addition, the current use of the railway was reviewed and potential demand for rail services in the area that EWR will serve was considered. In doing this, planned housing (and other) development in the areas served by the existing railway was taken into account.

5.3.3. This process has identified the need for a number of changes to the railway between Oxford and Bedford, including stations, level crossings and railway infrastructure to make it suitable for its future role to ensure:

- The railway has adequate capacity for additional EWR services;
- EWR services can operate reliably and not interfere with other services already operating (or proposed to operate) at key node points along the Route Alignment, such as at Oxford, Bedford and Cambridge;
- Existing freight services that use the Marston Vale Line can continue to operate;
- EWR services offer attractive journey times consistent with the business case for the EWR Project; and
- That stations along the Route Alignment provide appropriate facilities for the numbers of people that are expected to use them, the types of journeys those people are expected to make and that meet the Project Objectives.

5.3.4. Using the outputs of this consultation, EWR Co will further develop options where needed and identify a preferred option for each Project Section to be presented in the Statutory Consultation.

## 5.4. Developing designs in Project Sections C, D and E: new railway development from Bedford to Cambridge

5.4.1. The proposed new railway to connect Bedford and Cambridge (Project Sections C, D and E) has been developed sequentially.

5.4.2. The option development process for the new railway from Bedford to Cambridge described above is summarised in Figure 5.1.

5.4.3. The remainder of this Chapter covers:

- an explanation of how the Preferred Route Option (Route E) for the new railway between Bedford and Cambridge was selected;
- How an initial proposal for an alignment was identified within Route Option E and the process to develop the new railway alignment options presented in this report.

Figure 5.1: Design Development and DCO Process Summary for Bedford to Cambridge

## Process for selecting the Preferred Route Option – Route E

5.4.4. Network Rail developed the Project in the earlier stages prior to EWR Co being established in 2017. Network Rail initially identified twenty potential broad 'Route Corridors' which could serve a new east-west railway between Bletchley and Cambridge, spanning the broad area between St Albans and Harlow to Peterborough. After appraising the potential Route Corridors against the initial strategic objectives, five corridors were taken forward for further work. A quantitative assessment of the potential costs and benefits of these five corridors was undertaken before Route Corridor C via the broad area around Sandy, shown in Figure 5.2, was selected as the Preferred Route Corridor in 2016 [21].

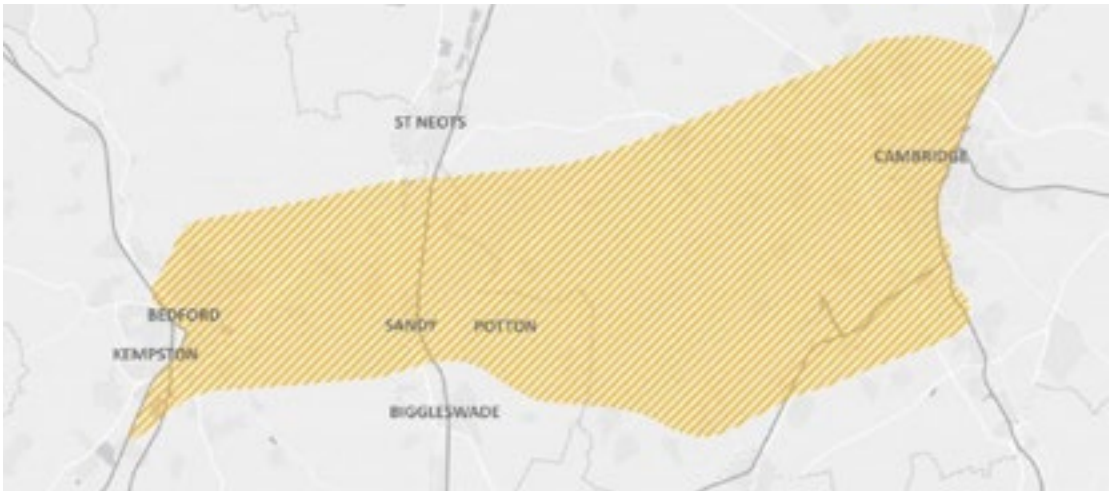



Figure 5.2:
Route Corridor C

5.4.5. 'Route Options' were then developed within the Preferred Route Corridor. Route Corridor C covered a wide area (up to 15km) through which the railway would run, allowing various possibilities to be explored. For example: Route Options to the south via the Bassingbourn area or to the north near Cambourne; potential station locations both north and south of Cambourne; and a choice of approaches to Cambridge which could be from the north, west or south.

5.4.6. As part of the Route Option development process, Network Rail and EWR Co considered how the three different potential approaches to Cambridge compared and how they performed when considered against the Strategic Objectives at that stage of the design. This analysis concluded that an approach into Cambridge from the south should be preferred and a final shortlist of Route Options was prepared on this basis.

[21] The Preferred Route Corridor covered a wide area (up to 15km) through which the railway would run.

5.4.7. Using the Strategic Objectives for EWR and the set of route selection Assessment Factors agreed with the Department for Transport (DfT) and local stakeholders, eleven potential Route Option areas within the Preferred Route Corridor C were identified. Six of these eleven Route Options were not taken forward on the basis that they performed less favourably than the other five Route Options against the Assessment Factors and offered no additional benefits.

5.4.8. The five remaining Route Options were included in EWR Co's initial non-Statutory Consultation between January and March 2019. Two of these – Route Options B and E – would serve Cambourne and an indicative station location was assumed provided on the south side of the town near Caxton. This indicative location was identified in part because a station location north of Cambourne would have required the railway to cross the A428 – at least once in order to approach Cambridge from the north and twice in order to approach Cambridge from the south – which would add both complexity and cost to the Project's design, construction and maintenance.

5.4.9. The Technical Report supporting the 2019 consultation also set out the reasons why approaches to Cambridge from the north had been previously ruled out by Network Rail. Respondents were invited to give their views on whether they agreed that EWR Co was right to prioritise Route Options that approached Cambridge from the south rather than from the north on this basis. Responses to this question were evenly split both ways and a significant proportion of respondents took a neutral position.[22]

5.4.10. EWR Co's further analysis after the consultation focused on how the Route Options performed against the Assessment Factors that were identified as being most likely to differentiate between Route Options. They were reported[23] in the following way in the Preferred Route Option Report[24]:

- **Benefits for transport users** – the potential benefits from improved journey times, lower fares and less road congestion;
- **Supporting economic growth** – the potential wider employment and productivity benefits of improved east-west connectivity;
- **Supporting the delivery of new housing** – the opportunity for stations served by EWR to support housing growth within their catchment areas;
- **Capital and operating costs and overall affordability** – the expected upfront capital costs, whole life and operating costs, and revenue streams associated with EWR; and
- **Environmental impacts and opportunities** – the key environmental features which fall within the boundaries of each route option and associated challenges and opportunities.

[22] https://eastwest-rail-production.s3.eu-west-2.amazonaws.com/public/ListsBlock-Media/66959d6763/Preferred-Route-Option-Announcement-Public-Feedback-Report.pdf

[23] The titles of these Assessment Factors, as reported in the Preferred Route Option Report, are slightly different to the Assessment Factors listed above in paragraph 5.2.10. However, the underlying content of the assessment was the same, and the outcome is the same, as if they had been titled in the same way as paragraph 5.2.10. The "Contribution to enabling housing and economic growth including best serving areas benefitting from developable land" factor (para 5.2.10) was divided and reported under two headings: "supporting economic growth" and "supporting the delivery of new housing". This is because there are two separate approaches to analysing these (as set out in DfT's Transport Appraisal Guidance – relating to 'Level 2' and 'Level 3' stages of analysis and benefits capture).

[24] Preferred Route Option Report

5.4.11. In relation to costs, the Consultation Document noted[25] that at that early stage, costs estimates were indicative only. The Consultation Document relied on estimates provided by Network Rail based on information that was available at the time[26]. These indicative upfront construction costs ranged from £2.0 billion[27] (for Route Option A) to £3.4 billion (for Route Option E). These costs would continue to be developed, as the Consultation Document explained: "Cost estimates will continue to be refined as route development work progresses towards identifying a final Preferred Route Alignment."[28]

5.4.12. Following the consultation, the cost estimates continued to be updated and revised by Network Rail. Estimates were also prepared by Atkins, an independent consultant retained by EWR Co. In particular, they were updated to include[29]:

- More detailed consideration of how environmental and heritage risk areas could be avoided, and the potential additional land requirements for ecological habitat creation and relocation;
- Consideration of how properties and buildings could be avoided to minimise adverse impacts on local communities and land acquisition and compensation costs;
- An assumption that viaducts would be required to mitigate known areas of floodplain risk in advance of detailed flood risk assessments; and
- Seeking to respect existing rights of way by including provision to maintain access through appropriate structures (e.g. bridges, underpasses).

5.4.13. This was a conservative approach which resulted in the indicative estimates of upfront capital costs being revised upwards, ranging from £3.6 billion[30] (for Route Option A) to £4.3 billion (for Route Option C). The further development work also resulted in changes to the relative costs of each option, with Route Option E now having an estimated upfront capital cost of £3.7 billion. The five Route Options ranked in the same order for both the Network Rail and Atkins sets of estimates.

5.4.14. Following consideration of the consultation feedback and the further analysis of each Route Option including the most up-to-date cost estimates, EWR Co identified Route Option E (shown in Figure 5.3) as its recommendation for the Preferred Route Option for the new section of railway between Bedford and Cambridge. Having considered EWR Co's recommendation, the Secretary of State announced Route Option E as the Preferred Route Option on 30 January 2020. The analysis and assessment work that led to EWR Co making its recommendation was presented in the Preferred Route Option Report published in January 2020.[31]

[25] See page 12 of the 2019 Consultation Document
[26] See page 59 of the Preferred Route Option Report
[27] These figures are real values (adjusted for inflation) in 2015 prices, and do not account for discrepancies in price inflation between construction and the general economy
[28] See page 59 of the Preferred Route Option Report
[29] See page 59 of the Preferred Route Option Report
[30] Preferred Route Option Report see page 15, real values (adjusted for inflation) in 2015 prices, and do not account for discrepancies in price inflation between construction and the general economy
[31] For further detail, please see the East West Rail Bedford to Cambridge Preferred Route Option Report, found here: https://eastwestrail-production.s3.eu-west-2.amazonaws.com/public/Preferred-Route-Option-Announcement/a72dbd2d81/Route-Option-Report.pdf

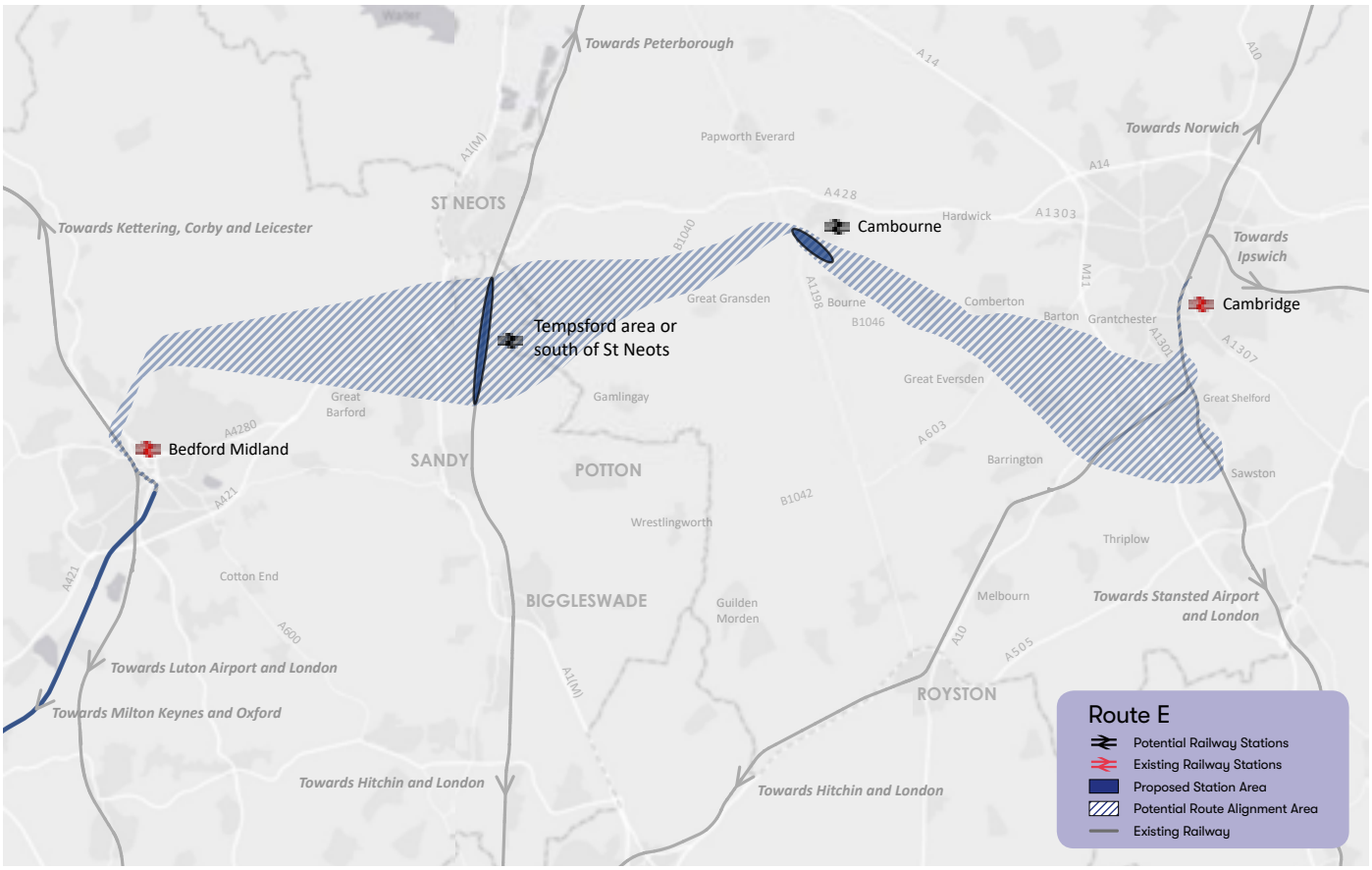



Figure 5.3: Broad area for the preferred route between Bedford and Cambridge (Route Option E)

5.4.15. EWR Co's analysis concluded that when considering differentiating factors, Route Option E was most likely to deliver against the strategic objectives for EWR and provide the best overall value for money for the Government's investment in the railway.

5.4.16. The key reasons why Route Option E was identified as being the Preferred Route Option are presented below, with more detail available in the Preferred Route Option Report[32]:

- It achieved the highest score based upon responses to the 2019 consultation on four out of five key criteria: benefits for transport users, environmental considerations, supporting economic growth and supporting new homes;
- Taking a route via Cambourne offers the greatest opportunity to avoid the most environmentally challenging areas and potential direct impacts on irreplaceable or sensitive environmental features, including heritage assets, with good opportunities to achieve biodiversity net gain;

[32] For further detail, please see the East West Rail Bedford to Cambridge Preferred Route Option Report, found here: https://eastwestrail-production.s3.eu-west-2.amazonaws.com/public/Preferred-Route-Option-Announcement/a72dbd2d81/Route-Option-Report.pdf

- New links to Thameslink and the Midland Main Line (MML) at Bedford, the East Coast Main Line (ECML) in the vicinity of Sandy/St Neots and the West Anglia Main Line (WAML) in Cambridge will provide convenient additional inter-regional connectivity for people, making it easier to get to towns and cities like Kettering, Leeds, Norwich, Ipswich and Nottingham;
- By serving Bedford station it provides easy connectivity into Bedford town centre and provides an opportunity for other bodies such as Bedford Borough Council to bring forward regeneration plans in this area of Bedford;
- It also connects the growing population of Cambourne with environmentally sustainable transport and could integrate with proposed improvements to the local transport network in south Cambridgeshire such as the busway extension and Cambridgeshire Autonomous Metro;
- The Route Option could support much needed development of more affordable housing in areas including Bedford, between Sandy and St Neots and at Cambourne; and
- Most responses from local authorities in the Bedford to Cambridge area supported this route.

## Generating alignment options from selection of Route Option E

5.4.17. Following the identification of Preferred Route Option E, alignment options were generated in three stages.

5.4.18. First, an initial design proposal provided a "Route Option E Indicative alignment". This Route Option E Indicative Alignment was developed to test the viability of how to connect Bedford to Cambridge within the Route Option Area using desktop data that allowed the environment and heritage features to be understood and taken into account early in the design lifecycle. Data on built-up areas was also gathered, as well as the location of roads and Public Rights of Way (PRoW) enabling these considerations to inform the Route Option E Indicative Alignment. This allowed key risks and opportunities to be identified early which could then be used as the basis for work in the next design phase.

5.4.19. Second, the Route Option E Indicative Alignment went through a phase of design updates (Value Management). These updates began to improve the alignment's design in relation to its operational characteristics and impact on the landscape. This resulted in a "value managed alignment".

5.4.20. Third, the value managed alignment was used as a basis to generate new Route Alignment Options through three key steps:

- Consideration of emerging requirements for operations and maintenance, including provision of passing loops;
- Identification of hotspots and opportunities to drive improvements and optimisation of the Route Alignment Options; and
- Consideration of potential station locations.

5.4.21. The development of options included consideration of:

- Indicative locations and potential requirements for passing loops, using design parameters that would facilitate the loops being capable of accommodating freight services;
- Indicative locations and potential requirements for connections between the tracks to improve operational flexibility; and
- Indicative track options at the interfaces with existing Network Rail infrastructure (i.e. junction arrangements).

5.4.22. The activity to identify hotspots (areas of critical engineering or environmental constraints or areas where there were multiple constraints in close proximity to the alignment being developed) and opportunities for improvements resulted in refinements such as:

- Reducing skew, which is the angle at which one railway crosses another, over the ECML and other major infrastructure crossings (reducing skew reduces design and construction complexity making it quicker and cheaper to build);
- Providing a sufficient length of straight track through the potential stations to ensure that stepping distances from platforms to trains are minimised;
- Consideration of clearances over highways and watercourse crossings; and
- Further avoidance of environmental, heritage and community assets.

5.4.23. In some cases, addressing hotspots was realised through refinement of the Route Alignment Options. In other cases, new Route Alignment Options emerged through the process of identifying solutions to the hotspots.

5.4.24. This process resulted in the identification of the Route Alignment Options described in Chapter 8 (Project Section C: Bedford), Chapter 9 (Project Section D: Clapham Green to The Eversdens) and Chapter 10 (Project Section E: Harlton to Hauxton).

5.4.25. Alignment options were generated from the Route Option E Indicative Alignment. The subsequent options are an improvement from it, better meeting operational requirements and taking account of hotspots and opportunities.

5.4.26. In addition, as part of the Route Alignment option development process, EWR Co has examined the potential performance of alignments following the route of the A428 Improvement Scheme being promoted by Highways England between Black Cat and Caxton Gibbet. The preferred alignment for this Scheme had not been announced when the Preferred Route Corridor was selected or the Route Options were being developed.

5.4.27. The preferred alignment was confirmed by Highways England in February 2019 – part way through EWR Co's 2019 consultation on the Route Options – and differed from the options that Highways England had previously published. The preferred alignment selected for the A428 Scheme is largely located on land just to the north of the Preferred Route Corridor. As a result, this land also lies outside all five of the short-listed Route Option areas included in EWR Co's 2019 consultation.

5.4.28. In light of the new information from Highways England and following comments received from respondents during the 2019 consultation regarding the A428 Scheme, EWR Co has considered how potential alignments in this area might perform compared to alignments wholly within the Preferred Route Option area.

5.4.29. Moreover, if an alignment that runs to the north of the A428 Scheme is selected, this would remove the need for at least one of the potential crossings of the A428 required in order to serve a station located north of Cambourne. As a result – and also following stakeholder feedback – EWR Co has considered potential station locations to the north and to the south of the town, both of which would remain proximate to the Preferred Route Corridor E area.

5.4.30. Should a station be provided at Cambourne North rather than Cambourne South potential alternative options for accessing Cambridge (assumed from the south) may exist.

5.4.31. For completeness, EWR Co has assembled up-to-date information about a northern approach into Cambridge in case this would change conclusions that a southern approach to Cambridge should be favoured, especially in light of a

station location to the north of Cambourne. The information continues to favour a southern approach strongly, and EWR Co remains of the view that a southern approach into Cambridge is preferable to a northern approach. The analysis of the performance of a northern approach to Cambridge and the consequences for the design of the Project is contained in Appendix F to this Technical Report.[34] The matters on which EWR Co is seeking views include that the advantages of approaching Cambridge from the south is the better option and that a number of challenges remain for a northern approach even with a Cambourne North station.

## Selecting preferred station and alignment options

5.4.32. The outputs of this consultation will be considered before a preferred alignment is recommended to the Secretary of State for Transport. The preferred alignment will then be subject to further design and will be the subject of the Statutory Consultation.

## Developing designs in Project Section F: the Shelfords to Cambridge station

5.4.33. In this Project Section Network Rail is the infrastructure owner and is developing infrastructure solutions in the area for a number of schemes, notably the development of the Cambridge South Station scheme. Therefore, EWR Co has worked with Network Rail and identified further enhancements that would be required to also accommodate EWR services into Cambridge station. These enhancements are being driven by operational need. A key element of these operational assessments is understanding what services use the existing infrastructure today, what is proposed in the future and what impact the introduction of EWR services have on these services. This drives the identification of the infrastructure changes that are required, including changes to Cambridge Station.

[34] Further detail regarding the review – including analysis of the constraints, challenges and opportunities for both northern and southern approaches – is set out in Appendix F of this report.

# 06.
# Project Section A: Oxford to Bicester

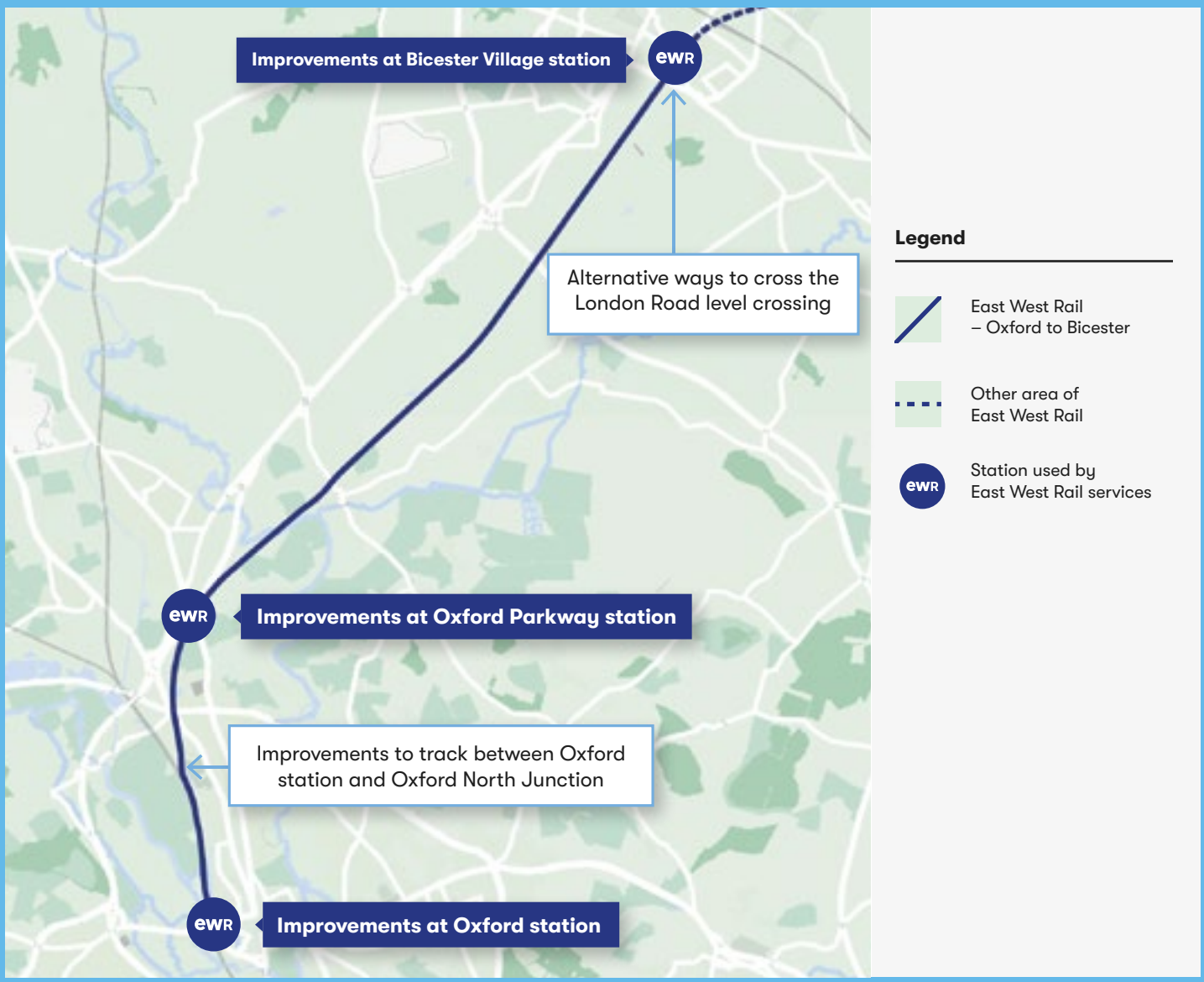



Figure 6.1: Oxford station area

## 6.1. Chapter summary

**6.1.1. This Chapter describes the proposals for the section of the Project between Oxford and Bicester.**

**6.1.2. Changes may be required to the existing railway in the Oxford area, to facilitate EWR services. This Chapter sets out the options and key issues that are being considered by EWR Co for this area.**

**6.1.3. The Chapter goes on to address the potential need for modifications at Oxford Parkway and Bicester Village stations and the key constraints that need to be considered in planning for EWR services.**

**6.1.4. EWR Co is looking at the implications of increased train services on the operation of the level crossing at London Road in Bicester. The Chapter describes the issues that are being considered and sets out six high-level conceptual options for this location. It also explains the site-specific factors that will be taken into account as those concepts are developed further.**

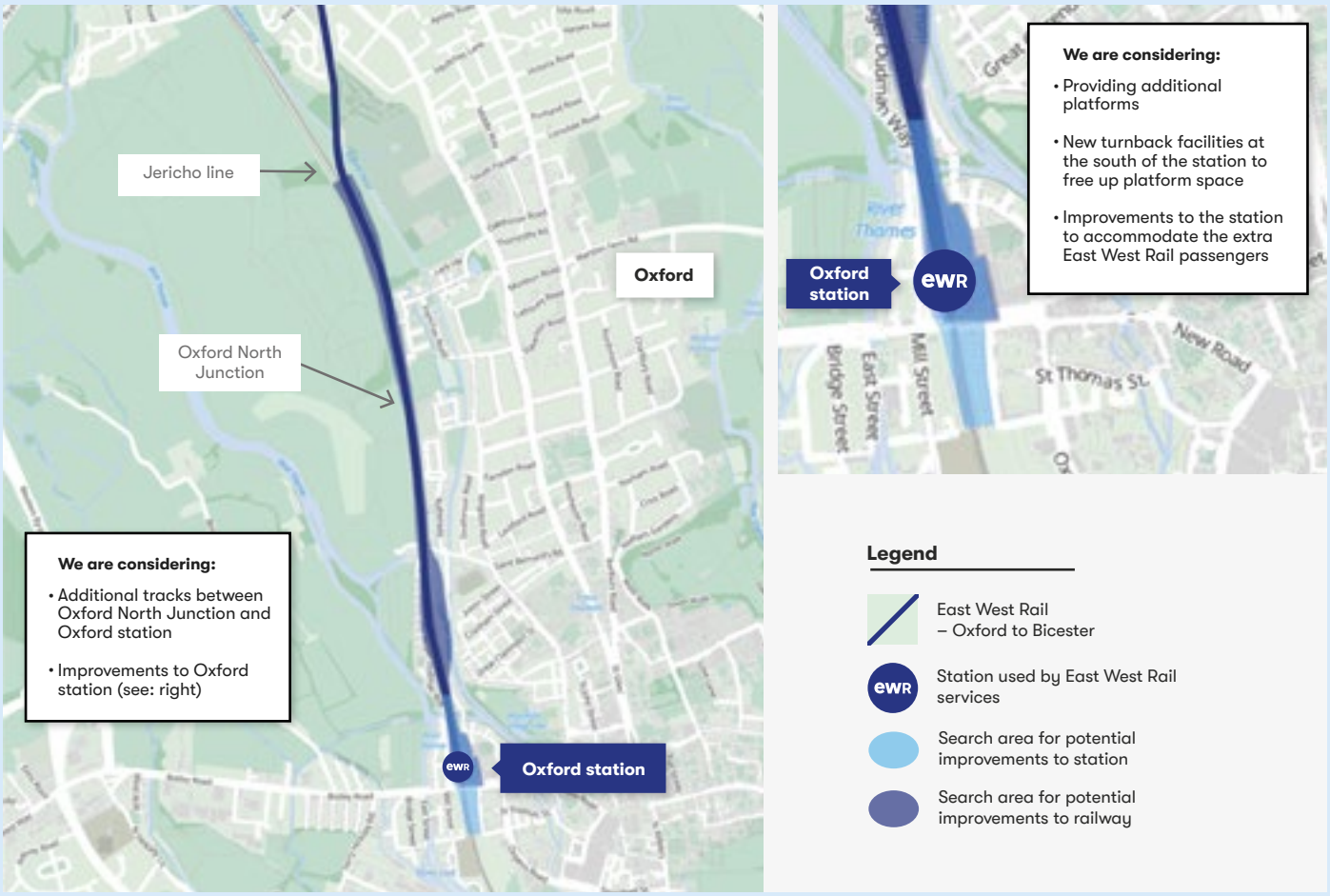
## 6.2 Oxford area

### Introduction

6.2.1. This section of the Chapter discusses Oxford station and the surrounding area, shown in Figure 6.2. It provides a general description of the current station environment, the existing railway network and its associated facilities. It then outlines:

- The pattern of train services to/from Oxford station;
- The potential issues that may arise as a result of the introduction of EWR services;
- Potential enhancements at Oxford station;
- Potential enhancements between Oxford North Junction and Oxford station; and
- The options to upgrade the railway infrastructure that EWR Co is considering.

Figure 6.2: Oxford station area



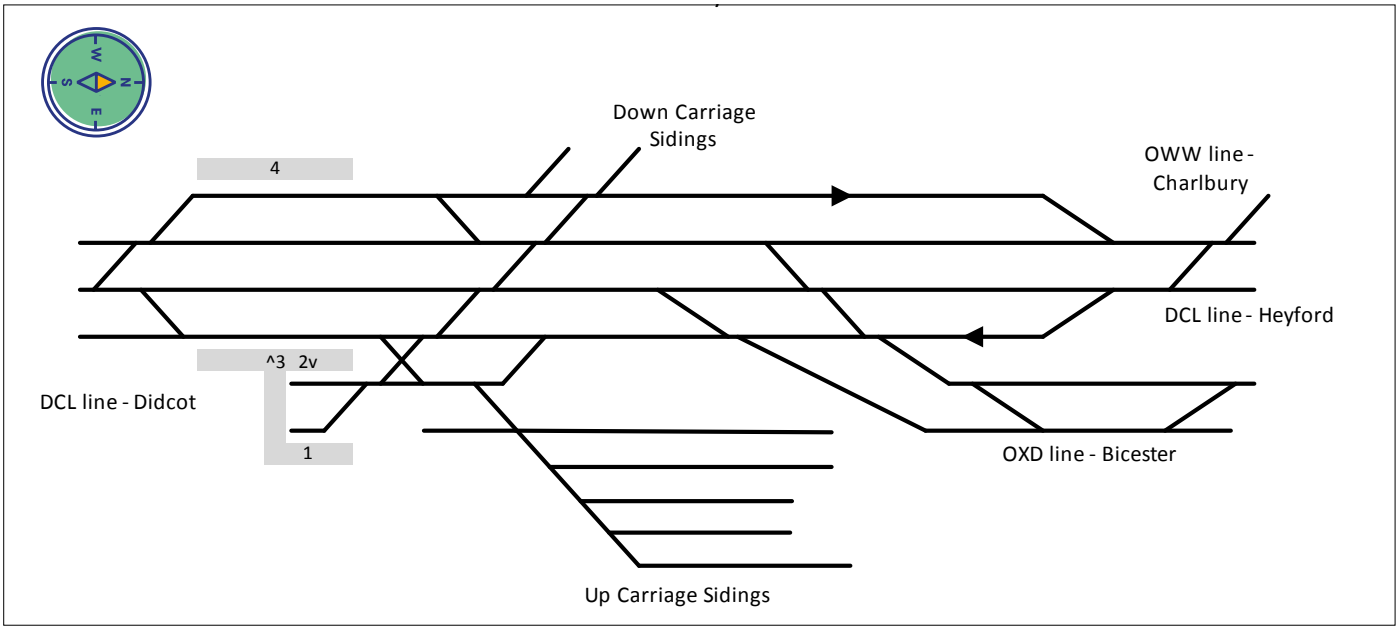
## Current station

6.2.2. Oxford is one of the two key stations on the EWR route that would serve as the starting and terminus station for customers using EWR services to and from Cambridge and Milton Keynes. It is therefore a key part of the EWR customer experience, even more so because of its iconic presence and its purpose as a gateway to the city. In 2018/19 over eight million passengers started or finished their train journey at Oxford station, and a further 500,000 people changed trains.

6.2.3. Oxford station is owned by Network Rail and operated by Great Western Railway as part of its franchise agreement. Figure 6.3 shows a schematic layout of the station and its northern approaches. The route from Oxford to Cambridge leaves the station in a northbound direction.

6.2.4. Oxford station has four platforms, two through platforms (Platform 3 and 4) and two bay platforms (Platforms 1 and 2), facing north. Great Western Railway and CrossCountry services almost exclusively use the through platforms, and Chiltern almost exclusively operates from the bay platforms, except during peak hours when some trains exceed the available length of the bays. Carriage sidings are used for stabling trains. This is an important function at Oxford, which acts as an end-point for a number of services, as described below.

Figure 6.3: Schematic of Oxford station and approaches from the north of the station



6.2.5. Oxford is at the heart of the rail corridor that links the Great Western Main Line (GWML) at Didcot with the London Marylebone to Birmingham 'Joint Line' at Aynho Junction, south of Banbury. This corridor, which forms the southern-most section of the Didcot to Chester Line (DCL), is vital for inter-regional passenger and freight services. It connects customers to a range of destinations to the south and north regions and further afield to destinations in Scotland and South Wales. It is a designated part of the national Strategic Freight Network, with Oxford station being the hub of the rail network in Oxfordshire.

6.2.6. Oxford itself is a key origin and destination for outer Thames Valley passenger services using the GWML, North Cotswolds services using the Oxford, Worcester and Wolverhampton railway (OWWR) for connectivity into London and, when works under the 2020 Order are complete, the EWR services using the Oxford Branch from Oxford to Bletchley. There is also an important local rail market centred on Oxford from all surrounding lines.

6.2.7. North of Oxford station, the railway gives access to the Oxford Branch, which provides passenger and freight links with the Chilterns Line and the East Midlands, and the OWWR, which provides passenger links to West Oxfordshire, Worcestershire, and Herefordshire.

## Bicester to Oxford North Junction

6.2.8. EWR services would approach from the direction of Bicester and connect into the main route into Oxford at Oxford North Junction. The lines from Bicester to Oxford North Junction were upgraded as part of the first stage of delivering EWR and consist of two tracks throughout.

## Oxford approach from Bicester

6.2.9. The approach tracks from the Bicester direction into Oxford comprise two tracks from Bicester to Oxford North Junction where access is available onto the up 'Jericho' line (the slow line providing local services) or up main line into Oxford. Services using the bay platform then have to leave the Jericho line or main line and cross over into the bay platforms.

6.2.10. Services leaving the bay platforms conflict with southbound services and have to make complex movements to access the northbound tracks to Oxford North Junction.

## Train services

6.2.11. The EWR services at Oxford will be delivered in two phases. Connection Stage 1 will see the introduction of two trains per hour (tph) between Oxford and Milton Keynes following the completion of the upgrade of the railway between Bicester and Bletchley by Network Rail.

6.2.12. The next stage for EWR services will be the introduction of 2tph between Oxford and Bedford following delivery of the Marston Vale Line upgrade as part of Connection Stage 2.

6.2.13. It is planned that these Oxford to Bedford services will be extended through to Cambridge following the completion of Connection Stage 3 between Bedford and Cambridge. It is fundamental to the overall EWR business case and the Project Objectives that the 4tph can be accommodated at Oxford.

## Issues and constraints

6.2.14. Oxford is recognised as a challenging location due to its constrained site, environmental restrictions and high level of use by the rail industry. Oxford station and the surrounding area is highly congested and capacity to operate additional services for Connection Stages 2 and 3 of EWR is presently limited.

6.2.15. Other challenges include:

- Environmental impacts, including flooding, noise and emissions;
- Interfaces with numerous train and freight operating companies;
- Interfaces with other modes of transport for customers' end-to-end journeys; and
- Capacity in the Carriage Sidings for additional train stabling.

6.2.16. EWR Co is also considering the following factors as it develops the plans in this area:

- The effects on residents living in properties next to the railway, such as noise and disturbance;
- The potential need to purchase neighbouring properties;
- Protecting the historic LNWR swing bridge and its setting;
- The proximity to Port Meadow Special Area of Conservation; and
- Minimising the impact of on current train services during construction.

6.2.17. As part of Connection Stage 1, enhancements are already underway between Oxford and Bletchley to enable the start of services from Oxford to Milton Keynes. However, to provide services to Bedford and Cambridge, additional works are required on this section of railway to provide the necessary further capacity for the extra trains and the passengers that would use them. The additional works needed to achieve the services to Bedford and Cambridge are discussed in this report.

6.2.18. This work also includes timetable development to create flexibility around available capacity and/or additional infrastructure. This is needed to ensure existing services, planned services and EWR trains can run reliably and punctually, as the rail network grows for both passenger and freight.

6.2.19. Sufficient capacity for EWR at Oxford station is necessary to deliver the full EWR connectivity between Oxford and Cambridge. This connectivity is recognised by the National Infrastructure Commission (NIC), local authorities and the Government as a strategic enabler for the wider transformation of the Oxford-Cambridge Arc. In that context, therefore, achieving the right solution at Oxford is essential in railway capacity terms, but also because the station masterplan redevelopment at Oxford presents an opportunity to reinforce the wider economic benefits that are at the heart of the Project. This is pertinent given the important part played by Oxford University as part of the knowledge economy.

6.2.20. EWR is one of a number of enhancement programmes that will rely on increased capacity at Oxford; others include the aspiration for services to run to Cowley, the work of the North Cotswolds Line Taskforce[35] and potential electrification from Didcot to Oxford. Indeed, the long-term aspirations for the railway in and around Oxford have been identified in the Network Rail Oxfordshire Rail Study that has recently been completed.

6.2.21. The introduction of EWR services to Milton Keynes would use much of the remaining spare capacity in the rail network approaching Oxford from the north. Moreover, the additional passengers that are expected to use these new services would place additional pressure on the existing station facilities at Oxford.

6.2.22. Recognising that the plans to introduce additional services linking Oxford to Bedford and Cambridge would place further pressure on the station and on the rail network in the vicinity of the station, EWR Co needs to undertake works in the Oxford area to ensure that these services, and the others that serve Oxford, can operate reliably. EWR Co also needs to ensure that the station can safely handle the numbers of people expected to use it while offering a passenger experience befitting a major interchange and gateway station.

6.2.23. EWR Co has developed some indicative options for the capacity required at Oxford to run its full service, for example by doubling the Jericho line on the approach into Oxford station. However, it is important that the infrastructure intervention to enable EWR is coherent with the long-term solution for Oxford station; to avoid abortive cost, minimise disruption to communities and passengers, and to fulfil the wider economic opportunity there.

6.2.24. For that reason, EWR Co is working closely with Network Rail, as well as with the Department for Transport (DfT), to develop a joined-up approach to developing Oxford station and its approaches.

6.2.25. Development of the potential timetable options for EWR services has identified that capacity at Oxford is limited and is unlikely to be able to facilitate the full range of EWR services with a level of robustness. Capacity into and out of the bay platforms at Oxford for

[35] The North Cotswold Line Task Force is a group of five county councils and Local Enterprise Partnerships https://researchbriefings.files.parliament.uk/documents/CDP-2020-0004/NORTH-COTSWOLD-LINE-TASK-FORCE-STRATEGIC-BUSINESS-CASE-DEC-2019_ISSUE_110120-(002).pdf

use by EWR services is constrained through both the use and occupation by Chiltern services (typically 2tph) and the limited track capacity between Oxford North junction and Oxford Station. The combination of infrastructure and timetable inflexibility limits the ability for the creation of suitable capacity to enable the introduction of EWR services. It is also acknowledged that changes to infrastructure in the Oxford area are restricted by planning constraints and available space.

## EWR interfaces with other schemes under consideration

6.2.26. To enable an application for DCO to allow the Project to be delivered, EWR Co needs to consider and determine its needs at Oxford to the extent that are additional to, or require adjustment to, improvements already in development by others.

6.2.27. Network Rail is also developing options for improvements at Oxford station and its vicinity to improve safety, capacity, connectivity and journey times which may include additional platforms, additional tracks, signalling optimisation and high-speed crossovers to the north of Oxford station, some of which form part of the wider Oxfordshire Rail Study.

6.2.28. In addition, there are several schemes and concepts currently being considered, developed or under way in the Oxford area. EWR Co recognises that due to the complexities and number of options being explored by stakeholders for improvements at Oxford, a number of these additional schemes may require further consultation by Network Rail and coordination with other stakeholders.

6.2.29. These include:

- Oxford to Didcot electrification[36];
- Oxford Corridor Phase 2[37]– including additional platform capacity and line speed improvements;
- The North Cotswold Line Transformation[38];
- Oxford station masterplan[39]; and
- Midlands Engine Rail schemes[40].

6.2.30. In May 2020 DfT and Network Rail embarked on Project SPEED (Swift, Pragmatic and Efficient Enhancement Delivery), which reviewed infrastructure projects at different stages of development, including the Oxford area, to identify how government funding could go further and work could be carried out faster.

6.2.31. EWR will work closely with Network Rail, other promoters and stakeholders to ensure that its requirements at Oxford are joined up with the other initiatives and that the outcomes achieved work together for the benefit of the whole railway and its passengers.

[37] https://www.networkrail.co.uk/running-the-railway/our-routes/western/oxfordshire/ North Cotswold Line Transformation - Strategic Outline Business Case, North Cotswold Line Task Force, December 2019

[38] North Cotswold Line Transformation - Strategic Outline Business Case, North Cotswold Line Task Force, December 2019 (https://researchbriefings.files.parliament.uk/documents/CDP-2020-0004/NORTH-COTSWOLD-LINE-TASK-FORCE-STRATEGIC-BUSINESS-CASE-DEC-2019_ISSUE_110120-(002).pdf)

[39] https://www.oxford.gov.uk/info/20182/regeneration_and_development/949/oxford_station_masterplan

[40] https://www.midlandsconnect.uk/key-projects/midlands-engine-rail/midlands-engine-rail/

## Options to be considered

6.2.32. EWR Co's objective is to resolve the need for change in the Oxford area and to investigate the requirements associated with the introduction of the Connection Stage 2 and Connection Stage 3 train services. This will allow for the options to be thoroughly investigated and a greater understanding of what the interventions might need to be. EWR Co aims to provide details of the infrastructure and facilities it believes are necessary to operate the EWR railway.

6.2.33. Several infrastructure options are being considered to increase capacity on the railway and at the station. These include additional track between Oxford and Oxford North Junction, additional platforms at Oxford station and capacity improvements to the south of Oxford station.

6.2.34. In addition, concept train service planning is ongoing to identify how available capacity can be used to deliver a robust and standard ('clock face') pattern timetable without adversely impacting existing trains and operations. This means that trains would call at most stations at the same minutes past each hour all day and that train services would be evenly spaced, as far as is possible. These concepts will be matched with the evolving infrastructure option development to identify the optimum industry solution whilst recognising customer needs.

6.2.35. At Oxford station the options being considered include:

- The provision of additional platform faces to increase the number of trains that can use Oxford station at the same time;
- The provision of additional platforms to increase the ability for some services to continue through Oxford rather than turning back;
- The provision of additional infrastructure south of Oxford station to provide improved facilities to turn back trains outside the station, freeing up platform space; and
- Station specific improvements to accommodate the increase in passengers generated by EWR.

6.2.36. On the approaches to Oxford station the options being considered include:

- Additional tracks between Oxford North Junction and the bay platforms; and
- Additional track between Oxford North Junction and the Jericho line.

6.2.37. Figure 6.4 illustrates indicative interventions that are under consideration, in red.

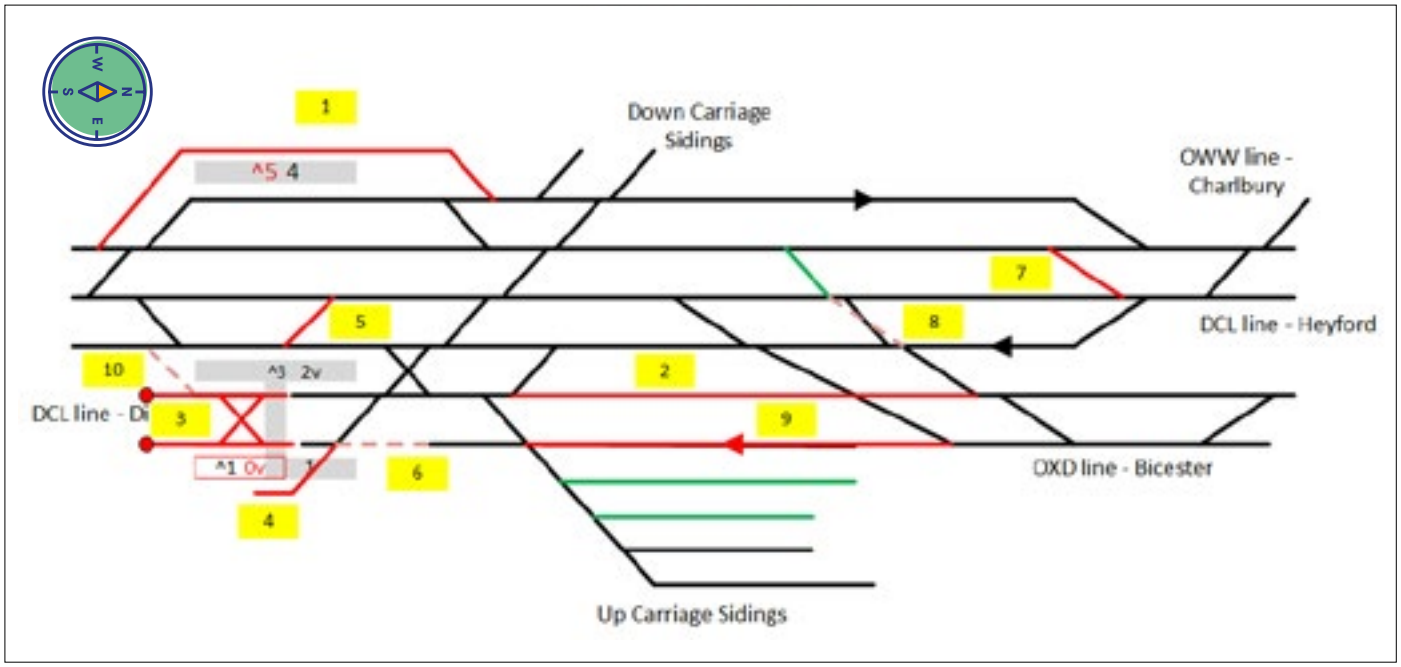



Figure 6.4: EWR Co indicative option to support EWR trains terminating at Oxford (potential changes shown in red and green)

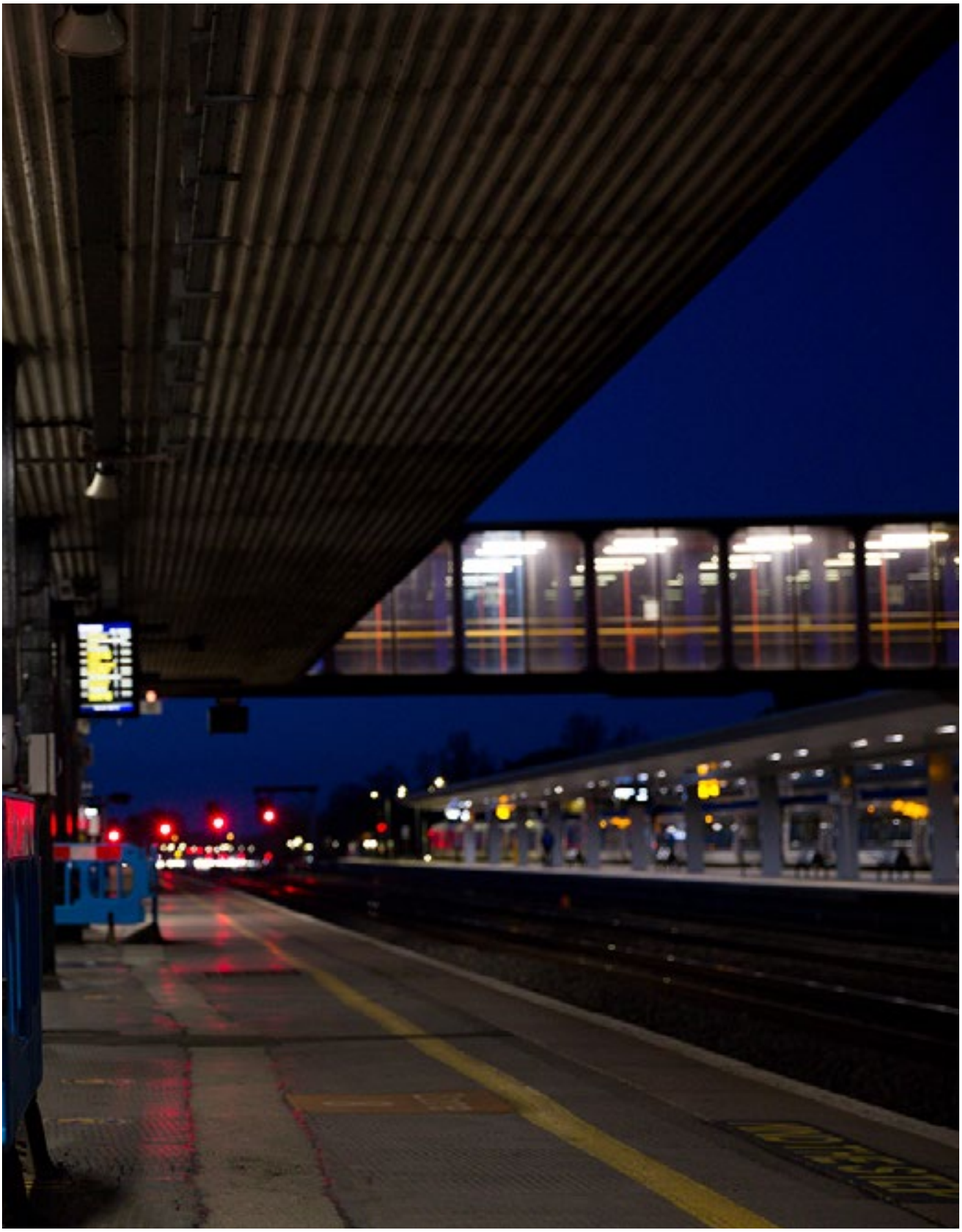
## Factors to be considered

6.2.38. EWR Co's objective is to maximise the use of the station and enhance the customer experience for those using EWR services.

6.2.39. When deciding which options to take forward, in addition to the outcomes of this consultation, EWR Co expects there to be a need to pay particular attention to the following Assessment Factors which are likely to assist in differentiating between options:

- Environmental impacts and opportunities;
- Transport user benefits – especially with regard to journey times and connectivity to the region and beyond;
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land – encouraging regeneration and improving employment and productivity benefits arising from existing and proposed development;
- Capital costs (of the infrastructure required to enable each option);
- Operating costs;
- Short distance passenger services;
- Rail passenger connectivity to existing mainlines;
- Long distance passenger services; and
- Performance.

6.2.40. Feedback from consultees in relation to the 'Customer experience and railway operations' section of the Consultation Document will also inform the development of EWR Co's plans for Oxford station and the surrounding area in order to establish a new benchmark in customer experience.



Oxford station platform

## 6.3. Oxford Parkway station

### Introduction

6.3.1. This section of the Chapter discusses Oxford Parkway station and the surrounding area. It provides a general description of the current station environment, which is shown in Figure 6.5, and then outlines:

- The pattern of train services from Oxford Parkway station;
- The key constraints; and
- Potential enhancements at Oxford Parkway station.

6.3.2. Oxford Parkway station was built in 2015 in connection with the introduction of new services between Oxford and London Marylebone. Oxford Parkway station is located immediately to the north of Oxford, adjacent to the A4165 and A34 roads. A park and ride site serving Oxford city centre is located adjacent to the station.

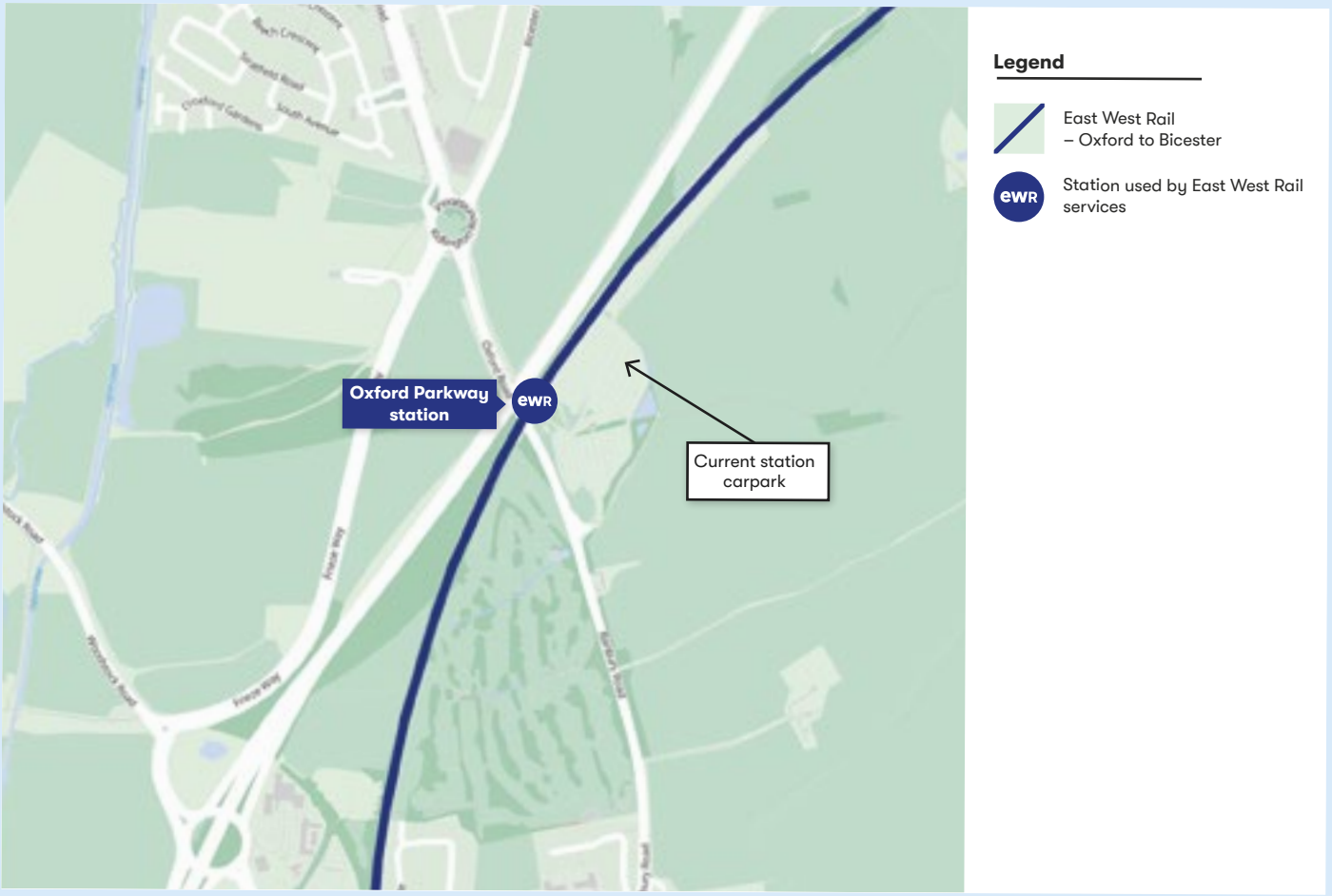



Figure 6.5: Oxford Parkway station

6.3.3. The station is currently served by Chiltern Railways with 2tph to Oxford and London Marylebone. The station lies on the National Cycle Route 51 and has a large car park to cater for park and ride traffic. The number of passengers who used the station in 2018/19 was in excess of one million.

6.3.4. Although the station was designed and built with EWR in mind, at that point in time the prospective timing of services beyond Bedford to Cambridge was less certain and was not therefore fully accounted for.

## Key constraints

6.3.5. Oxford Parkway station is located within the Green Belt, adjacent to open countryside. The station site is constrained by the adjacent highways, park and ride site and an aggregates depot.

## Potential need for changes

6.3.6. Because of the increased number of people that are expected to use the station once EWR services to destinations east of Bletchley commence, EWR Co is reviewing the facilities which impact the customer experience at the station. Although the work done to date shows that the majority of the station facilities would be adequate for the expected number of users once EWR services are introduced, the station car park is known to be regularly full, meaning that potential users are unable to access the railway.

6.3.7. EWR Co will investigate options to expand the parking facilities at the station, together with options to encourage access to the station via sustainable modes, such as walking and cycling. EWR Co will also examine whether improvements to the local highway networks are required to deal with the expected increase in traffic accessing the station.

6.3.8. In addition, EWR Co will investigate further options to improve the overall customer experience at Oxford Parkway station.

6.3.9. When deciding which options to take forward, in addition to the outcomes of this consultation, EWR Co expects there to be a need to pay particular attention to the following Assessment Factors, which are likely to assist in differentiating between options:

- Environmental impacts and opportunities;
- Transport user benefits – especially with regard to journey times;
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land – encouraging regeneration and improving employment and productivity benefits arising from existing and proposed development;
- Capital costs (of the upgrades required to enable each option);
- Short distance passenger services;
- Rail passenger connectivity to existing main lines; and
- Long distance passenger services.

6.3.10. The work on the above options is currently at a very early stage of development. Detailed proposals will be presented at the Statutory Consultation.

## 6.4. Bicester Village station

### Introduction

6.4.1. This section of the Chapter discusses Bicester Village station and the surrounding area. It provides a general description of the current station environment, which is shown in Figure 6.6, and then outlines:

- The pattern of train services from Bicester Village station;
- The key constraints; and
- Potential enhancements at Bicester Village station.

6.4.2. Bicester Village station was built in 2015 in connection with the introduction of new services between Oxford and London Marylebone. It is located to the south of Bicester town centre. It is close to London Road level crossing and also to the Bicester Village retail complex.

6.4.3. The station is currently served by Chiltern Railways with 2tph to Oxford and London Marylebone. The station is located adjacent to the site of "Bicester Village" shopping centre and has an Information Hub and walkway to the Village, providing direct access for customers who are visiting the retail outlets. The number of passengers who used the station in 2018/19 was in excess of 1.7 million.

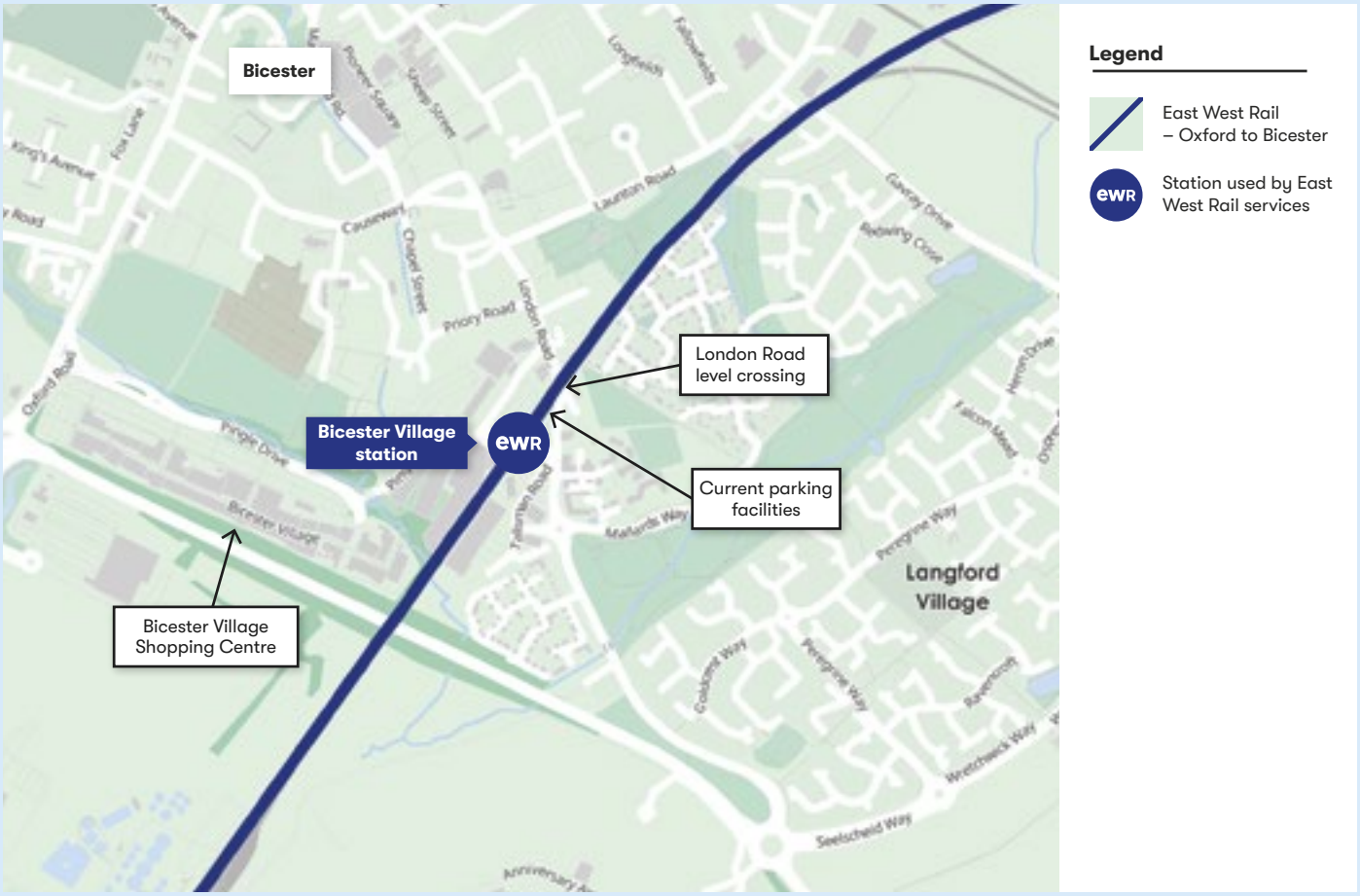



Figure 6.6: Bicester Village station

6.4.4. Although the station was designed and built with EWR in mind, at that point in time the prospective timing of services beyond Bedford to Cambridge was uncertain and was not therefore fully accounted for.

6.4.5. In addition, the station has proved to be very popular and has attracted a large number of users.

## Key constraints

6.4.6. Bicester Village is within the built-up area of Bicester and is surrounded by development. The London Road level crossing is located a short distance to the northeast of the station, adjacent to Station House, which is a Grade II listed building.

## Potential need for changes

6.4.7. Because of the increased number of people that are expected to use the station once EWR services to destinations east of Bletchley commence, EWR Co is reviewing the facilities which impact the customer experience at the station. Although the work done to date shows that the majority of the station facilities would be adequate for the expected number of users once EWR services are introduced, there may be a requirement for additional facilities, for example waiting areas. EWR Co will investigate options to expand the parking facilities at the station together with initiatives to encourage access to the station via sustainable modes, such as walking and cycling. EWR Co will also examine whether improvements to the local highway networks are required to deal with the expected increase in traffic accessing the station.

6.4.8. In addition, EWR Co will investigate further options to improve the overall customer experience at Bicester Village station.

6.4.9. When deciding which options to take forward, in addition to the outcomes of this consultation, EWR Co expects there to be a need to pay particular attention to the following Assessment Factors, which are likely to assist in differentiating between options:

- Environmental impacts and opportunities;
- Transport user benefits – especially with regard to journey times;
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land – encouraging regeneration and improving employment and productivity benefits arising from existing and proposed development;
- Capital costs (of the upgrades required to enable each option);
- Short distance passenger services;
- Rail passenger connectivity to existing main lines; and
- Long distance passenger services.

6.4.10. The work on the above options is currently at a very early stage of development. Detailed proposals will be presented at the Statutory Consultation.

## 6.5. Level crossing at London Road, Bicester

### Introduction

6.5.1. EWR Co is examining the capacity of the rail infrastructure between Oxford and Bicester to enable fast, frequent services between Oxford and Cambridge, as set out in the Project Objectives. A key element is the level crossing at London Road in Bicester, where EWR Co is investigating measures to mitigate the effects of the planned increase in train services, including the way vehicles and pedestrians cross the railway, so that safety can be improved, a more reliable service can be operated and congestion arising from prolonged barrier down times can be minimised.

6.5.2. The B4100 London Road is a two-lane single carriageway road, which runs north-south and intersects the Oxford to Bicester Railway line just south of Bicester Town centre and just east of Bicester Village station (OS Grid reference E458636, N 222034). The intersection is an at-grade manually controlled barrier locally monitored by CCTV (MCB CCTV) level crossing. The route provides an important link for local movements between the south east sector of Bicester and the rest of the town, from which it is separated by the railway, and serves as an important route for local bus services. It is one of only three roads that cross the railway in Bicester, the other two being the A41 to the west and the A4421 to the east, which are located on the perimeter of Bicester Town. Figure 6.7 shows the location of the crossing and the surrounding area.

6.5.3. In order to ensure the safety of road users and of the railway, a Manually Controlled Barrier (MCB) crossing is provided with barriers, operated by the signaller, that are remotely monitored through CCTV by a signaller and automatically linked with the railway signalling system, meaning that barriers cannot be raised if there is a train proceeding across the level crossing. In order to ensure the safe operation of the crossing, the barriers are closed for sufficient time to allow the safe passage of trains in either direction, which can be up to several minutes every time a train needs pass.

6.5.4. The crossing was examined as part of the previous phase of EWR which secured powers to carry out works in relation to the Network Rail (East West Rail) (Bicester to Bedford Improvements) Order 2020 (the 2020 Order). The rail traffic assumed in promoting the 2020 Order included services between Oxford and Milton Keynes (two trains per hour) and Oxford and Bedford (one train per hour) as well as additional freight services. However, it did not include the additional future train services to Cambridge, which were not committed at that time. In light of this, the inspector considering the application for the 2020 Order ruled that Network Rail was not required to provide an alternative crossing to replace the level crossing at London Road.


Figure 6.7: Site Plan of London Road crossing

6.5.5. Nevertheless, the introduction of the Oxford to Milton Keynes services following implementation of the works authorised by the 2020 Order will increase the barrier down-time from its current 10.6 minutes per hour to 21.7 minutes per hour, following signalling alterations by Network Rail to mitigate the effects in 2021.

6.5.6. Barrier down-time would increase again with the introduction of EWR Oxford to Cambridge train services. It is estimated that the barrier would be down for a significant period each hour, potentially up to 50 minutes, though this figure is subject to further assessment. This would result in motorists, cyclists and pedestrians using the crossing experiencing delays to their journeys, which EWR Co considers is unlikely to be acceptable and therefore a number of solutions to address this have been considered.

6.5.7. The possibility of providing an alternative railway crossing via a bridge at this location has been considered in the past. However, the location of the crossing within a built-up area means that the construction of a road bridge or underpass, and the associated changes to the layout and alignment of London Road, would be very challenging and have a significant impact on residents and businesses in the adjacent area. Elevating the railway or construction of a rail underpass would be even more intrusive since the shallow gradients required to achieve this would necessitate much greater areas of works, disrupt the operational railway for a considerable time, and require the reconstruction of the recently upgraded Bicester Village station.

6.5.8. Due to the high level of barrier down-time in each hour, there is a risk that users will abuse the crossing, which is supported by evidence of 111 incidents of deliberate misuse of this crossing over the past five years identified by Network Rail. All level crossings are subject to risk review and it is recognised by both the ORR and Network Rail that the most effective way to control level crossing risk is to close the crossing.

6.5.9. Due to the expected further increase in the number of minutes in each hour for which the crossing would be closed to road users due to the introduction of additional EWR train services, it is necessary to review and build upon previous studies to see if there is a case for permanently closing the level crossing and providing an alternative means of traversing the railway.

## Stakeholders

6.5.10. There are a number of stakeholders who may be affected by the proposed solutions to mitigating the effects of East West Rail on the level crossing.

6.5.11. The Bicester Village outlet retail park is located just to the southwest of Bicester village station and attracts a large number of visitors, especially during weekends and the holiday season. In addition to the site of the Village, parking facilities for the Outlet are located west of the railway line adjacent to the station.

These facilities include a two-storey car park and an open area for further over-spill parking.

6.5.12. There are a number of business parks and residential estates in the area with direct links to London Road or Station Approach that may be affected. Some of the potential stakeholders are:

- Talisman Business Centre which is located on the east side of the railway line opposite the railway station and has access to London Road via the roundabout just outside the business park;
- McKay Trading Estate which is located west of the station and has direct access to Station Approach;
- Westholmes Court, a residential estate located opposite Station Approach on the north side of the level crossing. London Road provides the only access to the estate;
- Coach House Mews, a residential estate located adjacent to the petrol filling station on the south side of the level crossing. London Road provides the only access to this estate;
- There are a number of other residences and businesses with direct access to London Road along its length; and
- Communities to the south of Bicester: Potential station infrastructure measures may be required (subject to further assessments) to ensure that they can retain access to Bicester Village station if London Road is severed. This may need to include changes to access arrangements and car parking provisions.

## Key objectives

6.5.13. In addition to the Project Objectives detailed in Chapter 3, EWR Co will consider how the mitigation of effects on the crossing will address the six objectives defined by Oxfordshire County Council in a paper to the EWR Consortium Strategic Board concerning the potential closure of London Road Crossing on 9 Dec 2020. The objectives identified are:

1. To facilitate expansion of rail services while maintaining connectivity across the town and promoting town centre vitality and accessibility;
2. To encourage the development of a high-quality, innovative and resilient integrated transport system that promotes active travel provision and supports healthy place-shaping;
3. To promote opportunities for pedestrians and cyclists in Bicester;
4. To reduce carbon emissions from transport in Bicester and improve air quality in the town, particularly within the designated Air Quality Management Area;
5. To improve connectivity between key employment and residential areas and their access to the strategically important transport networks, including rail services; and
6. To encourage and facilitate the efficient operation of bus services in Bicester and the surrounding area.

6.5.14. In addition to the objectives shown above EWR Co recognises that maintaining a safe railway and user activity is a fundamental objective of all parties.

6.5.15. To enable these objectives to be met, should it be necessary to close the level crossing, measures would need to be implemented to provide an alternative means for existing users to cross the railway and undertake their journeys.

## Options to be considered

6.5.16. The concepts to mitigate the effects of the crossing arising from East West Rail services, outlined in this section of the Chapter, were assessed against high level cost, engineering and environmental factors commensurate with their early stage of development.

6.5.17. If the level crossing were to be retained in its current form whilst the next EWR Connection Stage is in operation, the barriers would be down for a significant period during each hour and would not provide sufficient time for road traffic to use the crossing. This suggests that closure and alternative access is necessary. Further, the policy of the Office of Rail and Road (ORR) and Network Rail risk review is likely to recommend closure, especially given the level of crossing misuse identified by Network Rail in this particular location.

6.5.18. The limited time available for road users to use London Road if the crossing remains in place, and the risk of misuse and associated safety implications, means that closure is favoured. Furthermore, the ability to operate a clock-face service without delays (and consequences elsewhere on the railway network), suggests that the Project Objectives may not be achieved in the absence of measures to mitigate the effects of the crossing.

6.5.19. Many studies have been undertaken over several years to investigate the impacts of closing the level crossing and to examine the case for replacement measures, the most recent by Oxfordshire County Council in 2020. EWR's own early investigation of options has identified potential concepts for further investigation, engineering development and assessment over the next few months. The main options identified are:

- **Concept 1:** non-motorised user bridge;
- **Concept 2:** road underpass at London Road (online);
- **Concept 3**: road overbridge at London Road (online);
- **Concept 4:** road underpass alongside London Road (offline);
- **Concept 5:** road overbridge alongside London Road (offline); and
- **Concept 6:** alternative road crossings locations.

6.5.20. Taking the feedback from this consultation into account, these concepts will be further developed to assess their viability. At this stage, the following Assessment Factors are envisaged to be of particular relevance in determining the preferred solution from the options available:

- Transport user benefits – primarily in respect of the impact on road users;
- Capital costs;
- Operating costs – in particular for the underpass options;
- Overall affordability;
- Safety risk (construction and operation);
- Environmental impacts and opportunities – including the potential severance effects and the extent to which these can be mitigated; and
- Consistency with Local Plans.

## Concept 1: non-motorised user bridge

6.5.21. The first concept is the closure of the London Road level crossing without the provision of an alternative road railway crossing. However, a fully accessible bridge crossing of the railway for non-motorised users (including pedestrians, cyclists and horse riders) would be provided.

6.5.22. Current vehicular users would be diverted around the southern perimeter of the town via the A41 and then Oxford Road, King's End and Queen's Avenue into the centre of Bicester. Vehicular access would still be possible along either end of London Road, but traffic would not be able to cross the railway. Traffic assessments and further work will need to carried out during the next stage of development to ascertain the traffic impact on the diversionary routes, including community and environmental impacts, as well as the journey time impacts for individual road users.

6.5.23. For this concept to be developed into a viable design, further work is required to confirm the impact in the constrained location of the existing level crossing, given the requirement to create a fully accessible solution with ramps to meet modern standards and community needs. Potential impact on the station southern entrance and car-park facilities will also need to be assessed.

6.5.24. Overall, this solution is likely to have the lowest capital and operating cost of the six concepts.

6.5.25. Other key Assessment Factors for this option are the environmental impacts and opportunities and consistency with Local Plans, in particular the following considerations:

- The ability of the A41 and other local roads to accommodate an increase in traffic arising from the termination of London Road at the railway, and any additional measures required;
- The impact of severance on the local community in south-east Bicester and whether an additional route, with a crossing over the railway, is required (and indeed feasible) to the north-east of London Road; and
- Measures required to accommodate traffic requiring access to Bicester Village station from the south-east, including car parking and drop-off facilities on the eastern side of the railway.

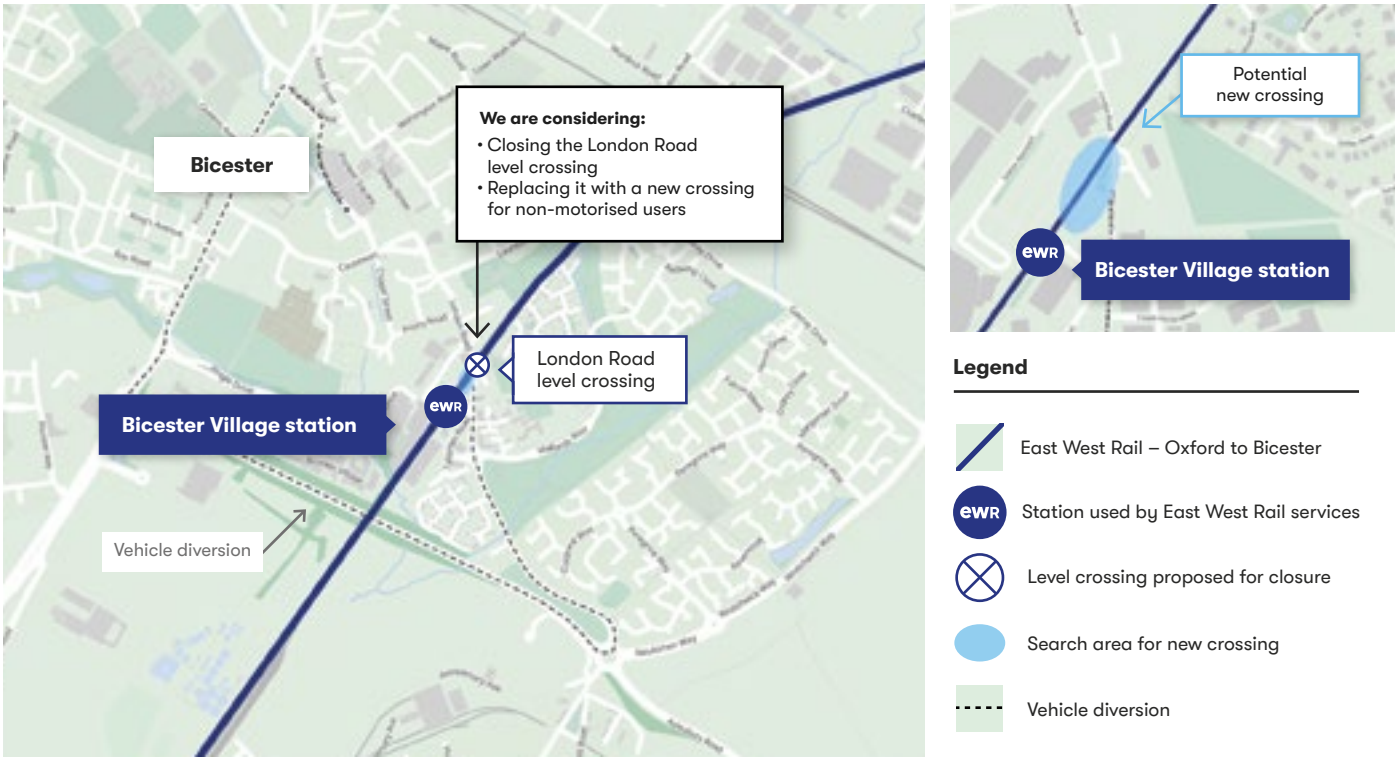



Figure 6.8: Concept 1: non-motorised user bridge

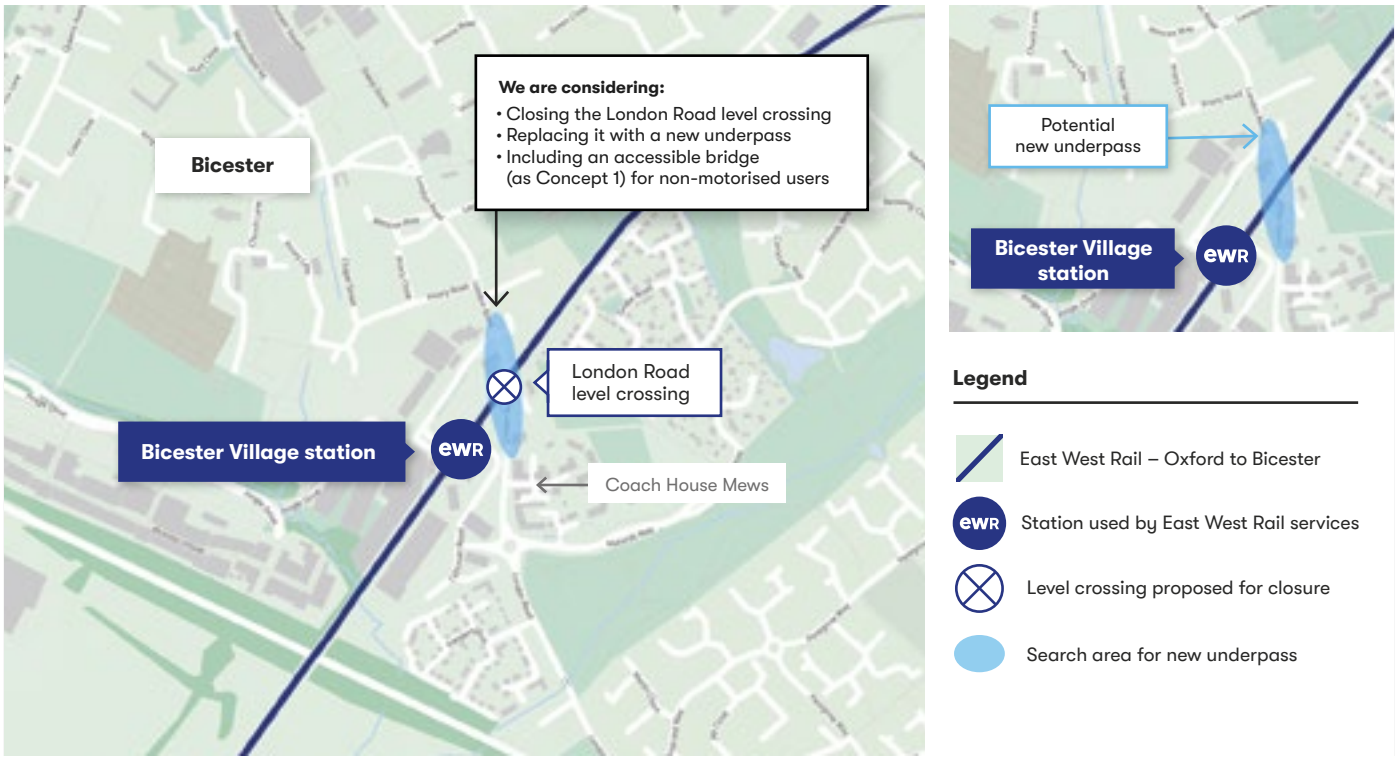



Figure 6.9: Concept 2: road underpass at London Road (online)

## Concept 2: road underpass at London Road (online)

6.5.26. A road underpass beneath the railway at the site of the existing crossing along the horizontal alignment of London Road is possible and can be designed to meet required highway standards for a 30mph road. Pedestrian facilities could be provided alongside the road tunnel, although this may result in an unattractive underground pedestrian route over 300m long; consideration should be given to alternative routes for pedestrians, possibly combining this concept with a pedestrian overbridge. The concept is shown in Figure 6.9.

6.5.27. The highway vertical alignment would fall from the Talisman Road roundabout, reducing to 0.5m below existing ground level at Coach House Mews. North of the rail crossing, the levels of T-junctions connecting London Road to the Station Approach would be reduced by approximately 5.4m and at Priory Road by approximately 1.7m. The access into Westholme Court, and to Alchester Terrace (south of the existing crossing) could not be maintained, as the road here would be lowered in the region of 5-6m: alternative accesses for these premises would have to be located elsewhere. Accesses to Coach House Mews, Station Approach, Priory Road and Garth Court could be maintained. The tie-in points are based on vertical and horizontal alignments compliant with a 50kph design speed, as these are minor side roads.

6.5.28. Capital cost will be an important factor for this option, with the cost of underground construction being typically greater than that of overbridges. Complex construction in such a constrained environment and significant environmental impacts would need to be considered:

- The groundwater table is relatively high in this location and an underpass would be prone to flood risk, which means that a pumping system would be likely to be required. This would increase both capital expenditure and maintenance costs;
- London Road is a major corridor for utility apparatus such as gas, electricity and water cables and pipes due to it being one of the few existing places where utilities can cross the railway in Bicester. Implementation of an underpass would be likely to result in significant conflicts with existing electric, gas, water, sewer and telecoms apparatus which may require diversion prior to commencement of the main works. This would add to cost and engineering complexity;
- The ground conditions are expected to be challenging for construction as historical ground investigation has shown sub-artesian groundwater conditions. This means that groundwater is held under pressure below ground by an impermeable layer of soil. If the soil is disturbed by excavation, potentially significant groundwater abstraction or soil stabilisation measures would be required to permit excavation;

- The means of construction of the underpass are to be confirmed. The most economical construction methodology would necessitate the removal of the tracks for excavation and construction of the underpass to occur. This would result in prolonged closure of the operational railway;
- Impact to property may be substantial with access severed to several properties. Access to these premises would have to be re-provided with alternative routes yet to be identified. Buildings in close proximity of the carriageway may need to be demolished during the works; and
- The new infrastructure would significantly impact the heritage setting of the conservation area and local listed buildings.

6.5.29. Transport user benefits should also be considered in light of local aspirations for the future of Bicester city centre. The fact that London Road would have to be closed for the duration of the works (which could be up to two years), causing severance between communities in the short and medium term, will be an important consideration.

## Concept 3: Road overbridge at London Road (online)

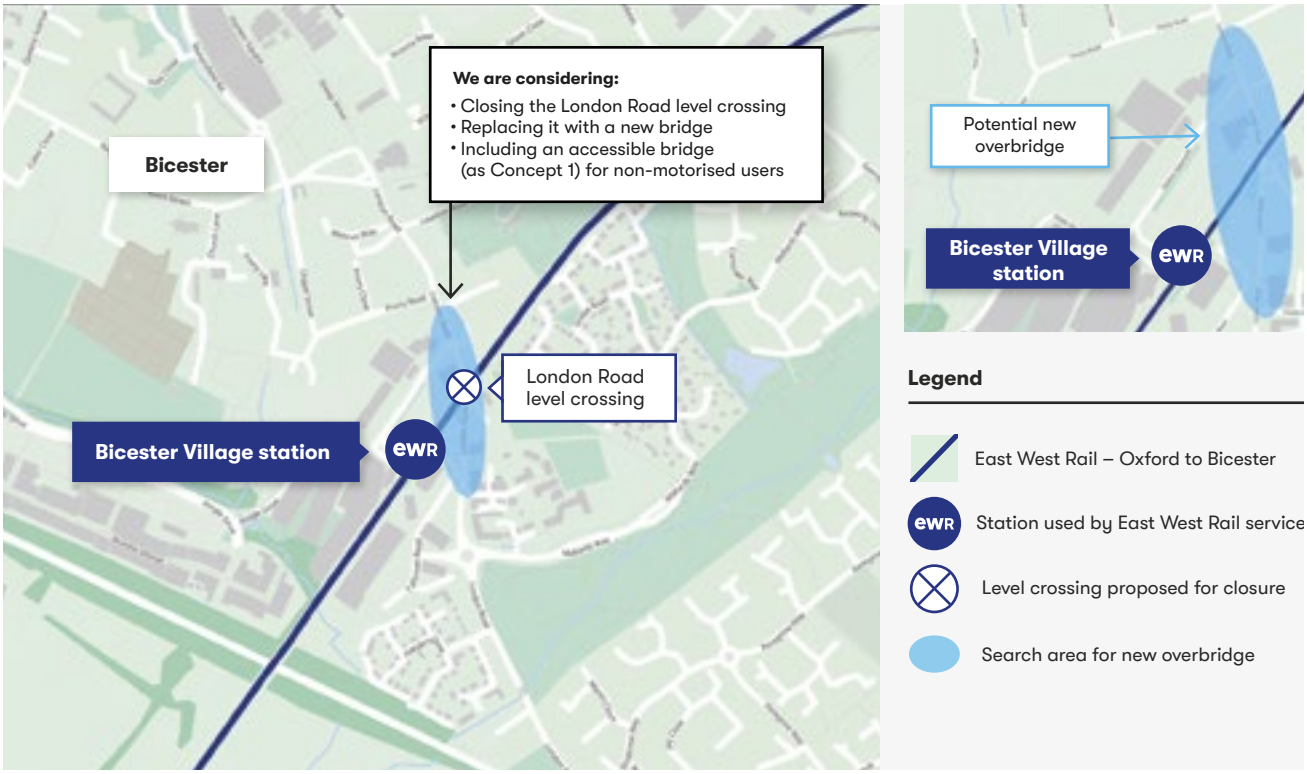
6.5.30. An alternative solution would be a road overbridge along the same alignment as the road underbridge. In this case, in order to achieve a compliant road geometry and to terminate the ramps before the Talisman Road and Wessex Way crossings, the speed limit would have to be reduced below 30mph. A separate pedestrian footbridge would probably be required to avoid pedestrians having to face steep gradients over a significant length.

6.5.31. An overbridge solution would obviate some of the construction challenges presented by an underpass, and, in particular, it could reduce ground concerns and issues with groundwater drainage once in operation. It is possible that conflicts with utilities could be reduced, although this would require an assessment of the impact of the bridge foundations on the existing apparatus, which is yet to be undertaken. Impact on the operational railway could also be reduced as bridge installation techniques are likely to take less time than the construction of an underpass, although the overall construction severance of traffic along London Road would be likely to remain broadly the same as per the underpass option (up to approximately two years).

6.5.32. Impacts on access to premises would be likely to be the same as the road underpass option.

6.5.33. Environmental impacts on adjoining properties, including noise and visual intrusion, would be likely to be more significant in the bridge option than in the underpass, given the constrained urban location.

Figure 6.10: Concept 3: road overbridge at London Road (online)



## Concept 4: road underpass alongside London Road (offline)

6.5.34. Concept 4 would provide an underpass to the south-west of the existing level crossing, diverting London Road from its current alignment. The underpass would be expected to achieve highway standards for a 30mph road. Pedestrian facilities could be provided alongside the road tunnel, although this may result in an unattractive underground pedestrian route over 300m long; consideration would be needed of alternative routes for pedestrians, possibly combining this concept with a pedestrian overbridge. The concept is shown in Figure 6.11.

6.5.35. The alignment of this concept would require a new arm to be constructed off the Talisman Road roundabout, removing the original London Road and Talisman Road arms, with these elements of carriageway re-formed into T-junctions off the new alignment. Coach House Mews, the unnamed access to Alchester Terrace and the petrol station forecourt would all be accessible from the existing alignment.

6.5.36. The highway vertical alignment would be lowered from the realigned arm of the Talisman Road roundabout. North of the underpass, the carriageway would be in cut, below ground level, across the junctions of Station Approach by approximately 4.1m and Priory Road by approximately 0.3m. The position of the existing access to Westholme Court would be lost and a new separate access would have to be identified.

6.5.37. All issues considered for concept 2 also apply to this option, however the impact on utilities apparatus would be likely to be reduced, as the majority of London Road would remain unaffected, and impacts on access to properties are reduced at least to the south of London Road. Importantly, this option should not cause two years of severance to the road connection during the works, although shorter interruptions to complete the junctions to the existing London Road would still likely be required.

6.5.38. Environmental impacts such as noise and visual intrusion for properties to the west of London Road would be substantially increased, as several buildings would directly clash with the proposed infrastructure. Impacts on the recently upgraded Bicester Village railway station would also be also likely to be more significant.

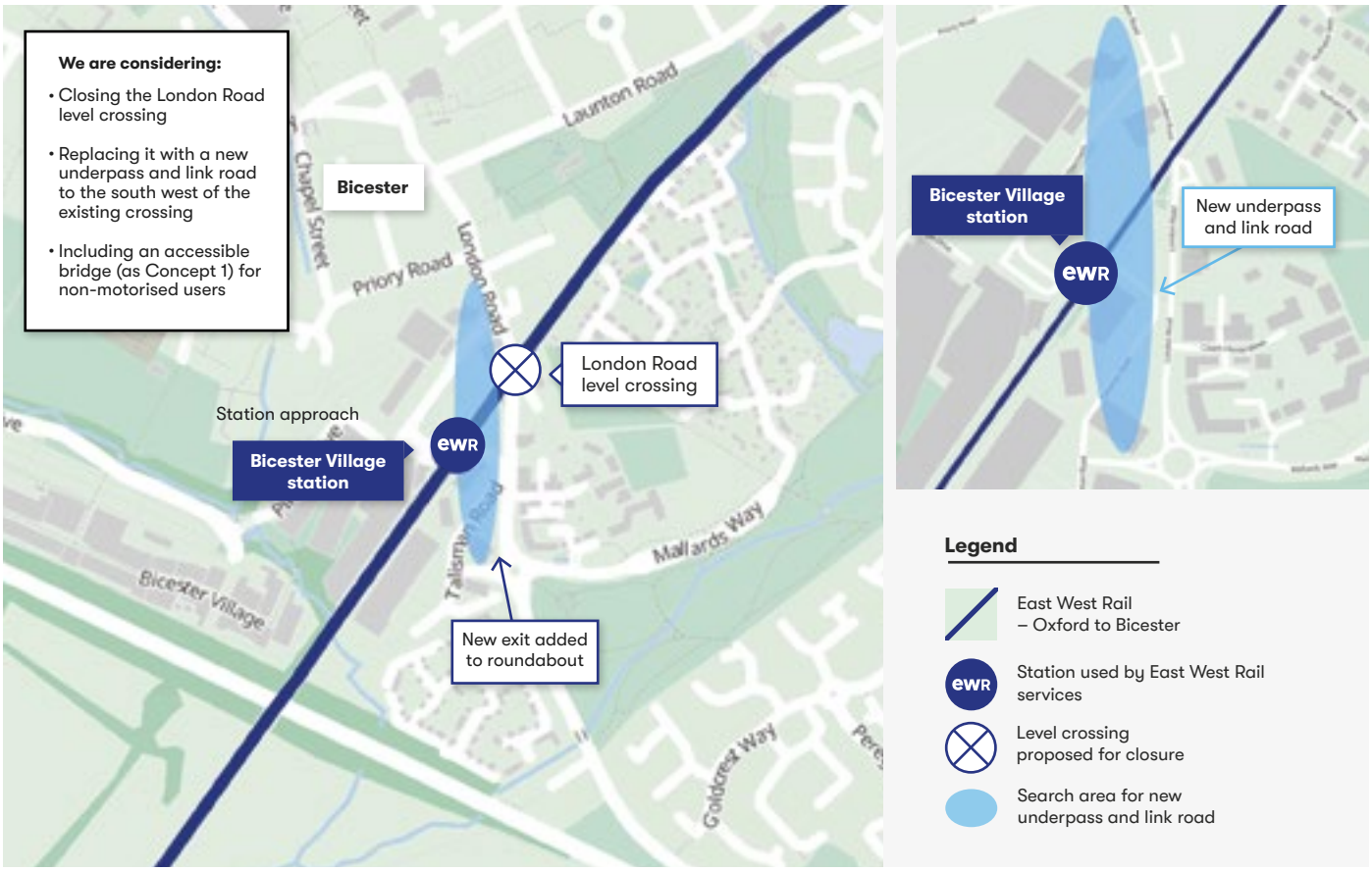



Figure 6.11: Concept 4: road underpass alongside London Road (offline)

## Concept 5: Road overbridge alongside London Road (offline)

6.5.39. This concept follows the alignment of concept 4, and again the same comparison made between the online underpass and overbridge for concepts 2 and 3 apply to the offline concepts 4 and 5. Also in this case, in order to achieve a compliant road geometry and to terminate the ramps before the Talisman Road and Wessex Way crossings, speed would have to be reduced to below 30mph. A separate pedestrian footbridge would be likely to be required to avoid pedestrians having to face steep gradients over a significant length. The concept is shown in Figure 6.12.

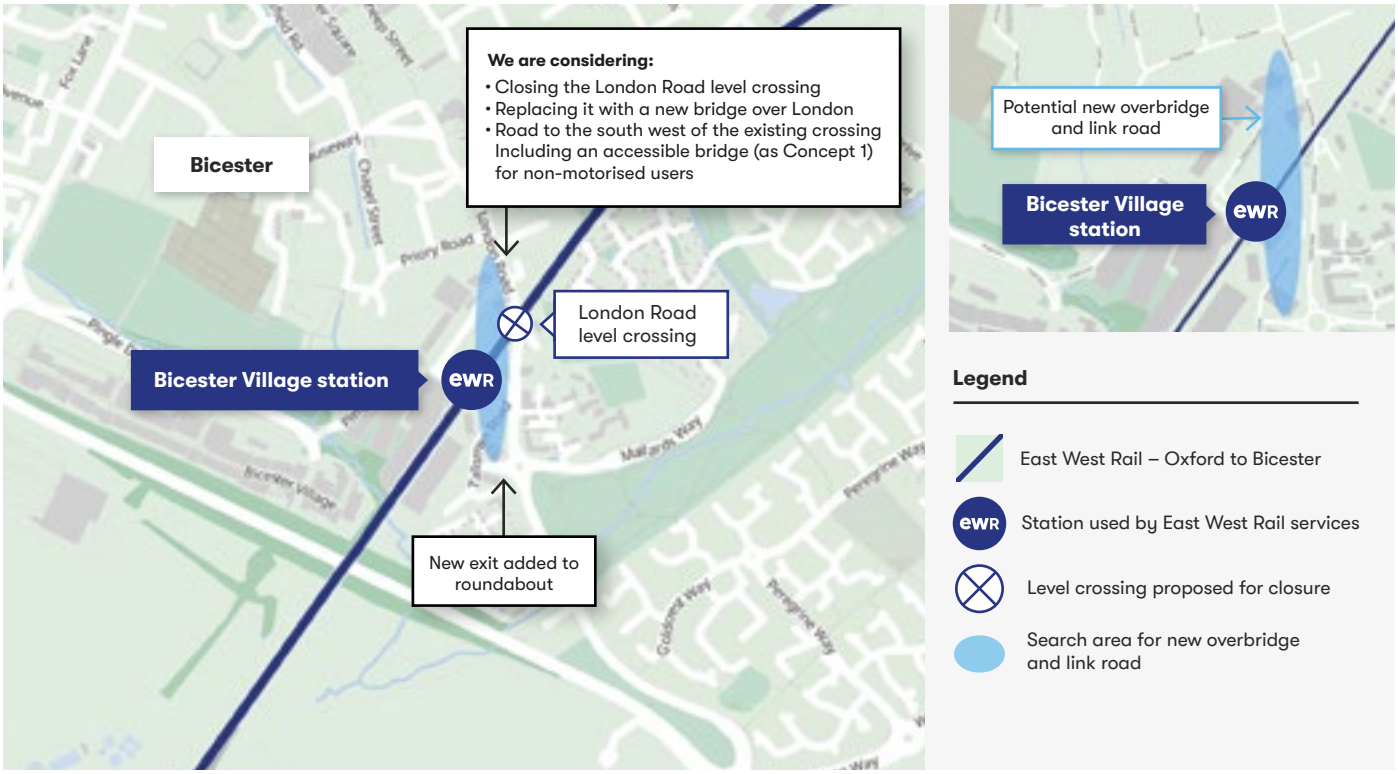



Figure 6.12: Concept 5: Road overbridge alongside London Road (offline)

## Concept 6: alternative road crossing locations

6.5.40. Historically, further options have been investigated by Network Rail for crossings – either bridges or underpasses – located to the west in between London Road and the A41 or to the east in between London Road and the A4421 (Charbridge Lane). The concept is shown in Figure 6.13.

6.5.41. Options to the west have become more challenging because of the upgrades to the Bicester Village shopping mall and railway station since these were assessed. All the options in this area would require substantial demolitions and re-configuration of the shopping mall facilities, railway station and of the Talisman buildings complex and, for these reasons, Network Rail had discounted them from further development.

6.5.42. Options to the east have included consideration of crossings at Gavray Drive, a new road parallel to the London to Birmingham railway line, or further north at Charbridge Way. The option at Gavray Drive poses design challenges to achieve a satisfactory road geometry to the north and would potentially impact residential and commercial properties. The options further to the north are expected to have a limited transport benefit, as whilst they intercept traffic in the northern section of Launton Road, they do not replace the connectivity provided by London Road in full.

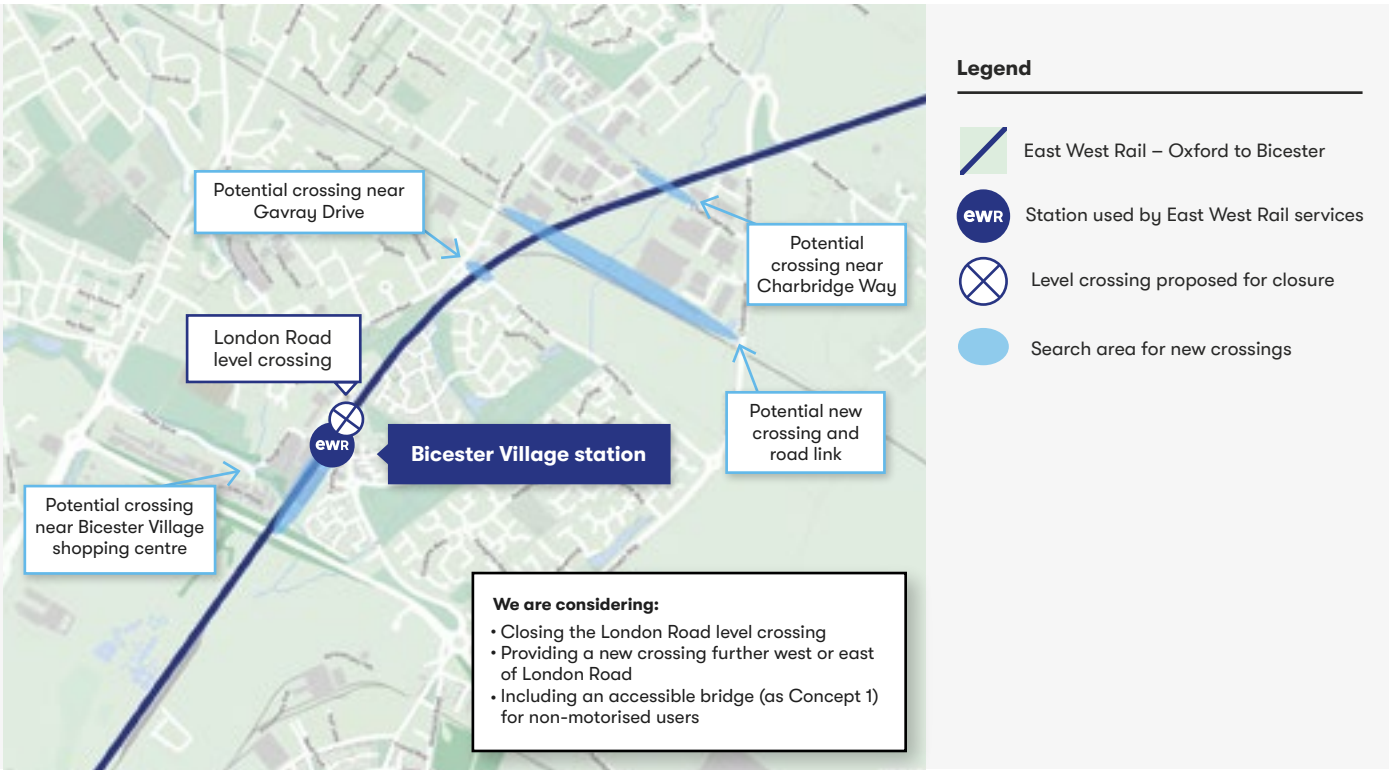
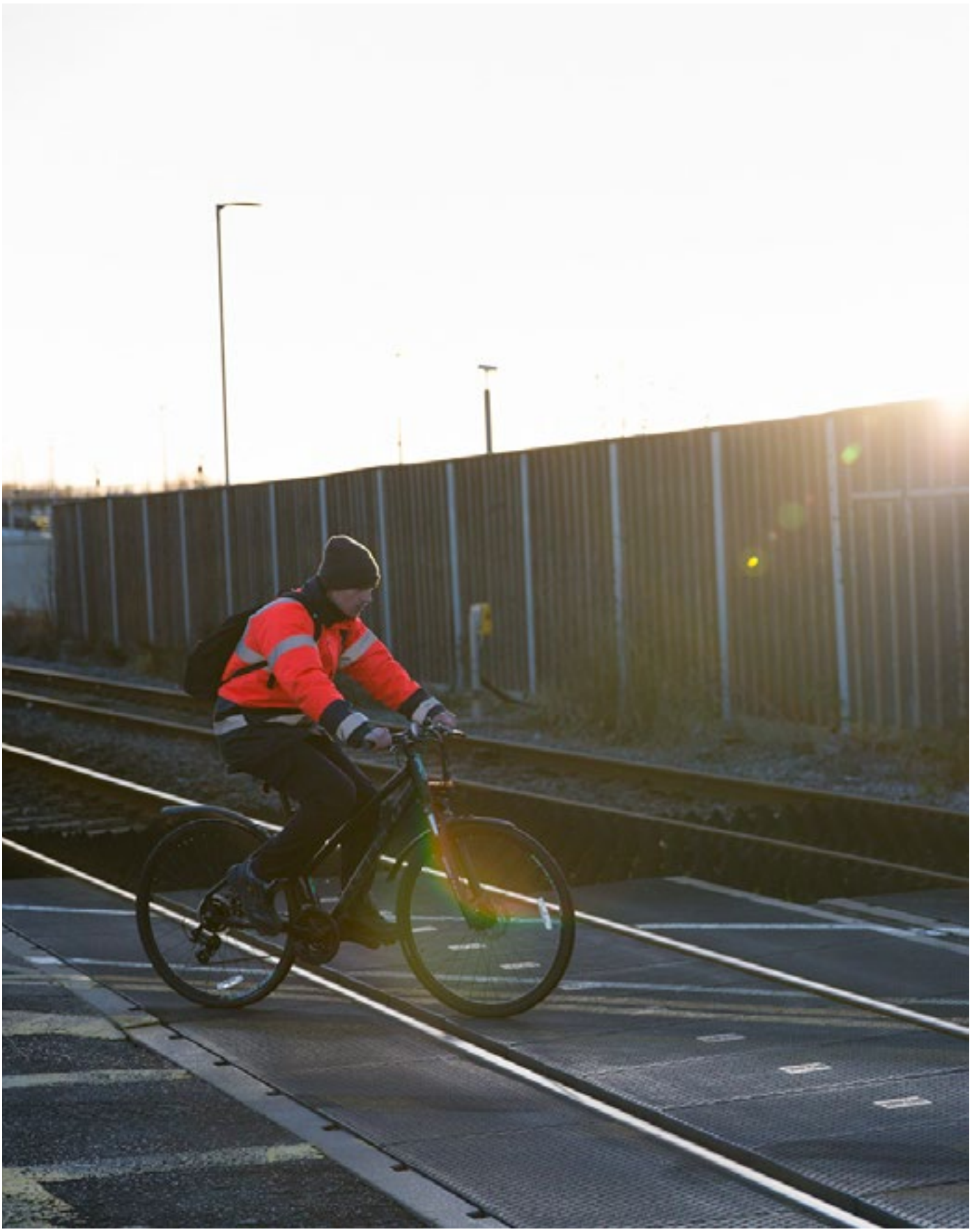



Figure 6.13: Concept 6: alternative road crossing locations

## Site-specific factors

6.5.43. Further work is required to develop the concepts above into viable options. The following specific considerations will need to be made in developing the design:

- Maintenance of access to residential property and businesses in the area during construction and following the completion of the works;
- The effect on properties, including listed buildings, with the aim of avoiding, or minimising, any adverse impacts;
- The requirement for the temporary and/or permanent diversion of utilities;
- The risk and impact of ground conditions and water table constraints;
- The environmental impact of proposals;
- The traffic and severance impacts of the proposals; and
- Alignment with stakeholder requirements.



London Road, Bicester

# 07.
# Project Section B: Bletchley and the Marston Vale Line


Figure 7.1: Project Section B

## Legend

East West Rail – Bletchley & Marston Vale Line

Other area of East West Rail

Station used by East West Rail services

7.1 Chapter summary

**7.1.1 This Chapter describes the proposals for the section of the Project east of Bletchley and along the Marston Vale Line as far as Bedford St Johns station.**

**7.1.2. Two service concepts are being considered for the way in which services are configured on this part of EWR once EWR trains are operating. These are to retain and modify the existing 'all-stations' train service and introduce limited-stop EWR services; or focused services on a smaller number of better located stations to allow an increased number of stopping services. While further work will be done to decide which concept to take forward, this Chapter explains the concepts and provides a comparison between them, with a preliminary assessment of how they may perform against the Assessment Factors. We expect that more detailed information in relation to the design, environmental impacts and opportunities of both concepts will be presented at Statutory Consultation in relation to the project. At this non-**

**Statutory Consultation stage, EWR Co is seeking to understand the views of respondents in relation to the overall service patterns and station distribution.**

**7.1.3. EWR Co is considering a range of options to improve Bletchley station to make it fit for its future role as a hub on the EWR route and an interchange with services on the West Coast Main Line (WCML) between London, the West Midlands, North-west England and Scotland. Design is at a very early stage and this Chapter explains the types of improvement that EWR Co might undertake.**

**7.1.4. At Fenny Stratford, east of Bletchley, a section of the railway is currently only single track. A second track is needed to increase capacity to allow for the additional EWR services. This Chapter describes what is likely to be required and the way in which options are being developed at this stage.**

**7.1.5. There are 31 level crossings on the railway between Bletchley and Bedford. This Chapter provides background to the safety risks and operational issues associated with level crossings. EWR Co has reviewed all the level crossings on the Marston Vale Line. This Chapter explains the options being considered at each location, with a view to**

**removing the level crossing and, where necessary, providing of an alternative means of crossing the railway. These changes would be required regardless of which train service concept is selected (see paragraph 7.1.2).**

**7.1.6. The Chapter considers the proposed approach to upgrading the railway between Bletchley and Bedford, including track replacement, drainage improvements, repair or strengthening of existing earthworks (cuttings and embankments) and replacement of the signalling system. It explains the way in which options for these works will be considered as they are developed in further detail. The approach to upgrading the railway is not dependent on, or materially changed by, whichever of the two service concepts is selected.**

## 7.2 Introduction

7.2.1 This section of the Chapter discusses the line between Bletchley and Bedford, which is known as the Marston Vale Line. It provides a general description of the Marston Vale Line and then goes on to describe options that EWR Co is considering for:

- The pattern of EWR train services and stations (starting at paragraph 7.3.1);
- Potential enhancements at Bletchley station (starting at paragraph 7.4.1);
- The reinstatement of a second track in the Fenny Stratford area (starting at paragraph 7.5.1);
- Level crossings (starting at paragraph 7.6.1); and
- General upgrading of the railway infrastructure between Bletchley and Bedford (starting at paragraph 7.7.1).

7.2.2. The final section of the line Marston Vale Line through Bedford St Johns station and into Bedford station is covered in the Chapter of this report dealing with Bedford (Chapter 8).

7.2.3. The Marston Vale Line is approximately 27km (16.5 miles) in length and dates back to 1846. It developed to become part of the cross-country route between Oxford and Cambridge known as the 'Varsity Line'. During the 1950s and 60s the line was threatened with closure on several occasions but survived and is still in operation today.

7.2.4. Passenger services between Bletchley and Bedford provide a roughly hourly service that operates between 05.16 and 23.51 Monday to Friday. The service also runs on Saturdays but the last train runs roughly half an hour earlier. No services currently run on Sundays. All passenger trains call at all ten of the intermediate stations on the line. This service is operated by West Midlands Trains under their London Northwestern Railway brand through a contract with the Department for Transport (DfT). The passenger service trains typically take 42 minutes to complete the end-to-end journey.

7.2.5. All of the intermediate stations along this route are unstaffed. A basic level of facilities is provided at each station. The Marston Vale Community Rail Partnership has worked with the operator of the stations to deliver improvements to station facilities and to generally improve the maintenance and appearance of the stations. The facilities at each station generally comprise:

- an open waiting shelter (on most platforms)
- ticket vending machine;
- real-time train departure and train running information at each platform; and
- Help points that enable passengers to contact railway staff for information or for use in an emergency.

7.2.6. A coffee shop is located adjacent to Woburn Sands station in the former station building (now privately owned). Ridgmont also benefits from a tea shop located within the heritage centre operated by the Community Rail Partnership (see paragraph 7.2.11). However, neither of these facilities are controlled by the train operator.

7.2.7. The stations have little or no formal car parking provision and no formal provision for pick-up and drop-off of passengers. Most have no facilities for cycle parking and no specific arrangements are available to facilitate interchange with local transport. It is also recognised that pedestrian access routes to some stations are unattractive to potential users. One of the worst examples of this is Kempston Hardwick, where pedestrian access is from a busy, unlit rural road that has no footways.

7.2.8. As a result of the historical context of the development of the line some stations, such as Woburn Sands and Lidlington, are located within the settlements from which they take their names. Others, such as Millbrook and Kempston Hardwick, are located a considerable distance from the nearest centres of population.

7.2.9. Based on data available through the Office of Rail and Road (ORR) it is evident that usage of the existing train service and of the intermediate stations on the Bletchley to Bedford line is relatively low. According to the annual station usage data published by ORR, six of the ten intermediate stations are amongst the least used 20% of stations in Great Britain, with three being amongst the least used 10%. Several stations have typically less than 50 passengers per day, and only two (Stewartby and Bedford St Johns) typically exceed 200 passengers a day. The usage has been relatively stable over the last 4 years, with significant growth only at Woburn Sands and Stewartby.

7.2.10. Usage of the stations based on Office of Rail and Road (ORR) entry and exit data between 2016/17 and 2019/20 is shown in Table 7.1.

| Station | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2019/20 Ranked in usage[41] |
|---|---|---|---|---|---|
| Fenny Stratford | 24974 | 22632 | 26292 | 26446 | 2174 |
| Bow Brickhill | 40626 | 38846 | 43410 | 41340 | 2065 |
| Woburn Sands | 38942 | 46606 | 51606 | 46704 | 2013 |
| Aspley Guise | 9454 | 9962 | 11636 | 9408 | 2340 |
| Ridgmont | 34338 | 36450 | 31532 | 26208 | 2175 |
| Lidlington | 27326 | 27510 | 26888 | 19628 | 2241 |
| Millbrook | 13654 | 11324 | 12504 | 12250 | 2311 |
| Stewartby | 36976 | 48412 | 61542 | 72748 | 1874 |
| Kempston Hardwick | 11806 | 9842 | 9692 | 10494 | 2329 |
| Bedford St Johns | 183826 | 186638 | 189276 | 180520 | 1451 |

Table 7.1: Usage of the stations based on ORR passenger entry and exit data between 2016/17 and 2019/20

7.2.11. In 2007 the Marston Vale Community Rail Partnership was established, which seeks to involve communities in adopting and looking after stations and providing marketing and initiatives with the operator to increase patronage and revenue.

7.2.12. The Community Rail Partnership has set up station adoption groups for most of the stations on the line and has worked hard to bring about improvements to the stations. Of particular note is the restoration of the former station building at Ridgmont to create a heritage centre and tea rooms.

7.2.13. In recent years there have been modest improvements to the train service and a gradual improvement in the quality of facilities at stations, but overall, the service provided today by this section of the railway is little changed from that provided in 1968 (i.e. immediately after the withdrawal of through trains to Oxford and Cambridge). This is in spite of the significant changes that have occurred within the corridor served by the railway, such as the development of Milton Keynes (which grew from a population of around 40,000[42] at its designation as a New Town in 1967 to a population of more than 260,000 by 2016[43]), the demise

[41] This is out of 2,567 stations in Great Britain

[42] 'Modern Milton Keynes: A plan for a new City''

[42] Milton-Keynes.gov.uk

of the brick-making industry in the Marston Vale, particularly around Stewartby, which at its height was producing over 500 million bricks a year[44] and the construction of new housing at various locations in the corridor. Further growth is expected within the area in the coming decades, including significant numbers of new homes near Lidlington and on the site of the former Stewartby Brickworks (as referenced in the Central Bedfordshire Local Plan) and in the South East Milton Keynes Strategic Urban Extension (as referenced in the development plan for Milton Keynes ("Plan:MK")[45]).

7.2.14. The line has suffered increasing problems with infrastructure reliability in recent years. These problems have, in part, been related to the signalling and level crossing equipment, which is of a type that is not widely used and for which spare parts are difficult to source. There were also problems with the reliability of new trains introduced in 2019 but the reliability of the new trains has improved considerably over time. As a result of staff shortages related to the Covid-19 pandemic, train services were replaced, either wholly or in part, by buses for much of 2020 and, at the time or writing, there continues to be no train service.

7.2.15. Today, the railway is used by people making a number of different types of journey. While some people use the line as part of longer-distance journeys (by changing trains at Bletchley or Bedford), the majority of journeys are of a short distance. Analysis undertaken on behalf of EWR Co shows that the majority of journeys undertaken on the line are for leisure purposes, with approximately 30% of journeys on the line for the purposes of commuting to or from a place of works. A much smaller, but nonetheless significant, proportion of journeys are for the purpose of accessing education.

7.2.16. In addition to the passenger service outlined above, it is EWR Co's intention, at this time, to replicate (as a minimum) the existing provision for freight paths between Bletchley and Bedford, not all of which are currently utilised, in any upgrades to the line. EWR Co is currently working on the wider freight strategy between Oxford and Cambridge and this will inform future option development.

7.2.17. The Project will deliver a step-change in the number of trains using the railway infrastructure between Bletchley and Bedford and its hours of operation. Significant investment in the infrastructure of the Marston Vale Line is required to make it suitable for its future role as an integral part of the railway between Oxford and Cambridge. The scale of investment that will be necessary offers, and requires viewing as, a "once in a generation" opportunity to think afresh about how the railway can best serve local residents, businesses, local events and economic development in the

[44] bedfordbrickworks.co.uk

[45] "Plan:MK" adopted version, Milton Keynes Council, March 2019 https://www.milton-keynes.gov.uk/planning-and-building/plan-mk

area both now and in the future.

7.2.18. EWR Co has examined how the railway could be developed and improved as part of the EWR Project. As part of the option development, careful consideration has been given to ways that existing journeys can be facilitated while providing attractive journey times and train frequencies for the longer-distance journeys (such as Oxford to Cambridge) that would be made in the future. These options are explored in more detail below, but relate in particular to two aspects:

- Service concepts, relating to the way that train services operate on this section of EWR as well as which stations they serve; and
- Level crossing closures in order to enable EWR to operate at its fullest capability.

## 7.3 Service Concepts

7.3.1. There is what may be a once in a generation opportunity to invest in upgrading the Marston Vale Line to meet the needs of the community and railway customers, now and in the future. The existing line, which was built in the nineteenth century to serve a very different customer base, now suffers from poor reliability and low usage, although EWR Co recognises the importance of this line to some parts of the community.

7.3.2. Therefore, in this section of the Chapter, we consider two alternative concepts for the train service that could operate in the future. In the first, the current service would continue to run between Bletchley and Bedford calling at all existing stations with EWR services providing faster through services to Oxford and Cambridge, calling at Woburn Sands and Ridgmont. In the second concept, the existing stations would be replaced with a new pattern of stations along the Marston Vale Line, which would be designed to be more conveniently located for twenty-first century travellers and communities, and proving a faster through service with fewer changes for longer journeys. In this second option, new stations with better facilities for pedestrians, cyclists and car drivers would be located in Woburn Sands, Ridgmont, Lidlington, Stewartby and Bedford St Johns. Some trains would call at all five stations whilst others would only stop at Woburn Sands and Ridgmont.

7.3.3. In this consultation EWR Co is seeking views on the merits of both concepts, considering the benefits of maintaining the status quo versus the opportunities that might exist with a different configuration of stations and services. EWR Co expects to develop both concepts further, so that more details of both can be presented when it undertakes Statutory Consultation.

7.3.4. In devising these two concepts, EWR Co has considered:

- The anticipated needs of users of the railway (both current and future);
- The importance of minimising journey times for longer-distance journeys while reducing the impact on shorter-distance travel; and
- The operational requirements of the railway with a particular focus on providing a safe, reliable and attractive service.

7.3.5. The Assessment Factors to be considered in deciding which concept to take forward are described in paragraph 7.3.103.

7.3.6. Further consideration will be given to these concepts at a subsequent consultation exercise, which will precede the submission of an application for development consent. Regardless of which service concept is taken forward, following this Statutory Consultation, a base level of significant improvements to other infrastructure on the Marston Vale Line, described in the remainder of Chapter 7 and in Chapter 8, would need to be undertaken.

7.3.7. The two service concepts are described below.

## Concept 1 – retain existing stopping service and introduce limited-stop EWR services calling at just two intermediate stations on the Marston Vale Line

7.3.8. In this concept, the existing hourly service would continue to operate (albeit with some journey times increased – see below), calling at the existing intermediate stations from Bletchley and terminating at Bedford. Faster limited-stop EWR services between Oxford and Cambridge would operate alongside the existing hourly service, calling at Woburn Sands and Ridgmont. An opportunity to interchange between the "all-stations" service and the faster EWR services would be provided at Woburn Sands and Ridgmont.

7.3.9. It is anticipated that four EWR services per hour would be provided once the new railway between Bedford and Cambridge is complete. Two of these would operate between Oxford and Cambridge and two further EWR services would operate between Bletchley and Cambridge. The combined service pattern is represented in Figure 7.2.

Figure 7.1: The combined service pattern between Bletchley and Cambridge

7.3.10. In order to minimise journey times for longer-distance travellers (and, therefore, attract sufficient numbers of users to justify the investment in the overall EWR Project), the EWR services need to complete the journey between Bletchley and Bedford in 24 minutes or less. This is roughly half the time taken by today's hourly services.

7.3.11. A standard pattern of departures across the hour (sometimes referred to as a "clock-face timetable") is preferred as this provides an easy-to-understand and memorable service for customers. It also allows the new services to fit more easily around existing train services at Cambridge and Oxford.

7.3.12. EWR Co has developed an indicative timetable to demonstrate the pattern of services and journey times that would be available with this concept. This is shown in Figure 7.3. As the timetable is developed further, EWR Co will endeavour to ensure that services are, where practical, timed such that they continue to cater for journeys to and from educational establishments along the route.

7.3.13. In order for the faster limited-stop EWR services to operate alongside the existing hourly service, it would be necessary, in both directions, for the faster services to overtake the slower service somewhere between Bletchley and Bedford. In the indicative timetable above, this overtaking happens at Ridgmont, because the best opportunity for maximising connectivity on the route is achieved if faster trains are allowed to overtake slower trains at a station where both trains call and where passengers can transfer. As can be seen from the indicative timetable above, the hourly service arrives first at Ridgmont, closely followed by the faster limited-stop EWR service. Passengers have the opportunity to interchange between the two services following which the limited-stop EWR service leaves first, closely followed by the slower hourly service.

7.3.14. The existing stopping service would have to wait at Ridgmont for around 6 minutes for the faster limited-stop EWR service to overtake. The resulting increase in journey time would be offset by the infrastructure improvements described in this and the subsequent Chapters and by taking advantage of the operating characteristics of the new trains introduced to the line in 2019.

7.3.15. For some journeys to or from stations that are only served by the existing service, a shorter journey time would be possible by changing to or from a fast service at Ridgmont. A comparison of train frequency and journey times by rail today with the frequency and indicative journey times in each of the two concepts can be found in paragraph 7.3.89.

7.3.16. There are several constraints that make the provision of passing loops at the current Ridgmont station site difficult. These include the listed former station building (now a heritage centre and tea rooms), the bridges carrying

| | | | | | | |
|---|---|---|---|---|---|---|
| OXFORD | d | 10:26 | | | 10:56 | |
| Oxford Parkway | d | 10:33 | | | 11:03 | |
| Bicester Village | d | 10:40 | | | 11:10 | |
| Winslow | d | 10:51 | | | 11:21 | |
| BLETCHLEY High Level | a | 10:59 | | | 11:29 | |
| | d | 11:00 | | | 11:30 | |
| BLETCHLEY Low Level | d | ↓ | 11:14 | 11:21 | ↓ | 11:44 |
| Fenny Stratford | d | | ↓ | 11:24 | | ↓ |
| Bow Brickhill | d | ↓ | | 11:27 | ↓ | |
| Woburn Sands | d | 11:06 | 11:21 | 11:31 | 11:36 | 11:51 |
| Aspley Guise | d | ↓ | ↓ | 11:33 | ↓ | ↓ |
| Ridgmont (relocated) | a | 11:09 | 11:24 | 11:35 | 11:39 | 11:54 |
| | d | 11:10 | 11:25 | 11:43 | 11:40 | 11:55 |
| Lidlington | d | ↓ | ↓ | 11:46 | ↓ | ↓ |
| Millbrook | d | | | 11:49 | | |
| Stewartby | d | | | 11:52 | | |
| Kempston Hardwick | d | | | 11:55 | | |
| Bedford St Johns (relocated) | d | ↓ | ↓ | 12:00 | ↓ | ↓ |
| BEDFORD | a | 11:20 | 11:35 | 12:02 | 11:50 | 12:05 |
| | d | 11:21 | 11:36 | | 11:51 | 12:06 |
| ECML Interchange | d | 11:31 | 11:46 | | 12:01 | 12:16 |
| Cambourne Area | d | 11:41 | 11:56 | | 12:11 | 12:26 |
| Cambridge South | d | 11:54 | 12:09 | | 12:24 | 12:39 |
| CAMBRIDGE | a | 11:57 | 12:12 | | 12:27 | 12:42 |

Figure 7.3: An indicative timetable demonstrating the pattern of services and journey times available with Concept 1

| | | | | | | |
|---|---|---|---|---|---|---|
| CAMBRIDGE | d | 10:35 | 10:50 | | 11:05 | 11:20 |
| Cambridge South | d | 10:39 | 10:54 | | 11:09 | 11:24 |
| Cambourne Area | d | 10:53 | 11:08 | | 11:23 | 11:38 |
| ECML Interchange | d | 11:01 | 11:16 | | 11:31 | 11:46 |
| BEDFORD | a | 11:12 | 11:27 | | 11:42 | 11:57 |
| | d | 11:14 | 11:29 | 11:30 | 11:44 | 11:59 |
| Bedford St Johns (relocated) | d | ↓ | ↓ | 11:33 | ↓ | ↓ |
| Kempston Hardwick | d | ↓ | ↓ | 11:38 | ↓ | ↓ |
| Stewartby | d | ↓ | ↓ | 11:42 | ↓ | ↓ |
| Millbrook | d | ↓ | ↓ | 11:45 | ↓ | ↓ |
| Lidlington | d | ↓ | ↓ | 11:48 | ↓ | ↓ |
| Ridgmont (relocated) | a | 11:24 | 11:39 | 11:52 | 11:54 | 12:09 |
| | d | 11:25 | 11:40 | 11:59 | 11:55 | 12:10 |
| Aspley Guise | d | ↓ | ↓ | 12:02 | ↓ | ↓ |
| Woburn Sands | d | 11:30 | 11:45 | 12:04 | 12:00 | 12:15 |
| Bow Brickhill | d | ↓ | ↓ | 12:08 | ↓ | ↓ |
| Fenny Stratford | d | ↓ | ↓ | 12:10 | ↓ | ↓ |
| BLETCHLEY Low Level | a | 11:36 | ↓ | 12:12 | 12:06 | ↓ |
| BLETCHLEY High Level | a | | 11:51 | | | 12:21 |
| | d | | 11:52 | | | 12:22 |
| Winslow | d | | 12:00 | | | 12:30 |
| Bicester Village | d | | 12:09 | | | 12:39 |
| Oxford Parkway | d | | 12:16 | | | 12:46 |
| OXFORD | a | | 12:23 | | | 12:53 |

the A507, M1 and Bedford Road over the railway and a pipeline that runs alongside the railway for a short distance to the south of the station. Taking all of these considerations into account, we would propose to build the loops to the west of the current Ridgmont station, on the section of line between Berry Lane Level Crossing and the bridge carrying Bedford Road over the railway. The passing loops would need to be approximately 1000m in length. This is because they would also need to be used by freight trains that currently use the Marston Vale Line or which could do in future.

7.3.17. To facilitate interchange between the existing stopping service and faster limited-stop EWR service, we would need to relocate Ridgmont station to be on the part of the railway where the passing loops would be. This would mean relocating the station to a new site to the west of Bedford Road.

7.3.18. The approximate area within which the passing loops would be built and approximate location of the new station is shown in Figure 7.4. Further work is required to determine the precise location and layout of the passing loops and re-sited station.

7.3.19. The new station would have four platforms and improved station facilities including a station building, with potential for staffing, a secure station

car park and improved amenities and facilities in line with a modern station. Pedestrian and cycle links would be provided between the new and current station sites to facilitate journeys to and from the heritage centre and employment sites located close to the current station. Platforms at the new station would be long enough to accommodate four-car trains but would be designed to allow for extension to accommodate eight-car trains in the future. The proposed site for the relocated station is on a straight section of track that improves boarding and alighting from trains and reduces the risk of accidents when compared to a curved platform.

7.3.20. In order to build the new station and the passing loops, privately owned agricultural land would need to be acquired. EWR Co has not yet determined the extent of land that would need to be acquired; this would depend on the size and layout of the station facilities, access routes to the station and the length of the passing loops that need to be provided.

7.3.21. In addition to the works described above, it might also be necessary to provide an additional platform at Bletchley station (adjacent to the current platform 6). This would be necessary if the timetable structure is such that one terminating train arrives at Bletchley station before the previous terminating train has departed. This platform would be in addition to the two new high-level platforms that are being constructed for the train services to and from Oxford.

7.3.22. Regardless of which Service Concept is taken forward, proposed changes to level crossings (described in paragraphs 7.6.1 to 7.6.341) would be required. As a result of these changes, it would be necessary to


Figure 7.4: Map showing approximate location for passing loops and the relocated Ridgmont station

change the access arrangements at some of the existing stations for Concept 1. The precise details would vary by station and would depend on which option is taken forward for each level crossing or group of crossings. The changes would typically involve new pedestrian access routes from the street to the platforms and, at some stations, a new footbridge might be required to provide access between the two station platforms. We would expect to provide further details on any necessary changes to station access as part of the next round of public consultation.

7.3.23. In connection with the proposed construction of a second track in the Fenny Stratford area (see paragraphs 7.5.1 to 7.5.7), it would be necessary in Concept 1 to build a second platform at Fenny Stratford station. The precise location of the platform and the access route(s) to it would, in part, depend on the option taken forward for the adjacent Fenny Stratford level crossing. We would expect to provide further details on any necessary changes to station access as part of the next round of public consultation.

7.3.24. In this Service Concept, the platforms at Woburn Sands station would need to be lengthened in order to accommodate four-car EWR trains. The extended platforms would be designed to allow for further extension to accommodate eight-car trains in the future. If this concept is taken forward, EWR Co will review the current facilities available at this station and consider how they might be expanded and improved to deal with future demand and provide an improved customer experience within the constraints of the current station site.

7.3.25. As well as the enhancements described above, the infrastructure improvements detailed in paragraphs 7.7.1 to 7.7.13 below are also required to facilitate sufficient capacity and the reliable operation of the train service for this concept. (These works would be required for both Concept 1 and Concept 2). The works in the Bedford area, described in Chapter 8, including the proposed relocation of Bedford St John's station, would also be required regardless of which Service Concept is taken forward.

## Concept 2 – provide more people with EWR services that are more frequent and enable quicker journeys, using a consolidated set of new stations

7.3.26. In this concept, EWR Co would review station locations and service patterns along the Marston Vale Line to:

- provide better connectivity for more people
- deliver a more reliable train service
- provide more frequent trains by doubling the number of services every hour at intermediate stations
- deliver quicker journeys over both short and long distances
- provide direct trains to more destinations for more users
- focus investment to provide better-quality stations with more facilities
- provide stations with future growth in mind, thereby reducing the risk of increased station traffic driving through villages and/or parking on residential streets

### Station locations

7.3.27. The existing service and station locations were designed to meet the historic needs of communities as they existed quite some time ago. Over time travel patterns and preferences have changed significantly, and communities such as Milton Keynes have altered the overall travel needs of the area. This may explain the low usage on the existing services. For that reason, it makes sense to at least consider an alternative concept that revisits the existing station locations to better serve existing and future communities.

7.3.28. This concept proposes that the ten current intermediate stations on the Marston Vale Line would be consolidated into five relocated stations. The existing stopping service between Bletchley and Bedford would be replaced by a more frequent EWR stopping service, with two services every hour calling at all five of the new intermediate stations. This would provide a half-hourly service, direct to a wider range of destinations for more people. This would be in addition to the two fast EWR services every hour, that would call at two of the five stations as well.

7.3.29. By consolidating the number of stations on the line, it would be possible to operate the more frequent EWR stopping service every half hour without the need for faster trains to overtake the slower ones. This would mean that the additional tracks (passing loops) that are required near Ridgmont station in Concept 1 would not have to be built. It would also avoid the need to provide new access routes (including, in some cases, new footbridges) at some of the existing stations that would otherwise be necessary because of the changes affecting the adjacent level crossings (see paragraphs 7.6.1 to 7.6.341 below). The money saved from not building the additional tracks and altering the existing stations could instead be used to provide a greatly improved range of facilities at the five new intermediate stations, as well as ensuring they are

better connected to the communities they serve.

7.3.30. The work EWR Co has undertaken to date indicates that the maximum number of intermediate stations which could be supported with the proposed pattern of EWR stopping services is five. Limiting the number of intermediate stations to five allows the operation of a reliable train service without the need for trains to overtake one another. By adding additional station calls to some EWR services, those trains will take longer to travel from Bletchley to Cambridge than in Concept 1 but, by limiting the number of station calls between Bletchley and Bedford to five, the overall impact on journey time remains acceptable. The impact on the longer journey times for some trains is off set by the improved accessibility of EWR services leading to more people using the railway.

7.3.31. EWR Co has identified five approximate locations where it believes relocated stations could be built. These locations are based on a review of existing and likely future travel patterns between Bletchley and Bedford. In choosing the new locations we have also considered the location of existing communities as well as proposed new housing and employment developments along the route, and we have sought to provide stations that can be accessed from the new developments without increasing traffic through existing villages.

7.3.32. The locations of the stations would be refined based on on-going technical development of the proposals and feedback from this consultation. Each of the locations proposed is described in more detail in paragraphs 7.3.49 to 7.3.74 below.

7.3.33. No proposals are being made in relation to the names of any of the proposed relocated stations at this stage, but for ease of identification, the stations are described in this consultation as follows:

- A relocated station at Woburn Sands
- A relocated station at Ridgmont
- A relocated station at Lidlington
- A relocated station at Stewartby
- A relocated Bedford St Johns station

7.3.34. EWR Co would welcome stakeholders' views on the eventual station names that may be used.

7.3.35. EWR Co has engaged with representatives of the three local authorities along the route to consider how to best serve both the present and future needs of communities along the Marston Vale Line. The proposed locations are based on current and planned locations of homes and jobs and are designed to provide enhanced connectivity for as many people as possible. EWR Co would be open to consider alternative locations for intermediate stations but any proposed alternative station location(s) would need to meet a number of criteria:

- There can be no more than five intermediate stations between Bletchley and Bedford – as further stops extend the journey time, which reduces the number of passengers that would use EWR overall.
- Any alternative location would need to be accessible for existing users of the Marston Vale Line
- The five stations along the Marston vale Line would need to adequately take into account the needs of existing and planned new communities
- Any station location must have acceptable impacts on the environment, ecology and heritage features and there must be a reasonable prospect that any such impacts can be adequately mitigated to the satisfaction of the relevant statutory body.
- The alternative location(s) would need to deliver the same (or better) outcomes when compared to the five locations proposed in this consultation.
- Any station location should, as far as possible, be located on a straight section of railway. (This avoids excessive gaps between the train and the platform and ensures that as many users as possible can board and alight from trains without assistance).

7.3.36. To supplement the changes to the railway, between Bletchley and Bedford, EWR Co would also seek to improve the options available for journeys to and from the stations (sometimes referred to as "first mile / last mile connectivity") to support and improve sustainable travel and user experience. EWR Co is currently engaged with England's Economic Heartland (the Sub-National Transport Body for the region) in a joint study in first/last mile connectivity to help inform the options. This work aims to ensure existing and future communities can easily access one or more of the proposed relocated stations and, where practicable, would ensure point to point journey times (including those parts of the journey not made by train) are similar to or better than those of today, even if a station has been relocated.

7.3.37. The details of the options for first mile/last mile connectivity that are developed will be consulted on at the Statutory Consultation. However, the options could include:

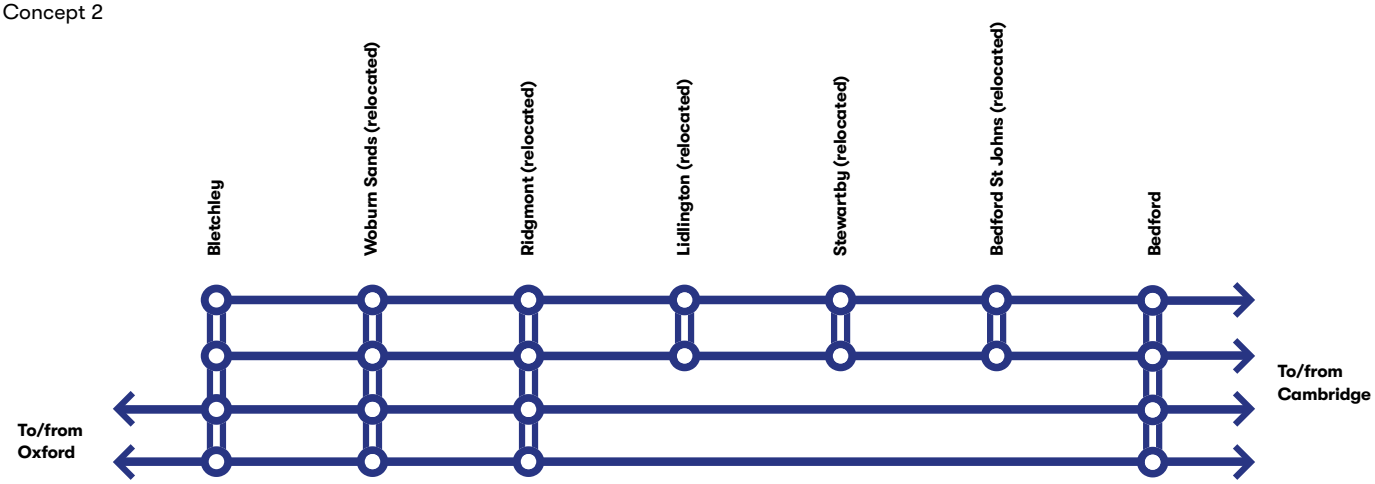
- new and improved walking and cycling routes (which could bring benefits to the wider community, not just those accessing the relocated stations);
- new or altered bus services;
- dedicated taxi or minibus services that could provide a door-to-door service between the station and a customer's home (or other destination), timed to connect with the train service. These services could operate on a fixed route and to a fixed schedule or could be operated on-demand with customers requesting journeys via a smartphone app or by phone. (Such services are sometimes referred to as "demand-responsive" services);
- In future, autonomous vehicles operating within a defined area, providing an on-demand, door-to-door service.

7.3.38. EWR Co would also aim to provide an integrated journey booking system and fares structure that allows for end-to-end journeys using multiple modes of transport to be booked and paid for in a single transaction.

## Service patterns

Figure 7.5: Diagram showing the pattern of passenger train services that would operate on the Marston Vale Line in Concept 2

7.3.39. The pattern of train services that would operate in Concept 2 between Bletchley and Bedford once the section of EWR through to Cambridge is open is shown in the diagram in Figure 7.5. Prior to the opening of the line through to Cambridge, a different pattern of services might be operated.




**Key:**

New EWR services

Note: Each line represents 1 train per hour in each direction

7.3.40. Two EWR services would run each hour in each direction between Oxford and Cambridge. A further two EWR stopping services would run between Bletchley and Cambridge. The intention is that these trains operate at regular times throughout the day and that, between Bedford and Cambridge, the trains would be evenly spaced throughout each hour - a so-called "clock face" service.

7.3.41. In this concept, it is proposed that the EWR services between Bletchley and Cambridge would call at all of the new intermediate stations and the EWR services between Oxford and Cambridge would call at Woburn Sands (relocated) and Ridgmont (relocated) only. This means that all stations would be served by at least two EWR trains each hour Woburn Sands (relocated) and Ridgmont (relocated) would be served by four) and all of those trains would extend beyond Bedford to Cambridge.

7.3.42. Every other train from Woburn Sands (relocated) and Ridgmont (relocated) would extend to Oxford. Journeys between the other intermediate stations (Bedford St Johns (relocated), Stewartby (relocated) or Lidlington (relocated) and Oxford would also be available with only one change.

7.3.43. EWR Co has developed an indicative timetable to demonstrate the pattern of services and journey times that would be available with this concept.

This is shown in Figure 7.6.

7.3.44. Under this concept, two of the four trains each hour may not achieve the Bletchley to Bedford target journey time of 24 minutes, instead taking in the region of 27 to 28 minutes based on current modelling. However, this increased journey time would be offset by improved accessibility to direct trains to Cambridge for a greater number of people, avoidance of the need to build additional tracks at/near Ridgmont and reduced operating costs resulting from the withdrawal of the current stopping service. In addition, all intermediate stations would benefit from an improved frequency of service with at least two EWR services per hour (in each direction) serving all-stations. A comparison of train frequency and journey times by rail today with the frequency and indicative journey times in each of the two concepts can be found in paragraph 7.3.89.

7.3.45. Unlike Concept 1, Concept 2 does not require the provision of additional tracks at/near Ridgmont. This is because the slower services that call at all five stations have a shorter journey time than the current "all-stations" service (that would continue to operate in Concept 1) and can complete the journey from Bletchley to Bedford (or vice versa) in the time between two of the faster services. It is therefore not necessary for the faster trains to overtake the slower ones in this concept.

7.3.46. If this concept were taken forward, it would be necessary for EWR Co to secure the powers to close the existing intermediate stations from the Secretary of State for Transport and/or to carry out other network changes. Normally, closure of stations is achieved by way of the statutory process set out in the Railways Act (2005) (the 2005 Act). As described in Chapter 1, EWR Co intends to seek consent for this next stage of the Project through the Development Consent Order (DCO) process under the Planning Act 2008 (PA 2008). The DCO process can be used so that a number of otherwise separate processes are grouped together, acting as an alternative to the 2005 Act process to secure powers for station closures. Because the station closures are intrinsically linked to the works for which EWR Co is seeking consent for through the DCO process, it would be appropriate for EWR Co to also seek consent for the station closures (and other network changes) through this process rather than through the 2005 Act process at the same time. This allows the station closures to be considered at the same time as the powers to upgrade the railway.

7.3.47. EWR Co and the DfT have discussed how to use the DCO process to effect station closures. EWR Co has agreed that, where practicable, it will use the same consultation periods as would be used under the 2005 Act in preparing its application to effect closures pursuant to the DCO. EWR Co will also engage the Office of Rail and Road in relation to its proposals.

## Station location: detailed information

7.3.48. The following paragraphs describe the five potential locations that EWR Co has identified as being suitable for new stations.

| | | | | | |
|---|---|---|---|---|---|
| OXFORD | d | | 10:53 | | 11:23 |
| Oxford Parkway | d | | 11:00 | | 11:30 |
| Bicester Village | d | | 11:07 | | 11:37 |
| Winslow | d | | 11:18 | | 11:48 |
| BLETCHLEY High Level | a | | 11:26 | | 11:56 |
| | d | | 11:27 | | 11:57 |
| BLETCHLEY Low Level | d | 11:05 | ↓ | 11:35 | ↓ |
| Woburn Sands (relocated) | d | 11:12 | 11:33 | 11:42 | 12:33 |
| Ridgmont (relocated) | d | 11:16 | 11:37 | 11:46 | 12:37 |
| Lidlington (relocated) | d | 11:20 | ↓ | 11:50 | ↓ |
| Stewartby (relocated) | d | 11:25 | ↓ | 11:55 | ↓ |
| Bedford St Johns (relocated) | d | 11:30 | ↓ | 12:00 | ↓ |
| BEDFORD | a | 11:32 | 11:47 | 12:02 | 12:17 |
| | d | 11:33 | 11:48 | 12:03 | 12:18 |
| ECML Interchange | d | 11:43 | 11:58 | 12:13 | 12:28 |
| Cambourne Area | d | 11:53 | 12:08 | 12:23 | 12:38 |
| Cambridge South | d | 12:06 | 12:21 | 12:36 | 12:51 |
| CAMBRIDGE | a | 12:09 | 12:24 | 12:39 | 12:54 |

Figure 7.6: An indicative timetable demonstrating the pattern of services and journey times available with Concept 2

| | | | | | |
|---|---|---|---|---|---|
| CAMBRIDGE | d | 10:24 | 10:39 | 10:54 | 11:09 |
| Cambridge South | d | 10:28 | 10:43 | 10:58 | 11:13 |
| Cambourne Area | d | 10:42 | 10:57 | 11:12 | 11:27 |
| ECML Interchange | d | 10:49 | 11:04 | 11:19 | 11:34 |
| BEDFORD | a | 11:01 | 11:16 | 11:31 | 11:46 |
| | d | 11:03 | 11:18 | 11:33 | 11:48 |
| Bedford St Johns (relocated) | d | ↓ | 11:20 | ↓ | 11:50 |
| Stewartby (relocated) | d | ↓ | 11:26 | ↓ | 11:56 |
| Lidlington (relocated) | d | ↓ | 11:31 | ↓ | 12:01 |
| Ridgmont (relocated) | d | 11:14 | 11:36 | 11:44 | 12:06 |
| Woburn Sands (relocated) | d | 11:19 | 11:41 | 11:19 | 12:11 |
| BLETCHLEY Low Level | a | ↓ | 11:46 | ↓ | 12:16 |
| BLETCHLEY High Level | a | 11:25 | | 11:55 | |
| | d | 11:26 | | 11:56 | |
| Winslow | d | 11:34 | | 12:04 | |
| Bicester Village | d | 11:43 | | 12:13 | |
| Oxford Parkway | d | 11:50 | | 12:20 | |
| OXFORD | a | 11:57 | | 12:27 | |

## Woburn Sands (relocated)

7.3.50. The current station site is heavily constrained by surrounding development and the adjacent level crossing and offers relatively few opportunities for expansion and improvement. Moving the station to the west would unlock greater potential to provide a modern station with improved facilities and better options for interchange with other modes of transport. The proposed relocation would also allow easier access from the proposed Milton Keynes Southeast development area (SD11), where 3,000 new homes are expected to be built in future years. The proposed relocation of the station would mean that users accessing the station from the new development would not need to travel via the existing streets within Woburn Sands to reach the station.

7.3.51. EWR Co is keen to enable easy access to the station from Woburn Sands, from the planned housing to the west and from Aspley Guise (to the east) and will work with the local authorities to secure improvements to access routes.

7.3.52. The relocation of the station would also fit well with some of the options being considered for improving the safety of Woburn Sands level crossing (see paragraphs 7.6.99 to 7.6.140).

7.3.53. Construction of a new station in this locality would require the permanent acquisition of privately owned land. The precise details of which land would be affected cannot be determined until a definite site for the relocated station has been determined and further work is undertaken to confirm the layout of the station and associated infrastructure (such as car parks and access roads). If this concept is taken forward, this will be done at the next stage of design and details will be consulted upon at the Statutory Consultation.


Figure 7.7: Map showing search area for relocated Woburn Sands station

## Ridgmont (relocated)

7.3.54. A new station would be provided between the current Aspley Guise and Ridgmont stations, replacing these stations, and located to the west of Bedford Road. The approximate area in which the station could be located is shown in Figure 7.8, below.

7.3.55. The station would be located to the west of the M1 and Bedford Road bridges. This is close to the site of the former Husborne Crawley Halt that closed in 1941 and is the same location that is described above for the relocation of Ridgmont station in Concept 1.

7.3.56. The relocated station would be adjacent to an area (known as "Aspley Triangle") that has been identified as being potentially suitable for development in the future as part of the South East Milton Keynes Area of Future Growth (AFG). The development of the Aspley Triangle area could provide a significant number of new homes as well as employment areas.

7.3.57. Like the current Ridgmont station, the proposed area for the relocated station is close to junction 13 of the M1, where the motorway is intersected by the A421.

7.3.58. A new station at this site could be configured to provide interchange with other modes of transport. It would offer convenient access from the M1 and

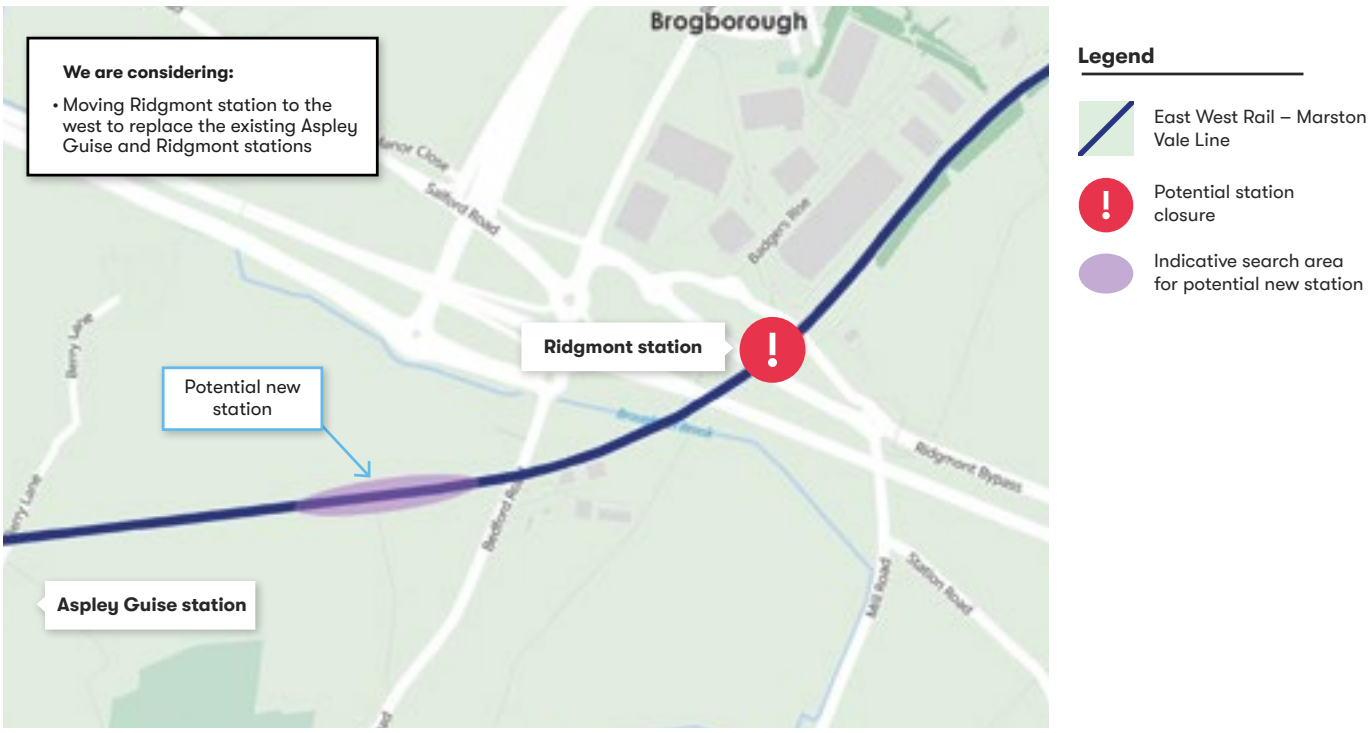



Figure 7.8: Map showing search area for new station to replace Aspley Guise and Ridgmont stations

A421 roads and could offer potential for a park and ride facility for wider connectivity, which supports proposals by Milton Keynes Council. Unlike the current Ridgmont station, the new station would be located on a straight section of track. This would allow for easier boarding and alighting from trains and reduces the risk of accidents because of the smaller gap between the train and the platform when compared to a curved platform.

7.3.59. The precise layout of a station in this location would require careful consideration and to fit with proposals for the Milton Keynes – Bedford Waterway. As the land to the south of the railway is designated as Green Belt, the station would need to be designed in a way that respects the character of the Green Belt.

7.3.60. Development of a station at this location would allow a modern, multi-modal interchange to be provided without harming the setting of the heritage centre and tea rooms located in the listed former station building at Ridgmont.

7.3.61. However, it would place the station further away from these facilities and also from the businesses located close to the current Ridgmont station. EWR Co would propose that a good-quality pedestrian and cycle route is developed to link the new station site to the current Ridgmont station site. The walking time between the two would be in the region of 10 to 15 minutes, depending on walking speed and the final location of the new station.

7.3.62. The station would also be further from the village of Aspley Guise than the current Aspley Guise station. The current station is around 900m from the centre of the village (taken as being The Square). EWR Co would also seek to establish new pedestrian and cycling links to Aspley Guise. With the new links in place, the distance from the centre of the village to Aspley Guise station could increase by between 700m and 1km (depending on the precise station location and the route of any new pedestrian and cycle paths). Coupled with proposed links to alternative modes of transport, the proposed relocation would encourage increased traffic flows away from the centre of Aspley Guise and village roads.

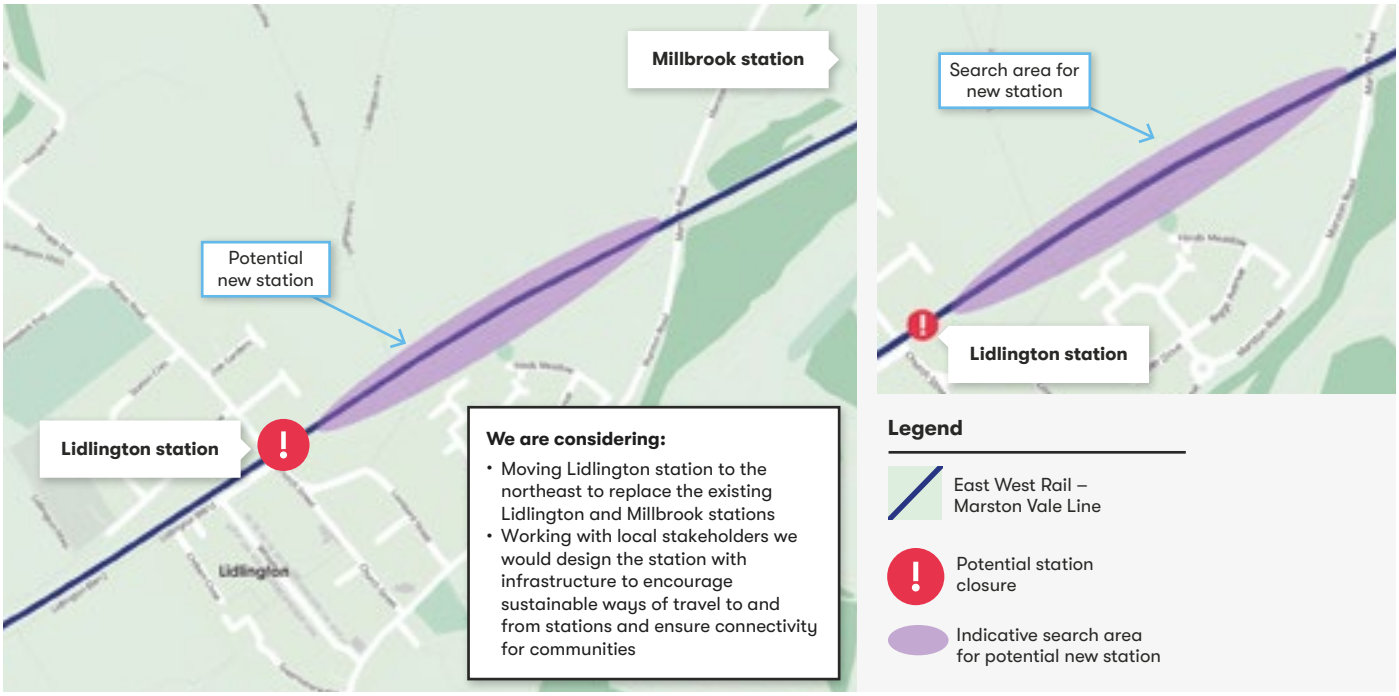
7.3.63. Options for demand-responsive services (such as on-demand taxi or minibus services) would also be investigated, to link the station to surrounding areas.

7.3.64. Construction of a new station in this locality would require the permanent acquisition of privately owned land. The precise details of which land would be affected cannot be determined until a definite site for the re-sited station has been determined and further work is undertaken to confirm the layout of the station and associated infrastructure (such as car parks and access roads). If this concept is taken forward, this will be done at the next stage of design and details will be consulted upon at the Statutory Consultation.

## Lidlington (relocated)

7.3.65. A new station would be provided between the current Lidlington and Millbrook stations, replacing those stations, and located to the west of Marston Road. The approximate area in which the station could be located is shown in Figure 7.9, below.

Figure 7.9: Map of search area for proposed new station to replace Lidlington and Millbrook stations




7.3.66. 5,000 new homes are proposed to be built to the north of Lidlington over the next 20 years under SA2 outline planning applications submitted by O&H Properties. The development of these homes would potentially lead to significant additional use of Lidlington station. However, the station is located within the built-up area of the village and has no space around it to allow for improvement and expansion. The proposed site for the relocated Lidlington station would allow for a better station to be created that is more able to deal with the expected future levels of use and provide a modern customer experience. Access to the new station from the new development would be possible without passing through the existing village at Lidlington thereby avoiding increased traffic flows.

7.3.67. A station at this location would be designed as a facility for the local community rather than a station to encourage access from a wider catchment and it would be designed to encourage access by sustainable means. EWR Co would work with the local authority and the developer of the Marston Valley development to develop high-quality pedestrian and cycle access routes between the station and the new homes. Direct access for pedestrians and cyclists would also be provided from the site of the current

Lidlington station. The walking and cycling distance from the current Lidlington station to the relocated Lidlington station could be in the region of 500 to 800m (depending on the precise station location and the route of any pedestrian and cycle path).

7.3.68. EWR Co will also seek opportunities for improved links to the new station for residents of Marston Moretaine, currently served by Millbrook station. The distance from the village to the new station would be approximately 2.3km (approximately 600m further than the distance to the current Millbrook station).

7.3.69. Construction of a new station in this locality would require the permanent acquisition of privately owned land. The precise details of which land would be affected cannot be determined until a definite site for the re-sited station has been determined and further work is undertaken to confirm the layout of the station and associated infrastructure (such as car parks and access roads). If this concept is taken forward, this will be done at the next stage of design and details will be consulted upon at the Statutory Consultation.

## Stewartby (relocated)

7.3.70. A new station would be provided between the current Stewartby and Kempston Hardwick stations, replacing these stations, and located close to Broadmead Road. The approximate area in which the station could be located is shown in Figure 7.10, below.

Figure 7.10: Map showing search area for new station to replace Stewartby and Kempston Hardwick stations


7.3.71. Under Policy 25 of the Bedford Borough Local Plan the site of the former Stewartby Brickworks, to the southwest of the proposed new station, is proposed to be redeveloped for a mix of residential, employment and community uses. Proposals put forward by developer Cloudwing propose up to 1,000 homes being built on the site.

7.3.72. Cloudwing has also submitted an outline planning application for an employment-led mixed-use development (known as Bedford Business Park) to be built on land immediately to the northeast of the new station site. This development would extend along both sides of the railway towards Bedford and is expected to bring around 15,000 new jobs to the area. The proposed relocation of the station would provide better connectivity to both of these developments.

7.3.73. A station at this site would be well placed to provide access to the railway from both existing and new residential areas at Wootton and on the west side of Bedford (thereby taking pressure off the road network linking these areas to Bedford station). Access to the relocated station would also be possible

from developments at Wixams. The distance between the proposed area for the relocated Stewartby station and the proposed location for the new Wixams station on the Midland Main Line (which is on the western edge of the Wixams development) is around 4.5km via existing roads. New roads that are planned as part of the Bedford Business Park development would reduce the length of the journey to around 2.5km. This would mean the journey would take around eight minutes by bike, 30 minutes on foot or less than five minutes by car.

7.3.74. The relocated station would be a similar distance from the centre of Stewartby village as the existing Stewartby station. However, the distance between the relocated station and Kimberley Sixth Form College would increase from around 450m to approximately 1400m (depending on the precise location of the new station and the layout of roads and footpaths within the new development on the brickworks site). It would take around four to five minutes to cycle between the relocated station and the college or around 17 minutes on foot.

7.3.75. EWR Co would investigate a range of options for providing access between the relocated station, surrounding residential and commercial areas and Kimberley College. If this Service Concept is taken forward, EWR Co would work with the developers of the adjoining sites to seek to provide high-quality walking and cycling routes that link to the station. Options for demand-responsive services (see 7.3.64 above) would also be investigated, to link the station to surrounding areas, including the Wixams development.

7.3.76. Construction of a station in this locality would require the permanent acquisition of privately owned land. The precise details of which land would be affected cannot be determined until a definite site for the re-sited station has been determined and further work is undertaken to confirm the layout of the station and associated infrastructure (such as car parks and access roads). If this concept is taken forward, this will be done at the next stage of design and details will be consulted upon at the Statutory Consultation.

### Bedford St Johns (relocated)

7.3.77. EWR Co's proposals in respect of the relocation of Bedford St Johns station are described in Chapter 8 of this document, which deals with proposals in the wider Bedford area (see paragraphs 8.3.1 to 8.3.46).

### Summary of station alternatives

7.3.78. Under Concept 2, the alternatives described below would be available to users of existing Marston Vale Line stations.

7.3.79. Improvements to Bletchley station (including a new eastern entrance on Saxon Way) (see paragraph 7.4.1) and possible improvements to other public transport in the area would allow users of the current **Fenny Stratford**

station to access the railway at Bletchley. The new entrance at Bletchley station would be around 1.4km from the current Fenny Stratford station. On average, this distance could be covered in around six minutes by bike or 18 minutes on foot. EWR Co would also work with Milton Keynes Council to investigate opportunities for improvements to local bus services linking the Fenny Stratford area to Bletchley station.

7.3.80. Users of the current **Bow Brickhill** station would be able to use Bletchley station or the relocated Woburn Sands station instead. The new eastern entrance at Bletchley would be around 4km from Bow Brickhill station. The relocated Woburn Sands station would be around 4.5km from Bow Brickhill station but this distance is likely to be reduced by the construction of new roads and cycle paths within the MKSE development. EWR Co would work with Milton Keynes Council and developers of sites adjoining the railway to secure new and improved pedestrian and cycle routes. EWR Co would also work with Milton Keynes Council to investigate opportunities for improvements to local bus services to link the area around Bow Brickhill station to Bletchley and the relocated Woburn Sands stations. Options for demand-responsive services (see 7.3.64 above) from the relocated Woburn Sands station to connect with the area around Bow Brickhill station would also be considered.

7.3.81. Users of **Woburn Sands** would be able to access the railway at the improved, Woburn Sands (relocated) station. The relocated station would be linked to the site of the current station (and hence to the town) via a new stretch of pedestrian and cycle path. In addition, depending on the final location and configuration of the station and the option taken forward for Woburn Sands level crossing (see 7.6.99) a new vehicular access route might also be provided.

7.3.82. EWR Co would also investigate options for improving walking and cycling routes from the Woburn Sands (relocated) station to **Aspley Guise**. In addition, links from Aspley Guise to the relocated Ridgmont station would be created. EWR Co would also consider the provision of a demand-responsive transport options (see 7.3.64 above) to link to Ridgmont (relocated) station. With new footpath and cycle links, the distance from Aspley Guise (The Square) to the relocated Ridgmont station would be around 1.8km (roughly double the distance to the current Aspley Guise station), taking an extra few minutes by bike or 11 minutes on foot. The journey by car using existing roads would take less than five minutes.

7.3.83. The current **Ridgmont** station would be linked to the relocated Ridgmont station by a new pedestrian and cycle path. This path would need to be co-ordinated with other proposals affecting the area such as the Milton Keynes – Bedford Waterway. The demand-responsive services (see 7.3.64 above) that would be considered to link Aspley Guise to Ridgmont (relocated) station could also serve the area currently served by Ridgmont station.

7.3.84. The relocated Lidlington station would be a relatively short distance from the site of the current Lidlington station and would be linked to it by a new or improved pedestrian and cycle route. For some residents of the village, the journey to the station would become slightly longer but for others it would become shorter.

7.3.85. Residents of Marston Moretaine (the nearest settlement to **Millbrook** station) would have access to the relocated Lidlington station via Station Road and Marston Road. EWR Co would also work with the local authority (Central Bedfordshire Council) and the developer of the proposed Marston Valley development to secure improved pedestrian and cycle links between Marston Moretaine and the new station. The relocated Lidlington station would be around 2.3km from the centre of Marston Moretaine (taken as the junction of Station Road and Woburn Road), which is around 700m further than the distance to the current Millbrook station.

7.3.86. Users of **Stewartby** station would be able to access the railway via the relocated Stewartby station. EWR Co would work with the local authority (Central Bedfordshire Council) and the developer of the former Stewartby Brickworks site to secure new pedestrian and cycle links to Stewartby village and to Kimberly College. For residents of Stewartby, the distance to the station would be similar, with some residents being slightly further from the relocated station but others being slightly closer. The distance between the relocated station and Kimberley College would increase from around 450m to around 1400m (depending on the final location of the relocated station and the precise configuration of new roads and pedestrian and cycle routes within the planned Stewartby brickworks redevelopment). The journey from the relocated station to the college would take around four to five minutes by bike and 10-12 minutes longer on foot compared to today.

77.3.87. The relocated Stewartby station would also provide a replacement facility for users of the current **Kempston Hardwick** station. The existing road network already provides routes to the new station for users of the current station and additional, shorter routes would be provided if the business park development on land between the two stations goes ahead.

7.3.88. The relocated **Bedford St Johns** station would be a short distance from the current station. Access to the new station site from the current one would be possible via the existing network of streets and footpaths within this part of Bedford.

7.3.89. The options for new pedestrian and cycle routes, new access routes and potential improvements to other public transport (including the potential provision of new, demand-responsive services) would be developed in time for the Statutory Consultation.

## Comparison of Concepts 1 and 2

7.3.90. Table 7.2 below provides a comparison of train frequency and journey times by rail today with the frequency and indicative journey times in each of the two concepts for a sample range of journeys. Where a journey between two points cannot easily be undertaken by rail today (for example, journeys that are only currently possible by rail by travelling via London), no current journey time is shown. For concept 2 (and for journeys to or from Ridgmont or Bedford St Johns in concept 1), the journey time for the equivalent journey to or from the nearest new station is shown and this journey time does not take account of any additional time that might be taken to reach the alternative station. For some journeys in concept 1, a faster journey time is possible by changing trains at Ridgmont. Where this is the case, the faster journey time is shown in brackets after the journey time that can be achieved without changing trains. The journey times shown in this table are indicative and may be subject to change as the Project develops.

Table 7.2: Comparison of current train frequencies and journey times with those in concepts 1 and 2

| Journey | Current | | Concept 1 | | Concept 2 | |
|---|---|---|---|---|---|---|
| | Frequency (journey opportunities per hour) | Journey time (minutes) | Frequency (journey opportunities per hour) | Journey time (minutes) | Frequency (journey opportunities per hour) | Journey time (minutes) |
| **Bow Brickhill to Bedford St Johns** | | | | | | |
| Bow Brickhill to Bedford St Johns | 1 | 31 | | | | |
| Bow Brickhill to Bedford St Johns (relocated) | | | 1 | 33 | | |
| Woburn Sands (relocated) to Bedford St Johns (relocated) | | | | | 2 | 18 |
| **Woburn Sands to Bedford** | | | | | | |
| Woburn Sands to Bedford | 1 | 31 | 4 | 14 | | |
| | | | 1 | 31 | | |
| Woburn Sands (relocated) to Bedford | | | | | 4 | 14 |
| **Aspley Guise to Bedford** | | | | | | |
| Aspley Guise to Bedford | 1 | 28 | 1 | 29/17 | | |
| Ridgmont (relocated) to Bedford | | | | | 4 | 10 |

| Journey | Current | | Concept 1 | | Concept 2 | |
|---|---|---|---|---|---|---|
| | Frequency (journey opportunities per hour) | Journey time (minutes) | Frequency (journey opportunities per hour) | Journey time (minutes) | Frequency (journey opportunities per hour) | Journey time (minutes) |
| **Aspley Guise to Stewartby** | | | | | | |
| Aspley Guise to Stewartby | 1 | 14 | 1 | 19 | | |
| Ridgmont (relocated) to Stewartby (relocated) | | | | | 2 | 9 |
| **Ridgmont to Oxford** | | | | | | |
| Ridgmont (relocated) to Oxford | | | 2 | 43 | 2 | 43 |
| **Ridgmont to Cambridge** | | | | | | |
| Ridgmont (relocated) to Cambridge | | | 4 | 47 | 2 | 47 |
| | | | | | 2 | 53 |
| **Lidlington to Oxford** | | | | | | |
| Lidlington to Oxford (changing at Bletchley) | | | 1 | 65 | | |
| Lidlington (relocated) to Oxford (changing at Ridgmont) | | | | | 2 | 56 |
| **Lidlington to Cambridge** | | | | | | |
| Lidlington to Cambridge (changing at Bedford) | | | 1 | 56 | | |
| Lidlington (relocated) to Cambridge (by direct train) | | | | | 2 | 49 |
| **Stewartby to Bletchley** | | | | | | |
| Stewartby to Bletchley | 1 | 29 | 1 | 30/24 | | |
| Stewartby (relocated) to Bletchley | | | | | 2 | 20 |
| **Bedford to Bletchley** | | | | | | |
| Bedford to Bletchley | 1 | 42 | 4 | 22 | 2 | 22 |
| | | | 1 | 42 | 2 | 27 |

7.3.91. The following paragraphs compare the two concepts and highlight some of the advantages and disadvantages associated with each concept.

7.3.92. Concept 1 would retain the existing intermediate stations in their current locations - other than at Ridgmont and Bedford St Johns where the stations would be relocated - and as a result, access to the railway would remain largely unchanged to what is seen and available today. However, the shape of the communities in and around the Marston Vale Line is set to change rapidly – regardless of the introduction of EWR services – given the scale of proposed new developments in the area. Under this concept, access to stations for those living or working in both existing communities and new developments could be less convenient as locations would encourage increased traffic from new developments on longer routes through existing towns and villages along the railway.

7.3.93. Concept 2 would provide alternative station sites that attempt to strike a balance between the needs of those who use the railway today and those who may be attracted to use it in the future, meaning that more people would have convenient access to an EWR station. While, in Concept 2 some existing users may have to travel further to reach a station, this increase in travel time would be offset by faster train journey times.

7.3.94. It would provide stations that could be accessed from new developments without the need to travel into or through existing settlements.

7.3.82. As part of Concept 2, EWR Co would seek to provide new and improved pedestrian and cycle links to the new station sites. These new links would allow quicker, safer access to the new station sites and would also be available for the use of the whole community as part of the wider footpath and cycleway network in the area. Other than at Ridgmont, these links would not be provided in Concept 1.

7.3.95. Existing stations have relatively poor facilities for access other than on foot and, in the majority of cases, site constrains prevent comprehensive access improvements from being implemented. In Concept 1 potential users from new developments could be dissuaded from using the railway and might choose to use less sustainable modes of transport to undertake their journeys. However, the greater distances that some existing users would need to travel to reach a station in Concept 2 could cause them to switch to alternative, less sustainable modes of transport.

7.3.96. As part of Concept 2, EWR Co would seek to provide new and improved pedestrian and cycle links to the new station sites. These new links would allow quicker, safer access to the new station sites and would also be available for the use of the whole community as part of the wider footpath and cycleway network in the area. Other than at Ridgmont, these links would not be provided in Concept 1, due to constraints in and around the existing station locations.

7.3.97. Concept 2 provides four trains per

hour (in each direction) with at least two trains per hour serving each station. The more frequent service at some stations in Concept 2 might make the train a more attractive option for more journeys. Concept 1 requires five trains per hour (in each direction) and the majority of stations would be served by just one train per hour.

7.3.98. In Concept 1, only Woburn Sands and Ridgmont would be served by direct trains to Oxford and Cambridge. In Concept 2, all stations would have a direct service to Cambridge. Woburn Sands (relocated) and Ridgmont (relocated) would also have direct services to Oxford. In Concept 2, some stations would have direct trains to a wider range of destinations than in Concept 1 and that could make the train a more attractive option for some longer-distance journeys.

7.3.99. In Concept 1, station facilities would remain largely unchanged (although EWR Co would consider improvements at Woburn Sands and at the relocated Ridgmont station). The new station sites in Concept 2 would provide greater scope for the provision of better facilities, potentially including facilities that would benefit the whole community, not just those travelling by train. Concept 1 would require the construction of passing loops near Ridgmont, which would require additional land in this area compared to Concept 2, in which passing loops would not be required to operate the passenger service. However, Concept 2 would require land for the re-sited stations that would not be required for Concept 1.

7.3.100. If Concept 2 were taken forward, the cost of the passing loops would be saved and could instead be invested in better facilities at the relocated stations. The changes to level crossings (described further on in this Chapter) would result in the need for new and changed access routes at the existing stations, possibly including new footbridges at some stations. These works would not be required for Concept 2.

7.3.101. The Concept 1 train service would require more trains (and hence more train crew) to operate than the Concept 2 service. This would make the Concept 1 train service more expensive to operate than the Concept 2 service.

7.3.102. In Concept 1, the pattern of train services means that faster EWR services would need to overtake the slower "all-stations" service. The structure of the timetable that would be required to facilitate this overtaking would be make it inherently less reliable. This is because, at certain points on their journeys, the faster and slower trains would have to be scheduled to be much closer together than in Concept 2. This increases the risk of a delay to one train resulting in a delay to the following service.

## Assessment Factors to be considered

7.3.87. When deciding which concept to take forward, in addition to the outcomes of this consultation, EWR Co expects that it will be necessary to pay particular attention to the following Assessment Factors and Considerations which are expected to differentiate between concepts:

- Transport user benefits – especially with regard to journey times;
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land – encouraging regeneration and improving employment and productivity benefits arising from existing and proposed development;
- Environmental impacts and opportunities – including impacts on local communities;
- Capital costs (of the infrastructure required to enable each concept);
- Operating costs;
- Short distance connectivity to support commuting travel into key employment hubs (current and future) – with particular reference to the impact on journeys that are currently undertaken on the route;
- Short distance passenger services;
- Rail passenger connectivity to existing main lines;
- Long distance passenger services; and
- Performance.

7.3.88. The following paragraphs set out a preliminary assessment of how these Assessment Factors may apply to the concepts at the next stage of the Project.

7.3.89. Concept 1 may perform worse than Concept 2 in respect of **Transport User Benefits** as the slower service would need to wait at Ridgmont to allow the faster service to pass. The service is also likely to be less reliable in Concept 1 because of the way in which the faster and slower trains interact. However, in Concept 1, journey times to and from stations are unchanged for users that live (or work) close to an existing station (except at Ridgmont and Bedford St Johns). Concept 2 is expected to be an improvement on Concept 1 as the service would be more reliable (due to passenger services not needing to overtake one another) and more stations have direct services to Cambridge. Journey times on the slower services would be shorter in Concept 2. Concept 2 may mean that some existing users are further from their nearest station compared to Concept 1 but EWR Co would aim to make overall journey times from home to destination (or vice versa) similar to or shorter than Concept 1. Stations would, though, be more easily accessible from new developments. As Concept 2 has better station facilities at all stations, it is more likely to encourage more people to use rail. The new station sites are likely to offer more opportunities for integration with other modes of transport

7.3.90. Concept 2 is expected to perform better than Concept 1 in terms of **contribution to enabling housing and economic growth**. This is because the existing station locations do not optimally serve anticipated future developments across the corridor, and the slower service patterns and lack of onward connectivity lowers the probability that current and future residents use public transport. EWR Co expects that the new or relocated stations could better serve existing and future developments because they would be located in places that are more easily accessible from sites that are likely to be developable. The improvement in connectivity (in terms of faster journey times to key centres across the Arc) would be more conducive to growth.

7.3.91. Concept 1 could perform less well in terms of **Environmental impacts and opportunities** because of the impacts associated with the new infrastructure (passing loops) around Ridgmont. Concept 1 could support existing communities by retaining the existing stations which could be more accessible for some existing communities. Concept 2 could have more negative impacts due to the development of stations on undeveloped land. Concept 2 could support existing and future communities by providing a better service with shorter journey times, but it could be less accessible for some existing communities.

7.3.92. Further work is required to understand the **capital costs** of building the infrastructure required to support the two Concepts. However, EWR Co's initial assessment is that the costs could be broadly similar. This is because the savings in Concept 2 from not having to build passing loops at Ridgmont would be countered by the additional costs associated with the new stations and the associated access improvements.

7.3.93. Concept 1 could have higher **operating costs** than Concept 2 due to the greater amount of track infrastructure required (to provide passing loops) and the higher number of stations compared to Concept 2.

7.3.94. In terms of **short distance connectivity to support commuting travel into key employment hubs (current and future)**, Concept 1 would maintain the journeys that people currently take although they would be slower in this Concept. Concept 2 could attract more people to use the railway as a whole because of the better station facilities, stations being better located to serve existing and future development, more frequent trains and faster journey times for some journeys. However, with relocated stations, the journey to the station for some users may take longer and become unattractive.

7.3.95. Concept 1 could be worse than Concept 2 in terms **short distance passenger services (regional journeys, station to station)** because many shorter journeys would be slower in Concept 1 than in Concept 2.

7.3.96. Concept 1 could impact the reliability of **long-distance passenger services** as the faster long-distance services are more likely be delayed by the slower services (because of the interactions between services that occur as the result of the faster services having to overtake the slower services). Concept 2 offers direct services to Cambridge from more locations and therefore more readily facilitates longer-distance journeys.

7.3.97. **Performance** is likely to be worse in Concept 1 because there would be more trains using the railway and the interactions between trains are more complex leading to an increased risk of an incident leading to more widespread delay. Concept 1 could also be worse because the increased amount of track and number of stations means that there are more opportunities for the infrastructure to fail.

## 7.4 Bletchley Station

### Introduction

7.4.1. This section of the Chapter describes additional works that EWR Co is considering carrying out at Bletchley station, the location of which is shown in Figure 7.11.

7.4.2. In February 2020, Network Rail obtained the 2020 Order which included the expansion of Bletchley station by providing two new platforms (for trains to and from Oxford) and a new footbridge span to link these platforms with the rest of the station.

7.4.3. With the extension of EWR services to Bedford and Cambridge, Bletchley station would become an important hub. It is expected that the station would provide an important interchange, not only between different EWR services but also between EWR services and those on the West Coast Main Line (WCML, the route between London, the West Midlands, the Northwest of England and Scotland). The station is also expected to be used by more people from the local area and by more people accessing Bletchley from locations newly connected to the town via EWR.

### Options to be considered

7.4.4. Works to expand Bletchley station (by adding two additional platforms for trains between Oxford, Milton Keynes and Bedford) were authorised by the 2020 Order. However, in connection with the additional services to Bedford and Cambridge now proposed by EWR Co, additional works may be required at Bletchley to provide for the extra trains and the passengers that would use the station. EWR Co is reviewing the works authorised by the 2020 Order and considering what additional works might be required to provide an improved customer experience throughout the station area and to provide for additional demand in the future.

Figure 7.11: Location of Bletchley station

7.4.5. EWR Co is considering a range of options to improve the station. The design process is currently at a very early stage but the types of improvements EWR Co might wish to undertake include:

- Provision of a new station entrance on the east side of the station near the Saxon Street / Buckingham Road roundabout. This new entrance would be more convenient for access to and from the bus station, the town centre and Fenny Stratford;
- Improvements to access routes within the station, including alterations to or replacement of the current station footbridge and provision of step-free access to platform 6;
- Improvements to or replacement of the current station building on Sherwood Drive;
- Improvement and enlargement of the station car park;
- Alterations to the proposed design of the new platforms for trains to and from Oxford to make boarding and alighting of trains easier for all passengers;
- Provision of a further additional platform, next to the current platform 6. This platform would be used by trains to and from Bedford and Cambridge that start or terminate at Bletchley and it would provide additional platform capacity to allow more trains to operate in future; and
- Improvements to the current pick-up / drop-off area on the west side of the station.

7.4.6. EWR Co will engage with Bletchley Town Council and Milton Keynes Council to ensure synergy with the emerging plans for the redevelopment of Bletchley town centre.

## Assessment Factors to be considered

7.4.7. When deciding which options to take forward, in addition to the outcomes of this consultation, the following Assessment Factors (of those agreed with DfT to be used for optioneering relating to the overall Project Objectives as described in Chapter 3) are expected to be of particular relevance:

- Transport user benefits
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land;
- Capital costs
- Operating costs
- Overall affordability
- Rail passenger connectivity to existing main lines
- Alignment with wider railway strategy / infrastructure;
- Safety risk (construction and operation);
- Environmental impacts and opportunities; and
- Consistency with Local Plans


Bletchley station

## 7.5 Fenny Stratford additional track

### Introduction

7.5.1. This section of the Chapter describes works that EWR Co needs to undertake in the Fenny Stratford area, shown in Figure 7.12, to reinstate a second track that was removed in the 1970s. It describes the options being considered and the factors that will be taken into account when choosing which option to take forward.

Figure 7.12: Map highlighting the section of railway over which a second track is proposed


7.5.2. The railway from Bletchley station towards Bedford currently includes a section of single track between Bletchley station and a point immediately to the east of the A5 road near Fenny Stratford. In this section there is a junction where the railway to and from Oxford diverges from the railway to and from the current platforms at Bletchley station. This section of single track would not be able to accommodate the additional train services, which would run between Oxford and Bedford / Cambridge, and would prevent them from operating reliably without significantly affecting other services.

7.5.3. To increase capacity and reliability of the service a second track is needed in this area and the junction between the two routes needs to be redesigned. EWR Co is confident that this can be built within the existing railway

boundary because this section of railway previously had two tracks and the land on which the second track was located is still owned by Network Rail. However, more land may be needed on a temporary basis to do some of the work required, like repairing and improving the existing embankments. EWR Co will consult further on this as part of the Statutory Consultation.

7.5.4. In this section of the line, there are four bridges that carry the railway line over the River Ouzel and local roads (the V7 Saxon Street dual carriageway in Bletchley (2 bridges) and the A5 dual carriageway east of Fenny Stratford). These bridges were built to carry only one track, therefore changes would be needed allow for reinstatement of the second track. (The bridge carrying the railway over the Grand Union Canal at Fenny Stratford has adequate space for a second track and does not need to be rebuilt).

## Options to be considered

7.5.5. EWR Co is considering several potential track layout options for the redesigned junction, each of which have differing impacts on the design of the replacement bridge structures that would be required and on the existing railway embankments. The layouts also have differing impacts on the speed at which trains are able to travel at within this section of the line and they could also impact on the future reliability of the train services.

7.5.6. Further development of the detail of the track layout options is required and this will need to take account of the train service pattern that would operate in future (see paragraphs 7.3.1 to 7.3.113).

## Assessment Factors to be considered

7.5.7. When deciding the options for the revised junction design and the design of the replacement bridge structures in this area, in addition to the outcomes of this consultation, the following Assessment Factors are expected to be of particular relevance:

- Transport user benefits – with particular reference to the impact of each option on journey times;
- Capital costs;
- Operating costs;
- Overall affordability;
- Satisfying existing and future freight demand;
- Performance;
- Safety risk (construction and operation); and
- Environmental impacts and opportunities

## 7.6. Level crossings on the Marston Vale Line

### Introduction

7.6.1. This section of the Chapter looks at the level crossings on the railway between Bletchley and Bedford. It describes the crossings and EWR Co's proposals for them. It also describes options to mitigate the impacts of those proposals. The closure of level crossings is expected to be required regardless of the service concept eventually selected as the frequency and speed of new services would make crossings less safe than they are today and could mean considerable delays for road users. The progressive replacement of level crossings with bridges and underpasses is government policy in the UK.

7.6.2. There are currently 31 level crossings on the railway between Bletchley and Bedford. Their locations are shown in Figure 7.13. At these level crossings, rights of way of various kinds cross the railway on the level. These rights of way include public highways, private access roads, public footpaths and bridleways and agricultural access routes that facilitate access between different parts of farms that are bisected by the railway. Of these crossings,

Figure 7.13: Level crossings on the Marston Vale Line


Intermediate stations between Bletchley and Bedford not shown

there are 11 that are already due to be altered or closed pursuant to the 2020 Order secured by Network Rail. A further three crossings (in addition to the 31 considered here) have already been closed by Network Rail pursuant to the 2020 Order.

7.6.3. The level crossings can be subdivided as follows:

- 11 road crossings of which two will be closed under the 2020 Order;
- 14 public footpath and bridleway crossings of which four will be closed under the 2020 Order; and
- Six[46] private access crossings of which five[45] will be closed under the 2020 Order.

7.6.4. The Office of Rail and Road (ORR) (the safety regulator for the railway industry) acknowledged, in 2011[46], that "level crossings account for nearly half of the catastrophic train accident risk on Britain's railways". Despite continued effort by the railway industry to improve the safety of level crossings, in Great Britain in 2019/20:

- Two pedestrians died after being struck by trains in accidents at level crossings.
- There were six train collisions with road vehicles at level crossings.
- Pedestrian near misses at passive crossing types are increasing.
- The number of operating incidents resulting in users becoming trapped on or in a level crossing also increased.
- There were 24 suicides at level crossings.[48]

7.6.5. In addition to the safety risk posed by level crossings, a significant proportion of train delays are attributable to level crossings, either as a result of accidents or incidents or because of the failure and or misuse of level crossing equipment. On the Bedford to Bletchley line, train services had to be suspended on a number of days during 2020 because of an ongoing technical problem with two of the level crossings.

7.6.6. Many factors influence safety risk at level crossings. However, it is clear that as the number and speed of train movements over a crossing increase, the risk of an accident or safety-related incident at that crossing increases and the consequences of accidents potentially become more serious. Therefore, whenever changes are proposed to the speed, type and frequency of trains on a section of railway, it is necessary to review the risk at each level crossing and undertake any necessary works to reduce or remove the risk.

7.6.7. When considering improvements to level crossings, ORR states that "The primary objective should be to close level crossings permanently, following the closure or diversion of a highway, road or by the provision of a bridge or under-pass" and "Simple renewal and retention of existing crossings should be seen as a last resort"[48].

7.6.8. As stated above, Network Rail has previously consulted on and obtained

[45] Includes one level crossing at which both a private access and public footpath cross the railway
[46] "Level Crossings: A guide for managers, designers and operators", ORR, December 2011
[47] Accident data from "Level crossings 2019/20", RSSB,
[48] "Level Crossings: A guide for managers, designers and operators", ORR, December 2011

consent for proposals to close 11 of the remaining 31 level crossings on the Marston Vale Line. This was in connection with the proposals authorised under the 2020 Order to introduce an hourly Oxford to Bedford service as part of earlier proposals for EWR.

7.6.9. The current proposals, which will see the introduction of train services from Oxford to Bedford and Cambridge, will result in a greater increase in the number of passenger trains using the Bletchley to Bedford line than was envisaged at the time of Network Rail's application for the 2020 Order. The frequency of passenger trains will increase from the current level of one train per hour in each direction to up to five trains per hour in each direction. Unlike in the previous proposals, the maximum speed of trains will also increase, from 60mph to up to 100mph.

7.6.10. In addition to the passenger services, the line will continue to cater for freight traffic. Currently, up to five freight paths per day are timetabled over the Marston Vale Line, although many of the paths are often not used.

7.6.11. The most noticeable impact of this change on level crossings, if they were retained, would be at crossings at which public highways cross the railway. At these crossings, there would be a significant increase in the amount of time in each hour during which the crossings are closed to road traffic to allow trains to pass. The exact duration of closure each hour would depend on a number of location-specific factors and, at this stage in the design process, it is not possible to give precise timings. However, in some cases, the level crossing barrier could be closed for as much as 40 minutes in each hour[50]. This would lead to longer journey times for pedestrians and road users and could result in more traffic delays in the vicinity of some crossings.

7.6.12. EWR Co has therefore reviewed all the level crossings on the Marston Vale Line and intends to implement the crossing closures authorised by the 2020 Order. EWR Co is also proposing to close the remaining 20 crossings on the Marston Vale Line that were not previously proposed for closure under Network Rail's plans. This will be necessary regardless of which train service concept (see paragraphs 7.3.1 to 7.3.113) is taken forward.

7.6.13. Where necessary, alternative means of crossing the railway are proposed. Although mitigation measures have already been proposed and authorised in respect of the 11 crossing closures authorised by the 2020 Order, EWR Co is reconsidering these mitigation measures in the context of the need to close a greater number of crossings. As a result, in some locations, alternative connectivity options are now being considered by EWR Co.

7.6.14. Because many of the crossings are located in close proximity to one another,

[50] This figure is based on a service pattern of five trains per hour in each direction and a closure of up to four minutes for the passage of each train, which is a reasonable worst-case assumption for a full-barrier level crossing, remotely monitored by railway staff using CCTV (which is the type of crossing that is already in place at some sites and which would need to be provided where other types of crossing currently exist on public highways).

in some cases crossings have been considered in groups with the aim of identifying packages of connectivity measures that could compensate for the closure of more than one crossing.

7.6.15. In some cases, it has been relatively easy to identify potential connectivity options. However, some of the level crossings are located at highly constrained sites and, in the case of these crossings, EWR Co has sought to balance often conflicting requirements when developing its connectivity proposals.

7.6.16. Each crossing, or group of crossings, and the connectivity options that have been considered are described in the following paragraphs. Each crossing is identified by its official name (as used within the railway industry) and, where appropriate, by the name of the road which crosses the railway. The Ordnance Survey grid reference is also given to aid identification.

## Closure and connectivity proposals for each crossing or group of crossings

## Fenny Stratford (Simpson Road) (SP 882 342)

## Site description

7.6.17. Fenny Stratford level crossing is a vehicular highway level crossing. It is located just to the north of the centre of Fenny Stratford and immediately to the east of Fenny Stratford station. At the crossing, Simpson Road crosses the railway. Simpson Road is a single-carriageway urban road with a 30mph speed limit that leads north from Watling Street. It provides a link between the village of Simpson (a village within Milton Keynes) to both Fenny Stratford and Bletchley.


Figure 7.14: Fenny Stratford level crossing

7.6.18. The crossing is of the full-barrier type with CCTV provided so that the signaller can confirm the barrier has correctly lowered and the crossing is clear of obstructions before authorising trains to proceed over the crossing.

7.6.19. To the south of the railway, a mixture of residential and commercial properties abut the road. To the north of the railway, there are a number of commercial premises adjoining the road. These comprise offices and two separate builders' merchants. One of the builders' merchants has recently relocated and the site occupied by the other one is identified in development plan for Milton Keynes ("Plan:MK") as a proposed site for housing development. Beyond the commercial premises there is further, established residential development. To the north of the junction Staple Hall Road, lorries over 7.5t are prohibited (except for access) from Simpson Road. Simpson Road is served by bus route 18, which operates at hourly intervals (Mondays to Saturdays).

7.6.20. At the site of the level crossing, the railway comprises a single track. As part of proposals to upgrade the Bletchley to Bedford line, EWR Co proposes to reconstruct this section of railway and provide a second track at this location. An increase in the speed limit for rail traffic is also proposed at this location from the current 60mph up to 100mph.

## EWR Co proposals

7.6.21. EWR Co proposes to permanently close Fenny Stratford level crossing. This means that connectivity options to accommodate displaced traffic will need to be considered.

7.6.22. EWR Co is considering a number of connectivity options to deal with displaced vehicular and pedestrian traffic. These are described in the following paragraphs. Three options are examined for pedestrian traffic and three options are examined for vehicular traffic. Should approval be secured for the closure of Fenny Stratford level crossing, EWR Co would implement one of the vehicular connectivity options and one of the pedestrian connectivity options.

7.6.23. EWR Co has not yet identified a preferred option for either vehicular or pedestrian connectivity. This will be presented at Statutory Consultation.

## Vehicular Connectivity Option 1

7.6.24. In this option, no connectivity works are proposed. Vehicular traffic would be diverted via Staple Hall Road, which provides an alternative route between Simpson Road and Watling Street. This alternative route is shown in Figure 7.15 below.


Figure 7.15: Fenny Stratford Level Crossing, Vehicular Connectivity Option 1

7.6.25. This option would have the lowest cost. Compared to the other vehicular connectivity options, it would cause more traffic to use Staple Hall Road, including heavy vehicles over 7.5t. It would have less of an impact on ecology as it does not involve the construction of new sections of road across green areas.

## Vehicular Connectivity Option 2

7.6.26. Given that Staple Hall Road is a relatively narrow residential street, consideration has been given to the option of also providing a short section of new link road joining Simpson Road to H10 Bletcham Way. This would provide an alternative route for lorries (and other vehicles) to continue to access the commercial properties situated on Simpson Road to the north of the railway. The proposed new link road is shown in Figure 7.16.

7.6.27. The precise layout and alignment of the road would be subject to further development work, including discussion with the highway authority. The link road starts at a new junction with Simpson Road to the south of the bridge carrying H10 Bletcham Way over Simpson Road and terminates at a new junction with H10 Bletcham Way located between the bridge over Simpson Road and the Fenny Lock roundabout. The land on which this road would be situated is owned by Milton Keynes Council.

7.6.28. To allow lorries (and other heavy vehicles) to reach the new link road, the current 7.5t weight restriction that is in place on Simpson Road would need to be revoked between Staple Hall Road and the new link road.

7.6.29. This alternative route would also involve lorries crossing the bridge that carries Simpson Road over the Grand Union Canal. This bridge has just a single traffic lane and traffic lights are provided to control traffic using the bridge. If EWR Co were to proceed with the option of providing this alternative route, further work will be required to investigate the suitability of the canal bridge to handle the increase in volume and weight of traffic. Such work may either identify that this option is not suitable or require a solution to the constraint imposed by the canal bridge.


Figure 7.16: New link road between Simpson Road and H10 Bletcham Way (Vehicular Connectivity Option 2)

7.6.30. This option would reduce the amount of additional traffic that would need to use Staple Hall Road compared to Vehicular Connectivity Option 1. It would involve building a new section of road across vegetated land and would therefore have a negative impact on ecology. It would create new T-junctions on Bletcham Way and Simpson Road.

## Vehicular Connectivity Option 3

7.6.31. As an alternative to the above arrangement, the new link road could instead be provided to the north of H10 Bletcham Way. In this option, the new road would connect into the Fenny Lock Roundabout. This option is shown in Figure 7.17.


Figure 7.17: New link road between Simpson Road and H10 Bletcham Way (Vehicular Connectivity Option 3)

7.6.32. As with Vehicular Connectivity Option 2, this option requires the current 7.5t weight restriction that is in place on Simpson Road to be revoked between Staple Hall Road and the new link road. It would also require further work to investigate the suitability of the canal bridge to handle the increase in volume and weight of traffic to which it would be subjected, and any necessary mitigation.

7.6.33. As with Vehicular Connectivity Option 2, this option would reduce the amount of additional traffic that would need to use Staple Hall Road compared to Vehicular Connectivity Option 1. It would involve building a new section of road across vegetated land and would therefore have a negative impact on ecology. It would create a new T-junction and Simpson Road but it would feed traffic into an existing roundabout on Bletcham Way.

7.6.34. Unlike Vehicular Connectivity Option 1, this option crosses an area classified as deciduous woodland.

## Pedestrian Connectivity Option 1

7.6.35. In this option, no connectivity works are proposed. Alternative pedestrian routes between the northern part of Simpson Road and Watling street are already available via either Staple Hall Road or via Lock View Lane and the tow path on the east side of the Grand Union Canal. These are shown in Figure 7.18.

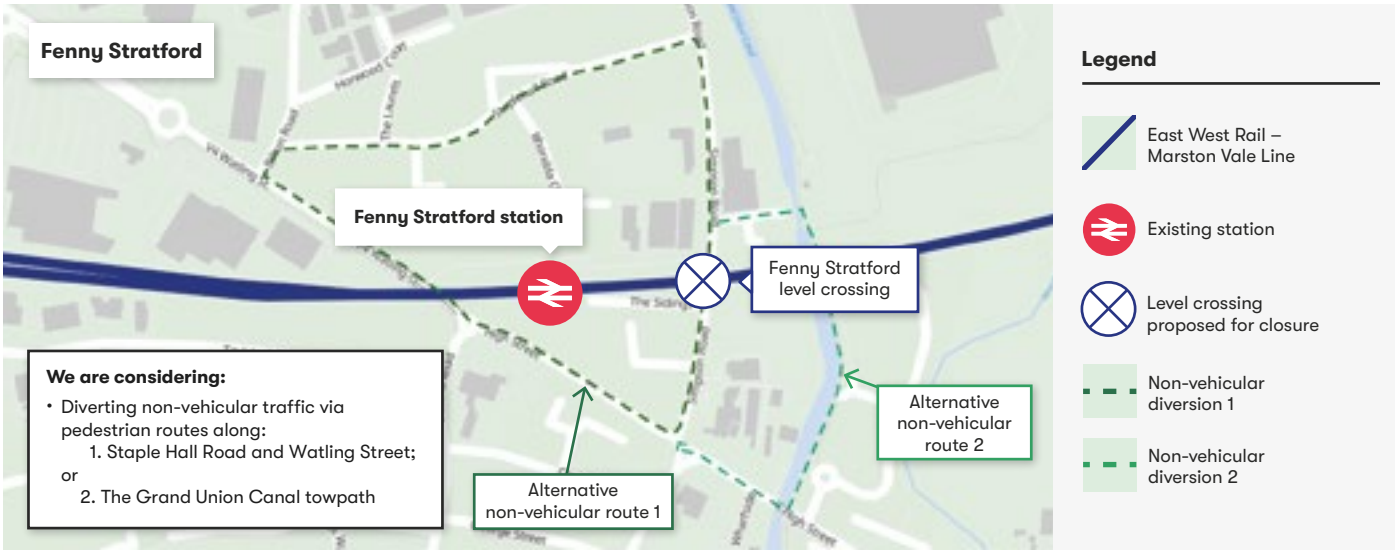



Figure 7.18: Map showing existing alternative pedestrian routes (Pedestrian Connectivity Option 1)

7.6.36. This has the lowest cost of the pedestrian connectivity options. It would avoid the need to create new sections of footpath and the building of any new structures. However, it would result in longer walking times for journeys that are currently made via the level crossing.

## Pedestrian Connectivity Option 2

7.6.37. To supplement the existing pedestrian routes, EWR Co has considered two options (Pedestrian Connectivity Options 2 and 3) to maintain pedestrian links across the railway at (or close to) the site of the current Fenny Stratford level crossing. Pedestrian Connectivity Option 2 would involve the provision of a footbridge at the site of the crossing.

7.6.38. The bridge would be provided with stairs. Ramps would also be provided so that pedestrians that are unable to use the stairs could access the bridge. In order to provide the necessary space for the ramp on the north side of the railway, it might be necessary to acquire and demolish a number of commercial properties located adjacent to the railway.

7.6.39. The proposed new footbridge could also provide a means of access between the platforms of Fenny Stratford station, if the station were to be retained (see paragraphs 7.3.90 to 7.3.113). A plan of this option is in Figure 7.19.


Figure 7.19: Map showing the indicative area for the proposed footbridge at Fenny Stratford crossing (Pedestrian Connectivity Option 2)

7.6.40. This option provides the shortest route for pedestrians, although mobility-impaired users would still experience a noticeable increase in the length of their journey due to the length of the ramps that are required to reach the footbridge. However, it entails the construction of a large footbridge structure that would necessitate the acquisition and demolition of commercial premises to the north of the railway and would have visual impact on the immediate surroundings of the crossing.

## Pedestrian Connectivity Option 3

7.6.41. As an alternative to the footbridge described above in Pedestrian Connectivity Option 2, a new pedestrian route could be provided linking the two parts of Simpson Road. This new link would entail the construction of a new section of footpath adjacent to the railway on its south side, linking Simpson Road to the Grand Union Canal. The new path would then pass beneath a presently un-used span of the bridge that carries the railway over the canal and would then link to the section of tow path on the west side of the canal that leads to Lock View Lane and, in turn, the northern part of Simpson Road. This alternative route is shown in Figure 7.20.


Figure 7.20: Proposed alternative footpath link (Pedestrian Connectivity Option 3

7.6.42. The new section of path would be built on land that is mostly owned by Network Rail. The existing section of canal tow path might need to be improved to make it suitable for all potential users. The new pedestrian route would need to be lit at night.

7.6.43. This option would have less of a visual impact on the area compared to the footbridge option and would not involve the demolition of any buildings. It would, however, increase the number of people walking past the houses located on the canal adjacent to Fenny Lock and have a negative impact on the canal-side residential properties as a result of the new lighting that would be provided.

## Bow Brickhill (V10 Brickhill Street) (SP 896 347)

### Site description

7.6.44. Bow Brickhill level crossing is a vehicular highway level crossing located on the south side of Milton Keynes, immediately to the south of Caldecotte and Tilbrook. Bow Brickhill station straddles the level crossing with the platform for trains towards Bletchley being to its west and that for trains towards Bedford being to the east.

7.6.45. The crossing is of the full-barrier type with CCTV provided so that the signaller can confirm the barriers have correctly lowered and the crossing is clear of obstructions before authorising trains to proceed over the crossing.

7.6.46. V10 Brickhill Street crosses the railway at this level crossing. Brickhill Street is a single carriageway road and links a number of areas in the southern part of Milton Keynes to the A5 and A4146 at Kelly's Kitchen Roundabout. To the north of the crossing, it is urban in character while to the south the road has a more rural appearance. Roundabouts are situated a short distance from the crossing to both the north (junction with Caldecotte Lake Drive, 100m from crossing) and south (junction with Station Road, 80m from the crossing). Bus stops (with laybys) are located immediately to the north of the level crossing although no bus services currently use this section of Brickhill Street.

7.6.47. The speed limit for road traffic on Brickhill Street is 40mph at the site of the level crossing but this increases to 60mph just to the south of the junction with Station Road. The maximum speed of rail traffic at the crossing is currently 60mph but it is proposed to increase this up to 100mph.

7.6.48. A private access leads off Brickhill Street immediately to the south of the crossing on the east side of the road. This serves an equestrian establishment. Beyond this, two residential properties are situated, which face onto Station Road. The land to the east of the residential properties is agricultural, as is that to the south of Station Road. The land to the southwest of the crossing is currently in agricultural use but is subject of a planning application for a warehousing and distribution park. To the north of the crossing, the sites immediately adjacent to the crossing are undeveloped but beyond these lie the industrial area of Tilbrook and commercial and residential areas of Caldecotte. The land to the northeast of the crossing is subject of a proposal for a new access to the Tilbrook industrial area.

### EWR Co proposals

7.6.49. EWR Co proposes to permanently close Bow Brickhill level crossing and divert V10 Brickhill Street via a new bridge over the railway. This means that connectivity options to accommodate displaced traffic will need to be considered.

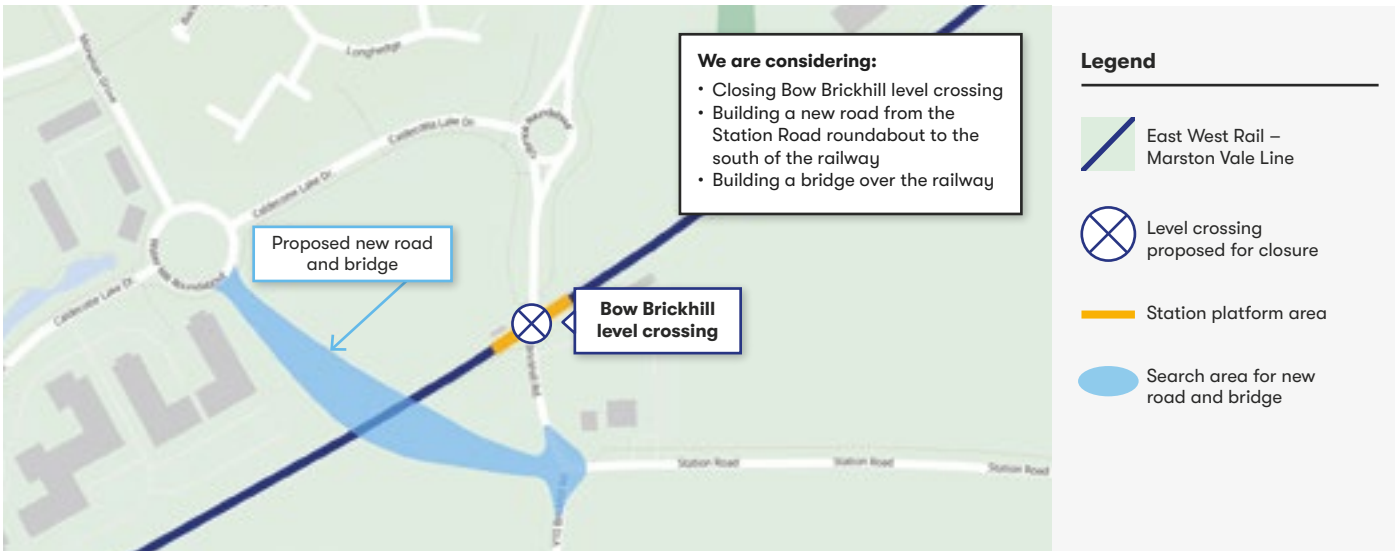
7.6.50. EWR Co has considered four options for a new bridge to replace this level crossing. These options are described in the following paragraphs.

7.6.51. EWR Co has not identified a preferred option.

## Connectivity Option 1

7.6.52. Connectivity Option 1 provides a new bridge over the railway to the west of the current level crossing. The bridge would be linked to the current road network at the Station Road roundabout south of the railway and at Water Mill roundabout (on Caldecotte Lake Drive) to the north of the railway. This is shown in Figure 7.21.

Figure 7.21: Bow Brickhill Connectivity Option 1



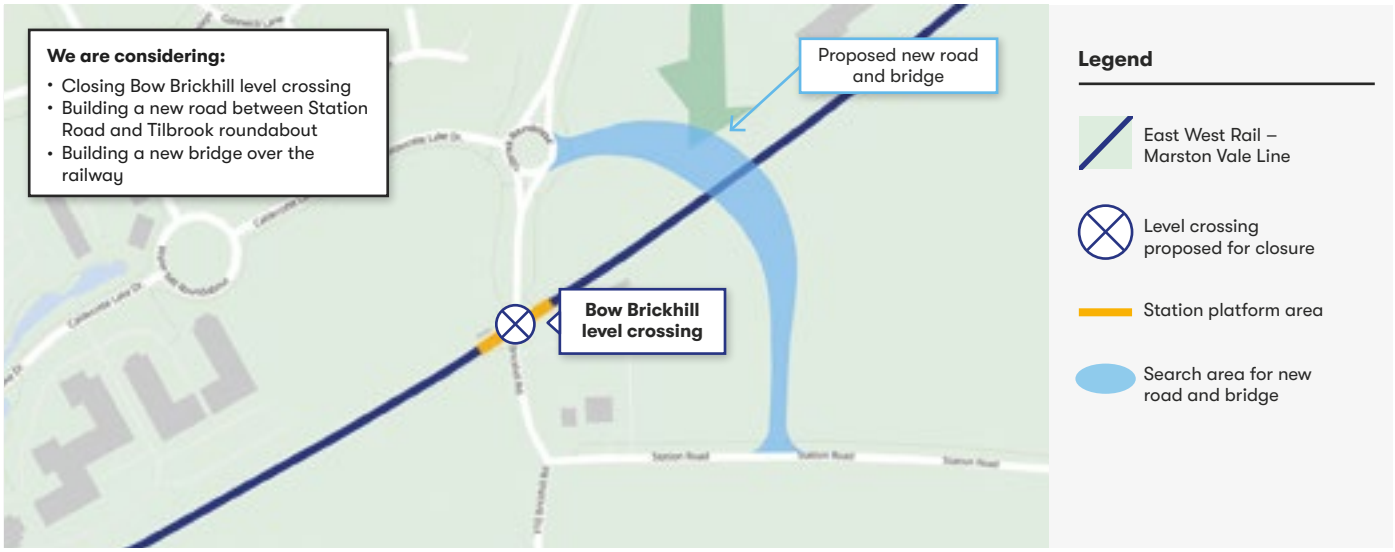

7.6.53. In addition to the construction of the bridge, the Station Road roundabout would need to be upgraded and the Water Mill roundabout would require resurfacing (because the current block paving would be unsuitable for the increased volume of traffic using it).

7.6.54. This option would require the acquisition of third-party land for the construction of the ramped approaches to the new bridge and for the enlargement of the Station Road roundabout. Some of this land is the subject of current planning applications for development. It would also result in an increase in traffic on the eastern part of Caldecotte Lake Drive, which is currently used for parking by people accessing the Caldecotte Lake Business Park. The gradients of the approaches to the new bridge would need to be steeper than the normal standard for roads of this type due to the relatively short distances in which the road needs to rise from the existing levels of the roundabouts at each end.

## Connectivity Option 2

7.6.55. Connectivity Option 2 provides a new bridge to the east of the current level crossing. A new section of road would pass over the bridge, starting on the south side of the railway at a new junction on Station Road (located east of the residential properties near the existing roundabout) and ending on the north side of the railway at the Caldcotte Lake roundabout. This option is shown in Figure 7.22.

Figure 7.22: Bow Brickhill Connectivity Option 2




7.6.56. This option would require the acquisition of third-party land on which the ramped approaches to the new bridge would be built. To the north of the railway, it would conflict with the proposed new access to Tilbrook and the design of the new road over the bridge would need to be developed further to take account of this new access. The curve of the new section of road is tighter than the usual standard for this type of road. The gradients of the approaches to the new bridge are also steeper than the usual standard for the type of road.

7.6.57. This option would require the removal of a small area of deciduous woodland on the north side of the railway.

## Connectivity Option 3

7.6.58. Connectivity Option 3 is similar to Connectivity Option 2 but instead of providing a bridge over the railway, a new bridge would be provided to allow the road to pass under the railway. The road would follow a similar alignment to that for Connectivity Option 2. This option is shown in Figure 7.23.

7.6.59. As with Connectivity Option 2, this option would require the acquisition of third-party land. To the north of the railway, it would conflict with the proposed new access to Tilbrook and the design of the new road over the bridge would need to be developed further to take account of this new access. The curve of the new section of road is tighter than the usual standard for this type of road. The gradients of the approaches to the new bridge are also steeper than the usual standard for the type of road.

7.6.60. As with Connectivity Option 2, this option would require the removal of a small area of deciduous woodland on the north side of the railway.

7.6.61. Unlike the other connectivity options, in this option the new ramped approach down to the bridge on the south of the railway conflicts with a high-pressure gas main, which would need to be re-routed. As the road level would be below ground level, a pumped drainage system would be required together with an underground attenuation tank. Such a system would introduce an undesirable long-term on-going maintenance liability and cost.

Figure 7.23: Bow Brickhill Connectivity Option 3

## Connectivity Option 4

7.6.62. Connectivity Option 4 provides a bridge over the railway on a similar alignment as the current road. This option is shown in Figure 7.24.

Figure 7.24: Bow Brickhill Connectivity Option 4


7.6.63. Unlike the other three options, all of which can be built without significant disruption to road traffic, this option would require the closure of V10 Brickhill Street for around one year. This option has a reduced impact on adjoining development sites. Although it still requires some areas of development land, the overall impact on development potential is less than in the other options.

7.6.64. This option is likely to require the removal of a small area of deciduous woodland on the north side of the railway to facilitate the revised link to Bradbourne Drive.

## Browns Wood (SP906355)

### Site description

7.6.65. Browns Wood foot crossing is located at the southern edge of Milton Keynes between the Browns Wood and Old Park Farm residential areas. At the crossing, a public footpath crosses the railway. Kissing gates are provided on either side of the line to allow users to access the crossing. The footpath that crosses the railway at this crossing connects an area of open space (located off Holst Crescent) to Station Road in the village of Bow Brickhill. Throughout its length, the footpath is unsurfaced. Although EWR Co has not undertaken a formal count of users, the footpath appears to be relatively lightly used.

7.6.66. To the south of the railway, the path crosses agricultural land. It is unsurfaced and, in places, it is uneven. Some sections of the path can become muddy.

7.6.67. The area to the south of the railway is identified in the development plan for Milton Keynes ("Plan:MK") as a strategic site for the future expansion of Milton Keynes.

7.6.68. To the north of the railway, there is a gap in the surrounding housing development that is used as informal recreational space. This gap has been left to allow for the possibility of a future southward extension of V11 Tongwell Street. If this extension of Tongwell Street were to be implemented, it would cross the railway on a bridge at the site of Browns Wood foot crossing.

### EWR Co proposals

7.6.69. EWR Co proposes to permanently close Browns Wood foot crossing. This means that connectivity options to accommodate displaced pedestrians will need to be considered.

7.6.70. In the absence of any firm proposals to extend V11 Tongwell Street (which would obviate the need for further mitigation of this crossing closure), EWR Co has considered three options to provide a pedestrian bridge at or close to the site of the crossing.

7.6.71. EWR Co has not yet identified a preferred option. This will be presented at Statutory Consultation.

## Connectivity Option 1

7.6.72. Connectivity Option 1 provides a footbridge at the site of the existing crossing. The footbridge would be accessed by means of stairs on both sides of the railway. The nature of the footpath to the south of the railway (see paragraph 7.6.66 above) makes it unsuited to use by persons of restricted mobility. Therefore, in this option, ramps to access the bridge are not proposed, although it would be possible to design the bridge in a way that allows these to accommodate groups able to access the location despite restricted mobility or added later if circumstances change. In addition, to ensure this ability, land would need to be acquired for the purpose to ensure this could actually take place. (The other connectivity options do make provision for mobility-impaired users). This option is shown in Figure 7.25 below.

Figure 7.25: Browns Wood Connectivity Option 1


7.6.73. This option would have a reduced footprint compared to the other connectivity options which means that it would be more likely that it could be constructed without the need to permanently acquire any land outside of the current railway boundary (although this would need to be confirmed following further survey and design work). However, additional land would be required temporarily to facilitate construction of the new bridge.

7.6.74. The visual impact of this option would be less than that of Connectivity Option 2 but is likely to be greater than that of Connectivity Option 3. It requires the removal of less mature vegetation than Connectivity Option 2. It has less of a negative impact on the recreation area to the north of the railway than Connectivity Option 3.

## Connectivity Option 2

7.6.75. Connectivity Option 2 is a development of Connectivity Option 1 that would include ramps to facilitate access to the bridge by people with reduced mobility. This option is shown in Figure 7.26 below.

Figure 7.26: Browns Wood Connectivity Option 2


7.6.76. This option would be likely to require the permanent acquisition of a strip of land on each side of the railway in order to locate the ramps. This might include a small area of land within the allotment site to the northeast of the crossing. If this option is taken forward, EWR Co will investigate options to avoid the need for this area of land.

7.6.77. This option would require the removal of more mature vegetation than Connectivity Option 1, but this could be mitigated by replacement planting. This option would have a greater visual impact than Connectivity Option 1 and would cost more.

## Connectivity Option 3

7.6.78. Connectivity Option 3 would provide a pedestrian underbridge at the site of the crossing, allowing the footpath to pass beneath the railway. This option is shown in Figure 7.27.

Figure 7.27: Browns Wood Connectivity Option 3


7.6.79. The new bridge and the connections to it have been configured to provide good forward visibility along the footpath so as to improve security for users of the footpath.

7.6.80. This option has less visual impact than the other two options, but it would require the permanent acquisition of more land, including a larger area of the open space to the north of the railway. As the new footpath under the railway would be below ground level, it is likely that drainage would be an issue for this option. If this option is taken forward, EWR Co will investigate options for a suitable drainage system, but it is possible that a pumped drainage system would be required, and an underground attenuation tank might also have to be provided to temporarily store water at times of heavy rain to avoid overwhelming the local drainage system.

## Pony (SP 912 359)

### Site description

7.6.81. Pony crossing is located on the south side of Milton Keynes, at the southeast corner of the Old Park Farm residential area. At the crossing, a public bridleway crosses the railway. To the south of the railway, this bridleway provides links across agricultural land to a wider network of bridleways providing connections to Bow Brickhill village, Browns Wood, Bow Brickhill Park, Bow Brickhill Heath and a number of other areas of heath and woodland. A number of equestrian properties adjoin the bridleway between the railway and Bow Brickhill Road.

7.6.82. To the north of the railway, the bridleway has a more formal, semi-urban character. It connects with bridleways to Wavendon and through the Browns Wood residential area. It also connects with the Milton Keynes Redway network.

7.6.83. The site of the crossing is mostly surrounded by agricultural land. However, on the north side of the railway, houses are located immediately to the east of the bridleway. The land to the south of the crossing is identified in the Local Plan as a strategic development site for future housing growth.

### EWR Co proposals

7.6.84. EWR Co proposes to permanently close Pony crossing. This means that connectivity options to accommodate displaced pedestrians, cyclists and equestrian users will need to be considered.

7.6.85. EWR Co has developed three connectivity options that provide a bridge at, or close to, the site of the crossing

7.6.86. EWR Co has not yet identified a preferred option. This will be presented at Statutory Consultation.

## Connectivity Option 1

7.6.87. Connectivity Option 1 provides a new bridge over the railway at the site of the current crossing. This is shown in Figure 7.28.

7.6.88. To the south of the railway, the bridleway would be placed on a ramped embankment. To the north of the railway, in order to minimise the amount of land required, a steel structure is proposed to support the ramped approach to the bridge. This structure would be provided with a sound-deadening, non-slip surface to enable its use by horses. A strip of planting is proposed between the northern ramp and the neighbouring residential properties to reduce the visual impact of the structure and restrict opportunities for overlooking.

7.6.89. This option would require the permanent acquisition of third-party land. EWR Co believes the land required to the north of the railway is in the ownership of Milton Keynes Council. Some of the land required to the south of the railway forms part of the strategic development area. EWR Co would also need to temporarily acquire further land to facilitate the construction of the new bridge.

7.6.90. This option would have a more significant negative visual impact on nearby residential properties (particularly those located at the end of Beethoven Close and Davenport Lea) than Connectivity Options 2 and 3 but is likely to require the acquisition of less third-party land outside of the existing bridleway corridor.

Figure 7.28: Pony Connectivity Option 1

## Connectivity Option 2

7.6.91. Connectivity Option 2 is a minor variation on Connectivity Option 1 that moves the northern approach slightly further away from the neighbouring residential properties. This is shown in Figure 7.29.

Figure 7.29: Pony Connectivity Option 2


7.6.92. As this option moves the northern approach ramp to the new bridge slightly further to the east, it would require the permanent acquisition of a narrow strip of agricultural land to the east of the current bridleway in addition to the land identified as being required for Connectivity Option 1.

7.6.93. This option would have a reduced visual impact on nearby residential properties and would create a larger area on which screening vegetation could be planted.

## Connectivity Option 3

7.6.94. Connectivity Option 3 provides a new underbridge allowing the bridleway to pass beneath the railway at the site of the crossing. This is shown in Figure 7.30.

Figure 7.30: Pony Connectivity Option 3


7.6.95. The bridge would have sufficient headroom to allow equestrian users to pass beneath the railway without the need to dismount. The bridge would be constructed to minimise noise from trains passing over it so as to reduce the risk of "spooking" horses using the bridleway.

7.6.96. Because the new length of bridleway would be below the existing ground level, if this option is taken forward EWR Co will need to further investigate potential drainage solutions. It is likely that a pumped drainage system would be required, and an underground attenuation tank (or similar) may also be needed to temporarily store water at times of heavy rainfall to avoid overwhelming the local drainage system.

7.6.97. This option would have a lesser visual impact than Connectivity Options 1 and 2. It also prevents overlooking of adjacent residential properties by users of the bridleway.

7.6.98. In common with the overbridge solutions (Connectivity Options 1 and 2), this option would require the permanent acquisition of third-party land, including land within the strategic development area to the south of the railway and potentially a small strip of the agricultural land located to the east of the bridleway on the north side of the railway.

## Woburn Sands area crossings

## Description of the group of crossings

7.6.99. There are a number of level crossings in the Woburn Sands area in relatively close proximity to one another. Because of the proximity of the crossings to one another, the options for one crossing potentially influence the options for other crossings. The crossings in this area have therefore been considered as a single group.

7.6.100. This group of crossings comprises five crossings of which:

- One is a road crossing
- Three are public footpath crossings of which one will be closed under the 2020 Order; and
- One is a private access crossing, which will be closed under the 2020 Order.

7.6.101. The crossings in this group are:

- **Woodleys Farm (SP 917 362):** an accommodation crossing to the west of Woburn Sands that provides a private access route between two parts of an agricultural holding. This is authorised to be closed by the 2020 Order.
- **Fisherman's Path (SP 921 363):** a foot crossing immediately to the west of Woburn Sands at which a public footpath linking Bow Brickhill Road (to the south of the railway) to Wavendon (to the north of the railway) (Woburn Sands Footpath No. 2) crosses the railway. This crossing is authorised to be closed by the 2020 Order.
- **Woburn Sands (SP 924 363):** a public highway crossing, located adjacent to Woburn Sands station, at which the A5130 Station Road / Newport Road crosses the railway.
- **Mill Farm (SP 929 365):** a foot crossing immediately to the east of Woburn Sands at which a public footpath linking Vandyke Close on the north of the railway to a network of paths to the south of the railway that connect to Aspley Guise (Aspley Guise Footpath No. 3) crosses the railway. This path forms part of the Milton Keynes Boundary Walk.
- **Sewage Farm (SP 932 365):** a foot crossing to the east of Woburn Sands at which a public footpath (Aspley Guise Footpath No. 13) crosses the railway. This footpath connects into the wider footpath network to the south of the railway, but the public right of way ends in a field just over 300m to the north of the railway, at the border between Central Bedfordshire and Milton Keynes.

7.6.102. Woburn Sands crossing is located within the built-up area of Woburn Sands. The junction of Newport Road and Cranfield Road is located immediately to the north of the crossing. Beyond this junction on the northeast side of Newport Road is a residential area. A group of business premises are located on the southwest side of Newport Road, beyond which is a wooded area which gives way to agricultural land beyond.

7.6.103. Woburn Sands station is located immediately to the west of the crossing. To the southwest of the crossing is the (Grade II) listed former Woburn Sands station building, which is now used a coffee shop. Further along Station Road is a small private car park, the Station Tavern (a bar and restaurant) and the Summerlin Community Centre. To the west of the properties fronting Station Road is a modern housing development.

7.6.104. On the opposite side of Station Road, a small Network Rail maintenance compound adjoins the railway. To the southeast and east of this compound is a used-car sales business. Further along Station Road is a community building ("The Old Fire Station") and recreation ground.

7.6.105. The remainder of the crossings in this group are surrounded by agricultural land, although Fisherman's Path crossing leads into an area of woodland to the south of the railway, immediately to the west of the built-up area of Woburn Sands.

7.6.106. Fisherman's Path and Woodleys Farm crossings are located is within the proposed South East Milton Keynes Strategic Urban Extension area, detailed within the development plan for Milton Keynes ("Plan:MK").

## EWR Co proposals

7.6.107. EWR Co wishes to permanently close all of the level crossings in this group. This means that connectivity options to accommodate displaced traffic, pedestrians and other crossing users will need to be considered.

7.6.108. Two connectivity options have been developed, which provide bridges over which diverted rights of way would be routed. Because of the difficulty involved in providing suitable mitigation for the closure of Woburn Sands level crossing, the second of the two options includes the retention of that level crossing.

7.6.109. In addition to these two connectivity options, an alternative connectivity proposal has been considered but discounted. The two connectivity options and the discounted alternative are described below.

7.6.110. EWR Co has not yet identified a preferred option. This will be presented at Statutory Consultation.

## Connectivity Option 1

7.6.111. Connectivity Option 1 comprises a new by-pass road to the west of Woburn Sands that would cross the railway on a new bridge located close to the current Woodleys Farm level crossing. This option is shown in Figure 7.31 and Figure 7.32 below.

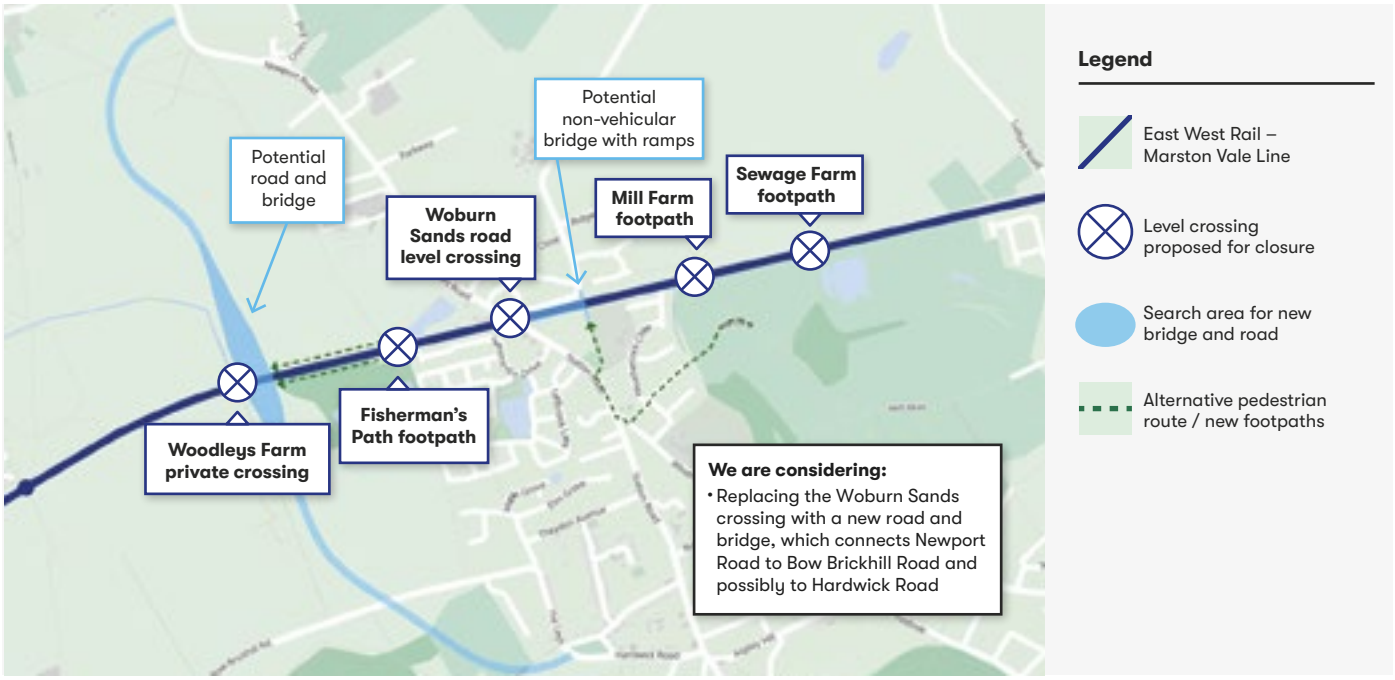



Figure 7.31: Woburn Sands Connectivity Option 1

7.6.112. To the north of the railway, the new road would commence at a new junction with Newport Road at a point between Wavendon and the entrance to Wavendon Fields (to the south of Wavendon). The precise location and layout of the new junction would be subject of further development work at the next stage of design. From here, the new road would cross agricultural land to reach the site of the new bridge over the railway.

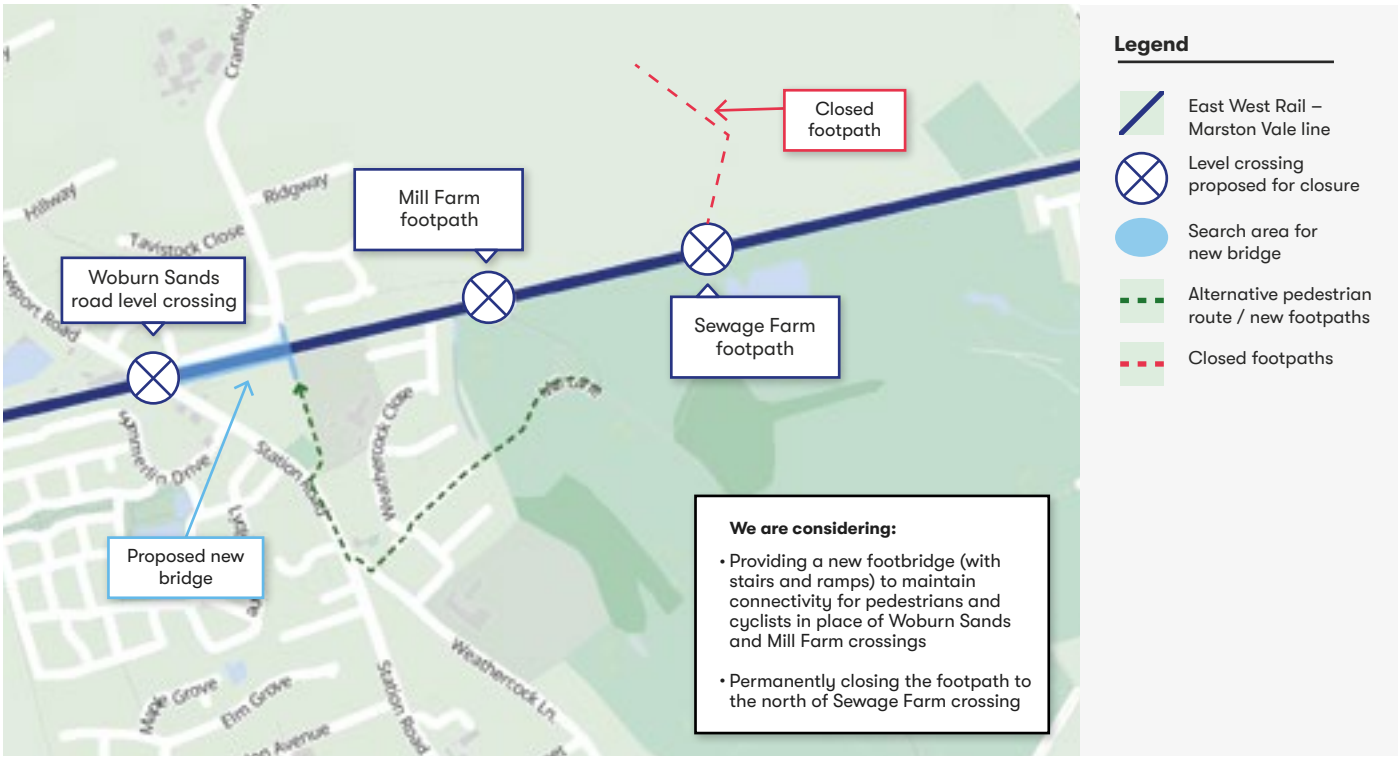



Figure 7.33: Proposed footbridge at Woburn Sands crossing (Connectivity Option 1)

7.6.113. To the south of the railway, the road would continue across agricultural land to Bow Brickhill Road. From the junction with Bow Brickhill Road, traffic could proceed via The Leys and Hardwick Road to re-join the current A5130 at the Hardwick Road/High Street roundabout. The total length of the new road would be around 1.5km.

7.6.114. A variant of this option would involve extending the new road to the south of Bow Brickhill Road to connect with The Leys to the south of the Woodland Way junction. This would extend the length of the new road to around 2km. The extension of the new road to The Leys would pass through allotments. This is in order to avoid the higher ground immediately to the west of the allotments.

7.6.115. It is possible that The Leys and Hardwick Road would need to be improved to deal with the additional traffic that would use these roads. Additional parking restrictions might also have to be imposed on some streets.

7.6.116. As part of this connectivity option, the rights of way over Woodleys Farm and Fisherman's Path crossing would be diverted to link to the new highway bridge over the railway. This would be in place of the proposals in respect of these two crossings authorised by the 2020 Order.

7.6.117. In order to maintain connectivity between the areas of Woburn Sands on each side of the railway for pedestrians and cyclists, a new bridge would be provided at the site of the recently closed School Crossing (a former footpath crossing to the east of Woburn Sands crossing). The bridge would be provided

with steps linking to Cranfield Road on the north side of the railway and to the existing footpath on the south side of the railway.

7.6.118. Ramps would be provided for the use of cyclists and mobility-impaired users. The bottom end of the ramp on the south side of the railway would be located just off Station Road, adjacent to the current Woburn Sands level crossing. On the north side, the bottom end of the ramp would be on the south side of Cranfield Road, opposite the junction with Turnpike Court. This option is shown in Figure 7.33.

7.6.119. On the north side of the railway, alterations would be required to Cranfield Road to make space for the new ramp. These alterations would include changes to the layout of the road where it meets Newport Road to reconfigure the junction following the removal of Woburn Sands level crossing.

7.6.120. The public footpath that currently crosses the railway at Mill Farm crossing would be diverted as shown in Figure 7.32 to connect with the new bridge at the site of the recently closed School Crossing.

7.6.121. The footpath that currently crosses the railway at Sewage Farm crossing would be extinguished from a point immediately to the south of the crossing to the end of the footpath to the north of the railway. This is because this path ends shortly after the crossing and appears to serve no purpose.

7.6.122. In addition to the bridges described above, this Connectivity Option might also require an additional footbridge to provide access between the platforms of Woburn Sands station. The precise location of this bridge would depend on whether Woburn Sands Station remains in its current location or is moved slightly to the west as described in paragraphs 7.3.49 to 7.3.53 of this Chapter.

7.6.123. This connectivity option would significantly reduce traffic flows through Woburn Sands on Newport Road, Station Road and High Street. However, it would significantly increase traffic on Hardwick Road and The Leys (south and east of the Woodland Way junction). If the additional section of new road south of Bow Brickhill Road was not provided, it would also result in increased traffic on the eastern part of Bow Brickhill Road and the section of The Leys north of the Woodland Way junction. Traffic modelling needs to be undertaken to better understand the change in traffic flows and any resulting impacts. This will be done as part of the next design stage of EWR.

7.6.124. This option would require the permanent acquisition of a significant amount of third-party land, most of which is currently in agricultural use. However much of this land is within the area identified in the Milton Keynes Local Plan for the Southeast Milton Keynes strategic urban extension. The possible extension of the new road to the south of Bow Brickhill Road would require the permanent acquisition of part of the allotments site on the southwest of the town. The new footbridge would require the acquisition of part of the land occupied by the second-hand car dealer on Station Road.

7.6.125. This option would work well with the concept for the proposed expansion and re-siting of Woburn Sands station (see paragraphs 7.3.49 to 7.3.53) but the re-siting of the station does not require this option to be implemented.

7.6.126. The construction of the new road bridge might require the removal of a small area of deciduous woodland immediately adjacent to the railway.

7.6.127. The construction of the new footbridge would require the removal of some of the mature vegetation on the south side of Cranfield Road to make space for the ramp leading to the bridge on the north side of the railway.

7.6.128. The new footbridge structure and the ramps would have a visual impact on the surrounding area, including on residential properties on the north side of Cranfield Road. EWR Co will investigate options to mitigate this impact in the next stage of design. Mitigation could include planting to partially screen the bridge or possibly the development of an alternative design of bridge structure (although this might increase the amount of land required).

7.6.129. The new footbridge would mitigate the recent closure of School Crossing.

7.6.130. The diversion of the footpath away from Mill Farm crossing would increase the length of journeys that are currently made via Mill Farm crossing.

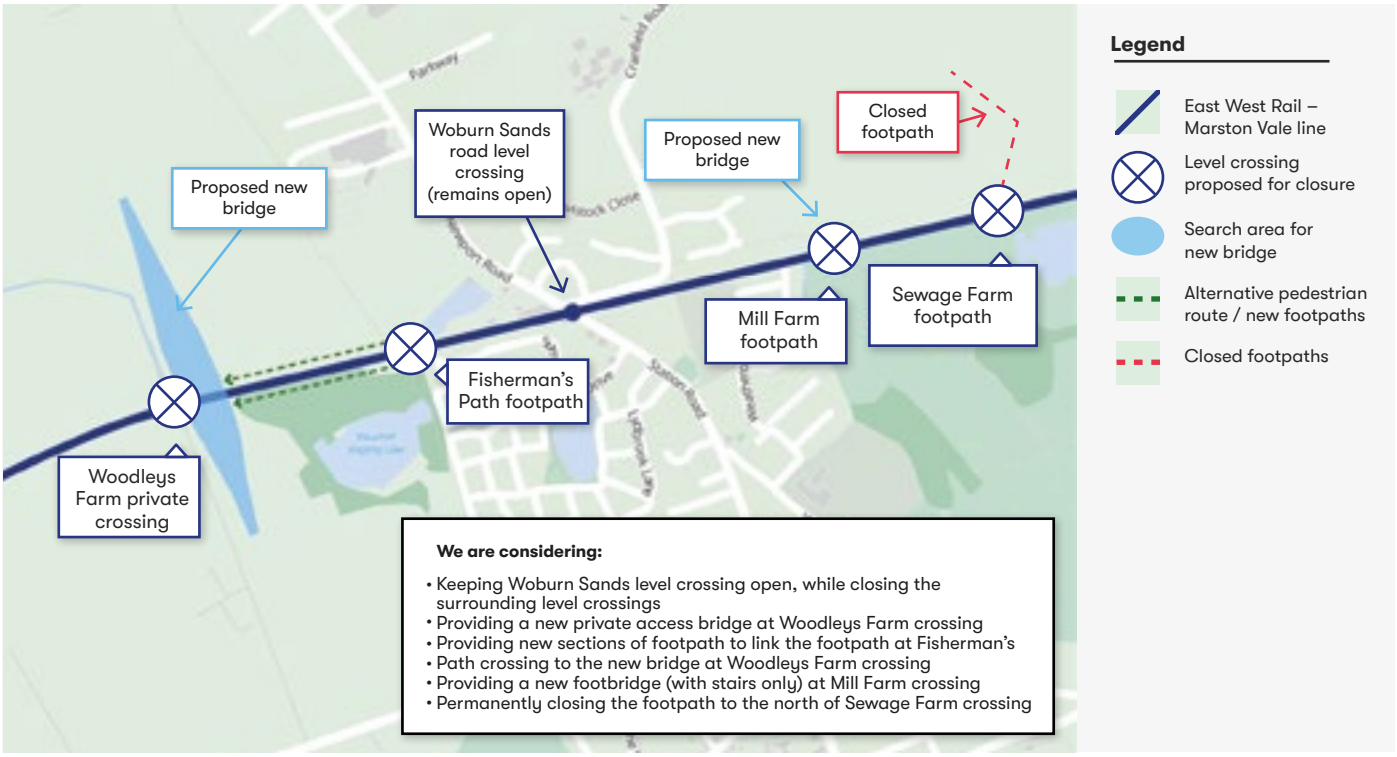
## Connectivity Option 2

7.6.131. In this option, the existing Woburn Sands level crossing could be retained (but this would only be possible if acceptable from a safety and performance perspective) and improved. However, further work is required to determine whether upgrading the crossing equipment would sufficiently reduce the safety risk at this crossing to allow it to remain open. Also, further work needs to be undertaken to better understand the impact on traffic flows on the A5130 and Cranfield Road of the increased duration each hour in which the level crossing would be closed to allow the passage of trains (as described in paragraph 7.6.11).

7.6.132. If this option were taken forward, EWR Co would implement the mitigation measures for Woodleys Farm and Fisherman's Path crossings that were authorised by the 2020 Order. These involved providing a bridge suitable for use by agricultural traffic over the railway, close to the site of Woodleys Farm crossing. The public footpath from Fisherman's Path crossing would be diverted over this bridge. However, proposals in respect of these two crossings would depend on emerging proposals in relation to highways and other public rights of way within the Southeast Milton Keynes strategic urban extension. EWR Co will continue to work with Milton Keynes Council to understand the emerging proposals and the proposals within this option will be developed accordingly.

7.6.133. A footbridge with steps would be provided at the site of Mill Farm crossing. Ramps would not be provided at this bridge. Although this approach would mean that people whose mobility was impaired could not use the footbridge, EWR Co believes it would not be possible for them to access the bridge using the footpaths leading up to it and so, in practice, mobility impaired people would not use the bridge. However, the footbridge could be designed to allow ramps to be added at a later date if circumstances change. This site of the proposed bridge is shown in Figure 7.35.

Figure 7.35: Woburn Sands Connectivity Option 2




7.6.134. As with Connectivity Option 1, EWR Co would extinguish the footpath that crosses the railway at Sewage Farm crossing from a point immediately to the south of the railway to the end of the footpath to the north of the railway. This is because this path ends shortly after the crossing and appears to serve no purpose.

7.6.135. This option requires significantly less third-party land than Connectivity Option 1 because it does not require the construction of the new road to the west of Woburn Sands. However, land would still need to be permanently acquired for the new private access bridge at the site of Woodleys Farm crossing. A small amount of land might also be required for the new footbridge at the site of Mill Farm crossing.

7.6.136. This option is likely to cost significantly less than Connectivity Option 1 but it would not achieve EWR Co's aim to close all level crossings on the line between Bletchley and Bedford.

7.6.137. This option would avoid routing additional traffic via The Leys and Hardwick Road but the amount of time for which the barriers at Woburn Sands level crossing would be down for would cause significant disruption to traffic flows along Station Road and Newport Road and could also adversely affect traffic movements on adjoining roads.

## Alternative connectivity proposal

7.6.138. In addition to the two options described above, EWR Co has considered a variation of Connectivity Option 2 in which Woburn Sands level crossing would be closed and replaced with a new road bridge over the railway at the site of the current level crossing.

7.6.139. In order to build a bridge at this location and avoid the demolition of residential properties, it would be necessary to build a heavily skewed, and therefore very large (approximate span of 125m), bridge at the site of the crossing. The ramped approach to the bridge on the south side of the bridge would need to be sited, in part at least, on the recreation ground on the northeast side of Station Road. On the north side of the railway, the approach ramp would require the demolition of commercial properties and would impact on the wooded area and a pond located on the southwest side of Newton Road. The junctions with Summerlin Drive, Cranfield Road, Turnpike Court and possibly Chantry Close would need to be significantly altered and this would have further adverse impacts on nearby properties.

7.6.140. As a result of the scale of the anticipated adverse impacts the new bridge structure would have on surrounding properties, this option has been discounted.

## Aspley Guise / Husborne Crawley area crossings

### Description of the group of crossings

7.6.141. There are a number of level crossings located between Aspley Guise and Bedford Road (to the east of Aspley Guise) in relatively close proximity to one another. Because of the proximity of the crossings to one another, the options for one crossing potentially influence the options for other crossings. The crossings in this area have therefore been considered as a single group.

7.6.142. This group of crossings comprises six crossings of which:

- One is a road crossing;
- Two are public footpath crossings, of which one will be closed under the 2020 Order; and
- Three are private access crossings, all of which will be closed under the 2020 Order.

7.6.143. The crossings in this group are:

- **Aspley Guise (Salford Road) (SP 939 367):** a public highway crossing at which Salford Road crosses the railway. Aspley Guise station station straddles the crossing, and the crossing provides the soles means of access between the station's two platforms.
- **Old Manor Farm (SP 942 367):** a foot crossing at which a public footpath (Aspley Guise Footpath No. 12) crosses the railway. This footpath links Aspley Guise (to the south of the railway) to a network of paths to the north of the railway that connect to Lower End, Salford and a range of other destinations.
- **Berry Lane (SP 944 368):** a private vehicular crossing at which a private access road (known as Berry Lane) crosses the railway. The 2020 Order authorises this crossing to be closed.
- **Long Leys (SP 950 369):** an accommodation crossing to the northeast of Aspley Guise that provides a private access route between two parts of an agricultural holding. The 2020 Order authorises this crossing to be closed.
- **Husborne Crawley Footpath No. 6 (SP 954 369):** a foot crossing at which a public footpath linking Husborne Crawley to Salford Road (to the north of the M1) crosses the railway.
- **Matey Boys (SP 954 369):** an accommodation crossing to the west of Bedford Road that provides a private access route between two parts of an agricultural holding. The 2020 Order authorises this crossing to be closed.

7.6.144. Because of the proximity of the crossings to one another, choices relating one crossing will influence choices relating to one or more of the others. EWR Co has therefore considered these crossings as a single group.

## EWR Co proposals

7.6.145. EWR Co proposes to implement the closures previously authorised by the 2020 Order and to close the remaining crossings in this group. This means that connectivity options to accommodate displaced traffic, pedestrians and other crossing users will need to be considered.

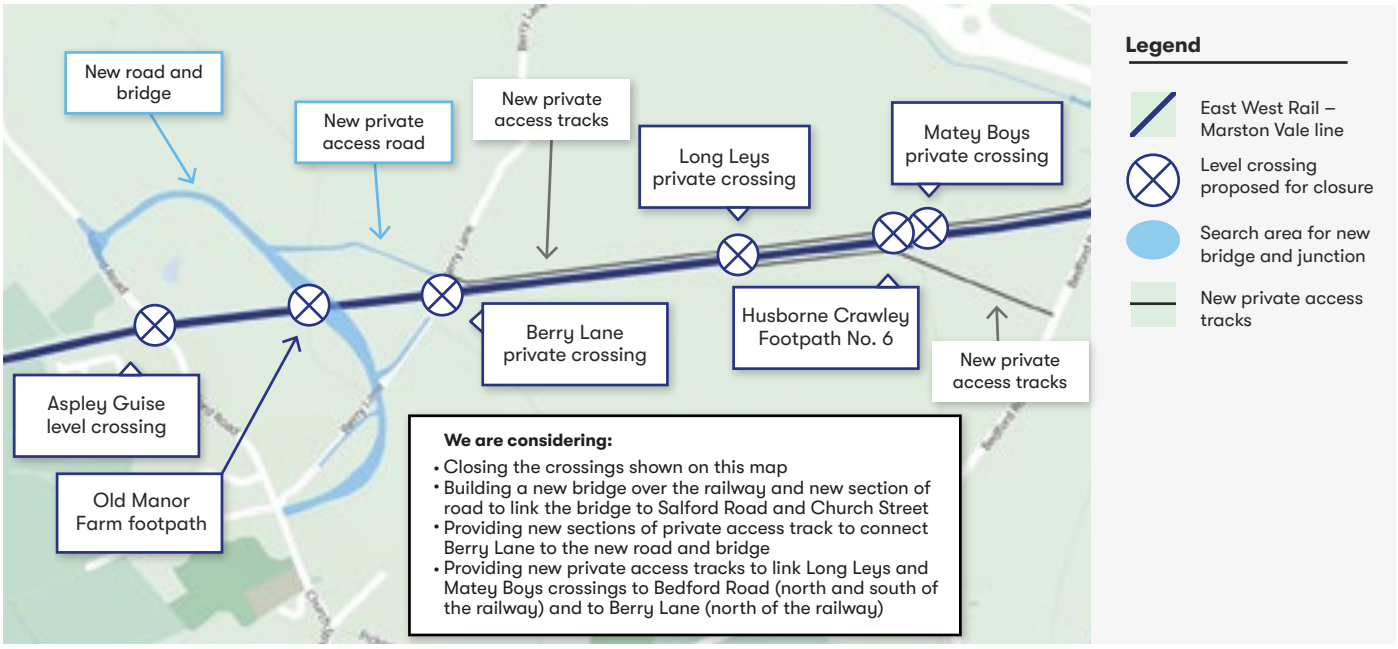
7.6.146. Two connectivity options have been developed, which modify the mitigation works authorised in the 2020 Order to provide mitigation for the additional crossing closures. The options, which are described below, provide bridges and access tracks over which diverted rights of way would be routed.

7.6.147. EWR Co has not yet identified a preferred option. This will be presented at Statutory Consultation.

## Connectivity Option 1

7.6.148. In this option, traffic from Aspley Guise crossing would be diverted via a new bridge over the railway located to the east, close to the site of the current Manor Farm foot crossing. New sections of road would be required to link the new bridge to Salford Road. On the north side of the railway, the new section of road would commence around 200m to the north of the current Aspley guise level crossing and would pass through agricultural land around Crossinglands Business Park to reach the bridge. On the south side of the railway, the road would commence just to the south of the junctions of Salford Road with Mill Way and Berry Lane. The road would pass between the houses on the east side of Salford Road before curving to the north and crossing the current alignment of Berry Lane to reach the bridge. This is shown in Figure 7.36.

Figure 7.36: Aspley Guise Connectivity Option 1



7.6.149. Berry Lane would be locally realigned at the intersection with new road (on the south side of the railway) to provide a staggered junction. A new section of private access road would be built linking the new road to Berry Lane on the north side of the railway. Traffic that currently crosses the railway at Berry Lane crossing would therefore be able to cross the railway via the new road bridge.

7.6.150. If Aspley Guise station is retained (as per train service pattern concept 1 – see paragraphs 7.3.1 to 7.3.113) a new footbridge would be required at the station to provide access between the two platforms. (This is not shown in the drawing in Figure 7.36) The precise location and arrangement of the footbridge would be determined at the next stage of design development and would be described at the Statutory Consultation.

7.6.151. Aspley Guise Footpath No. 12, which currently crosses the railway at Old Manor Farm foot crossing, would be diverted between Berry Lane and the north side of the railway to follow the new road and cross the railway via the new bridge.

7.6.152. New access tracks on both the north side of the railway (running from Berry Lane to Bedford Road) and south side of the railway (running from a point adjacent to Long Leys crossing to Bedford Road) were authorised by the 2020 Order. These tracks provide alternative routes for the users of Long Leys and Matey Boys crossings. EWR Co would provide these new access tracks but their precise alignment would need to be modified to take account of the concept to relocate Ridgmont station to the west of Bedford Road and to provide passing loops (as part of train service concept 1, described in paragraphs 7.3.16 to 7.3.20) also to the west of Bedford Road. The details of the changes to the alignment of the access tracks would be determined as part of the next design stage and would be described at the Statutory Consultation.

7.6.153. Husborne Crawley Footpath No. 6 would be diverted over a new footbridge that would be constructed at (or very close to) the site of the current foot crossing. The concept to relocate Ridgmont station to the west of Bedford Road and to provide passing loops (as part of train service concept 1, described in paragraphs 7.3.16 to 7.3.20) also to the west of Bedford Road would impact on the precise location and configuration of the footbridge. The interface between these aspects of the Project will be developed further at the next stage of design and would be described at the Statutory Consultation.

7.6.154. The proposals described in this connectivity option would require the permanent acquisition of third-party land and rights of access across land. Additional land would need to be used temporarily during the construction of the connectivity works. The vast majority of the land required is agricultural land. However, a small area of land that is required to provide the connection

between the new section of public highway and Salford Road to the south of the railway appears to be within the curtilage of residential properties. If this option is taken forward, EWR Co will look at whether use of this land can be avoided or reduced as part of the next stage of design development.

7.6.155. The land on the south side of the railway that is affected by these proposals is within the Green Belt. If this option were taken forward, EWR Co would need to ensure that the proposed connectivity works did not harm the character of the Green Belt or demonstrate that very special circumstances applied to their construction.

## Connectivity Option 2

7.6.156. In this option, no new route would be provided for traffic that currently uses Aspley Guise level crossing. Instead, traffic would need to use the existing road network to travel between locations on either side of the railway.

7.6.157. If Aspley Guise station is retained (as per train service pattern concept 1 – see paragraphs 7.3.1 to 7.3.113) a new footbridge would be provided at the station to maintain access between the two platforms. (This is not shown in the drawing in Figure 7.37). The precise location and arrangement of the footbridge would be determined at the next stage of design development and would be described at the Statutory Consultation.

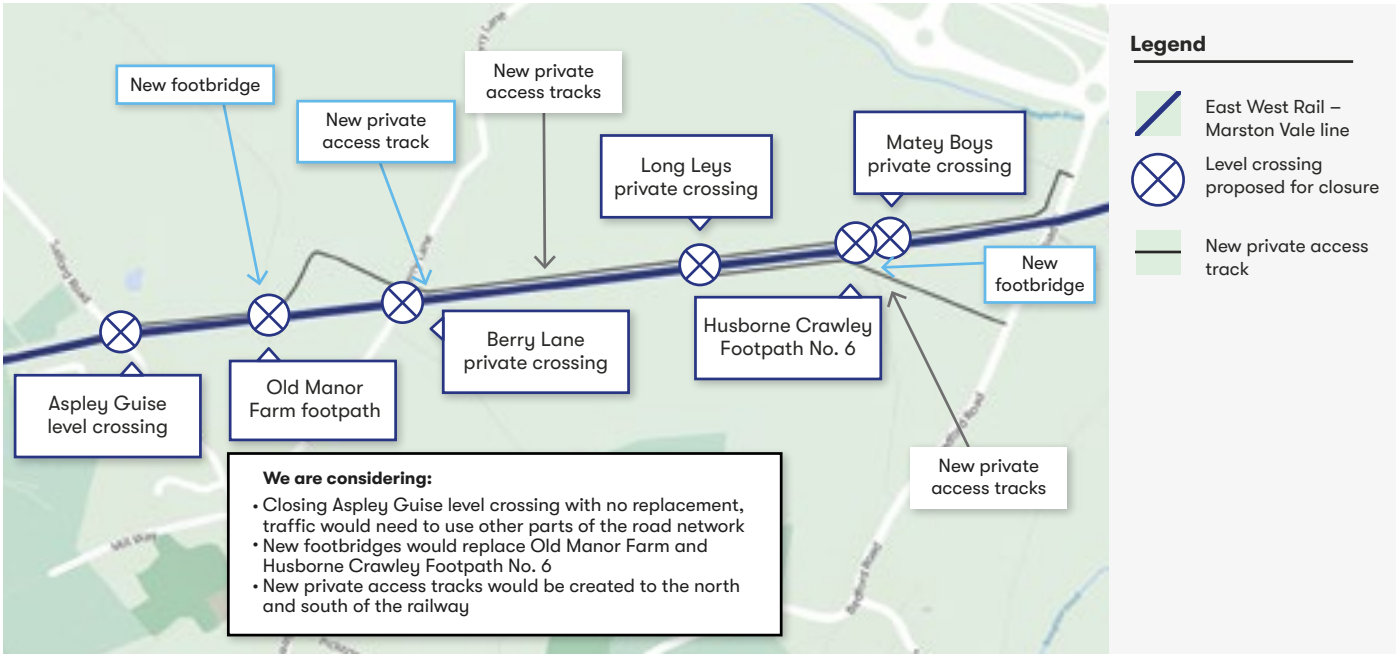
7.6.158. Aspley Guise Footpath No. 12, which currently crosses the railway at Old Manor Farm foot crossing, would be diverted over a new footbridge that would be provided at the site of the current crossing. The footbridge would be accessed by stairs only and no ramps would be provided. Although this approach would mean that people whose mobility was impaired could not use the footbridge, EWR Co believes it would not be possible for them to access the bridge using the footpaths leading up to it and so, in practice, mobility impaired people would not use the bridge.

7.6.159. EWR Co would implement the works previously authorised by the 2020 Order to mitigate Berry Lane, Long Leys and Matey Boys level crossings. The precise alignment of the access tracks would need to be locally modified to accommodate the footbridge at the site of the current Old Manor Farm crossing (described above). The alignment would need to be modified to take account of the concept to relocate Ridgmont station to the west of Bedford Road and to provide passing loops (as part of train service concept 1, described in paragraphs 7.3.16 to 7.3.20) also to the west of Bedford Road. The details of the changes to the alignment of the access tracks would be determined as part of the next design stage and would be described at the Statutory Consultation.

7.6.160. As in Connectivity Option 1, Husborne Crawley Footpath No. 6 would be diverted over a new footbridge that would be constructed at (or very close to) the site of the current foot crossing. The option to relocate Ridgmont station to the west of Bedford Road and to provide passing loops (as part of train service concept 1, described in paragraphs 7.3.16 to 7.3.20) also to the west of Bedford Road would impact on the precise location and configuration of the footbridge. The interface between these aspects of the Project will be developed further at the next stage of design and would be described at the Statutory Consultation.

7.6.161. The connectivity works described above are shown in Figure 7.37.

Figure 7.37: Aspley Guise Connectivity Option 2




7.6.162. The connectivity proposals described in this option would require the permanent acquisition of third-party land and rights of access across land in order to provide the new access tracks described above. In addition, small areas of land may need to be permanently acquired to accommodate the new footbridges at the sites of Old Manor Farm and Husborne Crawley No. 6 Footpath crossing. However, EWR Co will seek to remove or reduce the need for this land in subsequent design stages. Additional land would need to be used temporarily during the construction of the connectivity works. All of the land required for this option is agricultural land. The amount of land required for this option is less than for Connectivity Option 1.

7.6.163. The land on the south side of the railway that is affected by these proposals is within the Green Belt. As with Connectivity Option 1, if this option were taken forward, EWR Co would need to ensure that the proposed connectivity works did not harm the character of the Green Belt or demonstrate that very special circumstances applied to their construction.

7.6.164. A key difference between this option and Connectivity Option 1 is that traffic displaced from Aspley Guise and Berry Lane level crossings is required to use the existing road network to cross the railway. This would remove the need for the construction of the new road bridge and associated sections of new road that form part of Connectivity Option 1 but it would mean that road users would have to use alternative routes. For the majority of journeys that are likely to use Aspley Guise level crossing at present, end-to-end journey times would not be significantly altered.

7.6.165. Connectivity Option 2 would be likely to have less of a visual impact than Connectivity Option 1 because of the absence of the new road bridge and associated sections of road.

## Husborne Crawley Footpath No. 10 (SP 962 372) and Ridgmont (Station Road) (SP 965 374) level crossings

### Description of the crossings

7.6.166. Husborne Crawley Footpath No. 10 crossing is a foot crossing located next to and on the west side of the bridge carrying the M1 motorway over the railway, a short distance to the west of the existing Ridgmont station. The crossing enables a public footpath (Husborne Crawley Footpath No. 10) to cross the railway. This footpath links Husborne Crawley (to the south of the railway) with Station Road and Ridgmont station (to the north of the railway). A further footpath (Brogborough Footpath No. 4) provides an onward link to the village of Brogborough via the Prologis Park Marston Gate industrial area. The 2020 Order authorises this crossing to be closed.

7.6.167. Ridgmont level crossing is a public highway level crossing, located adjacent to Ridgmont station. The Grade II listed former Ridgmont station building is located adjacent to the crossing on the southeast side of the line, on the southwest side of Station Road, which is now used as a Heritage Centre and Tea Rooms.

7.6.168. At the crossing, Station Road crosses the railway. The crossing also provides the sole means of access between the two platforms at Ridgmont station. Station Road is a single-carriageway road that formerly linked Bedford Road (the former A421) and Salford to the northwest of the crossing with Ridgmont to the southeast. However, in 2008 the A507 Ridgmont By-Pass opened and this now provides an alternative route, via a new bridge over the railway to the southwest of Ridgmont station. Station Road is linked to the A507 by roundabouts located either side of the railway, a short distance from the crossing. Since the opening of the A507, the route over the level crossing has served no purpose other than to provide an alternative route (to that via the A507) for accessing the business premises adjoining Station Road and as means of access between Ridgmont station's two platforms. Ridgmont level crossing is located in a mostly industrial area.

## EWR Co proposals

7.6.169. EWR Co proposes to implement the closure of Husborne Crawley Footpath No. 10 crossing previously authorised by the 2020 Order and to also close Ridgmont level crossing. This means that connectivity options to accommodate displaced traffic, pedestrians and other crossing users will need to be considered.

77.6.170. Three connectivity options have been developed, which modify the mitigation works authorised in the 2020 Order to provide mitigation for the additional crossing closure. The options, which are described below, provide bridges and new sections of public footpath.

7.6.171. EWR Co has not yet identified a preferred option. This will be presented at Statutory Consultation.

## Connectivity Option 1

7.6.172. Connectivity Option 1 would divert Husborne Crawley No. 10 Footpath to cross the railway via the A507 bridge. On the southeast side of the railway, the diverted footpath would run alongside the railway, passing beneath the M1 and A507 bridges. On the northeast side of the A507 bridge, a ramp would be provided to give access from the level of the railway to the elevated roadway. The verge on the northeast side of the A507 bridge would be improved to provide a footway. A further ramp would be provided on the opposite side of the railway to provide access between the bridge and the current route of the footpath.

7.6.173. Station Road would be stopped up either side of Ridgmont level crossing and vehicular traffic would be diverted via the existing A507. A new section of public footpath would be created on the southeast side of the railway to link Station Road to the diverted Husborne Crawley No. 10 footpath at the A507 bridge. This would provide an alternative route for pedestrians to cross the railway. This option is shown in Figure 7.38.


Figure 7.38: Ridgmont Connectivity Option 1

7.6.174. This option would require alterations to the A507 bridge to provide a suitable footway and to relocate the vehicle restraint system ("crash barriers") to the roadside of the new footpath. Further work is required to determine whether this would necessitate structural alterations to the bridge to support the revised restraint system.

7.6.175. This option is likely to require the permanent acquisition of small amounts of third-party land to accommodate the turning heads that would be provided on Station Road. This will be confirmed following further design development. New rights of way would be required across third-party land. Additional land would need to be used temporarily during the construction of the connectivity works.

## Connectivity Option 2

7.6.176. Connectivity Option 2 would provide a new footbridge at the site of Husborne Crawley Footpath No. 10 crossing, over which the footpath would be diverted. The footbridge would be accessed by stairs only and no ramps would be provided. Although this approach would mean that people whose mobility was impaired could not use the footbridge, EWR Co believes it would not be possible for them to access the bridge using the footpaths leading up to it and so, in practice, mobility impaired people would not use the bridge. However, it may be possible to design the bridge in a way that allows ramps to accommodate groups able to access the location despite restricted mobility.

7.6.177. As with Connectivity Option1, vehicular traffic from Station Road would be diverted via the A507. This option is shown in Figure 7.39.


Figure 7.39: Ridgmont Connectivity Option 2

7.6.178. A footpath connection between Station Road and Husborne Crawly Footpath No. 10 on the southeast side of the railway is not presently included as part of this option. If there were found to be sufficient need for such a connection, one could be provided. However, it should be noted that the length of the revised pedestrian route between the two parts of Station Road would be around twice that in Connectivity Option 1 (around 700m in Connectivity Option 2 compared to around 350m in Connectivity Option 1).

7.6.179. This option is likely to require the permanent acquisition of small amounts of third-party land to accommodate the new footbridge and the turning heads that would be provided on Station Road. This will be confirmed following further design development. New rights of way would be required across third-party land. Additional land would need to be used temporarily during the construction of the connectivity works.

## Connectivity Option 3

7.6.180. Connectivity Option 3 entails the diversion of Husborne Crawley Footpath No. 10 along the southeast side of the railway, passing beneath the M1 and A507 bridges, to join Station Road close to the Ridgmont station Heritage Centre and Tea Rooms. A new footbridge would be provided at the site of the current Ridgmont level crossing. This new bridge would be provided with both stairs and ramps and would provide a route across the railway for both users of the footpath and pedestrian users of Station Road. As with the other two options, vehicular traffic from Station Road would be diverted via the A507. This option is shown in Figure 7.40.

Figure 7.40: Ridgmont Connectivity Option 3

7.6.181. This option is likely to require the permanent acquisition of small amounts of third-party land to accommodate the new footbridge and the turning heads that would be provided on Station Road. This will be confirmed following further design development. New rights of way would be required across third-party land for all three options. Additional land would need to be used temporarily during the construction of the connectivity works.

7.6.182. The new footbridge proposed in this option could have an adverse impact on the setting of the Grade II listed former station building at Ridgmont station, which is now used as a Heritage Centre and Tea Rooms.

### Interface with Ridgmont station proposals and the Milton Keynes – Bedford Waterway

7.6.183. It should be noted that both of the train service concepts described in paragraphs 7.3.1 to 7.3.113 propose the relocation of Ridgmont station to a new site to the west of the M1 and Bedford Road. As concepts for the relocated station are developed, EWR Co will examine how best to provide links for pedestrians and cyclists between the existing and new station sites. Some of the options developed could serve to mitigate the closure of Husborne Crawley Footpath No. 10 and Ridgmont level crossings. At the next stage of design development, EWR Co will consider whether any such options could obviate the need for or require modification of the three connectivity options described above.

7.6.184. EWR Co is aware of the proposals for the Milton Keynes – Bedford Waterway in this area. At the next stage of design, EWR Co will also look at how the proposals for new and diverted footpaths in this area fit with the waterway proposals with a view to developing an integrated solution.

## Lidlington area level crossings

### Description of the group of crossings

7.6.185. There are a number of level crossings located in the Lidlington area in relatively close proximity to one another. Because of the proximity of the crossings to one another, the options for one crossing potentially influence the options for other crossings. The crossings in this area have therefore been considered as a single group

7.6.186. This group of crossings comprises five crossings of which:

- One is a road crossing; and
- Four are public footpath crossings of which one will be closed under the 2020 Order.

7.6.187. The crossings in this group are:

- **Broughton End (SP 979 385):** A foot crossing to the west of Lidlington at which Lidlington Footpath No. 20 crosses the railway. Lidlington Footpath No. 17 commences by the crossing on the north side of the railway. Lidlington Footpath No. 21 runs along the southern side of the railway in this vicinity and intersects Lidlington Footpath No. 20 immediately south of the foot crossing.
- **Forty Steps (SP 981 386):** A foot crossing to the west of Lidlington at which Lidlington Footpath No. 16 crosses the railway. Stairs are provided on each side of the railway to enable pedestrians to ascend the railway embankment slopes to reach the crossing. Lidlington Footpath No. 21 runs along the southern side of the railway in this vicinity and intersects Lidlington Footpath No. 20 immediately south of the foot crossing.
- **Playing Field (SP 984 387):** A foot crossing to the west of Lidlington at which Lidlington Footpath No. 15 crosses the railway. Steps are provided on each side of the railway to enable pedestrians to reach the crossing. Lidlington Footpath No. 21 runs along the southern side of the railway in this vicinity and intersects Lidlington Footpath No. 20 immediately south of the foot crossing.
- **Lidlington (Station Road / Church Street) (SP 989 391):** A public highway crossing at which the main north-south road through the village of Lidlington crosses the railway. This is a single-carriage road, known as Station Road to the north of the railway and Church Street to the south. The junction with Bye Road is located immediately to the south of the crossing. Accesses to a number of residential properties lead off Station road and Church Street in the immediate vicinity of the crossing. The crossing provides the sole means of access between the two platforms of Lidlington station, which straddles the crossing with one platform located either side of the road.
- **Pilling Farm South (SP 990 392):** A foot crossing located on the northern edge of Lidlington, to the east of the current Lidlington station at which Lidlington footpath No. 1 crosses the railway. This footpath forms part of the Marston Vale Trail. This crossing is authorised to be closed under the 2020 Order.

## EWR Co proposals

7.6.188. EWR Co proposes to permanently close all the foot crossings in this group and possibly also Lidlington public highway crossing. Two options have been developed to maintain connectivity in the area.

7.6.189. EWR Co proposes to implement the closure of Pilling Farm South crossing previously authorised by the 2020 Order. EWR Co also proposes to permanently close the remaining foot crossings in this group and possibly also Lidlington road level crossing. This means that connectivity options to accommodate displaced traffic, pedestrians and other crossing users will need to be considered.

7.6.190. Two connectivity options have been developed, which include and build upon the mitigations authorised in the 2020 Order. The options, which are described below, provide bridges, new sections of public footpath and bridleway and, in the case of Connectivity Option 1, a section of new road.

7.6.191. EWR Co has not yet identified a preferred option. This will be presented at Statutory Consultation.

7.6.192. In addition, EWR Co has considered an alternative solution, which is also described below. However, EWR Co does not currently believe this alternative is viable, primarily on grounds of affordability.

## Connectivity Option 1

7.6.193. Connectivity Option 1 would provide a new stretch of public highway immediately to the west of Lidlington running from Sheeptick End on the north side of the railway to Greensand Ridge to the south of the railway. A new bridge would be provided to allow the road to pass over the railway. In this option, Lidlington (Station Road / Church Street) crossing would be permanently closed and vehicular traffic would be diverted via this new road. The topography of the land which the new road would cross, combined with the need for the road to climb to reach the new bridge over the railway, means this road would have a gradient of around 1 in 20 over much of its length.

7.6.194. Lidlington Footpath No. 15, which currently leads to Playing Field foot crossing, would be diverted on the north side of the railway to intersect with the new road.

7.6.195. Lidlington Bridleway No. 12, which runs alongside the south side of the railway, would be diverted to connect with the new road. A new link between the two sides of Playing Field crossing would thus be created.

7.6.196. A link could also be created between the new road and Lidlington Footpath No. 6 on the north side of the railway to create additional connectivity.

7.6.197. Lidlington Footpath No. 10, which intersects the course of the proposed new road to the south of the railway, would need to be locally modified to provide a connection across the new road.

7.6.198. A new footbridge would be provided at the site of Lidlington (Station Road / Church Street) crossing to maintain a pedestrian route between the areas of Lidlington on either side of the railway. This footbridge would be provided with steps and ramps. The ramps would be located on the west side of the bridge and would run parallel to the railway and Bye Road. In order to make space for the ramp on the north side of the railway, it would be necessary to demolish the house at 1A Station Road.

7.6.199. In order to provide space for the ramp on the south side of the railway, it would be necessary to reduce the width of Bye Road at its eastern end. As a result, the road would not be wide enough for two-way traffic. The road would therefore need to be made a one-way road between Church Street and Whitehall. An alternative route between Bye Road and Church Street is available via Whitehall and High Street. However, the southern end of Whitehall (past the Village Hall and the Green Man public house) is not made up to normal highways standards and EWR Co would therefore need to carry out improvements to this short section of road.

7.6.200. This new footbridge would provide a route between the two platforms of Lidlington station (if it is retained in its current location – see paragraphs 7.3.1 to 7.3.113).

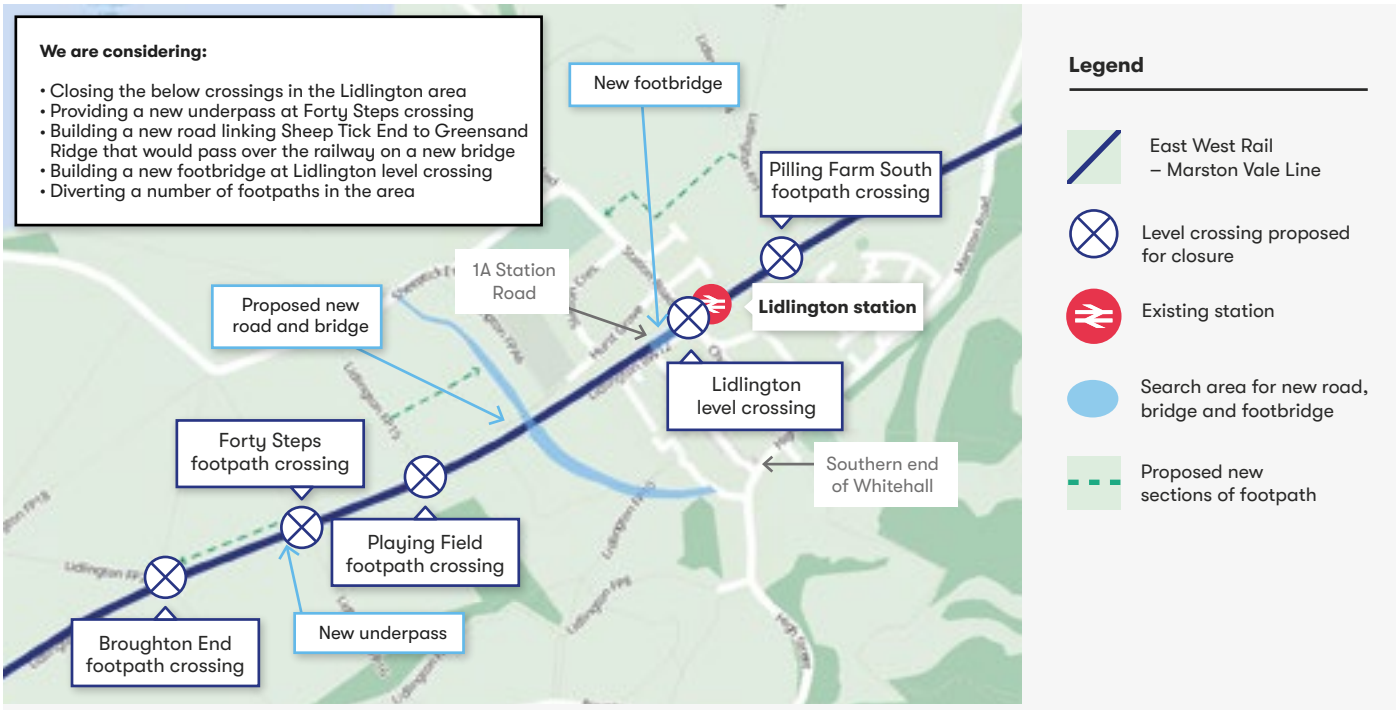
7.6.201. A new bridge under the railway would be provided at the site of Forty Steps crossing, through which Lidlington Footpath No. 16 would be diverted. Because of the height of the railway relative to the surrounding land at this point, the level of the new footpath would be close to the level of the surrounding land and would avoid the need for pedestrians to climb stairs to cross the railway at this point. The path would also drain freely, and it is anticipated that no pumped drainage would be required (as is sometimes the case with bridges beneath the railway).

7.6.202. Lidlington Footpath No. 20 would be diverted along the north side of the railway from the site of Broughton End crossing to the new bridge at the site of Forty Steps crossing. On the south side of the railway, Lidlington Footpath No. 21 already provides a link between the sites of Forty Steps and Broughton End crossings. EWR Co would consider extinguishing Lidlington Footpath No. 17 over its full length from Sheeptick End to Broughton End crossing as Lidlington Footpath No. 16 already provides link from the north end of Lidlington Footpath No. 17 to the proposed new bridge at the site of Forty Steps crossing.

7.6.203. EWR Co would implement the mitigation measures previously authorised by the 2020 Order in respect of Pilling Farm South foot crossing. These comprise a diversion of Lidlington Footpath No. 1 on the north side of the railway from a point close to the junction with Lidlington Footpath No. 4 to Station Road. The new section of footpath would join Station Road at the edge of Lidlington and would connect into the end of the footway on the east side of Station Road. The section of Lidlington Footpath No. 1 on the south side of the railway would be extinguished. The point at which the footpath currently commences could be reached via Station Road, the proposed new footbridge at the site of Lidlington (Station Road / Church Street) crossing, Church Street and Lombard Street.

7.6.204. This option is shown in Figure 7.41.

Figure 7.41: Lidlington Connectivity Option 1




7.6.205. This option would require the permanent acquisition of third-party land for the construction of the new road to the west of the village. As noted above, one residential property would need to be acquired and demolished to make room for the new footbridge. New and amended rights of way would need to be acquired over third-party land. Additional land would need to be used temporarily in connection with the construction of the new road and the new bridges over and under the railway.

7.6.206. The new road bridge and connecting sections of road would have a negative visual impact. Options to mitigate this impact would be investigated at the next stage of design.

7.6.207. The new road to the south of the new bridge over the railway might require the removal of a small area of deciduous woodland.

7.6.208. The new footbridge and, in particular, the ramps leading to it would have a visual impact on residential properties along Bye Road. Because of the limited space at the site of the bridge, it would be difficult to mitigate this impact.

## Connectivity Option 2

7.6.209. In this option, all of the footpath crossings would be closed but Lidlington (Station road / Church Street) public highway crossing would remain open.

7.6.210. In this option, the existing Lidlington (Church Street / Station Road) level crossing could be retained and improved. However, further work is required to determine whether upgrading the crossing equipment would sufficiently reduce the safety risk at this crossing to allow it to remain open. Also, further work needs to be undertaken to better understand the impact on traffic flows on Church Street / Station Road of the increased duration each hour in which the level crossing would be closed to allow the passage of trains (as described in paragraph 7.6.11).

7.6.211. A new pedestrian bridge under the railway at the site of Forty Steps crossing would be provided as described for Connectivity Option 1 above. The modifications to Lidlington Footpaths Nos. 16, 17 and 20 described above would also be undertaken as part of this option.

7.6.212. A second bridge under the railway would be provided roughly halfway between Playing Field crossing and the site of the recently closed School Crossing. To the north side of the railway, Lidlington Footpath No. 6 would be diverted to run along the side of the railway to reach the new bridge. On the south side of the railway, Lidlington Bridleway No. 12 provides a link from the new bridge to the south side of School Crossing. To the north of the railway, Lidlington Footpath No. 15 would be diverted along the field boundary to the north of the playing fields and then via Lidlington Footpath 6A and the diverted section of Lidlington Footpath 6 to reach the new bridge. On the south side of the railway, Lidlington Bridleway No. 12 and Lidlington Footpath No. 21 provide a link back to the south side of Playing Field crossing.

7.6.213. The changes to Lidlington Footpath No. 1 authorised by the 2020 Order and described above as part of Connectivity Option 1 would also be undertaken as part of this option. This option is shown in Figure 7.42.

7.6.214. This option avoids the visual impacts of the proposed new road bridge and the new footbridge at Church Street / Station Road that are included in Connectivity Option 1. However, although the Lidlington (Station Road / Church Street) public highway level crossing would remain open, it should be noted that the barriers could be closed across the road for up to approximately 40 minutes each hour as a result of the increased frequency of train service. This would mean that there would be a moderately high risk of users of this crossing experiencing an increased journey time.

7.6.215. A limited amount of third-party land would need to be permanently acquired as part of this option in connection with the construction of the new bridge between Playing Field and School crossings. New rights of way would need to be acquired over third-party land. Additional land would need to be used temporarily in connection with the construction of the new bridges. All of the land required is currently used for agricultural or amenity purposes.

Figure 7.42: Lidlington Connectivity Option 2

## Alternative solution

7.6.216. EWR Co has also considered an alternative solution that would divert the Marston Vale Line to the north of the village. This alternative route for the railway would avoid all the level crossings in this group. It would also result in changes to the proposals for Marston Road level crossing (below).

7.6.217. The total length of diverted railway would be 3.8km as shown in blue in Figure 7.43 with a significant proportion being in deep cutting.

Figure 7.43 Alternative solution diverting the railway to the north of Lidlington


7.6.218. The new railway alignment would deviate from the current alignment to the west of Broughton End foot crossing. The new railway would initially be on embankment before dropping into a cutting. It would run roughly parallel with and to the south of Sheeptick End. It would pass through the current allotments site meaning that the allotments would need to be relocated.

7.6.219. The alternative alignment is capable of having a new station adjacent to the Station Road Bridge, which would support housing development to the north. This would replace the current Lidlington station if train service concept 1 were selected (see paragraphs 7.3.1 to 7.3.113). If train service concept 2 were taken forward, a station at this site could be provided as an alternative to the Ridgmont (relocated) station proposed in that concept.

7.6.220. Having passed beneath Station Road, the new alignment would pass to the south of the Thrupp End scheduled monument before curving to the south to re-join the existing alignment to the east of Marston Road.

7.6.221. Station Road would possibly need to be lifted by up to 2m and Marston Road would possibly need to be lifted by up to one metre to permit the new alignment to pass under them with adequate clearances whilst maintaining railway gradients no steeper than 1 in 80. The works to raise Station Road would potentially also affect Thrupp End and Sheeptick End in the vicinity of the junction with Station Road.

7.6.222. Where the new railway intersects existing public footpaths, new bridges would be provided to allow the paths to pass over or under the railway. Local diversion of the footpaths would be necessary to take account of the new bridges.

7.6.223. Such an alignment would remove the tracks through Lidlington village, allowing all the crossings to be removed and roads or footpaths reinstated at ground level. It would also mean that the land within the current railway corridor would be available for other uses.

7.6.224. Noise and vibration through the village would be reduced and the areas of cutting would reduce the noise impact and visual impact of the railway.

7.6.225. The alternative alignment and the associated bridge works would require the permanent acquisition of more land than the two connectivity options described above. This would include land that is currently allotments and land that is proposed for development.

7.6.226. The alternative alignment passes approximately 100m away from Thrupp End scheduled monument. Further work would be required to determine the impact of the railway on the scheduled monument and on any associated archaeology.

7.6.227. The works required to raise Station Road and Marston Road would impact on a small number of residential properties. The extent of this impact has not been fully determined at this stage.

7.6.228. The alternative alignment would be very expensive to construct in comparison to the two options described above.

7.6.229. EWR Co does not believe that the additional benefits that this option delivers are great enough to justify the significant additional cost. A compelling case that performs at least as well as the options proposed and meets the Project Objectives would be needed for it to be considered further.

## Marston (Marston Road) (SP 994 394)

### Site description

7.6.230. Marston level crossing is located between Lidlington and Millbrook stations, to the east of the village of Lidlington.

7.6.231. The level crossing is an automatic half-barrier level crossing. This type of crossing is protected by road traffic light signals and a lifting barrier on both sides of the railway. When lowered, the barriers only extend across the entrances to the crossing leaving the exits clear. The crossing equipment is activated automatically by an approaching train. The lowering of the barriers is preceded by the display of road traffic light signals.

7.6.232. Marston Road, a single carriageway road linking Lidlington to Marston Moretaine, crosses the railway at the crossing. The speed limit on Marston Road is 40mph. The site of the crossing is relatively rural in nature. A house is located at the northwest corner of the crossing. Further houses front onto Marston Road to the north of the railway with the closest being around 160m from the level crossing.

7.6.233. In February 2020, consent was granted in the 2020 Order to close the level crossing and replace it with a bridge over the railway at the site of the crossing. This new bridge is shown in Figure 7.44. The closure of the crossing and provision of the new bridge has not yet taken place.

Figure 7.44: Proposed bridge at Marston level crossing

## EWR Co proposals

7.6.234. EWR Co proposes to incorporate Network Rail's consented proposals in respect of this crossing and would permanently close Marston Level crossing and implement the bridge scheme.

## Millbrook (Station Lane) (TL 006 404)

### Site description

7.6.235. Millbrook level crossing is a public highway level crossing located around 850m to the southeast of Marston Moretaine, adjacent to Millbrook station. At the crossing, the railway is crossed by Station Lane, a single carriageway road leading from Marston Moretaine to the village of Millbrook, which is around a mile to the south of the crossing. The maximum speed limit on this road is 60mph.

7.6.236. Millbrook station's two platforms are located immediately to the northeast of the level crossing. The crossing provides the only route between the two platforms. Immediately to the east of the crossing is the former Millbrook Station Master's house, now a private dwelling. Opposite this is a large, derelict house ("Morteyne House"), immediately beyond which is the northern extremity of the Millbrook Vehicle Proving Ground. A group of four houses ("Pillinge Cottages") are located slightly further to the east along Station Lane together with a private access road leading off Station Lane to a farm ("Pillinge Farm South"). A high-voltage electricity transmission line crosses the railway just to the southwest of the level crossing and passes between the derelict house and vehicle proving ground.

7.6.237. To the north of the level crossing is the Millennium Country Park, comprising 225 hectares of publicly accessible woodlands, grasslands, meadows and a Wetlands Nature Reserve.

### EWR Co proposals

7.6.238. EWR Co proposes to permanently close Millbrook level crossing.

7.6.239. This means that connectivity options to accommodate displaced road traffic, pedestrians and other crossing users will need to be considered.

7.6.240. EWR Co has developed three connectivity options that provide a bridge close to the site of the current crossing.

7.6.241. EWR Co has not identified a preferred option.

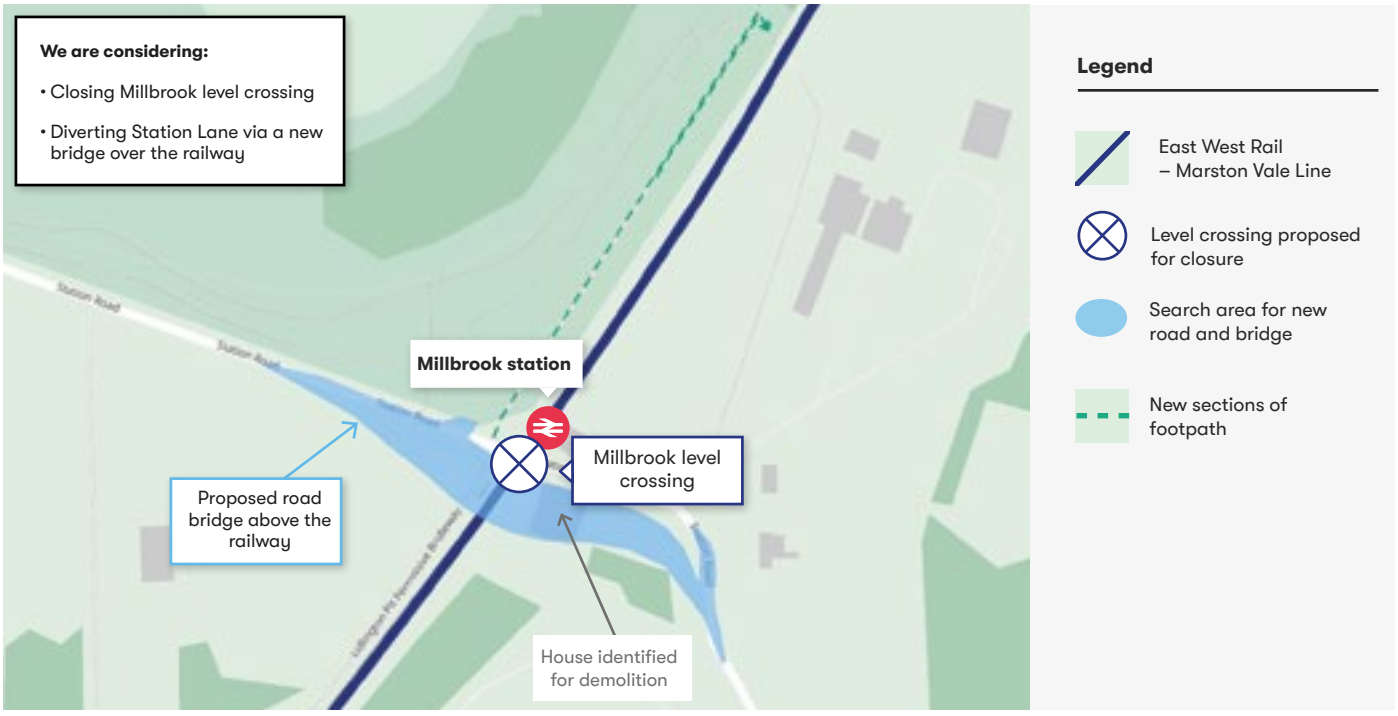
## Connectivity Option 1

7.6.242. Connectivity Option 1 would provide a new public highway bridge over the railway immediately to the southwest of the current Millbrook level crossing. Station Lane would be diverted over this bridge, connecting with its existing alignment around 220m from the level crossing on each side of the railway.

7.6.243. To the east of the railway, access to residential and agricultural properties currently accessed from Station Lane and, if Millbrook station is retained (see paragraphs 7.3.1 to 7.3.113), access to the Bletchley-bound platform at Millbrook station the existing Station Lane would be provided via an access road on the current alignment of Station Lane. To the west of the railway, an access road on the current alignment of Station Lane would be provided to give access to the (private) vehicular access track into the country park, the strip of land between the country park and Millbrook station and, if Millbrook station is retained, access to the Bedford-bound platform at Millbrook station.

7.6.244. This option is shown in Figure 7.45.

Figure 7.45: Millbrook Connectivity Option 1



7.6.245. The provision of this new bridge would necessitate the acquisition and demolition of the derelict house. It would also require the permanent acquisition of an area of agricultural land to the west of the crossing and possibly a very small area of land within the country park (although it is likely that further design development will remove the need for this piece of land). The section of embankment supporting the new road on the east side of the railway conflicts with the embankment supporting the roadway with the vehicle proving ground and would necessitate the permanent acquisition of a small area of land with the proving ground site. EWR Co will seek to remove this conflict during the next stage of design development. In addition to the land that is required permanently, further land would need to be used temporarily during the construction of the new bridge.

7.6.246. It is likely that the high-voltage electricity transmission line would need to be locally diverted and the pylon supporting it just to the south of the crossing would need to be relocated. However, EWR Co will investigate this further during the next stage of design with a view to avoiding the need to interfere with the transmission line if possible.

7.6.247. The new bridge would have a visual impact on the surrounding area but most notably on the residential properties located on Station Lane to the east of the level crossing.

## Connectivity Option 2

7.6.248. Connectivity Option 2 would provide a new section of public highway passing beneath the railway. The (horizontal) alignment of the new road would be very similar to that in Connectivity Option 1. As with Connectivity Option 1, access roads would be provided to maintain access to properties in the vicinity of the crossing that are currently accessed from Station Lane and, if it is retained (see paragraphs 7.3.1 to 7.3.113), access to the platforms at Millbrook station. This option is shown in Figure 7.46.

7.6.249. As with Connectivity Option 1, the provision of this new road and bridge would necessitate the acquisition and demolition of the derelict house adjacent to the crossing. It would also require the permanent acquisition of an area of agricultural land to the west of the crossing and possibly a very small area of land within the country park (although it is likely that further design development will remove the need for this area of land). The section of cutting adjacent to the new road on the east side of the railway conflicts with the embankment supporting the roadway with the vehicle proving ground and would necessitate the permanent acquisition of a small area of land with the proving ground site. EWR Co will seek to remove this conflict during the next stage of design development. In addition to the land that is required permanently, further land would need to be used temporarily during the construction of the new bridge.

7.6.250. It is likely that the high-voltage electricity transmission line would need to be locally diverted and the pylon supporting it just to the south of the crossing would need to be relocated. However, EWR Co will investigate this further during the next stage of design with a view to avoiding the need to interfere with the transmission line if possible.

7.6.251. The new bridge would have a reduced visual impact on the surrounding area and neighbouring residential properties compared to Connectivity Option 1.

Figure 7.46: Millbrook Connectivity Option 2

7.6.252. Because the new road passing under the bridge would be below ground level, a pumped drainage system would be required. It is possible that an underground attenuation tank might also be required to avoid overwhelming the local drainage system at times of heavy rainfall. This would require additional land compared to Connectivity Option 1 and would also result in higher on-going maintenance costs. Suitable land for the siting of the pumping equipment and, if required, the attenuation tank would be identified at the next stage of design if this option is taken forward.

## Connectivity Option 3

7.6.253. Connectivity Option 3 provides a new bridge over the railway to the northeast of Millbrook crossing and Millbrook station. On the east side of the railway, Station Lane would be diverted to pass behind Pillinge Cottages and Station House to reach the new bridge. On the west side of the railway, the diverted section of Station Lane would pass through the southern corner of the country park.

7.6.254. Access to Station House, Morteyne House and Pillinge Cottages would be provided via an access road on the existing Station Lane alignment. If required, a similar access would be provided to maintain access on the west side of the railway. Access to Millbrook station, if it is to be retained (see paragraphs 7.3.1 to 7.3.113) would be provided via these access roads. At the next stage of design development, EWR Co will investigate if access would be better provided via steps and / or ramps from the platforms to the new bridge. (This would shorten the route from Marston Mortaine to the Bletchley-bound platform). The diverted road would sever the current access to South Pillinge Farm and a new access would be formed off the diverted Station Lane.

7.6.255. This option is shown in Figure 7.47.

7.6.256. The total length of new road in this option is greater than in the other two options. It would require the permanent acquisition of a larger area of agricultural land and the permanent acquisition of land within the country park. It would also have a visual impact on the surrounding properties and on the country park. However, it would avoid the need to acquire and demolish the derelict house, it would avoid the need to interfere with the electricity transmission line and would avoid impacts on the embankment of the vehicle proving ground test track.


Figure 7.47: Millbrook Connectivity Option 3

## Green Lane (TL 014 422)

### Site description

7.6.257. Green Lane level crossing is a public highway level crossing located to the southwest of the village of Stewartby. The crossing is of the full-barrier type with CCTV provided so that the signaller can confirm the barriers have correctly lowered and the crossing is clear of obstructions before authorising trains to proceed over the crossing. The crossing has recently been converted from the automatic half-barrier type on account of the crossing's increased use following the construction of the Rookery South energy recovery plant.

7.6.258. At the crossing, Green Lane, a single carriageway public highway, crosses the railway. Green Lane is one of two roads (the other being Broadmead Road) that lead from the village to Bedford Road (the former A421). The speed limit at the crossing for road traffic is 30mph but it increases to 60mph just to the west of the crossing.

7.6.259. Stewartby station straddles the crossing, with one platform situated either side of the road. The crossing provides the only means of access between the two platforms.

7.6.260. The former Stewartby Brickworks site is located on both sides of the railway to the north and northeast of the crossing. Under Policy 25 of the Bedford Borough Local Plan, the site has been identified for mixed-use development. To south and west of the crossing are former claypits associated with the brickworks. The one to the west is now water-filled and forms Stewartby Lake. Stewartby Water Sports Club is located adjacent to the lake and is accessed from Green Lane a short distance to the west of the level crossing. Kimberley Sixth Form College is located around 400m to the northwest of the crossing and is accessed from Green Lane.

7.6.261. A short distance to the east of the crossing is the vehicular access to the energy recovery facility. The closest houses of Stewartby are located around 300m to the east of the crossing.

### EWR Co proposals

7.6.262. EWR Co proposes to permanently close Green Lane level crossing.

7.6.263. This means that connectivity options to accommodate displaced road traffic, pedestrians and other crossing users will need to be considered.

7.6.264. EWR Co has developed two connectivity options that provide a bridge close to the site of the current crossing.

## Connectivity Option 1

7.6.265. Connectivity Option 1 has been developed on the assumption that the existing Stewartby station is replaced by a station in an alternative location as would be the case with train service concept 2 (see paragraphs 7.3.1 to 7.3.113). This option provides a new bridge a short distance to the north of the current level crossing. Green Lane would be realigned to pass over the new bridge.

7.6.266. Access to the Water Sports Club would be via an access road on the current Green Lane alignment, which would join the realigned Green Lane opposite the (remodelled) access to Kimberley College.

7.6.267. Access to the energy recovery facility would be via a new access road on the north side of the realigned Green Lane that would pass under the new bridge to reach the plant. Further work would be required as part of the next stage of design development to ensure that adequate visibility could be provided of and from the junction of the access road with Green Lane.

7.6.268. Although this option has been developed on the assumption that the existing Stewartby station is relocated, it would be possible to develop a version of this option that incorporates the station, albeit with a revised station layout.

7.6.269. This option is shown in Figure 7.48.

7.6.270. This option would necessitate the permanent acquisition of part of the former brickworks site together with a small area of the grounds of Kimberley College. Additional land would be required temporarily to facilitate construction of the new bridge, realigned road and access roads. Because the bridge would be built to one side of the current road, its construction would be less disruptive and Green Lane could remain open for much of the construction period. This option would also leave undisturbed the mature vegetation adjoining Green Lane to the east of the energy recovery facility.


Figure 7.48: Green Lane Connectivity Option 1


Figure 7.49: Green Lane Connectivity Option 2

## Connectivity Option 2

7.6.271. Connectivity Option 2 has been developed on the basis of Stewartby station being retained at its current location. As with Connectivity Option 1, it provides a new public highway bridge over the railway to the north of the current crossing. In this option, the east end of the realigned road is slightly further to the north than Connectivity Option 1 with the result that the realignment continues further towards the village.

7.6.272. As with Connectivity Option 1, access to the Water Sports Club is provided by an access road on the current alignment of Green Lane. This access road could also be used to provide vehicular access to Stewartby station. The access to the energy recovery plant would be via a new access road on the south side of the realigned Green Lane to the east of the crossing. This access road could also be used to provide access to Stewartby station.

7.6.273. The new bridge would be designed to allow active travel routes from the proposed new development on the brickworks site to the station to pass beneath it.

7.6.274. Although this option has been designed on the basis of Stewartby station being retained at its current location, it is compatible with train service concept 2 in which Stewartby station would be relocated.

7.6.275. This option is shown in Figure 7.49.

7.6.276. As with Connectivity Option 1, this option would require the permanent acquisition of part of the former brickworks site and a small area of land at the edge of the grounds of Kimberley College. The area of land required is similar for both options. Further land would need to be used temporarily in connection with the construction of the new bridge and roads. It is likely that this option would require the removal of a small area of the deciduous woodland to the south of Green Lane on the east side of the crossing. This would be confirmed at the next stage of design development.

7.6.277. This option avoids the potential visibility issues at the junction between Green Lane and the access road to the energy recovery facility. The bridge could have a reduced span compared to that in Connectivity Option 1 and therefore is likely to cost less.

## Stewartby Brickworks (TL 016 425)

### Site description

7.6.278. Stewartby Brickworks level crossing is located within the disused Stewartby Brickworks site. At the crossing, a private access road and public footpath (Stewartby Footpath No. 5) cross the railway. The footpath starts at Broadmead Road (to the east of the railway) and terminates within the brickworks site, to the west of the railway.

7.6.279. The level crossing is of the full-barrier type with CCTV provided so that the signaller can confirm the barriers have correctly lowered and the crossing is clear of obstructions before authorising trains to proceed over the crossing.

7.6.280. In February 2020, consent was in the 2020 Order to close the level crossing and stop up the footpath without the need for any mitigation works.

### EWR Co proposals

7.6.281. EWR Co proposes to implement the closure of this crossing and the stopping up of Stewartby Footpath No. 5.

## Wootton Broadmead (Broadmead Road) (TL 020 435)

### Site description

7.6.282. Wootton Broadmead level crossing is a public highway level crossing located to the northwest of the village of Stewartby. The crossing is of the full-barrier type with CCTV provided so that the signaller can confirm the barriers have correctly lowered and the crossing is clear of obstructions before authorising trains to proceed over the crossing.

7.6.283. At the crossing, Broadmead Road, a single carriageway public highway, crosses the railway. Broadmead Road is one of two roads (the other being Green Lane) that lead from the village to Bedford Road (the former A421). The speed limit at the crossing for road traffic is 60mph.

7.6.284. On the east side of the railway there is agricultural land on both sides of Broadmead Road. On the west side of the railway, the land to the south of Broadmead Road is a former landfill site. On the opposite side of the road, the land is heavily vegetated, and a number of buildings (Randall's Farm) are located within a clearing in the vegetation a short distance along Broadmead Road from the level crossing.

7.6.285. The land to the north of Broadmead Road is subject of a planning application[51] to develop a business park.

[50] Bedford Borough Council reference 18/02940/EIA

## EWR Co Proposals

7.6.286. EWR Co proposes to permanently close Wootton Broadmead level crossing.

7.6.287. This means that connectivity options to accommodate displaced road traffic, pedestrians and other crossing users will need to be considered.

7.6.288. EWR Co has developed two connectivity options that provide a bridge close to the site of the current crossing.

## Connectivity Option 1

7.6.289. Connectivity Option 1 would provide a new public highway bridge just to the northeast of the existing level crossing. Broadmead Road would be realigned to pass over the new bridge. This option is shown in Figure 7.50.

Figure 7.50: Wootton Broadmead Connectivity Option 1


7.6.290. This option would require the permanent acquisition of an area of agricultural land to the east of the railway and some of the vegetated land to the west of the railway. It would also require the acquisition and demolition of the buildings at Randall's Farm to the west of the railway. Additional land would need to be used temporarily during the construction of the new bridge and realigned road. The new sections of road would require the removal of areas of deciduous woodland.

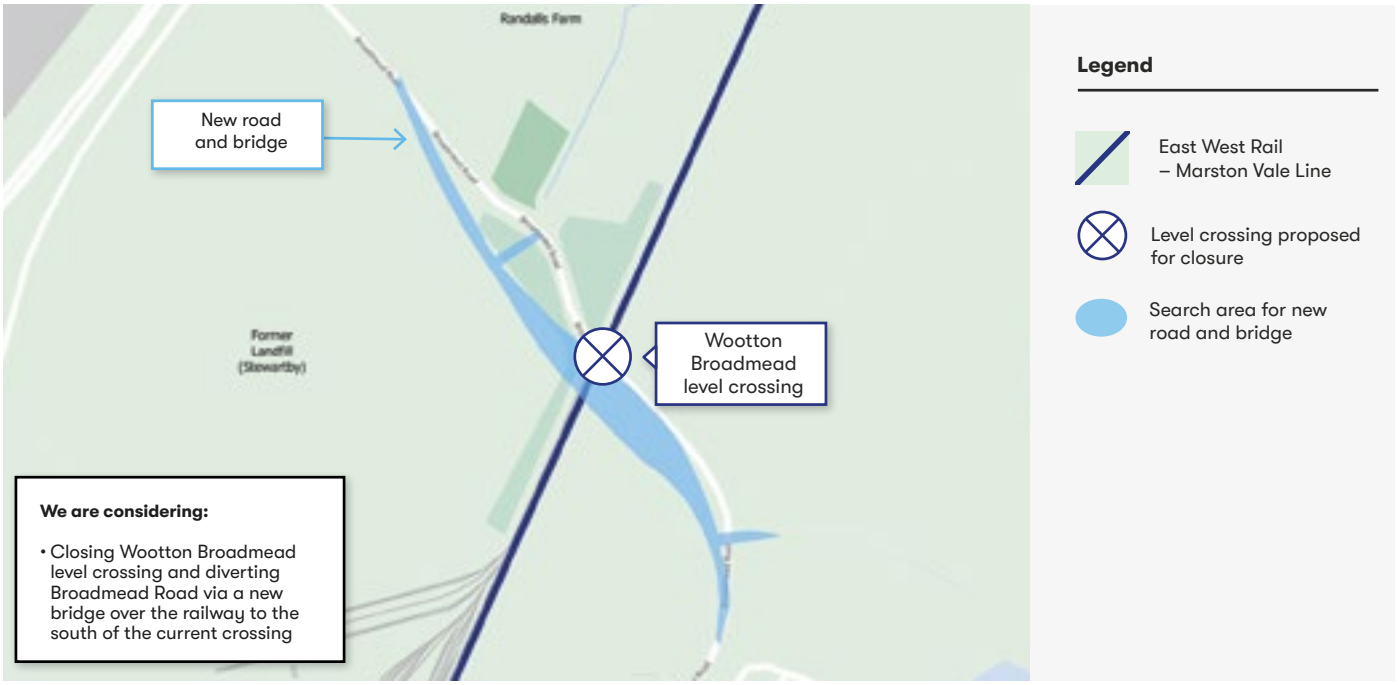
7.6.291. As the bridge is to one side of the existing road alignment, Broadmead Road could remain open for the majority of the period of construction of the new bridge and road.

7.6.292. This option has been developed to be compatible with a new station at this site (relocated Stewartby station), as proposed in train service concept 2 (see paragraphs 7.3.1 to 7.3.113). However, the option is also compatible with train service concept 1 in which the station would not be provided.

## Connectivity Option 2

7.6.293. Connectivity Option 2 would provide a new public highway bridge just to the southwest of the existing level crossing. Broadmead Road would be realigned to pass over the new bridge. This option is shown in Figure 7.51.

Figure 7.51: Wootton Broadmead Connectivity Option 2




7.6.294. This option would require the permanent acquisition of an area of agricultural land to the east of the railway and an area within the former landfill site to the west of the railway. Additional land would need to be used temporarily during the construction of the new bridge and realigned road.

7.6.295. This option avoids the need to demolish the buildings at Randall's Farm but it would involve construction within the former landfill site. As the landfill site contains contaminated and potentially hazardous material, the necessary earthworks for the new road could potentially be more hazardous and hence costly to construct. This would need to be investigated further at the next stage of design.

7.6.296. As with Connectivity Option 1, this option would require the removal of areas of deciduous woodland.

7.6.297. As the bridge is to one side of the existing road alignment, Broadmead Road could remain open for the majority of the period of construction of the new bridge and road.

7.6.298. This option has been developed to be compatible with a new station at this site (relocated Stewartby station), as proposed in train service concept 2 (see paragraphs 7.3.1 to 7.3.113). However, the option is also compatible with train service concept 1 in which the station would not be provided.

## Wootton Village (TL 024 443)

### Site description

7.6.299. Wootton Village crossing is a rural foot crossing to the north of Stewartby. At the crossing, Stewartby Footpath No. 1 crosses the railway. This unsurfaced footpath runs from a point on Bedford Road adjacent to CP Farm on the west side of the railway. On the east side of the railway, it runs to Manor Road in Kempston Hardwick. Broadmead Road (just outside Stewartby) can be reached via Stewartby Footpath No. 2 which joins Stewartby Footpath No. 1 to the east of the railway.

7.6.300. The crossing is surrounded by agricultural land. However, the land to the east side of the railway is subject of a planning application[52] to develop a business park.

### EWR Co proposals

7.6.301. EWR Co proposes to permanently close Wootton Village level crossing.

7.6.302. This means that connectivity options to accommodate displaced pedestrians will need to be considered.

7.6.303. EWR Co has developed a connectivity proposal that provides a bridge at the site of the current crossing.

### Connectivity proposal

7.6.304. A new footbridge would be provided at the site of the current foot crossing. The footbridge would be accessed via stairs. Although this approach would mean that people whose mobility was impaired could not use the footbridge, EWR Co believes it would not be possible for them to access the bridge using the footpaths leading up to it and so, in practice, mobility impaired people would not use the bridge. However, it may be possible to design the bridge in a way that allows ramps to be included to accommodate groups able to access the location despite restricted mobility. The bridge could also be designed to allow ramps to be added at a later date if changing patterns of development necessitate.

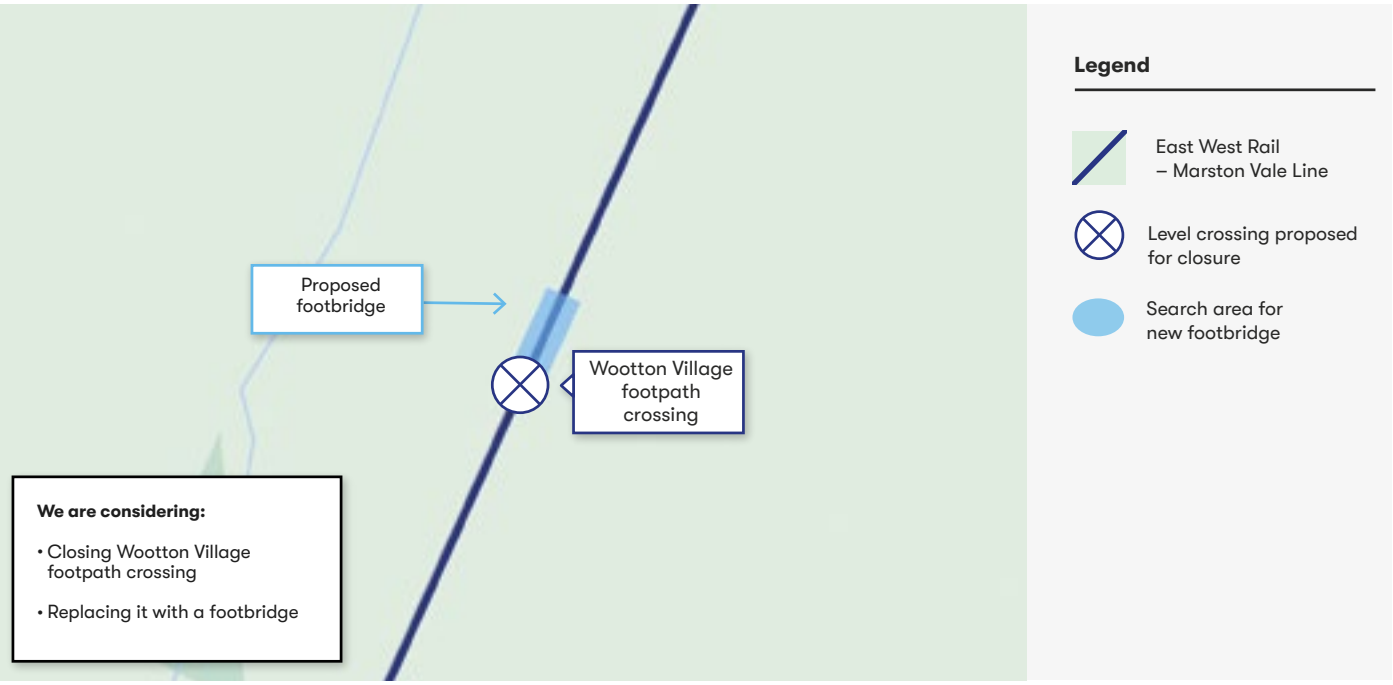
7.6.305. The proposed footbridge is shown in Figure 7.52.

[51] Bedford Borough Council reference 18/02940/EIA

7.6.306. The provision of the proposed footbridge would require the permanent acquisition of a small strip of agricultural land on the east side of the railway. EWR Co does not currently believe any land would be permanently required on the west side of the railway but this will be confirmed at the next stage of design development. Further land would need to be used temporarily to facilitate the construction of the new bridge.

7.6.307. As the bridge would be sited in a relatively flat landscape, it is likely to be visible over a relatively wide area.

Figure 7.52: Wootton Village proposed footbridge



## Kempston Hardwick (Manor Road) (TL 026 448)

### Site description

7.6.308. Kempston Hardwick level crossing is a public highway level crossing located to the southwest of Bedford. At the crossing, Manor Road crosses the railway. Manor Road is a single carriageway road linking Woburn Road (former A421) to Ampthill Road (B530) via the hamlet of Kempston Hardwick. The speed limit on Manor Road at the site of the crossing is 40mph but it increases to 60mph a short distance to the west of the railway.

7.6.309. The level crossing is an automatic half-barrier level crossing. This type of crossing is protected by road traffic light signals and a lifting barrier on both sides of the railway. When lowered, the barriers only extend across the entrances to the crossing leaving the exits clear. The crossing equipment is activated automatically by an approaching train. The lowering of the barriers is preceded by the display of road traffic light signals.

7.6.310. The land to the south and west of the crossing is agricultural. A private dwelling is located to the north of the level crossing. Beyond this lies an area of open land and a balancing pond beyond which is a distribution facility. The site of a former brickworks is located to the east of the crossing. Around 250m to the southeast of the crossing, a group of dwellings, known as Eastwood Cottages, front on to the north side of Manor Road. The land to the east of the railway is the subject of a planning application[53] for redevelopment as a business park.

7.6.311. Kempston Hardwick station is located immediately to the southwest of the crossing. The level crossing provides the only means of access between the two platforms of the station.

7.6.312. In February 2020, consent was granted in the 2020 Order to close the level crossing and replace it with a bridge over the railway at the site of the crossing. The closure of the crossing and provision of the new bridge has not yet taken place.

[52] Bedford Borough Council reference 18/02940/EIA

## EWR Co proposals

7.6.313. EWR Co proposes to implement the consented closure of this crossing.

7.6.314. EWR Co could implement the bridge scheme consented by the 2020 Order. This is described below as Connectivity Option 1. However, EWR Co has also considered two revised connectivity options that would provide a new bridge to the side of the current road alignment. These are described below as Connectivity Option 2 and Connectivity Option 3.

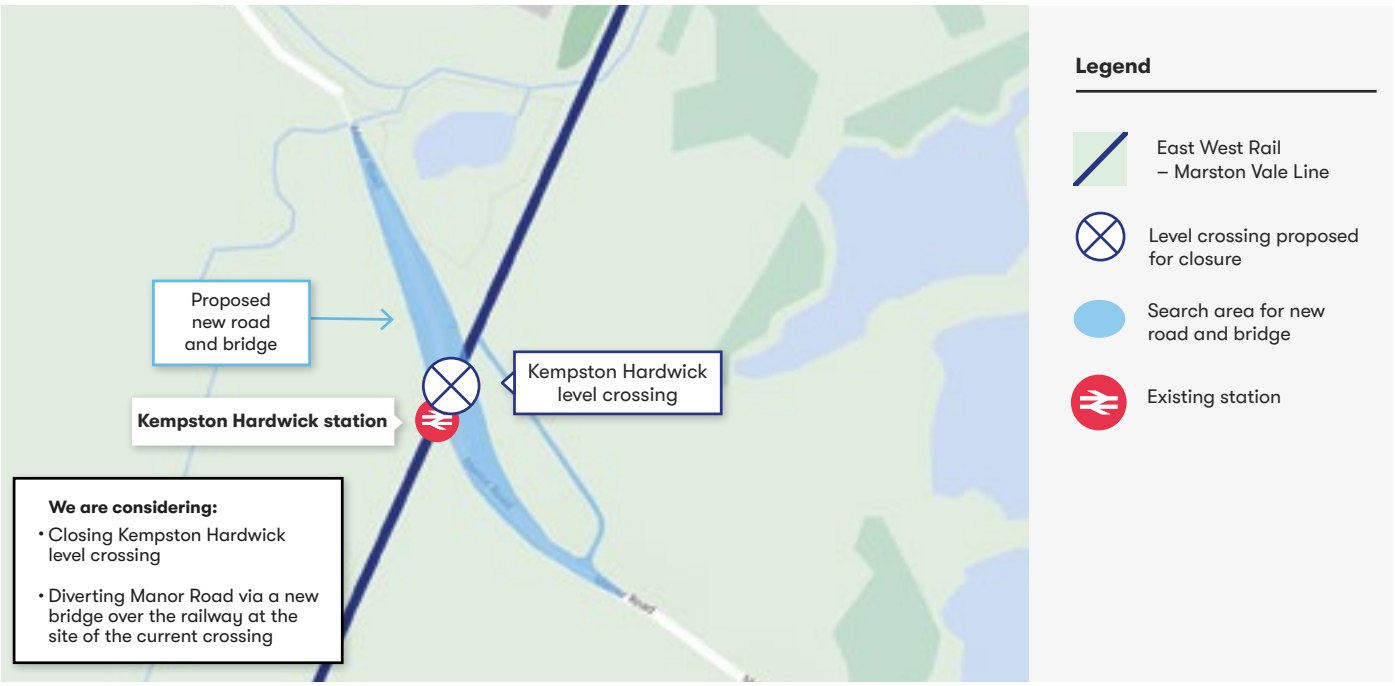
## Connectivity Option 1

7.6.315. Connectivity Option 1 would involve implementing the bridge scheme that has already gained consent pursuant to the 2020 Order. This would provide a new bridge over the railway on the same (horizontal) alignment as the current road. Manor Road would be diverted over this new bridge.

7.6.316. Further work would be required to determine a suitable arrangement for access to Kempston Hardwick station if train service concept 1 (see paragraphs 7.3.1 to 7.3.113) is taken forward and a station is retained at this location.

7.6.317. This new bridge is shown in Figure 7.53.

Figure 7.53: Network Rail's proposed new bridge at the site of Kempston Hardwick level crossing (Connectivity Option 1)



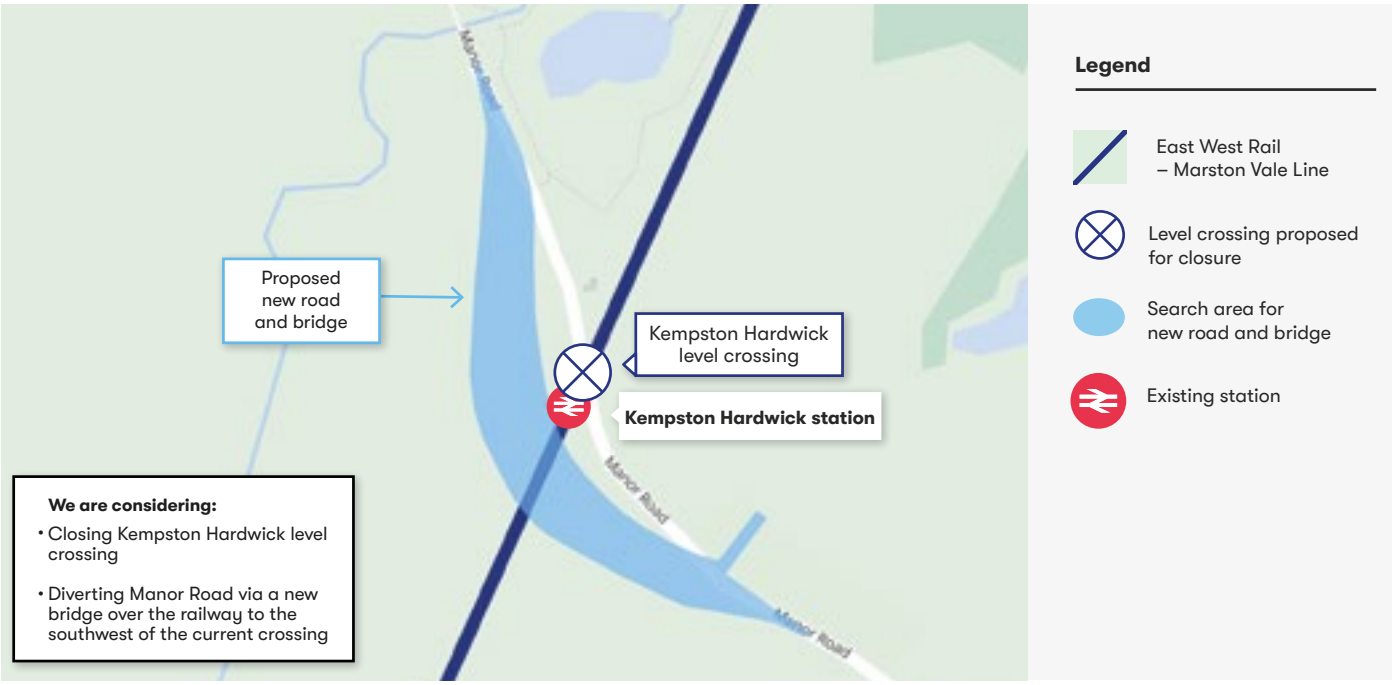
7.6.318. Because the alignment of the new road closely follows the alignment of the existing Manor Road, Manor Road would have to be closed for an extended period to allow the construction of the new bridge and connecting sections of road.

7.6.319. Although some third-party owned land would need to be permanently acquired, this option requires the least third-party land of the three options considered.

## Connectivity Option 2

7.6.320. This option would provide a new bridge over the railway to the southwest of the site of the current level crossing and would divert Manor Road over this new bridge. This option is shown in Figure 7.54.

Figure 7.54: Kempston Hardwick Connectivity Option 2




7.6.321. This option would require the permanent acquisition of more third-party land than the Connectivity Option 1. All of the land is currently in agricultural use but that on the east side of the railway is proposed for development. The arrangements for access to Kempston Hardwick station would need to be developed further at the next stage of design if train service concept 1 (see paragraphs 7.3.1 to 7.3.113) is taken forward.

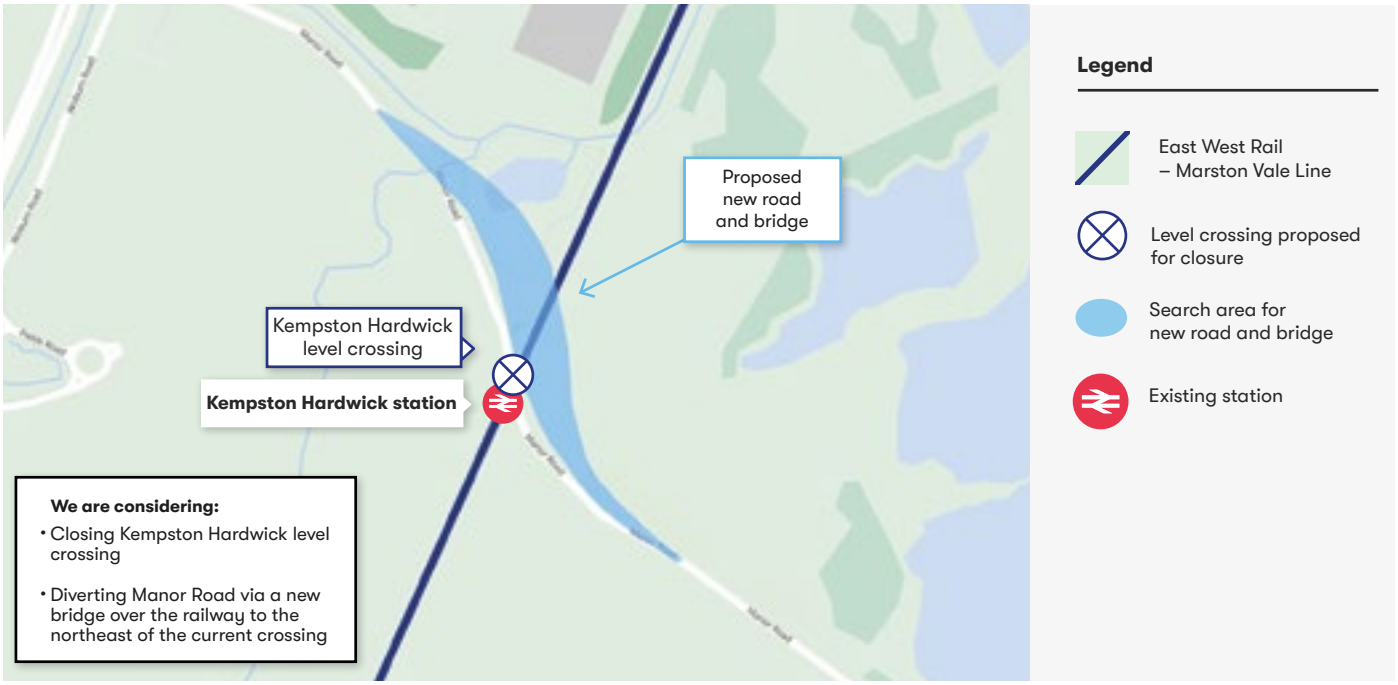
7.6.322. This option would move the road slightly further away from Eastwood Cottages compared to the current road alignment. Because the road would be rising towards the bridge, there could be a minor visual impact from the cottages closer to the railway. This would be reviewed at the next design stage with a view to minimising this impact.

7.6.323. Because the new bridge would be to one side of the existing road, Manor Road could remain open for much of the construction period.

## Connectivity Option 3

7.6.324. This option would provide a new bridge to the northeast of the current level crossing and Manor Road would be diverted over the new bridge. This option is shown in Figure 7.55.

Figure 7.55: Kempston Hardwick Connectivity Option 3




7.6.325. This option would require the permanent acquisition of more third-party land than Connectivity Option 1 but a similar amount to Connectivity Option 2. To the north of the crossing, the majority of the land required is open land but the balancing pond on this land would need to be modified. To the east of the crossing, the land required is all within the former brickworks site, which is proposed for redevelopment.

7.6.326. The interface between the realigned road and the residential properties at Eastwood Cottages would need to be developed further at the next stage of development in order to minimise the impact on these properties.

7.6.327. This option has been developed on the basis that Kempston Hardwick station would be retained, as proposed in train service concept 1 (see paragraphs 7.3.1 to 7.3.113). Figure 7.55 shows one way in which road access could be provided to the station. This is an indicative arrangement only and the details of access to the station would be developed further if train service concept 1 is taken forward. This proposal for the new bridge at Kempston Hardwick is not dependent on train service concept 1 and would also be compatible with train service concept 2.

## Woburn Road (TL 034 464)

### Site description

7.6.328. Woburn Road level crossing is a foot crossing located on the south side of Bedford. At the crossing, Kempston Footpath No. 1 crosses the railway. This footpath commences at the end of Chantry Road on the northwest side of the railway. It runs southwest alongside the railway to reach the site of the crossing. On the southeast side of the railway, it connects (via Footpaths Nos. 1A and 8, which form a continuation of Footpath No. 1) to Ampthill Road to the south of Bedford.

7.6.329. An industrial estate is located adjacent to the crossing on the northwest side of the railway. On the southeast side of the railway the path crosses a bridge over a watercourse (that runs parallel to the railway) and then runs alongside the railway and watercourse through an area of scrub land bordered by the railway, the A421 dual carriageway and the Interchange Retail Park.

7.6.330. In February 2020, consent was granted in the 2020 Order to close the level crossing and replace it with a footbridge over the railway and the watercourse. The closure of the crossing and provision of the new bridge has not yet taken place.

### EWR Co proposals

7.6.331. EWR Co proposes to implement the consented closure of this crossing.

7.6.332. EWR Co could implement the bridge scheme consented by the 2020 Order. This is described below as Connectivity Option 1. However, EWR Co has also considered a revised connectivity option that would provide a different arrangement of footbridge that would shorten the length of pedestrian route. This is described below as Connectivity Option 2.

## Connectivity Option 1

7.6.333. Connectivity Option 1 would involve implementing the bridge scheme that has already gained consent. The bridge would be located at the end of Chantry Road. This new bridge is shown in Figure 7.56.


Figure 7.56: Network Rail's proposed footbridge to replace Woburn Road crossing (Connectivity Option 1)

## Connectivity Option 2

7.6.334. EWR Co has considered a variation to Network Rail's proposals that would shorten the length of diversion required for Kempston Footpath No. 1 by turning the stairs on the southeast side of the railway to face in the opposite direction. This variant is shown in Figure 7.57.

7.6.335. Both solutions for this level crossing require the permanent acquisition of similar amounts of third-party land and would require the temporary use of additional land to facilitate construction of the new bridge.


Figure 7.57: EWR Co variant option for Woburn Road (Connectivity Option 2)

## Bedford Carriage Sidings (TL 043 494)

### Site Description

7.6.336. Bedford Carriage Sidings level crossing is a private crossing at which a private access road crosses the railway. The crossing is situated a short distance (around 220m) to the south of Bedford station and provides vehicular and pedestrian access to the railway sidings located between the Bletchley – Bedford line and the Midland Main Line (MML, the line from London St Pancras to the East Midlands).


Figure 7.58 Bedford Carriage Sidings private crossing

### EWR Co proposals

7.6.337. The proposals for this crossing will be dependent on the chosen option for the realignment of the Bletchley – Bedford line south of Bedford. The new alignment would sever the access road leading to the crossing to its north. This proposed realignment is described in Chapter 8.

7.6.338. Further work is required to develop proposals for a revised access route to and from the sidings. These proposals might involve the creation of a new access route leading from the bridge that carries Ford End Road over the railway. EWR Co will develop proposals for the new access route ahead of the Statutory Consultation.

## Assessment Factors to be considered

7.6.339. EWR Co has not yet identified preferred options for the mitigation of any of the level crossing closures. Following this consultation, EWR Co will use feedback received from the consultation together with the Assessment Factors to assist in the identification of a preferred option for each crossing (or group of crossings). The following Assessment Factors and Considerations are expected to be of particular relevance when identifying the preferred options:

- Transport user benefits: the impact of different options on road users and pedestrians and the journey times they experience will be of particular relevance in comparing options;
- Contribution to enabling housing and economic growth including best serving areas benefitting from developable land: although not directly relevant to every crossing, at some locations, some options might fit more readily with development plans and might assist in making some potential development sites more accessible;
- Capital costs: some options will cost more than others to deliver. EWR Co needs to ensure that the costs of individual elements of the Project are proportionate and that the Project as a whole remains affordable (see below) and the benefits it provides are delivered in a cost-efficient manner;
- Operating costs: where new infrastructure is provided, there will be on-going costs involved in its maintenance, operation and eventual decommissioning and replacement. EWR Co needs to ensure that on-going costs of operating and maintaining the railway are minimised;
- Overall affordability: EWR Co needs to ensure that the overall cost of the Project remains affordable and that unnecessary costs are avoided;
- Alignment with wider railway strategy / infrastructure: this railway will be part of the national network and it is necessary to ensure that the Project is aligned with national policy and strategy. EWR Co needs to ensure that the new and changed infrastructure it delivers is compatible with adjoining railway schemes;
- Safety risk (construction and operation): EWR Co must ensure that the railway can be constructed and operated as safely as reasonably practicable. Some options may introduce additional safety risks compared to others;
- Environmental impacts and opportunities: EWR Co is aiming to minimise the environmental impacts of the Project and, where possible, take advantage of opportunities to deliver environmental improvements. It therefore needs to consider the environmental impacts of each option, including the impact on current land uses and the extent to which these can be mitigated; and
- Consistency with Local Plans: EWR Co will consider how well each option fits with adopted Local Plans.

7.6.340. Following the identification of preferred options, further design work will take place to develop these options. This design work will take into account any relevant feedback that has been received during this consultation.

7.6.341. The developed designs will be consulted upon as part of the Statutory Consultation.

## 7.7. Marston Vale Line infrastructure upgrade

### Introduction

7.7.1. This section of the Chapter describes the proposed upgrading of the railway infrastructure (track, embankments, signalling, telecommunications equipment etc) and explains the decisions that are still to be made in respect of it.

7.7.2. The current track and signalling infrastructure of the Marston Vale Line reflects the current use of the railway. Regardless of which train service concept is chosen, EWR Co proposes to increase the number of trains using the railway and to operate those trains at higher speeds. The current track and signalling are unsuitable for faster and more frequent trains. Therefore, EWR Co proposes that the Marston Vale Line should be upgraded regardless of the service concept that is ultimately adopted. The upgrade approach – as discussed in this section of this Chapter – is not materially affected by the service concept.

7.7.3. EWR Co therefore proposes to replace the majority of the existing track using more suitable components for future needs. This is a major task that would involve removing the existing tracks and ballast (the stones that support and surround the tracks) over much of, and potentially all of, the full length of the line (around 27km or 16.5 miles).

7.7.4. In light of the increasing frequency and severity of extreme weather events associated with climate change, best industry practice and new standards the condition and capacity of the railway drainage systems are also being reviewed with a view to reducing the future risk of the railway flooding. Where necessary, the track drainage would be overhauled or renewed, after the track has been removed, to ensure the railway is able to continue to operate safely and reliably in future.

7.7.5. In addition, EWR Co is reviewing the condition of the existing earthworks (cuttings and embankments) and would undertake repair and strengthening works where necessary to ensure their long term stability and safety and ensure they are fit for future levels of railway traffic. In the majority of cases, this work would be most easily carried out while the track is removed.

7.7.6. Once the drainage works and earthworks repairs have been completed, the new tracks would be laid. New ballast would be laid and the new tracks would be installed on top of this. Finally, further ballast would be added to provide stability to the tracks.

7.7.7. EWR Co is proposing to replace the existing signalling system with a new signalling system. The choice of signalling system to be used will be based around operational and technical compatibility requirements. The system could be based around the use of conventional lineside signals, a

radio-based system that conveys information directly to train drivers using equipment on board trains or a combination of the two. Irrespective of which type of system is used, it would be necessary to lay new cables alongside the tracks and install lineside equipment cabinets at points throughout the line.

7.7.8. The strength and condition of all bridges on the railway (including culverts that carry smaller watercourses beneath the railway) are also being reviewed and EWR Co would undertake refurbishment and strengthening works to ensure they are suitable for the increased levels of traffic that the railway will see in future.

## Options to be considered

7.7.9. In designing the upgrading works, EWR Co will consider options appropriate to the future needs of the railway.

7.7.10. In considering options to repair and strengthen earthworks, it may be necessary to consider re-grading (i.e. changing the angle of) certain earthworks slopes. It is possible that this would lead to a requirement for additional land that is not part of the railway, either to accommodate the permanent works or temporarily in connection with construction activities. In such circumstances, the use of retaining walls or similar features could be considered where appropriate to avoid or minimise the amount of land required.

7.7.11. From the work undertaken to date, EWR Co does not expect there to be a need to carry out any significant strengthening or replacement of bridges other than as described in Section 7.5 (in relation to the Fenny Stratford area works) and Chapter 8 (in relation to works in the Bedford St Johns and Bedford areas).

7.7.12. EWR Co will present more detailed proposals in respect of the Marston Vale Line Infrastructure Upgrade works as part of the Statutory Consultation.

## Assessment Factors to be considered

7.7.13. Many of the key considerations associated with this aspect of the works will relate to the technical capabilities of the railway. However, when deciding which option to take forward, in addition to the outcomes of this consultation, the following Assessment Factors are expected to be of particular relevance:

- Capital costs;
- Operating costs;
- Overall affordability;
- Satisfying existing and future freight demand;
- Performance;
- Alignment with wider railway strategy / infrastructure;
- Safety risk (construction and operation) – including the safety of staff accessing equipment for the purposes of servicing and repair
- Environmental impacts and opportunities – including any impacts on land and property (primarily in connection with need to repair and improve existing earthworks)