Consultation feedback report:

Chapter 8 – Section D

Version: Final
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8. Section D

8.1 Introduction

This chapter provides a summary of your feedback and our response to the main comments raised in relation to proposals for Section D of EWR.

Throughout this section text in *italics* is our response to the matters raised in your feedback. Section D is the section between Clapham Green and The Eversdens, and considers the five possible shortlisted route alignments for the railway in this section (Route Alignments 1, 2, 6, 8 and 9) that were presented at the 2021 consultation. This chapter includes a summary of the points that were raised with us about each of these route alignment options, organised by theme, and our responses to them. It also includes a summary of the general comments that we received about Section D.

The chapter lists the alignments in numerical order, with matters raised, and our responses, sorted alphabetically for ease of navigation. We've summarised and responded to the comments for individual alignments in turn. Matters raised which cover either all alignments, or are general comments, have been summarised and responded in the last section of this chapter. Some themes raised have been broken down further for ease, for example, general comments regarding roads followed by a specific A428 Black Cat improvement scheme section. This chapter is a summary of themes raised – all of the individual matters raised and our responses can be found in the tables appended to this report.

You'll see references to Assessment Factors within our responses. These are the framework of 15 factors we've used to review possible route options since 2019. This allows us to compare and consider a range of aspects and find the best balance of benefits.

Our Assessment Factors look at how well different route options meet the overall Project objectives. They help us to determine the benefits of each option for customers, as well as the broader communities EWR will serve. These Assessment Factors have been agreed with the Government and provide a robust framework for comparing the relative performance of options.
We've taken all 15 factors into account at each stage of the design process and they will be applied in different ways according to the stage of development. This is because some may help to a greater extent than others in differentiating between options. More information on the Assessment Factors can be found in Chapter 5 and Appendix C of the 2021 Consultation Technical Report.

We also refer to the Reference Case. As defined in the 2021 Consultation Technical Report, 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's

derived from an initial engineering proposal. In this case, the Reference Case is Route Alignment 8.

At the 2021 consultation, we asked for feedback on the five shortlisted route alignment options and we stated that Route Alignments 1 and 9 were our emerging preferred options. We've subsequently undertaken further design and survey work and, taking into consideration the feedback from the 2021 public consultation, concluded that the majority of Alignment 1 provides a better solution than the other alignments.

However, we've developed a proposal for a new, localised variant of this alignment which incorporates part of Alignment 9 to serve a potential East Coast Mainline (ECML) station at Tempsford, where we believe there is greater potential for development to support economic growth than at St Neots South.

This new variant of Alignment 1 (known as Alignment 1 (Tempsford variant)) better achieves the Project objectives and will therefore be taken forward as our preferred route alignment for further design development and assessment. Feedback will be invited on the updated route design for Alignment 1 (Tempsford variant) as part of the statutory consultation, including the associated infrastructure, such as stations and level crossings.

Alignment 1 (Tempsford variant) deviates from Alignment 1 south of Colesden, then runs north of Roxton and would serve a Tempsford station location. To the east of Tempsford station, Alignment 1 (Tempsford variant) would then follow the proposed route of Alignment 9, which merges with Alignment 1 east of Little Barford and then runs to a station north of Cambourne.

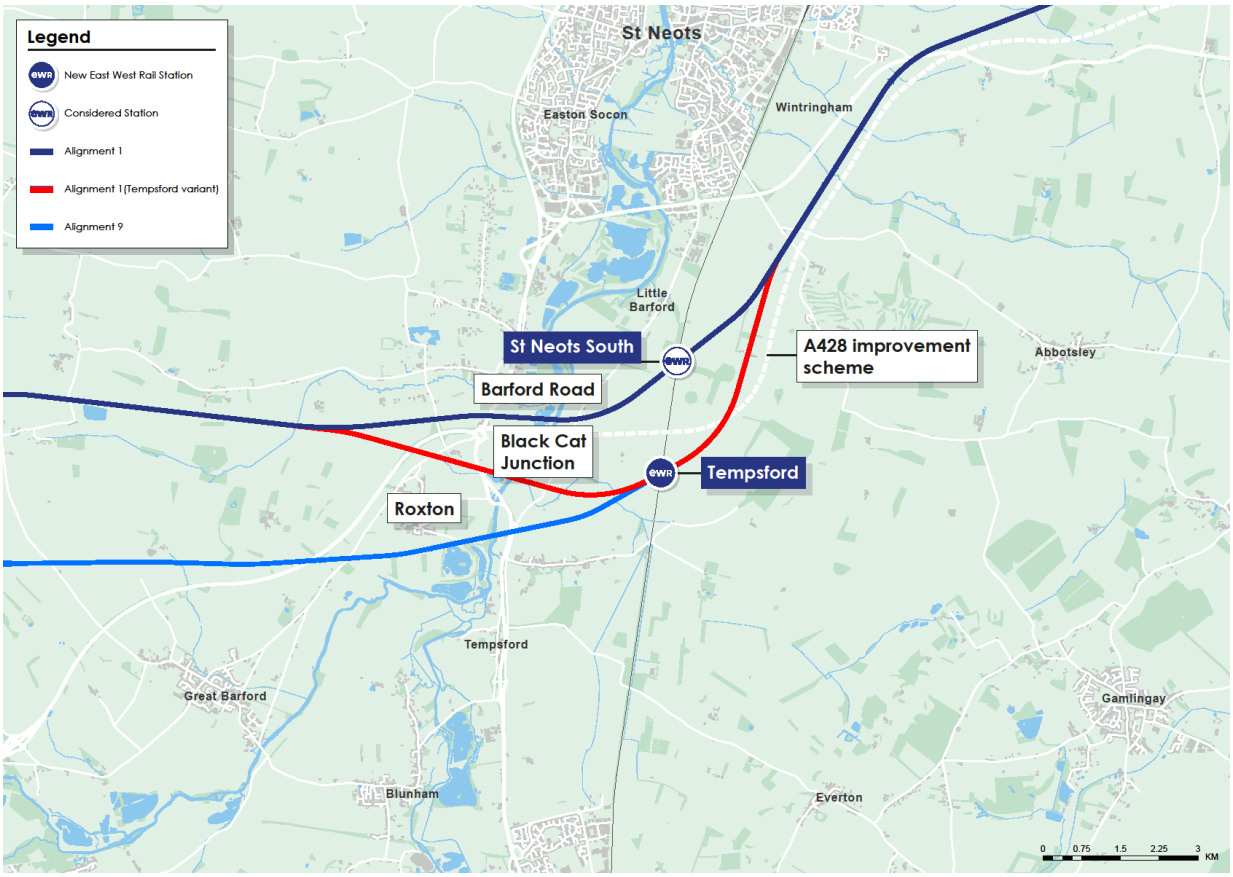

Figure 14: Map showing Route Alignment 1 (Tempsford variant)

For further information on our identification of Alignment 1 (Tempsford variant) as our preferred alignment please see the Economic and Technical Report on our website.

8.2 Your feedback and our response

8.2.1 Route Alignment 1 (dark blue)

8.2.1.1 Active travel (walking, cycling and wheeling)

Respondents expressed concern that a Cambourne station positioned to the North of the town and a station south of St Neots would not be accessible by walking and cycling and users would need to drive and have parking facilities to use this station, increasing congestion.

Respondents commented that the St Neots South Option A station is too far away from the centre of St Neots and question how this station would be connected to the town by public transport and cycle routes.
We've taken into account the accessibility of all potential station locations. Both proposed station options in Cambourne would be located close to existing communities. Cambourne North station is separated from Cambourne by the A428 which may reduce connectivity to the existing settlement, compared to Cambourne South, particularly for active travel options

such as walking, cycling and wheeling. However, it is believed that this could be mitigated by a foot and cycle bridge over the A428, alongside local connectivity strategies. This was therefore not considered to be a differentiating factor.
Our preferred alignment Alignment 1 (Tempsford variant) serves a Tempsford station location as this is considered to have a greater potential for large scale strategic housing development to support economic growth. Working with local councils and Network Rail, we'll consider how to provide the best method of connecting an EWR station serving the East Coast Main Line with St Neots, its existing station and local communities. The objective will be to reduce impact on St Neots and surrounding villages while facilitating connectivity such as through new and enhanced footpaths, pedestrian routes, cycleways, and public transport options. We'll consider options for connecting the stations to existing settlements, transport networks and sustainable transport modes as part of our preparation for statutory consultation.

We'll continue to work with local authorities and transport bodies to ensure public transport connectivity and the ability to use new and improved active travel modes are appropriately considered in the development of our station designs. We're seeking to maintain existing highway connections wherever feasible. Where it is not feasible to retain existing highways, public rights of way (PRoW) and private access roads in their current location, we'll ensure suitable alternatives are available that reduce impacts on communities.

The design will be carried out in accordance with recognised industry standards published at the time to provide a high level of safety. We've considered safety of the public and workers at all stages of design, and this will continue during construction and throughout the route's operation and maintenance. The safety of workers, road users, non-motorised users (NMUs) including pedestrians, our supply chain and local people has been prioritised and considered as we want to eliminate risks wherever possible.

Traffic and the potential for congestion around stations is expected to be broadly similar for all station location options and will be further examined at the next stage of design.

The Preliminary Environmental Information Report (PEIR) and the preliminary Equality Impact Assessment (EqIA) will include information regarding the baseline for transport, access and NMUs, together with a preliminary assessment of impacts. These will be provided at the statutory consultation and developed and refined for the Environmental Statement (ES) that will be submitted as part of the Development Consent Order (DCO) application.

8.2.1.2 Air quality and carbon

Respondents support Route Alignment 1 (RA1) stating it would cause fewer carbon emissions and is shorter so would need less extensive construction.

Respondents suggested that to mitigate the destruction of homes and pollution in the immediate vicinity would require either tunnelling or going over the A428, both of which would be expensive.

Respondents expressed concern that, compared to other routes, RA1 and RA9 cause the greatest pollution impact. They also expressed concern generally regarding health impacts because of air pollution.

Respondents raised concern about the use of diesel trains and CO2 emissions in general. Respondents commented that locating a station at Cambourne North, further away from residents of Cambourne, would encourage more people to drive to the station and cause additional pollution. Respondents felt that RA1 would increase pollution in an already heavily polluted transport corridor, due to the existing A428.

Regarding carbon emissions, although RA1 would result in an increase to track length required, it would need fewer bridge and viaduct structures, and would therefore have a lower level of emissions associated with those structures and earthworks in comparison to the Reference Case (RA8). Overall, RA1 is considered to result in a 32% saving in carbon footprint compared to the Reference Case (RA8), and this represents the lowest carbon footprint of all shortlisted route alignments. In this respect (Climate Assessment Factor 14.3), RA1 represents a major improvement to the Reference Case (RA8).

The amount and length of engineering works for the railway were considered when we assessed the alignment options. RA1 requires a shorter total length of structures and fewer earthworks than the Reference Case (RA8), having taken into account viaducts such as that at the proposed Black Cat Interchange near to Roxton. The alignment would either need to cross below or above the existing A428 and through the Bourne Airfield development, however, this doesn't require demolition of existing property in this area.

The station at Cambourne North would provide convenient connections for public and active travel to Cambourne and surrounding communities, therefore we don't agree that this station would encourage use of private cars or result in increased pollution.

Since the 2021 consultation, we've been reviewing the design of this section of route and looking for opportunities to reduce the height of embankments and viaducts within the design, including taking the railway under roads in cuttings instead of building viaducts over them and making minor diversions to the railway alignment to allow the railway to be lowered.

We considered the potential adverse impacts to air quality as part of the environmental appraisal of route alignments. For the purposes of the air quality appraisal, it was assumed that the Project would operate using diesel-powered trains to allow the extent of potential worst-case air quality impacts to be understood. Alignment 1 was judged as a major improvement for Air Quality Assessment Factor consideration (AF14.2) in comparison to the reference case (Alignment 8), and Alignment 9 was judged as neutral.

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 and we're committed to running a sustainable railway in the long term, with reduced emissions, including for carbon, NOx (Nitrogen Oxides) and particulates. This includes the use of sustainable traction power in the long term. We're reviewing how to introduce new and emerging technologies in its long-term train fleet and will

be seeking input from bidders across the market to ensure they understand the company's environmental goals. Information about this aspect of the Project will be provided at statutory consultation.

Diesel trains are being used to enable the opening of the first part of the railway between Oxford and Milton Keynes sooner than would be possible with trains powered by other means, including electrification. This is because additional infrastructure, such as overhead line equipment, would be required for electric trains to operate, and battery-powered trains are still being developed to improve their range so would not be able to serve Connection Stage 1 at this time.

We're developing the Project in line with relevant laws and UK government policies, including the Clean Air Strategy, and will continue to consider impacts on air quality (including CO2 emissions) throughout the design process. The PEIR will include information regarding the baseline air quality environment and identification of the relevant air quality standards and targets. The likely risks from construction activities and potential impacts from operation, including identification of mitigation and control measures, will also be presented as part of the PEIR. It will also include information about our approach to traction power. An ES will then be submitted as part of the DCO application and will assess changes in nitrogen oxides (NOx), fine particulates (known as PM2.5 and PM10) and dust. This assessment will follow best practice and guidance, such as the guidance set by the Institute of Air Quality Management and other recognised bodies, and take account of the existing baseline in the A428 corridor. Air quality environmental impacts – and potential resulting impacts on people's health – will be considered throughout the Project's development with the aim of avoiding and then reducing them where possible through the design. The impacts of the preferred alignment on the health and wellbeing of local communities will be assessed in a dedicated chapter of the PEIR published at statutory consultation, and then subsequently within the ES, which will detail the mitigation to be provided where appropriate.

8.2.1.3 Alignment route and station locations

Respondents supported RA1 and said it would have easier station access and align more closely with existing developments.

Respondents supported a station at St Neots to reduce traffic congestion.

Respondents supported a Cambourne North station as this would have less impact on the A1198. They expressed a preference for a Cambourne North station as this provides opportunities to develop new footpaths and cycleways within the development.

Respondents opposed a station at Cambourne North as it would facilitate urban sprawl and commented on the impact of a Cambourne North station on local communities – stating that this will cut the community of Cambourne off from a number of critical services in the neighbouring village of Comberton.

Concerns were raised that the station at St Neots South (A) would be too far from St Neots to sufficiently serve the population of St Neots especially considering St Neots already has a train station (ECML).

Cambridgeshire County Council recommended that careful consideration of Cambourne station accessibility is needed.

One of EWR's core priorities is to increase connectivity across the Oxford to Cambridge area, supporting economic growth, housing and employment. Therefore, understanding how station location options might influence the development potential of their surrounding areas has been taken into account when comparing the route alignment options.

We've considered a number of factors when assessing the different station location options for Cambourne and St Neots/Tempsford. Traffic and the potential for congestion around stations is expected to be broadly similar for all station location options and will be further examined at the next stage of design. We've considered accessibility of all potential station locations within design development.

Regarding a station at Cambourne North, the route alignments with a station at Cambourne North (RA1 and RA9) would move the station and alignment away from the A1198, west of Cambourne, and therefore reduce potential impacts on local roads and the environment around Cambourne South.

Although a Cambourne North station would be separated from Cambourne by the A428, it is expected that this could be mitigated by a foot and cycle bridge over the A428. Station designs for Cambourne North would include provision for public transport interchange and active travel facilities and routes to maintain connectivity with neighbouring villages and communities. Our door-to-door connectivity strategy will be developed at the next stage of design.

Regarding feedback on a station at St Neots South, it would be more accessible by bicycle and public transport users and would serve a larger existing population than a station at Tempsford because it would be closer to existing road networks and a larger number of existing properties overall. However, following the 2021 consultation further review of the opportunities associated with a station at either St Neots or Tempsford, it has emerged that a station at Tempsford is expected to have greater potential for development to support significant economic growth than a station at St Neots.

Through further work and taking into consideration the consultation feedback, we've concluded that the majority of RA1 provides a better solution than the other alignments. However, in order for RA1 to serve Tempsford station Alignment 1 (Tempsford variant) was developed. As this alignment better achieves the Project objectives it will be taken forward as our preferred route alignment for further design development and assessment. We'll consider, alongside local councils and Network Rail, how to provide the best method of connecting an ECML and EWR station with St Neots.

A new station at Tempsford would provide a connection with the ECML and is expected to unlock housing growth in the area. We're committed to increasing prosperity and connectivity across the area and therefore options to efficiently connect existing communities, such as St Neots, with EWR remain important, as well as connections for new communities. We'll continue to develop proposals, including through the consideration of door-to-door connectivity (I.e. how people travel to and from the station), at the next stage of design.

We will consider local connectivity, bus services and customer experience while travelling to EWR stations within our station design work. We'll promote and prioritise both active and sustainable transport modes, and will continue working with organisations, including bus operators, to improve facilities, including interfaces and interchange with bus services at stations and providing onward travel information. Car parking provision will also be considered. The objective will be to reduce, where practicable, the impact from traffic on surrounding communities and on the local environment while facilitating connectivity which includes consideration of potential enhancements for footpaths, pedestrian routes, cycleways, and public transport options.

Regarding urban sprawl, we've considered the potential for coalescence of smaller villages along the route, due to the expected future development around station locations. A station at Cambourne North, and any subsequent housing and economic development, is expected to be able to retain separation from and between existing settlements. Any impacts upon the identity of smaller villages and towns as a result of specific developments in this area would form part of the local authority's assessment of individual planning applications, and not part of the EWR Project.

Since the consultation we've amended the design to be within a cutting beneath the B1046 Comberton Road, between Comberton and Toft. This means with a minor realignment of the road a direct connection can be maintained between the two villages.

Station designs will include consideration for public transport interchange and active travel facilities and routes to maintain connectivity with neighbouring villages and communities. Although our stations aim to help unlock economic growth we're not directly promoting developments and any future development would need to follow its own planning process and address considerations such as proximity to existing settlements.

It is expected that all station locations could facilitate connections to public transport routes, and this was therefore not a differentiating factor in the preferred route alignment decision. We'll work collaboratively with local authorities and public transport operators to facilitate connectivity to stations, including from communities where demand is not met by current provision.

Although we're still developing our analysis of each station option's potential for housing development, the evidence reviewed so far suggests that, on balance, development around the Cambourne North station would require fewer, or less significant, mitigation measures than around Cambourne South. There is more available land capable of development to the north of the A428 with fewer constraints such as heritage assets and areas of woodland.

Housing development at Cambourne North is expected to be able to retain separation from and between existing settlements such as Papworth Everard, Knapwell and Elsworth, and a site in this area is already identified in the emerging Greater Cambridge Local Plan.

Further information will be presented at the statutory consultation, which we expect to take place in the first half of 2024.

8.2.1.4 Benefits

Respondents suggested that the route of RA1 will not serve a large enough number of people for it to be beneficial. Respondents commented on the imbalance of impacts compared to benefits of RA1, suggesting that the alignment would have little or no transportation benefit to small rural communities.

Respondents questioned whether a considerable number of local people would actually use the line, rather than driving, particularly given the perceived additional length and journey time of this route. Respondents claimed that Covid-19 has changed general demand for rail travel. Respondents raised concern that RA1 and RA9 are the longest routes, so will result in the longest journey times.

Concerns were raised that this route is inefficient as it lengthens journey and routes and is a more indirect route to Cambridge. There were also concerns regarding the potential time saving compared to private car travel, and that driving would still be the quickest mode of transport.

Respondents stated that there may not be a need for this stretch of line, citing the new and planned bus links between Cambourne and Cambridge, as well as the existing station in St Neots, as evidence that these towns don't need additional stations.

The proposed EWR station locations have been chosen to benefit those living and working in the area, to support the delivery of new housing and unlock economic growth. EWR would provide increased connectivity to households and businesses across the route. When businesses become closer in effective proximity (e.g. you can travel between businesses quicker than you previously could), then productivity gains can be made through closer links to suppliers, to a more dynamic and specialised labour market, and knowledge spill-overs occur. Also, businesses would be able to attract an increased pool of labour due to the reduction in journey times from areas along the EWR route. For households, residents would benefit from decreased journey times to areas along EWR and workers would be better connected to additional job opportunities along the route. More information regarding the business case for EWR can be found in Chapter 2 of this report.

Inevitably, in selecting a preferred route alignment, we've needed to balance impacts and benefits, which is why a variety of Assessment Factors, which include a range of supporting considerations, are used. Therefore, an alignment closer to settlements might affect less farmland and open countryside but be closer to and hence impact greater numbers of

residents and communities. As shown within the 2021 Consultation Technical Report, on balance RA1 performs the best against the Assessment Factors.

The proximity of each proposed Route Alignment to residential properties and community facilities was also assessed as part of the environmental appraisal and the alignments have been designed to maintain a reasonable distance from existing communities where feasible, including those highlighted by respondents. RA1 offers the ability to concentrate impacts in the A428 corridor, rather than in areas not already subject to development. RA1 and RA9 represent a minor improvement to the Reference Case (RA8) for this Assessment Factor (AF14.4), with other route alignments assessed as neutral.

RA1 is a longer alignment than RA2, RA6 and RA8, because it serves Cambourne North. Although this would lead to a slightly longer journey time, this is expected to be less than two minutes. These journey time related Assessment Factors (primarily AF1- Transport user benefits and AF7- Short distance passenger services) are weighed against other Assessment Factors, including environmental impact (AF14) and affordability (AF5), to inform the choice of route alignment.

Regarding the impact of Covid-19, the outbreak significantly cut demand for rail travel in the short term. Work is still ongoing to understand how the Covid-19 pandemic may affect commuter travel patterns over the longer-term. Latest statistics released by the Department for Transport (DfT) show that national rail usage is currently around 80% of pre-covid levels and the purpose of EWR is to enhance connectivity across the Oxford to Cambridge area as a whole.

EWR will offer an alternative form of transport to those currently available and help take cars off local roads, which will ease congestion on busy parts of the road network, such as between Bedford and Cambridge. Currently, due to this heavy congestion in and around Cambridge, it can take between 45 and 100 minutes to travel from Bedford to Cambridge via car. EWR is anticipated to complete this journey in around 30 minutes, therefore offering a journey time saving. Potential options to optimise the design and journey times will continue to be considered at all stages of design.

EWR would be complemented by C2C and local buses as these would enable local connections to destinations not directly served by EWR and in turn EWR would provide more efficient and direct journeys to destinations including Cambridge South and Cambridge stations. We're liaising with the Greater Cambridge Partnership C2C Busway scheme so that design interfaces between the projects can be appropriately managed and opportunities explored.

8.2.1.5 Borrow pits

Respondents expressed concern about the excavation requirements of RA1, remarking on safety issues with filling borrow pits and the stability of the ground.

It is expected that RA1 would need to cross borrow pits used by the A428 Black Cat improvement scheme. This is taken account of as part of the design and we're working closely

with the A428 Black Cat improvement scheme project team to manage this design interface and potential risks.

8.2.1.6 Community

Respondents stated that this route would have the least negative impact on local communities. They also remarked that RA1 would provide infrastructure to already more built-up settlements in the area, such as Cambourne and St Neots, and serve more people, while avoiding the less populous and more rural settlements such as Renhold and Tempsford. Respondents state that this would be more fitting with the character of the area and would better align with the lifestyle choices of the local residents, while providing infrastructure more directly to more people.

Respondents stated that RA1 could increase connectivity and community cohesion in the area, allowing St Neots and Cambourne to act as local hubs for their surrounding smaller villages, which could in turn lead to better transport options for all in the region. Respondents also expressed support for RA1 as it avoids dividing villages, particularly Bourn and Brickhill.

Additionally, respondents said RA1 would improve public transport for poorly connected communities and remove the chance of community severance. They suggested RA1 would have less of a detrimental impact on their mental health.

Respondents expressed concern over how RA1 will impact communities and local people, with specific reference to increased pressure on local infrastructure, increased development around the station and disruption to residents' physical and mental health and wellbeing. Respondents also expressed concern that the railway will sever communities, in particular the villages of Wilden, Highfields Caldecote, Comberton and Toft, and expressed concern that children don't have access to a bus service to the local primary and secondary schools in Comberton, and they will have to cross the railway line in order to reach the schools.

Respondents expressed concern regarding the loss of, and access to, outdoor recreation facilities, such as allotments, orchards, Brickhill Country Park, Clapham Park and Fortitude Fitness Centre. Other facilities included heritage assets and Listed buildings, such as Graze Hill Lane.

Respondents expressed concern over the loss of a planned local business park due its employment opportunities. There was also concern over access to GPs, schools and shops.

We've carefully considered the impacts of the proposed route alignments during both construction and operation on local communities. We recognise that all route alignments have the potential to result in amenity or isolation impacts to community and recreational facilities, particularly during construction and we'll seek to reduce these wherever it is practicably to do so.

The potential for impacts on the Disabilities Trust care home on Graze Hill has been taken into account, and as our design develops, we'll work with Disabilities Trust to and assess and

mitigate impacts of the project as far as reasonably practicable. The outcomes of this will be reported as part of future preliminary Equalities Impact Assessment reporting. We're aiming to maintain existing highway connections and PROW wherever feasible. Where it is not feasible to retain these in their current location, we'll ensure that a suitable alternative is available which reduces the impact on communities, including to key community facilities.

Of all shortlisted route alignments, RA1 would pass within 500m of (and therefore impact) the fewest number of homes, and would require the demolition of four properties, which is fewer than the Reference Case (RA8) and avoids the need for demolitions in Bourn and Brickhill. In addition, RA1 avoids passing within 50m of community or recreational facilities. Overall, RA1 is considered to represent a minor improvement on the Reference Case (RA8) in relation to the community Assessment Factor (AF14.4).

With regard to the historic environment, there are fewer heritage assets within 1km of RA1 with no Listed buildings and one Scheduled Monument within 250m of the alignment and it avoids the complex heritage resource area of Bourn Valley. Overall, RA1 was judged to represent a major improvement compared to the Reference Case (RA8) for the Historic Environment Assessment Factor consideration (AF14.9).

RA1 would avoid direct impacts to the Brickhill Country Park and Brace Dein Allotments near Bourn Airfield. The Fortitude Fitness Centre in Highfields Caldecote would be directly impacted by RA1 and RA9 and RA1 (Tempsford variant) and we'll work with the centre to understand their operations and consider potential mitigations.

Based on the RA1 designs presented at the 2021 consultation and current design of RA1 (Tempsford variant), we don't anticipate directly impacting Clapham Park. We're committed to protecting the environment by finding approaches to delivery that avoid, reduce or mitigate negative environmental impacts. We'll continue to consider how we can best avoid potential indirect impacts on Clapham Park as we develop the design. As part of our commitment to changing the environment for the better, we're reviewing carefully how the Project could affect woodlands and other habitats when designing the railway and we'll seek to avoid, reduce and mitigate any potential adverse impacts on habitats, including orchards, as far as is reasonably practicable.

Since consultation we've amended the design to run in cutting beneath the B1046 Comberton Road, between Comberton and Toft. This means that, with a minor realignment of the road, a direct connection can be maintained between the two towns, including for Children and bus services accessing schools. Arrangements for any temporary diversions will involve discussion with appropriate parties at relevant stages with the aim of reducing disruption to the local community and environment. At this stage, we don't anticipate directly impacting any business parks in Section D.

Based on the design of RA1 presented at the 2021 consultation and design of RA1 (Tempsford variant), we don't anticipate directly impacting Ravensden Grange or any Listed buildings on Graze Hill Lane. We continue seek to protect the environment by finding approaches to delivery that avoid, reduce or mitigate negative environmental impacts and will consider how

we can best avoid impacts on these buildings as we develop the design. As far as is reasonably practicable we'll aim to avoid harm to the setting of designated heritage assets, prioritising those of the highest sensitivity such as Scheduled Monuments, Grade I and Grade II Listed buildings and parks and gardens. To do this, early identification and surveys of those assets most likely to be affected will be carried out so the Project can be designed to avoid these and where this is not possible, incorporate appropriate mitigation measures into the design.

Our approach to managing construction activity and mitigating construction impacts will be set out in a Code of Construction Practice (CoCP) or an equivalent document which will form part of the DCO application.

The PEIR will include available baseline data and a preliminary construction and operation assessment of impact, including access, on residential properties, community facilities, recreational facilities, open space and PRoW. Information regarding the historic environment baseline, preliminary construction and operation assessment of direct impacts and the setting of heritage assets, buried archaeology and historic landscapes will also be included. A Zone of Theoretical Visibility, which will help identify where the railway will be visible from, will be produced to inform the extent of change to settings. The PEIR will be available at statutory consultation.

8.2.1.7 Cost

Respondents expressed support for RA1 on the basis that it is the most cost effective compared to other alignments. This was due to RA1 requiring fewer engineering works and less infrastructure, such as viaducts and embankments.

Respondents also expressed concern that RA1 will be much higher in cost than other alignments. They also raised concerns that the Project is too expensive, in part due to the mitigation measures, such as tunnelling and building bridges – especially around the A428.

There was concern that the cost of purchasing homes/land and compensating owners will be too expensive and that there will be high pipeline costs associated with the line.

Respondents raised concerns that including more stations (e.g. station north of Cambourne) will make this line too expensive and that RA1 will be too expensive to build.

There was also concern that associated professional fees will be too expensive and concern about high costs due to energy consumption as a result of the terrain of the route alignment.

We've taken into account the cost of construction when applying the Assessment Factors to the various alignments and have considered costs associated with the interface with the proposed A428 Black Cat improvement scheme and structures along the route alignments including bridges and tunnels, as well as pipeline crossings. Costs for purchasing properties and land, including any compensation, were considered to be broadly similar for all shortlisted alignments.

The cost of providing new stations is included in the assessment of route alignments. The same approach to cost for all alignments has been taken in assessing their relative performance and there is no reason to assume that RA1 would result in unidentified costs, which could affect the decision to select Alignment 1 (Tempsford variant) as the preferred alignment.

Professional fees are a small proportion of overall cost and unlikely to be materially different between route alignments at this stage of the design. With the current level of detail available and given the similar route lengths, all route alignments are considered to be neutral in terms of land and property and operation and maintenance costs, considered within capital costs Assessment Factor (AF3).

RA1 and RA6 were estimated as the lowest cost shortlisted alignments, with cost estimates over 10% lower than the cost of the Reference Case (RA8). These alignments were judged as being minor Improvements for the capital costs Assessment Factor (AF3), whilst all other route alignments were assessed as neutral.

Regarding concerns of crossing infrastructure, such as pipelines, this has been taken into account in the cost estimate and assessment of capital costs. Regarding utilities and associated equipment, we will work with the relevant providers to determine either a diversion or protective measures for their services.

Regarding new stations, a key purpose of EWR is to unlock economic growth. The proposed station locations have been selected to support the delivery of new housing and help create new jobs along the corridor, as well as helping to ease pressure on the housing market. We've considered the accessibility of stations to suitable road infrastructure, potential demand for EWR services and viability of proposed development in choosing station locations. Whilst the existing population in the catchment area around Cambourne North will be slightly lower than at Cambourne South, we'd expect additional residential development to come forward around Cambourne North which will drive additional demand for EWR.

8.2.1.8 Environmental impact - general

Respondents said that Route Alignment 1 (RA1) would have the least negative impact on the local environment and support it for this reason. Respondents stated that a factor in their support for this route alignment option is that it passes further from heritage assets and woodlands and has reduced impact on the countryside and landscape due to pre-existing travel corridors, such as the A421 and A428, reducing construction works and excavations.

Respondents expressed general concern about the potential negative impact of RA1 on the environment. Concerns were raised over the fencing of land to ensure animal safety, and the proximity of the Project to Sites of Special Scientific Interest (SSSI) and trees with Tree Protection Orders (TPO).

With regard to the historic environment and heritage assets, RA1 would pass within 1km of the fewest number of heritage assets, with no Listed buildings and one Scheduled Monument within 250m of the alignment. It also avoids the complex heritage resource area of the Bourn

Valley (by routing north of Cambourne). The alignment passes within 500 metres of three conservation areas (Harlton, Toft and Bedford), significantly fewer than the Reference Case (RA8).

As far as is reasonably practicable we'll aim to avoid harm to the setting of designated heritage assets. To do this, early identification and surveys of those assets most likely to be affected will be carried out so the Project can be designed to avoid these and, where this is not possible, incorporate appropriate mitigation measures into the design. Overall, for historic environment Assessment Factor consideration (AF14.9) RA1 was judged to represent a major improvement compared to the Reference Case (RA8), and this was a differentiating factor in selecting RA1 – and its variant, RA1 (Tempsford variant) – as the preferred option.

We've considered potential impacts to woodland and environmentally designated areas - RA1 would avoid overlaps with any Sites of Special Scientific Interest Impact Risk Zones (SSSI IRZs) and would not directly impact ancient (or potentially ancient) woodland sites. This reflects our commitment to avoid direct impacts on the most significant nationally and internationally designated environmental assets, which also includes National Nature Reserves (NNRs). We've considered these benefits against the loss of some areas of woodland at All Angels Park and trees lining Bourne Brook, as a result of RA1. Based on the designs presented at the 2021 consultation, we don't anticipate directly impacting woodland at Clapham, Ravensden or Knapwell.

RA1 would not impact Great Woods or Bushy Common of Langlands plantations as these are located away from the route to the south of Abbotsley.

We're committed to protecting the environment by finding approaches to delivery that avoid, reduce or mitigate negative environmental impacts and we'll continue to consider how we can best avoid impacts on habitats as we develop the design. This will include consideration of how best to ensure safety of wildlife and livestock, through, for example, appropriate fencing measures. All route alignment options would require some loss of woodland, but which we would seek to minimise across the entire route as far as possible.

The PEIR will include information regarding the landscape and visual baseline, preliminary construction and operation assessment of impact on landscape character and views, as well as an assessment of potential impact on the setting of heritage assets, buried archaeology and historic landscapes. The PEIR will also contain preliminary assessment of ecological impacts, including on sensitive habitats and species. Further information will be provided at the statutory consultation.

Overall, it is considered that RA1 represents a major improvement for the environmental impacts Assessment Factor (AF14) when compared to the Reference Case (RA8), and this was one of the differentiating factors in the decision to select RA1 and its variant, RA1 (Tempsford variant), as the preferred alignment. This judgement was based on RA1's performance over the range of environmental Assessment Factor considerations including climate (AF14.3), historic environment (AF14.9) and water resources and flooding (AF14.18) where RA1 was

judged as a major improvement. Further information will be provided at the statutory consultation.

We're following the environmental mitigation hierarchy approach which first seeks to avoid significant adverse effects, and where this isn't possible, seeks to reduce and mitigate impacts and, if necessary, provides compensation where avoiding, reducing or mitigating impacts isn't feasible. At this stage the Project is primarily focused on trying to avoid and reduce impact, by making decisions that help 'design out' the potential for environmental impacts. So, for example, all alignments have avoided direct impacts on key national features including known ancient woodland.

The Project has committed to delivering 10% Biodiversity Net Gain (BNG) which requires that habitats for wildlife are enhanced and left in a measurably better state than they were pre-development, which includes woodland.

8.2.1.9 Farmland

Respondents supported RA1 as it goes through farmland which was said to be preferable and easier. Respondents also said this route would have less impact on farmland and green belt land.

Respondents expressed concern about construction vehicles and potential damage to shallow depth drainage and critical local infrastructure. In particular, the potential severing of irrigation mains is a concern for farmers who state that – as well as the line cutting across farmland, making land uneconomical to farm – any severing of irrigation mains would result in crops failing.

Respondents raised concerns specifically about impact on service access to farms south of Bell Farm Yard, severance to farmland and increased usage of farm traffic on minor roads – impacting farm viability.

There was concern over impact of route on farmland and walking areas and impacts to existing farm tracks resulting in farmland being inaccessible and land parcels remaining impractical to farm.

Concern was also raised over the impact of RA1 on farm access at Hardwick – with access required to be maintained over the rail line.

Inevitably, in selecting a preferred alignment, we have to balance impacts and benefits, which is why a variety of Assessment Factors and considerations are used. Therefore, an alignment closer to settlements might affect less farmland and open countryside but be closer to, and hence impact greater numbers of, residents and communities. We consider that of all route alignments, RA1 provides the most appropriate balance between these interests.

The agriculture, forestry and soils consideration (AF14.1) looked at the potential adverse impacts on farm holdings, including the loss or severance of land, and the disruption to

farming practices (including drainage and irrigation). RA1 is likely to impact a greater amount of farmland, but fewer holdings, and is therefore considered neutral when compared to the Reference Case (RA8), although as noted in 9.2.1.7- Environmental impact – general RA1 was judged as a major improvement for the environmental impacts Assessment Factor (AF14).

Where EWR may impact agricultural land and access for farm vehicles during construction, we'll seek to reduce and mitigate potential impacts by working closely with landowners as designs progress and will seek to ensure that access to severed land for farmers and farm vehicles is maintained as far as is practicable during construction.

Potential effects on existing drainage, severing of irrigation mains and critical local infrastructure have been considered and where appropriate taken into account. These will continue to be assessed during design development and mitigation included where appropriate. These topics were not considered to differentiate between route alignments.

Utility diversions and the protection and the relocation of farm irrigation infrastructure may be required. We'll work with landowners whose farm water supply reservoirs and associated irrigation systems may be impacted to make sure that a comparable supply is maintained during construction.

As mentioned, the PEIR will describe the likely adverse and beneficial environmental effects of the proposals. Potential impacts and likely effects on agricultural and forestry land use and agricultural land holdings arising from land-take, demolitions of key agricultural infrastructure, severance and changes in accessibility will be included in the PEIR which will be provided at the statutory consultation.

As the design is progressed, we will assess the environmental impacts on important areas such as agricultural land (including best and most versatile (BMV) land) and the countryside. As part of this, we are exploring ways to reduce the impact of the railway on agricultural land holdings and soil resources. To better understand how the land is used, we will continue to work with landowners, occupiers and land managers to gather information that will help inform the design process.

8.2.1.10 Flooding

Respondents support RA1 as it would cause less flooding by avoiding the River Great Ouse floodplain and be better for drainage. Concern was raised regarding road and property flooding from the development of the rail line.

Flood risk was considered in the environmental appraisal of the proposed route alignments. As stated in Appendix E of the 2021 Consultation Technical Report, RA1 would have a shorter crossing of the River Great Ouse floodplain and would be routed via the A428 which is an area with reduced flood risk. In addition, RA1 would travel via the A428 and north of Cambourne and therefore avoid the groundwater source protection zone (SPZ). This represents a major improvement compared to the Reference Case (RA8) for water resources and flooding Assessment Factor consideration (AF14.18).

As the Project advances, we'll continue to develop our approach to delivering on our net zero carbon railway ambition and provide further information on this during statutory consultation. We'll develop flood risk assessments to help inform the design process, which will consider future requirements of a changing climate.

We'll also continue working with the Environment Agency to share information, data and modelling to support this work, as well as reviewing the condition and capacity of the railway drainage systems with the aim of reducing future risk of the railway flooding. The PEIR will include flood modelling and a preliminary construction and operation assessment of impact on surface water, ground water, flood risk and land drainage, and will be provided at the statutory consultation.

8.2.1.11 Footpaths and Public Rights of Way (PRoW)

There was support for RA1 as it would impact fewer footpaths and cycleways.

Respondents raised concerns around walking, cycling and that RA1 could disrupt PRoW in the area, including public footpaths and bridleways, by physically blocking them. Respondents suggested moving the route to avoid severing access to private land e.g. Toft Road in Hardwick, or the Tinsley Estate in Wyboston.

Respondents commented on the access between towns and villages along the alignment, particularly without any level crossings proposed.

We've considered the impact of the Project on the community, existing highways, local roads, PRoW, bridleways and private access roads, including Toft Road and the Tinsley Estate, as part of the design and assessment of all alignment options, as well as how to reduce or mitigate disruption to local people, communities and the environment and how to avoid significant adverse impacts on health and quality of life.

We're seeking to maintain existing highway connections wherever feasible. Where it is not feasible to retain existing highways, PRoW, bridleways and private access roads in their current location, we'll ensure that a suitable alternative is available which reduces the impact of the Project on communities. 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, including to key community facilities.

Crossing PRoW is inevitable for all alignments. This was assessed as part of the Community Environmental consideration (AF14.4) which judged that RA1 was a minor Improvement in comparison to the Reference Case (RA8). Although RA1 would be expected to cross 69 PRoW, it would not cross the A421 and would avoid impact to properties around Broadway. All PRoW that would be crossed by the new railway in Section D are assumed either to be maintained in situ by a bridge or underpass or to be diverted. This is expected to result in a neutral impact for the Severance Environmental Supporting Considerations for all route alignments and so is

not a differentiating factor. This is true for the North Bedfordshire Heritage trail, footpaths between Toft and Comberton, and Hardwick and Caldecote among others.

Since consultation we've amended the design to run in cutting beneath the B1046 Comberton Road, between Comberton and Toft. This means with a minor realignment of the road a direct connection can be maintained between the two towns.

We're not proposing any new level crossings due to safety concerns, and to ensure compliance with the Office for Road and Rail (ORR) guidance.

The impact of any changes to access will be reported as part of the PEIR and ES, with the aim of reducing adverse impacts of the Project. We'll also do an Equality Impact Assessment at the same time, to capture potential impacts, both positive and negative, on protected characteristic groups (PCGs) as a result of the Project, and how these have been taken into account. We'll consult in more detail on proposals for individual highways, PRoW and private access roads at the statutory consultation.

8.2.1.12 Future development and growth

Respondents expressed support for this alignment due to its positive impact on new housing and business development in the area. They remarked that RA1 could serve the new and forthcoming housing developments at Bourn Airfield and Cambourne, while also serving potential business development. Respondents suggested avoiding existing houses and settlements such as Highfields Caldecote, Ravensden, Wilden, Linden Homes (Angel Park), Sunderland Hill. They also suggested integrating EWR with the Bourn Airfield development.

Respondents said RA1 would have less negative impact on planned housing developments, such as Graze Hill and would provide greater opportunities for sustainable economic growth around Wyboston, north of A421 and the land north of Cambourne.

Respondents expressed a preference for this route as it includes a station at St Neots, which respondents said presents the better option for future housing and business development compared to Tempsford.

Respondents suggested changing RA1 so that it stops at Tempsford as there is greater potential for further housing development.

Respondents expressed concern about the impact on the new developments i.e. at Bourn Airfield and Highfields Caldecote. They felt the viaduct, and the start of the embankments, are proposed to be on land identified for high density housing such as flats, as well as recreation facilities for the community.

Respondents expressed concern about the potential impact of RA1 on homes and property values in the area.

Respondents expressed concern that part of RA1 would sever the entrance to the C2C station, which could hinder the proposed travel hub. They also expressed concern that the route was in conflict/not aligned with other planned developments in the area.

We've considered a number of factors when assessing the different station location options and associated route alignments, including potential housing delivery estimates for each location, as well as potential challenges for housing delivery. RA1 was considered a minor improvement for the contribution to enabling housing and economic growth Assessment Factor (AF2) when compared to the Reference Case (RA8).

We expect that the railway and Cambourne Station would support the Bourn Airfield development, including by enabling improved connections to key destinations across the Oxford to Cambridge area.

We've considered effects on committed developments along each route alignment and the design aims to reduce and mitigate the impacts on the developments at Bourn Airfield and Highfields Caldecote. RA1 and RA9 would only impact the north east corner of the proposed Bourn Airfield development and it is considered most of the development could be delivered unimpeded. As a result, RA1 and RA9 were considered neutral in this regard and this was not a differentiating factor in the overall route assessment. Since the 2021 consultation the design has been amended to avoid having a direct impact on the Linden Homes development at All Angels Park. However, these alignments directly impact an outdoor fitness centre and EWR will work with this business to mitigate impacts.

Station designs for Cambourne North will include provision for public transport interchange and active travel facilities and routes to maintain connectivity with neighbouring villages and communities.

In designing options for the railway to date, we've been monitoring the progress of new and emerging development plans across the area. The potential impact of the Project on existing housing, including housing that has been granted planning permission was taken into account when we were considering potential route alignments.

It is important to note that the railway is intended to provide new connections for existing settlements, residents and businesses – not just future development. Regarding AF2 – contribution to housing and economic growth, RA1 represents a minor improvement when compared to the Reference Case (RA8). Although we're still developing our analysis of each station option's potential for housing development, RA1 is expected to help support economic growth around Wyboston, north of A421 and the land north of Cambourne by providing improved connectivity to these areas.

Any development around Cambourne North station can be expected to require fewer or less significant mitigation measures than around Cambourne South and is therefore considered more likely to be realised. Although we're still developing our analysis of each station option's potential for housing development, RA1 is expected to help support economic growth around Wyboston, north of A421 and the land north of Cambourne by providing improved

connectivity to these areas. There is more available land capable of development to the north of the A428 with fewer constraints such as heritage assets and areas of woodland. Housing development at Cambourne North is expected to be able to retain separation from and between existing settlements such as Papworth Everard, Knapwell and Elsworth, and a site in this area is already identified in the emerging Greater Cambridge Local Plan.

Where land is acquired or proposed to be acquired, the Compensation Code sets out the circumstances in which compensation is payable. We have provided a guide to compulsory purchase compensation, Guide to Compulsory Acquisition and Compensation. Compensation is also available for properties in proximity to the new railway which may be affected by various physical factors of the operation of the railway once it is in use, this is referred to as Part 1 compensation for which we included a guide on the website – Guide to Part 1 claims. We consulted on a Proposed Need to Sell Property Scheme at the same time as the main 2021 consultation and the details for the Guide to the Proposed Need to Sell Property Scheme are available here: The Guide to the Proposed Need to Sell Property Scheme. Further information will be presented on this scheme and our approach at the statutory consultation.

We're liaising with C2C so that design interfaces between the two projects can be appropriately managed and opportunities explored. In addition, we'll continue to work closely with key stakeholders including Network Rail, National Highways and councils along the route, to liaise with them regarding other projects in the area as the EWR design develops, in order to manage the interfaces between these and EWR as effectively as possible.

Regarding the suggestion for RA1 to include a stop at Tempsford, this is a matter that we've considered. RA1 performs most favourably in comparison to other route alignments. However, RA9 was also identified as an emerging preference even though it doesn't perform as well as RA1, as it allowed EWR to serve a Tempsford ECML station location. Following feedback received from the 2021 consultation, particularly regarding potential impacts associated with RA9 between Bedford and Tempsford Station, we've developed RA1 – (Tempsford variant). The RA1 – (Tempsford variant) is a variation of RA1, which deviates from RA1 south of Colesden, then runs north of Roxton and serves a Tempsford Station location. RA1 – (Tempsford variant) would significantly reduce and/or mitigate the potential impacts at Ravensden, Renhold and Roxton associated with RA9. Following the 2021 consultation, further review of the opportunities associated with a station at either St Neots or Tempsford, it has emerged that a station at Tempsford is expected to have greater potential for development to support significant economic growth than a station at St Neots. Through further work and taking into consideration the consultation feedback, we've concluded that the majority of Alignment 1 provides a better solution than the other alignments. However, in order for RA1 to serve Tempsford station Alignment 1 (Tempsford variant) was developed. As this alignment better achieves the Project objectives it will be taken forward as our preferred route alignment for further design development and assessment. Feedback will be invited on the updated route design for Alignment 1 (Tempsford variant) as part of the statutory consultation.

8.2.1.13 Homes and property

Respondents expressed support for this alignment as they consider it to have less impact on properties in the area. They stated that RA1 would avoid a substantial number of listed and historic properties, as well as properties in general, meaning that the physical impact on homes due to construction and operation rail use would be lower.

Respondents supported RA1 as it has a reduced impact on residential properties and the lower number of properties that would be demolished. They also remarked that keeping the line away from homes could reduce the negative impact of this alignment on property values.

Of all shortlisted alignments, RA1 would pass within 500m of the fewest number of homes, reducing the number of properties impacted although it is to be noted that all route alignments are expected to require some demolitions. RA1 is expected to require the demolition of four properties and is classed as a minor Improvement for the community Assessment Factor consideration (AF14.4) compared to RA8 which would be expected to require the demolition of eight properties. RA1 is in close proximity to significantly fewer Listed buildings and Scheduled Monuments than the Reference Case (RA8) and is classed as a major improvement for the historic environment Assessment Factor consideration (AF14.9).

8.2.1.14 Noise and vibration

Respondents expressed a preference for RA1 as it would generate less noticeable noise than other alignments, because it's further from residential areas and using cuttings. Respondents stated that RA1 is within existing travel corridors and reduces noise impact. Additionally support for RA1 was expressed as it moves noise impact away from Bedford.

Respondents stated construction of RA1 would contribute unacceptable levels of noise and vibration to the area. Specifically noted were concerns around Highfield Caldecote and New Inn Farm regarding the impact of increased noise and/or vibration on quality of life.

All route alignment options are expected to have some adverse noise impacts on communities. RA1, RA2 and RA6 each represent a minor improvement to the Reference Case (RA8) regarding the noise and vibration Assessment Factor consideration (AF14.13), due to a smaller number of dwellings potentially affected.

With appropriate mitigation, the number of communities subject to potential adverse noise and vibration impacts from RA1 would be reduced. This represents a minor improvement relative to the Reference Case (RA8) due to the smaller number of dwellings potentially affected for the community Assessment Factor consideration (AF14.4). This is helped by the fact that RA1 follows the existing transport corridor alongside the A428.

Impacts from noise pollution were taken into account in the environmental appraisal which informed the Consultation Technical Report and assessed within the noise and vibration impacts environmental Assessment Factor consideration (AF14.13).

We'll continue to seek opportunities to reduce noise pollution, visual disturbance, and potential light pollution impacts through the design of the preferred route alignment. As mentioned, comprehensive assessments will be carried out and we will use industry-leading computer modelling, which can incorporate information on local geology to simulate potential noise and vibration impacts along the whole route, including on residential buildings, as part of the assessment of any mitigation required.

We'll also produce a Noise and Vibration Policy, which will outline our commitment to managing noise and vibration during construction and operation. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document. These may include the use of temporary screening and use of quieter or lower vibration construction methods and equipment.

We'll endeavour to schedule activities which are likely to produce higher levels of noise and vibration to weekday daytime hours wherever possible. Occasionally, we may need to work at other times, and we'll continue to work with local people and communities to implement arrangements which are least disruptive. Environmental impacts – and potential resulting impacts on human health – will be considered throughout Project's development with the aim of avoiding and, if not possible, reducing them where possible through the design. The impacts of the final route alignment on the health and wellbeing of local communities will be assessed in a dedicated chapter of the PEIR which will detail the mitigation to be provided where appropriate.

The PEIR will be presented at statutory consultation, with an ES being submitted as part of the DCO application.

8.2.1.15 Roads – general

Respondents support RA1 on the basis that it would have less negative impact on the local roads around the route compared to the other options. They remarked that it could relieve traffic and congestion, particularly on the roads from Cambourne to St Neots, by providing alternative transport for those who would otherwise drive.

Respondents commented that RA1 would have less negative impact on high-volume roads, such as the A421 and Bourne Broadway, and fewer roads in general, than other route alignments.

Respondents supported RA1 as it will result in less road diversions and construction vehicles on unsuitable roads and reduces the need for new farm access/wildlife tunnels.

Respondents mentioned the effects of construction on access to farms and existing infrastructure, such as roads and stations, as well as concerns about the challenges of installing the required infrastructure, such as tunnels and crossings, while maintaining this access.

Respondents expressed concern that local roads will be used as 'rat runs', raised concerns over road closures and increased traffic.

By providing quicker and more reliable journeys over long distances, EWR aims to encourage people to switch from private vehicles to rail. It is intended that EWR will help to reduce road congestion, as people favour of a more sustainable form of transport, and pre-emptively help to avoid increases in private vehicle use which may otherwise be associated with new housing or economic development. We'll also work collaboratively with local authorities and other transport operators to seek to provide connectivity to our stations via public transport and active travel.

Impacts to the road network will be assessed at the next stage and information will be made available at the statutory consultation. The environmental impacts and opportunities Assessment Factor consideration for Traffic and Transport (14.16) was therefore not applied during the assessment of the shortlisted route alignments. There is no reason to suppose that EWR and RA1 will increase the likelihood of rat-running.

The Traffic Assessment and Traffic Management Plan will consider the impact on the strategic and local highway networks, road safety, and will set out measures aimed at maintaining safety for road users and reducing the impacts of construction traffic. We'll endeavour to manage construction activity to reduce adverse impacts, such as by choosing suitable construction routes and maintaining access (or providing temporary diversions) where possible.

The PEIR will include information regarding the baseline for transport, access and non-motorised users, together with a preliminary assessment of impacts, and will be presented at statutory consultation. This will be developed and refined for the ES that will be submitted as part of the DCO application.

Regarding farm access and wildlife tunnels, and the impacts on road access to properties – including agricultural property – these will be addressed in the next stage of design as they don't assist in differentiating between route alignments at this stage. We're seeking to maintain existing highway connections wherever feasible. Where it is not feasible to retain existing highways, PRoW and private access roads in their current location, we'll ensure that a suitable alternative is available, which minimises the impact on communities.

8.2.1.16 Roads – A428

Respondents remarked that aligning with the existing transport corridors of the A1, the M11, the A421 and the A428 would reduce the general disruption which could arise from construction works.

Respondents expressed concern that constructing the route across the Black Cat roundabout and A428 will prove difficult, as will going south from Cambourne North station. Respondents also suggested that there is no benefit to rail travellers by aligning with the A428 in the north when approaching Cambridge from the south.

Respondents suggested that retrofitting the EWR project around the A428 scheme will cause problems, and inevitably delays, and add cost because the window of opportunity to plan together was missed. They also commented that RA8 and RA9 are shorter than the other options and less restricted by the A428. Some suggested there would be significant impact on the Strategic Road Network (SRN), specifically the A1, east of St Neots and east of Cambourne.

Concern was raised over integration with the A428 junction and subsequent access to Cambridge Road and Loves Farm.

We don't consider that it would be preferable to locate the new railway close to the A421, existing A428 and A14 or M11 roads because of the sensitive environmental features and existing settlements along these routes. Selecting an alignment in these areas could 'sandwich' existing communities between these busy roads and the new railway, increasing the impacts on these local communities from the combined infrastructure. In addition, the areas south of Bedford and north of Cambridge host a significant number of sensitive environmental features which it would be difficult to overcome, including heritage assets, ancient woodland, floodplains and top-grade agricultural land.

However, we're working closely with other projects, including the A428 Black Cat improvement scheme, to manage interfaces and seek opportunities. RA1 would run parallel to the proposed A428 Black Cat improvement scheme for approximately 12km and pass near to the works at Black Cat roundabout. All the shortlisted route alignments (other than the Reference Case (RA8)) would have some degree of interaction with the scheme, and as a consequence this was not a differentiating factor between alignments.

Running EWR parallel to the A428 could allow the Project to benefit from a shared travel corridor, meaning that it could cover a route used regularly to connect people to places. This could also help to reduce some adverse impacts of the Project. Visual changes to the landscape could be concentrated in the shared travel corridor rather than in areas not already subject to development.

Comments received in response to both our 2019 and 2021 non-statutory consultations have emphasised the importance that the public place on avoiding impacts upon the roads mentioned where possible. We are working closely with National Highways and the A428 Black Cat improvement scheme to manage interfaces and explore opportunities between projects. With regard to impacts to the highway network during construction, we'll develop a comprehensive logistics strategy that must be adopted by all contractors and suppliers. This will enable us 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 our 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. Impacts to the road network will be assessed at the next stage and information will be made available at the statutory consultation. The environmental impacts and opportunities Assessment Factor consideration

for traffic and transport (14.16) was therefore not applied during the assessment of the shortlisted route alignments.

8.2.1.17 Station design

Concerns were raised that RA1, RA2 and RA6 with a proposed St Neots station would involve a complex structure with platforms at a high level over the East Coast Main Line (ECML) and will be very close to the A428 which would cause structural integrity issues.

The station design assumptions for St Neots and Tempsford have been developed using standard construction techniques, and we'll work with Network Rail to ensure that specific safety requirements are complied with for our ECML station.

Visual impact

Respondents were opposed to RA1 and RA9 as it would require the line to rise an additional 12m on a hill that's already 72m high. Respondents expressed concern that the route will require a 3km viaduct running from Roxton to the ECML interchange east of the A1, generally at 10m above ground level increasing to 19m above ground level at certain points.

Viaducts and high embankments were also a concern, because noise and light pollution would be increased by having these structures on an already high point of land. Respondents also questioned the need for these structures on RA1.

Respondents supported RA1 as it would have reduced visual impact, specifically in reference to: Cambourne Country Park; Renhold; Ravensden; Bourn Windmill; Caxton village; Bourn Valley; Bourn Brook; River Great Ouse Valley; Brickhill Country Park; Roxton Park and Jackdaw Lake. Respondents felt that RA1 would have less impact on the surrounding countryside, as the route would be further from recreational footpaths that they use regularly.

We assessed the visual impacts of the route alignments and while all route alignment options would result in new elements in rural landscapes, RA1, RA2 and RA9 offer the ability to concentrate impacts in the A428 corridor, rather than in areas not already subject to development. RA1 would avoid impacts on landscape designations at Brickhill Country Park, the River Great Ouse valley and would have indirect impacts on the character of Roxton Park. However, RA1 would result in some areas of woodland loss at All Angels Park and trees lining Bourne Brook, as well as visual impacts at Chawston due to the A1 viaduct. Overall, RA1 is considered a minor improvement in relation to the Reference Case (RA8) for the landscape and visual Assessment Factor consideration (AF14.11).

RA1 would reduce visual impacts on communities such as Renhold, Cambourne Country Park, Caxton Village and Bourn, also passing to the north of Ravensden. RA1 would also avoid impacts upon landscape designations at Brickhill Country Park, the River Great Ouse valley and indirect impacts on the character of Roxton Park.

Overall, RA1 is therefore considered to be a minor improvement in terms of landscape and visual Assessment Factor consideration (AF14.11) compared to the Reference Case (RA8).

Although RA1 would still require some viaducts, it is expected to require fewer bridge and viaduct structures than other alignments. All route alignments require viaducts and embankments to some degree and, while inclusion of these structures alone doesn't differentiate between route alignments, they are taken into consideration when assessing other impacts of the Project, such as noise and vibration.

Since the 2021 consultation, we've been reviewing the design of this section of the line and have been looking for opportunities to reduce the height of embankments and viaducts within it. We considered, for example, taking the railway under roads in cuttings instead of building viaducts over them and making minor diversions to the railway alignment to allow the railway to be lowered. Roads could also be diverted over the railway on smaller overbridges, instead of building railway bridges/viaducts over existing highways. Further examples of where visual impacts are being considered are in the use of landscape earthworks to soften the appearance of embankments and integrate them into the wider landscape context or using sensitive placement of appropriate planting to either screen views from sensitive receptors, or to soften the appearance and presence of engineering earthworks.

Assessing the impact of the Project on the environment is a fundamental part of the design, including consideration of possible mitigation. The PEIR will include information regarding the landscape and visual baseline, preliminary construction and operation assessment of impact on landscape character and views. A Zone of Theoretical Visibility will be produced and will be presented at the statutory consultation with the PEIR, and an ES will be submitted as part of the DCO application.

It is not possible to assess the impact of light pollution in detail at this stage because parts of the Project that could have an effect on light pollution, such as location and layout of stations, maintenance compounds and new access routes are still being considered. However, we will consider how we design lighting when in proximity to 'sensitive receptors' such as housing, nearby residential areas or ecological habitats and will report potential impacts arising as a result of lighting initially as part of the PEIR, published at the statutory consultation, and then within the ES, submitted as part of the DCO application.

8.2.1.18 Wildlife and biodiversity

Respondents support RA1 as it passes further from wildlife habitats and reserves in the area, protected sites, environmentally sensitive areas, areas with ecological value and ancient woodland; specifically Bourne Brook, Cambourne Nature Reserve, Woodlands Park and Little Early Grove.

Concerns were raised that RA1 would cause the greatest impact to biodiversity and would cut through a higher number of Bedford County Council's 'Rebuilding Biodiversity in Bedford Borough' areas.

We'll avoid direct impacts on the most significant nationally and internationally designated environmental assets including, National Nature Reserves (NNRs), Ramsar Sites, Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and candidate Special Areas of Conservation (cSACs), Special Protection Areas (SPAs) and candidate Special Protection Areas (cSPAs), Ancient Woodland and Veteran Trees.

All the proposed route alignments would have the potential to impact habitats and wildlife along the route. While RA1 would have the potential to impact a greater number of mapped priority habitats than other route alignment options, it would not overlap with SSSI IRZs or have direct impacts on ancient woodland and would therefore avoid adverse ecological impacts in those areas. Overall, RA1 is considered to represent a minor improvement to the Reference Case (RA8) in relation to the ecology and biodiversity environmental Assessment Factor consideration (AF14.5).

We'll continue to undertake a programme of habitat surveys and species-specific surveys, including bats, badgers and birds, designed to help understand where species and habitats are in the landscape and how it is used by them. This will mean that the Project can avoid, reduce, mitigate and if necessary, compensate for identified impacts throughout the design of the railway. We'll consider local policy context and plans, such as Bedford Council's 'Rebuilding Biodiversity in Bedford Borough' when developing the railway. The results of this survey work will inform the development of the PEIR, which will provide detail on the impacts of the chosen route alignment on ecology and biodiversity alongside the steps we'll take to mitigate these impacts. The PEIR will be presented at the statutory consultation.

There is a colony of Barbastelle bats in the Eversden and Wimpole Woods Special Area of Conservation (SAC) which is located within the route option area and within 3-4km of the preferred alignment between Bedford and Cambridge. Throughout 2022 we carried out surveys to better understand the Barbastelle population in the area. Further bat surveys will be carried out in 2023. These will be used to ensure that the design doesn't significantly affect the population of Barbastelle bats and EWR Co will develop a PEIR and ES to describe the likely environmental effects of the proposals and report the results of survey work. The PEIR will be presented at statutory consultation and the ES will be submitted as part of the DCO application.

We recognise the importance of biodiversity and protecting the habitats of local wildlife including priority habitats such as woodland and orchards as well as parks and green spaces. As part of our commitment to changing the environment for the better, we're thinking carefully about these habitats when designing the railway. We'll seek to avoid, reduce and mitigate any potential adverse impacts on orchards, as far as is reasonably practicable.

We've committed to delivering 10% BNG, which requires that habitats for wildlife (including woodland) are enhanced and left in a measurably better state than they were pre-development. Further information will be provided at the statutory consultation.

8.2.2 Route Alignment 2 (red)

8.2.2.1 Active travel

There was support for Route Alignment 2 (RA2) as respondents felt it would provide easier access to the station for residents, especially by walking or cycling, therefore reducing traffic and congestion.

One of our main priorities is to increase connectivity across the Oxford to Cambridge area. We're taking RA1 (Tempsford variant) forward for further design, which serves a station at Tempsford rather than St Neots. We'll promote and prioritise both active and sustainable transport modes, and will continue working with other organisations, including bus operators, to improve facilities.

We'll work with local authorities to seek to ensure that access arrangements for new stations are aligned with local transport plans, making it easy to walk, wheel, cycle or use public transport to get to and from the station.

For the transport user benefits Assessment Factor, it is acknowledged that Cambourne South station would perform better than Cambourne North station as Cambourne North is north of the A428. However, the reduced connectivity of RA1 is capable of being mitigated by various factors including the provision of a new foot/cycle bridge over the A428. Future bus routes, cycling and walking facilities and public transport in respect of Route Alignment 1 (Tempsford variant) will be considered at the next stage of development for EWR.

8.2.2.2 Air quality and carbon

Respondents expressed support for RA2 as they said it would generate less air pollution than other alignment options. This was based on the perceived ongoing use of diesel traction as the South Cambourne alignments (RA2 and RA6) would only peak at 60m so will generate fewer carbon emissions.

Respondents voiced concern over RA2 due to air pollution during construction and operation from the trains and increased carbon emissions due to the use of diesel trains.

RA2 was rated as a minor improvement in relation to air quality Assessment Factor consideration (AF14.2) compared to the Reference Case (RA8), and additionally, no Air Quality Management Areas (AQMA) are likely to be impacted.

Although air quality impacts associated with RA2 would affect fewer properties than the Reference Case (RA8), the larger volume of earthworks required (which includes for the excavation of cuttings as well as the formation of embankments) for RA2 means that the overall air quality improvements against the Reference Case (RA8) is not as significant as that for RA1, the emerging preferred option. RA1 was considered as a major improvement for the air quality Assessment Factor consideration (AF14.2) whilst RA2 was considered as a minor improvement.

Overall, when considering general environmental impacts (AF14), both RA2 and RA1 are judged to be a major improvement compared to the Reference Case (RA8).

The Project team will work with local authorities to understand the current situation in communities and how to consider relevant AQMAs. As the Project develops, it will assess changes in NOx, PM2.5 and PM10 as part of the ES submitted as part of the DCO application. This assessment will follow best practice and guidance set by the Institute of Air Quality Management. The team will seek to reduce the impact the new railway will have on air quality. This will include considering what vehicles and equipment will be used during the construction and operation of the railway, as well as how to manage work sites to avoid and reduce any dust creation.
In relation to climate (Assessment Factor consideration AF14.3), including embodied carbon, RA2 constitutes a major improvement in comparison to the Reference Case (RA8). Although the track length would be longer (leading to a slight increase in greenhouse gases), the alignment requires far less earthworks and therefore lower greenhouse gases would be produced in association with this.

Overall, RA2 results in a lower carbon footprint (approximately a 20% saving) in comparison to the Reference Case (RA8). The emerging preferred option at the 2021 consultation, RA1, results in a 32% saving and is therefore a greater improvement. RA1 and RA2 are both judged to be a major improvement in comparison to the Reference Case (RA8) for the climate consideration (AF14.3).

We are continuing to work with the Government to review long term traction options for the railway and electrification is one of the options being considered. We will need to ensure the railway aligns with relevant policy and legislation for a net zero carbon UK by 2050.

We are committed to running a sustainable railway. This includes the use of greener traction power in the long term. While diesel trains are being used to enable the opening of the first part of the railway between Oxford and Milton Keynes, we are exploring how to introduce new and emerging technologies in the long-term train fleet and will be seeking input from bidders across the market to ensure they understand the company's environmental goals. Information about this aspect of the project will be provided at statutory consultation.

We are considering the most appropriate solution, including hydrogen power and full or part electrification, for the long-term train fleet and infrastructure. We will consider resilience for all weather conditions, including lightning and any potential future impacts brought about by climate change, as part of the design for any of the infrastructure and its supporting systems.

8.2.2.3 Alignment route and station locations

Respondents expressed support for the proposed station locations along RA2.

There was support for a station south of Cambourne, due to better accessibility for residents, and provision of a more direct route between St Neots, Cambourne and Cambridge; and because of existing road connections.

Respondents questioned the need for another station in St Neots adding that it will add to congestion. There was concern for RA2 as a St Neots South station would sever a farm and leave it unviable.

Respondents raised concern that a new station at St Neots South would be restricted by the the A428 Black Cat improvement scheme. Concern was also raised that there are limited opportunities for development around the station.

There was also concern that St Neots has been subject to a number of new developments, and it is now at capacity, so there was a preference for a new station at Tempsford.

Respondents suggested building a cycle path to service St Neots South station, boosting local bus services and using tunnels instead of viaducts.

We're aiming to provide a frequent passenger service through designing a flexible railway, with two railway tracks for EWR service use throughout this section of route, allowing the new services to offer attractive journey times. EWR would connect to six north-south routes, including provision for a new passenger interchange with the ECML at Tempsford. Our preference is for a new station at a Tempsford location which would provide a connection with the ECML and is expected to unlock housing and economic growth in the area.

St Neots and Tempsford station options presented at the 2021 consultation were located to support potential development and are expected to reduce the risk of traffic and congestion impacts to existing communities, when compared to stations within existing settlements. The use of the existing station within St Neots would not be expected to enable the same level of housing development that we anticipate would be unlocked by a new station at Tempsford. However, we're committed to increasing prosperity and connectivity across the region, and therefore options to efficiently connect existing communities, such as St Neots, with EWR are also important. We'll continue to develop proposals which consider how communities can easily access the station, including through improved door-to-door connectivity.

Options that enable a new station at St Neots, including RA2, perform better in respect of overall connectivity to existing properties than options that provide a Tempsford station (including the reference case (RA8) and RA9). As St Neots station options are closer to St Neots, they are more accessible for cyclists and pedestrians and provide a minor improvement for public transport users benefits (AF1) compared to Tempsford stations, and result in improved journey times. In terms of connectivity, while Tempsford stations are closer to the Tempsford community, St Neots stations are closer to a larger number of properties overall. However, Tempsford is expected to have greater potential for development to support significant economic growth than a station at St Neots. We've also considered the potential for coalescence with existing development and believe that there is a greater risk at St Neots station locations than for the Tempsford locations which are further away from the existing settlements.

In relation to reducing car travel between St Neots and Cambridge and accessibility of station locations, one of EWR's core priorities is to increase connectivity across the Oxford to Cambridge area. This includes consideration of local connectivity, bus services and customer experience while travelling to EWR stations within the station design work. We'll promote and prioritise both active and sustainable transport modes and will continue working with other organisations to improve facilities at stations. Car parking provision will also be considered.

Regarding Cambourne South and existing road connections, we've taken into consideration a number of factors when assessing the different station location options, including potential housing delivery opportunities and challenges. The existing population in the catchment area around Cambourne North is slightly lower than at Cambourne South, but we'd expect additional residential development to come forward around Cambourne North which will drive additional demand for EWR. There are understood to be fewer delivery risks associated with Cambourne North development than Cambourne South, suggesting that Cambourne North would be a better option for housing and therefore all options which provide for a Cambourne North station have been assigned minor improvement for Contribution to enabling housing and economic growth Assessment Factor (AF2). There is more available land capable of development to the north of the A428 with fewer constraints such as heritage assets and areas of woodland. Housing development at Cambourne North is expected to be able to retain separation from and between existing settlements such as Papworth Everard, Knapwell and Elsworth, and a site in this area is already identified in the emerging Greater Cambridge Local Plan.
Cambourne North station is separated from Cambourne by the A428 which reduces connectivity for active travel options (walking, cycling and wheeling). This is mitigated in part through proposals to provide a new foot and cycle bridge over the A428. Cambourne North also positions the station much further from Caxton (which is located to the south west of Cambourne) discouraging this existing community from active travel to the station. However, Cambourne North does have better connectivity to the current A428 (shorter access road) and the proposal to provide a foot and cycle bridge could enable connections to communities south of the A428. Alignments such as RA2 serving Cambourne South station were judged as neutral for the Transport user benefits (AF1) and Contribution to enabling housing and economic growth (AF2) Assessment Factors. However, alignments serving Cambourne North were judged as minor worsening for transport user benefits (AF1) and minor Improvement for contribution to enabling housing and economic growth (AF2).
We understand the importance of agriculture to the communities the railway will serve and we are focused on finding solutions that avoid, reduce or mitigate adverse impacts on land use and agricultural holdings. RA2 is considered to be a minor improvement in relation to agriculture, forestry and soils environmental Assessment Factor consideration (AF14.1).
The inclusion of tunnels would not improve the performance of RA2 relative to other route alignments, including the emerging preferred alignment at the 2021 consultation, RA1. We continue to explore the use of tunnels for the Project during the design process but only consider them to be a practical option in specific areas where they can provide a solution for addressing particular constraints. This is because they are more complex and expensive to build, operate and maintain than above ground structures, and also require additional surface structures for ventilation and exit in case of emergency.

8.2.2.4 Benefits

Respondents supported RA2, identifying its directness as having a positive impact on journey times. Conversely, respondents claimed that RA2 would increase journey times and disruption to the line.

All options to optimise journey time have been and will continue to be considered at all stages in the design of the railway. We're aiming to provide a frequent passenger service through designing a flexible railway, with two railway tracks for EWR services use throughout this section of the route, allowing the new services to offer attractive journey times. As all alignments have the same length of the alignment that uses or neighbours existing lines, there is no differentiation between route alignments in regard to disruption to existing lines.

For short distance passenger services, RA2 was judged as neutral when compared to the Reference Case (RA8). Although RA2 has a greater track length than the Reference Case (RA8) the journey time predicted for RA2 at the 2021 consultation was 25/43 seconds quicker Eastbound/Westbound than the Reference Case (RA8), but this slight difference was not considered to be significant. RA1 was also assessed as neutral for short distance connectivity Assessment Factor (AF6), but a minor worsening against the Reference Case (RA8) for short distance passenger services Assessment Factor (AF7). This is due to the greater journey times estimated for RA1 than the Reference Case (RA8).

For long distance passenger services Assessment Factor (AF9), as journey time differences between the route alignment options were sufficiently small that they would be unlikely to affect interchange opportunities, this was scored neutral across all options.

8.2.2.5 Construction

Respondents supported RA2 as construction traffic impacts were considered to be less than other route alignments.

Respondents expressed concern about the complexity of parts of the Project, particularly St Neots South station, and the viaduct over the River Great Ouse.

The expected amount of construction traffic cannot be calculated until further construction planning work is carried out at the next stage, in particular to understand how excavated material can be reused for the Project. Further information will be provided on this for our preferred alignment Route Alignment 1 (Tempsford variant) at the statutory consultation.

With regard to impacts to the highway network during construction, we'll develop a comprehensive logistics strategy that would be adopted by our contractors and suppliers. This will enable us 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 our 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.

The early stage design has had regard to proven construction practices that have been carried out successfully on other projects. It has been developed while considering the local context including topography, geology and environmental factors. Although we acknowledge the complexity of construction of the St. Neots ECML station, it would use standard construction techniques, and being in the early stage of the Project provides us with time for construction to be fully planned in a safe and efficient way, in close consultation with Network Rail. Also, for this, and for the construction of the viaduct over the River Great Ouse, we'll seek to appoint contractors with the necessary experience of constructing similar structures in undertaking other major infrastructure projects to ensure the safe and efficient construction of both complex elements.
We'll try to schedule activities which are likely to produce higher levels of noise to weekday daytime hours wherever possible. Occasionally, it will be necessary to work at other times and we'll work with local people and communities to implement arrangements which are least disruptive.

8.2.2.6 Cost

Respondents suggested that the directness of RA2 will make it cheaper and faster to build.

They voiced concern that the additional length of RA2, as well as challenges in dealing with gas pipelines in the area, could make the Project overly expensive.

All alignments, including RA2 and the emerging preferred alignment RA1, cross major utility networks, including gas pipelines. These crossings have been identified and allowed for in consideration of capital costs Assessment Factor (3) as presented in the 2021 Consultation Technical Report. While any diversion of major utilities is significant and has associated risks, it is usual for projects of this scale to have to deal with them and given that they are common to some extent in relation to all alignments this is not a differentiating factor in favour or against RA2.
RA2 represents a minor improvement in terms of programme risk consideration (which forms part of AF3 Capital costs) when compared to the Reference Case (RA8), on the basis that the route would involve less earthworks (i.e. cuttings and embankments) and less structural work. However, the overall judgement in terms of capital costs was neutral, whereas RA1 was judged to represent a minor improvement, because its upfront capital cost was more than 10% lower than the Reference Case (RA8). In relation to the overall affordability Assessment Factor (5), RA2 is not the cheapest route alignment nor is it the most expensive and was judged to be neutral to the Reference Case (RA8).

8.2.2.7 Embankments and viaducts

Respondents expressed concern around the impact of embankments and viaducts.

Respondents supported RA2 it would have less negative visual impact than other route alignment options, primarily because it would not require viaducts.

There was support for RA2 due to the reduced visual impact through avoiding rising an additional 12m on a hill that's already 72m high, as well as avoiding building a 15m wall that would be built through RA8 and RA9. There was support for RA2 as it avoids the construction of embankments.
As mentioned, all route alignments have the potential to cause adverse impacts on the rural landscape, and all include viaducts, embankments, cuttings and other structures.

We're carefully considering how the development can be designed to blend in with the local environment. This includes the consideration of where to create embankments and where viaducts are potentially more suitable. Further examples of where visual impacts are being considered are the potential for the use of landscape earthworks to soften the appearance of embankments and integrate them into the wider landscape context and the sensitive placement of appropriate planting to either screen views from sensitive receptors, or to soften the appearance and presence of engineering earthworks. Since consultation, to reduce the potential impacts, including visual impacts, we've been reviewing the design and looking for opportunities to reduce the height of embankments and viaducts. More information on this can be found in the Route Update Report on our website.

Overall, RA2 was judged to be neutral in relation to the landscape and visual environmental Assessment Factor consideration (AF14.11) in comparison to the Reference Case (RA8), whereas the emerging preferred option at the 2021 consultation, RA1, was judged to represent a minor improvement. RA1 and RA2 were both judged to be a major improvement in comparison to the Reference Case (RA8) with regard to the environmental impacts and opportunities Assessment Factor (AF14).

RA2 has greater visual impacts, including viaducts, than the Reference Case (RA8). It has very high visual impacts upon receptors at Chawston because of the A1 viaduct and routes closer to the settlements of Caxton, Caldecote, Great Cambourne, Lower Cambourne and Kingston than route alignments that serve a North Cambourne station (RA1 and RA9). It would also impact Eltisley, meaning that the overall visual impact from RA1 would be less than RA2.

8.2.2.8 Environmental impact

Respondents expressed support for RA2 due to perceived lower impact on the local environment, in particular at Ravensden Brook, Roxton lakes, and historic woodlands. There was support generally for routes having a reduced geological impact.

They also supported RA2 due to the removal of less soil and a reduced impact on the landscape by using tunnels instead of cuttings. There was support for RA2 specifically due to its reduced impact on the countryside in Bedfordshire; Brickhill; Cleat Hill, Renhold, Great Barford and between Black Cat roundabout and Cambourne.

Respondents expressed concern for RA2 because of its potential negative impacts on the environment.

As mentioned above, where we identify potential impacts, we follow the environmental mitigation hierarchy approach. All potential impacts on surface or groundwater features will be assessed and any proposed mitigation will be developed in consultation with relevant regulators, key stakeholders and in accordance with relevant legislation and best-practice guidelines. Construction-related impacts on the environment will be identified and managed, as far as reasonably practicable. These measures will be set out in a CoCP or an equivalent document. This will include measures to control impacts related to surface and groundwater management.

All options perform better from an environmental perspective than the Reference Case (RA8). RA1, RA2 and RA6 perform slightly better than RA8 and RA9. For RA2 there is expected to be a reduced impact on the villages of Comberton and Hardwick compared to RA1. However, this was not considered to be a differentiating factor in the choice of the preferred route alignment, as RA1 and RA2 were both judged to be a major improvement for the environment impacts and opportunities (AF14) in comparison to the Reference Case (RA8). Further information on the assessment of environmental impacts is set out in the 2021 Consultation Technical Report.

There are no indirect impacts on ancient woodlands associated with RA2, whereas the Reference Case (RA8) introduces a number of indirect impacts on such woodland.

For Roxton, RA2 avoids the heritage sensitive areas (including the Conservation Area), whereas in comparison, the Reference Case (RA8) comes within 500m of this Conservation Area.

Based on the RA2 designs presented at the 2021 consultation, we do not anticipate directly impacting Waresley, Gransden, Brickhill area of Bedford, Comberton and Hardwick. We're committed to protecting the environment by finding approaches to delivery that avoid, reduce or mitigate negative environmental impacts and will continue to consider how we can best avoid impacts on these communities as we develop the design. All alignments cross Ravensden Brook so this is not considered to be a differentiator.

Alignments including RA2 that follow the A428 Black Cat improvement scheme avoid an area of weaker geology, where there is exposed Ampthill Clay. RA2, and the preferred RA1 were rated as minor improvements for safety risk (Assessment Factor 13) in comparison to the Reference Case (RA8) as they require less earthworks and structural work.

We continue to explore the use of tunnels for the Project during the design process but only consider them to be a practical option in specific areas where they can provide a solution for addressing particular constraints. This is partly because they are more complex and expensive to build, operate and maintain than above ground structures, and also require additional surface structures for ventilation and exit in case of emergency.

8.2.2.9 Farmland

Respondents expressed concern on the visual impacts on farmland. Respondents also shared concern that RA2 would cut through a family farm, making it unviable and destroying the regenerative farming methods it has adopted.
We've aimed to reduce negative impacts on communities, people's homes and farmland. However, inevitably with an infrastructure project of this size, there will be some people who could be directly affected. We'll continue to work to mitigate any impacts we cannot avoid and work closely with people who could be affected.

RA2 is likely to impact approximately 40 farm holdings (based on available information), of which two would be likely to experience a major adverse impact from the construction of the Project. The Reference Case (RA8) is likely to impact approximately 50 farm holdings (based on available information), of which two would be likely to experience a major adverse impact from the construction of the Project. Based on the length of RA2, it would require a broadly similar amount of agricultural land as the Reference Case (RA8). We consider RA2 to be a minor improvement and note that the emerging preferred RA1 is considered to be neutral overall for agriculture, forestry, and soils Assessment Factor consideration (AF14.1) when compared to the Reference Case (RA8).

The potential interaction of the railway with agricultural land and holdings has formed an important part of the process of not only identifying potential alignments, but also the earlier selection of a preferred route option in 2020. The selected route option and the route alignments which were presented during the 2021 consultation have aimed to reduce the direct impact on the best grade agricultural land, although all of the alignments would have an impact to a greater or lesser degree.

We've held interviews with farm businesses to understand how they might be affected by the alignments presented at the 2021 consultation. We'll engage further with potentially directly impacted landowners when details of the land requirements are better known – to explain the Project in more detail, to understand concerns and to establish how we may be able to reduce impacts where practicable.

The PEIR will include information regarding baseline soils environment, including presence of best and most versatile (BMV) land, and existing agricultural and forestry land use and agricultural land holdings. The potential impacts and likely effects on the baseline soils environment arising from disturbance and displacement and mitigation such as outline plans for soil management during construction will be presented as part of the PEIR, which will be provided at the statutory consultation.

8.2.2.10 Flooding

Respondents expressed support for RA2 due to avoiding floodplains (in the north) and water bodies (such as the river around Great Barford) and stated RA2 also goes through a much less flood risk area.

Respondents expressed concern that RA2 would result in considerable risks to the Groundwater Source Protection Zone (SPZ) which it would pass over. There was also concern

that the route would damage existing land drainage culverts, which would cause localised flooding. Respondents voiced concern that not enough information on land drainage and reinstatement has been provided, and they are uncertain how this will be managed.

Both RA2 and the RA1 have a reduced length in the floodplain when compared to the Reference Case (RA8). RA2 crosses a groundwater SPZ and RA1 doesn't so RA1 is deemed a major improvement while RA2 is only a minor improvement in relation to water resources and flooding Assessment Factor consideration (AF14.18) when compared to the Reference Case (RA8).

RA2 comprises a shorter crossing of the River Great Ouse floodplain than the Reference Case (RA8), routing via St Neots South Option A and then via the A428 Black Cat improvement scheme. As a result, RA2 has a lower flood risk than the Reference Case (RA8).

When assessing possible impacts from the Project on the water environment, including watercourses, wetlands, aquifers and associated habitats, the assessment considered effects on both upstream catchments and downstream reaches that might be influenced by the route over the lifetime of the Project, including the potential impacts of pollution generated during construction. Our assessments consider quantity (under a range of conditions) and quality, as well as aspects such as geomorphology and the wider value that the water environment provides in terms of habitats and biodiversity.

We'll work with landowners whose water supply reservoirs and associated irrigation systems are impacted by the Project, so that a comparable supply is maintained during construction.

8.2.2.11 Footpaths and Public Rights of Way (PRoW)

Respondents supported RA2 as they felt it would have a positive effect on paths across the route.

Respondents expressed concern over the impact this route will have on local connectivity, specifically the severance of PRoW and dividing communities.

They also expressed concern over the severance and diversion of a number of PRoW and cycleways and the potential impact this could have on people's mental health and wellbeing.

We're seeking to maintain existing highway connections wherever practicable. Where it is not practicable to retain existing highways, PRoW and private access roads in their current location, we'll ensure that a suitable alternative is available which minimises the impact on users. All route alignments have potential to create some level of severance between communities and services, although measures will be identified to mitigate this severance as the design is developed. In terms of potential impacts on the communities in and around RA2, the impact is judged as neutral when compared to the Reference Case (RA8).

We'll consult in more detail on proposals for individual highways, PRoW and private access roads at the statutory consultation.

8.2.2.12 Future development and growth

Respondents commented that RA2 would support growth as it follows a corridor of planned housing development.

Respondents said that the proposed station location at St Neots is more suited to future development. There was support for a Cambourne South station as this would reduce the impact on the planned Bourn Airfield development, while serving new settlements such as West Cambourne and Angel Park.

Respondents expressed concern that RA2 will constrain development and growth opportunities within St Neots.

Stimulating economic growth, housing and employment across the Oxford to Cambridge area is a key objective for the Project. We've taken into consideration a number of factors when assessing the different station location options, including potential housing delivery opportunities and challenges. The evidence reviewed so far suggests that, on balance, development around the Cambourne North station would require fewer, or less significant, mitigation measures than around Cambourne South. Therefore, all options serving Cambourne North, including the emerging preferred RA1, have been assigned minor Improvement in regard to contributing to enabling housing and economic growth Assessment Factor (AF2). As RA2 would serve Cambourne South it has been judged as neutral for this Assessment Factor.

Following the 2021 consultation, and a further review of the opportunities associated with a station at either St Neots or Tempsford, it has been identified that a station at Tempsford is expected to have greater potential for development to support significant economic growth than a station at St Neots. Creating a new station at a Tempsford location has a greater potential for large scale strategic housing development to support economic growth to come forward than at St Neots, due to constraints at the St Neots location in relation to existing developments and infrastructure. Development at Tempsford would also enable the redevelopment of brownfield land at RAF Tempsford.

We've been monitoring the progress of new and emerging development plans across the area, including in Bedford Borough, Central Bedfordshire and the proposed Greater Cambridge Local Plan. It is to be noted that the allocation of land for development is a matter for local planning authorities.

Although RA2 would serve the West Cambourne area, a Cambourne South station would not directly serve the Bourn Airfield and All Angels Park development mentioned by respondents as they are both east of Cambourne. RA1 and RA9 connecting to a North Cambourne Station location would only impact the north-eastern corner of the proposed Bourn Airfield development and it is considered most of the development could be delivered unimpeded. As it was considered that this impact could be mitigated all route alignments were considered neutral. As a result, this was not a differentiating factor in the selection of the preferred option.

8.2.2.13 Homes and property

Respondents supported RA2 on the basis that it would have fewer negative impacts on property than other alignments.

RA2 would require the demolition of nine properties, which is the joint highest number with RA6 when comparing all options. Of the nine properties, seven would be at Bourn and the remaining two properties would be near Eynesbury Hardwick and in Wilden. RA1 would avoid Bourn and would result in the demolition of four properties in total. These would be located at Two Potts Farm, Wilden and Eynesbury. As such, RA1 has a lower impact than RA2 in terms of the number of properties demolished.

8.2.2.14 Impact on existing infrastructure

Respondents shared concern regarding the general proximity of proposals to nationally significant pipelines.

Respondents expressed concern that RA2 will cross over a National Highways borrow pit location which will remain open and unstable for years after the suggested construction start date of EWR.

It is inevitable that in constructing a project of this type, existing underground and overhead services (such as electricity, gas, water and communications) would need to be relocated and/or protected. This work is usually, but not always, undertaken in advance of the main construction works. We'll 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 the extension of services to contractor worksites. Any necessary interruptions to services would involve liaison with relevant parties in advance to discuss appropriate notification and mitigation.

Designs for utility diversions that may be required to deliver the Project will be discussed and agreed with the relevant utility companies and where appropriate will be set out at the statutory consultation. We'll assess the potential environmental impact of utility works and diversions and the outcome of this will be initially set out within the PEIR, published at the statutory consultation, and then the ES that is submitted as part of the DCO application.
It is expected that RA2, and RA1, would need to cross borrow pits used by the A428 Black Cat improvement scheme. This is taken account of as part of the design and we're working closely with the A428 Black Cat improvement scheme project team to manage this design interface and potential risks.

8.2.2.15 Impacts on heritage

There was support for RA2 due to the reduced impact on heritage assets. However, concerns were also raised regarding the visual impact of the Project on conservation and heritage assets.

We'll seek to avoid or reduce direct impacts on the most sensitive nationally and internationally designated heritage assets during construction activities. Consideration will be given to the setting and context of historic and cultural assets including conservation areas, archaeology, Listed buildings and structures, historic views, and landscapes.

RA2 is north of and in parallel to the A428 resulting in passing closer to fewer Listed buildings and Scheduled Monuments than the Reference Case (RA8), and avoids the heritage sensitive areas at Tempsford and Roxton. This reduces the likelihood of additional setting impacts to Listed buildings and SMs in the vicinity as fewer assets would be impacted. However, to the south of Cambourne, RA2 would pass through the complex heritage resource area of the Bourn Valley and, east of Eltisley, and comes in close proximity to a Scheduled Monument and associated listed building, Pastures Farm – Moated site at Pastures Farm and Dovecote to the North East of Caxton Pastures Farmhouse, which is likely to result in adverse impacts to the setting of these assets. The alignment passes within 500m of six conservation areas. This includes Bourn – village and Hall, Caldecote, Harlton, Kingston, Toft and Bedford.

RA2 represents a minor improvement compared to the Reference Case (RA8) in regard to the historic environment Assessment Factor consideration (AF14.9), and RA1 represents a major improvement compared to the reference case (RA8).

At the statutory consultation we'll share further information regarding how we plan to mitigate potential impacts on heritage and the environment.

8.2.2.16 Community

Respondents supported RA2 on the basis that it would have fewer negative impacts on local communities than other alignments, specifically: Abbotsley; Waresley; the Gransdens; Clapham; Brickhill; Comberton; Hardwick; Renhold; Ravensden and Roxton. Reasons for support included RA2 being less disruptive to residents and villages, improving commuter connectivity and improved connectivity for Cambridge residents.

Respondents suggested RA2 would serve a larger number of residents and would improve public transport for poorly served communities. They expressed support for RA2 as it would reduce the impact on access to green space.

Concern was also expressed that RA2 would negatively impact residents' quality of life and said it would be too close to villages. Respondents expressed concern that the railway in general would divide communities and block access between villages and that it would cause disruption to residents, villages and businesses.

The purpose of EWR is to provide new connectivity across the Oxford to Cambridge area, making it cheaper, easier and quicker for people to move around, and the new stations proposed will provide local people with the opportunity to experience that connectivity directly.

Regarding support for connectivity between St Neots and Cambridge, RA1, RA2 and RA6 would all provide this connection equally well. Alongside local councils and Network Rail, we'll

consider how to provide the best method of connecting the EWR ECML station with local communities. The objective would be to reduce impact on St Neots and surrounding communities while facilitating connectivity which could be achieved through new and enhanced footpaths, pedestrian routes, cycleways, and public transport options. Access to green space would be maintained where it is practical to do so, with mitigations put in place where needed.

The potential impacts on the communities in and around RA2 are judged as neutral when compared to the Reference Case (RA8). RA1 was assessed as a minor Improvement for the community Assessment Factor consideration (AF14.4) when compared to the Reference Case (RA8).

RA2 would require the demolition of nine properties, seven of which are located at Bourn. The remaining two properties requiring demolition would be an isolated property near Eynesbury Hardwick and a property in Wilden. The emerging preferred option at the 2021 consultation, RA1, would result in the demolition of four properties and is therefore an improvement on both the Reference Case (RA8) (which would result in the demolition of eight properties) and RA2.

RA2 and RA1 are considered as having a minor improvement on the Reference Case (RA8) for the community Assessment Factor consideration (AF14.4). RA2, without any mitigations has the potential to negatively impact Clapham East, Clapham Park Wood, Woodlands Park, Graze Hill, Ravensden North-west, Lower Grange/Sunderland Hill, Wilden, Cheques Hill North, Wilden East, Duck's Cross, South Brook, Colesden, Spinney Road, Chawston, Chawston East, Wintringham, Wintringham Hall, Caxton, Lower Cambourne, Great Cambourne, Crow End, Caldecote, Kingston, and Little Eversden.

We'll aim to be a good neighbour to the communities in which we and our partners operate by effectively managing and controlling noise, vibration and pollutant emissions to air to avoid significant adverse impacts on health and quality of life. Appendix E of the 2021 Consultation Technical Report confirms that insufficient detail existed for an assessment of the impact of each of the route alignments on health to be undertaken. In advance of the DCO application a Health Impact Assessment of the Project will be put carried out.

We'll continue to consider the impact on green spaces and work with affected communities and their representatives to maintain access and mitigate potential impacts, where it is feasible to do so.

8.2.2.17 Noise and vibration

Respondents commented that RA2 would result in less noise pollution for residents.

There was support for RA2 as the route is shorter and quicker, and follows the side of a hill, partly in a cutting, and is generally lower during its descent meaning more noise will be absorbed.

Respondents raised general concern over the impacts of noise and vibration on residents, specifically mentioning Sunderland Hill, Wilden, Bourn and the Eversdens as the baseline levels of noise in these areas are currently low. They also raised concerns around the impact of noise and vibration on a filming business near the Eversdens.

Concerns were raised over the continued operation of trains, with an 18-hour schedule, and the noise and vibration impact that this will have on residential properties and tranquil surrounding villages. Respondents also voiced concerns on the noise and vibration impact of diesel trains and freight on residential properties.

Concerns were raised of the noise impact from the elevated sections of the railway (embankments/viaducts) as the noise will travel further.

All of the shortlisted route alignments affect rural areas to some extent. We've sought to strike a balance between impacts on the countryside and on rural communities when developing alignments.

We considered the potential noise impacts within the environmental appraisal of the alignment options presented and RA2 was rated as a minor improvement relative to the Reference Case (RA8) because of the slightly smaller number of dwellings potentially affected. RA1 was considered as a minor improvement for noise and vibration Assessment Factor consideration (AF14.13).

Without any mitigation, RA2 has the potential to create adverse operational noise impacts at the following communities: Clapham East, Clapham Park Wood, Woodlands Park, Graze Hill, Ravensden North-west, Lower Grange/Sunderland Hill, Wilden, Chequers Hill North, Wilden East, Duck's Cross, South Brook, Colesden, Spinney Road, Chawston, Chawston East, Wintringham, Wintringham Hall, Caxton, Lower Cambourne, Great Cambourne, Crow End, Caldecote, Kingston, Little Eversden. However, with appropriate mitigation, the communities subject to potential adverse noise impacts would reduce to: Graze Hill, Lower Grange/Sunderland Hill, Colesden, Spinney Road, Chawston, Wintringham Hall and Crow End.

For Ravensden Church End, an adverse noise and vibration impact would be created even with mitigation by the Reference Case (RA8), whereas for both RA1 and RA2, the potential for an adverse impact at Ravensden North-West, and Clapham East and Clapham Park Wood, would be reduced with mitigation.
We'll seek to include specific measures within the design to reduce the impact of the Project on the surrounding environment during construction and operation. For example, measures to reduce railway noise may be mitigated by noise barriers and consideration of different track technologies and types of train that may be used in our long-term train fleet. Other mitigation measures, including during construction, may include the use of temporary screening and use of quieter or lower vibration construction methods and equipment.

Assessments will use modelling to simulate potential noise and vibration impacts along the whole route as part of the assessments on any mitigations required. This assessment will take account of factors including the height of the railway. The PEIR will include information

regarding the existing baseline noise environment, together with construction and operational noise limits having had regard to the appropriate guidance and legislation.

We proposed operational hours for passenger services in Appendices A and B of the 2021 Consultation Technical report, which referred to a potential pubic facing timetable (planned trains in passenger service), to provide some initial guidance. There will also be less intensive train movements as required outside these hours for infrastructure maintenance, inspection, freight, and other activities as part of the national rail network. We will continue to work on the concept of operation to inform the operational timetable.

8.2.2.18 Roads - general

Respondents supported RA2 as they felt it would have a positive effect on roads across the route. They also supported RA2 on the basis that it would avoid crossing the A428, preventing further congestion.

There was also support for RA2 as it would have less impact on the A1 and A1198, and there would be fewer footpaths and bridleways impacted.

Respondents stated that RA2 could conflict with the planned upgrade to the A428.

Respondents expressed concern that RA2 would create a "rat run" of speeding cars cutting through villages looking for shortcuts. There was mention that roads around Cambourne could be particularly affected and congested, such as the School Lane exit, and the A1198.

There was concern that locating the station in Cambourne South would result in drivers using unsuitable country lanes. Respondents expressed concern regarding the crossing/severance of: the Broadway; the B1046; the A428 to Loves Farm; Shrubbery Lane; Chequers Hill; Colesden Road and the Service road for Bell Farm Yard.

There was also concern regarding the potential increase in traffic and congestion in St Neots and concern regarding the lack of road infrastructure and connectivity between Cambourne South station and Great Cambourne, Upper Cambourne and Bourne.

In terms of impact on the A1198, both RA2 and the Reference Case (RA8) include a station at Cambourne South, which is near this existing highway.

RA1, RA2 and RA9 run parallel to the A428 Black Cat improvement scheme for approximately 12km. Although RA2 would not need to cross the A428 south of St Neots, it would cross the road between Eltisley and Cambourne.
Although the number of road crossings was not specifically assessed in the selection of a preferred option, any complex crossings were considered as part of the safety risk Assessment Factor (AF13) and programme risk supporting consideration (within AF3 - capital costs Assessment Factor), where RA2 was considered to be a minor improvement for both, due to having less earthworks and less structural work than the reference case (RA8). RA1 was judged as being neutral for programme risk and a minor improvement for safety risk (AF13).

We're working closely with National Highways and the A428 Black Cat improvement scheme to manage interfaces and explore opportunities between the projects.

In terms of impact on the A1, all of the route alignments would be required to cross over the A1 on a viaduct, therefore any complexity of construction relating to a particular angle of crossing, or location, will be analysed as the Project progresses to the next stage of design. A direct assessment of traffic and transport impacts of the route alignments was not undertaken prior to the 2021 consultation, due to information related to vehicle movements, non-motorised user movement and movement along waterways and canals not being available at this time. However, we've continued to consider potential traffic and transport impacts and are seeking to maintain existing highway connections wherever practicable. A Transport Assessment will be undertaken and will consider potential impacts on the strategic and local highway networks, road safety, and local sustainable modes of transport, including public transport. Outcomes of this will be reported in the PEIR which will be published at the statutory consultation, and in the ES submitted as part of the DCO application. The PEIR will include information regarding the baseline for transport, access and non-motorised users, together with a preliminary assessment of impacts. During the preparation of this assessment, mitigation requirements may be identified and incorporated into the proposals.

Further information on the impact of the preferred alignment including on the specific locations highlighted by respondents will be detailed at the statutory consultation.

8.2.2.19 Safety

Respondents supported RA2 on the basis that it would reduce safety issues.

Respondents suggested RA2 would cause security, safety and anti-social behaviour concerns.

We acknowledge the importance of customers being and feeling safe while travelling and we'll continue to design an environment where customers can travel confidently and safely. EWR stations and alignments will be designed and operated to industry standards including secure station accreditation.

In developing the design of the permanent railway and temporary construction works, we'll consult with DfT, British Transport Police and other security partners. We'll consider measures to avoid the potential for anti-social behaviour, such as by maintaining clear sight lines around hoardings and fencing with no hidden corners to avoid, where reasonably practicable.

During construction, we'll ensure that health, safety, and wellbeing performance meets or exceeds minimum legal requirements and industry best practice. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document.
Further information will be provided at the statutory consultation.

For safety risk (construction and operation) (Assessment Factor 13), RA2 and RA1 were rated as minor improvements in comparison to the Reference Case (RA8), as they require less

earthworks and structural work and avoid an area of weaker geology, such as the exposed Ampthill clay formation.

8.2.2.20 Visual impact

Respondents commented that RA2 would result in less light pollution for residents.

Respondents supported RA2 as it would follow the A428 and would be less visible and contain its impacts to an area already utilised by transport.

Concerns were raised about the alteration of landscape, specifically between Bourn and Toft. There was also general concern regarding cuttings and the visual impact on the area, as well as concern about the visual impacts of lighting and illumination.

Respondents expressed concern about the visual impact caused by a potential loss of fields and wildlife.

Assessing the impact of the Project on the environment is a fundamental part of the design of the Project, including possible mitigations. This includes consideration of the setting and context of landscapes and historic views, and visual impacts on country parks. We assessed each route against its impact upon landscape character. This assessment took into account the impact of structures including embankments, viaducts and cuttings on receptors including, country parks (e.g. Brickhill Country Park) and 'other park land' (e.g. All Angels Park).

Overall, for landscape and visual impacts Assessment Factor consideration (AF14.11), RA2 was assessed as neutral compared to the Reference Case (RA8). This is due to RA2 having notably less landscape impacts in comparison to the Reference Case (RA8), due to it not impacting on any landscape designations and on only a few woodlands. While RA2 has greater visual impact than the Reference Case (RA8), the overall assessment for landscape and visual was neutral compared to the Reference Case (RA8).
RA2 would have very high visual impacts upon Chawston due to the A1 viaduct. It would also cause moderate visual impacts at Caxton, Caldecote, Great Cambourne, Lower Cambourne and Kingston due to the alignment being south of Cambourne, and would result in additional visual impact upon Eltisley.

Between the Black Cat and Cambourne RA1, RA2 and RA9 would run parallel to the proposed A428 Black Cat improvement scheme for much of the route, which allows the Project to benefit from a 'shared travel corridor', although RA2 deviates from this corridor near Eltisley. Using this corridor could also help to reduce some adverse impacts of the Project. Visual changes to the landscape could be concentrated in the A428 corridor rather than in areas not already subject to development.

The design solution and construction planning will consider potential construction and longer-term environmental impacts of the Project, and we'll seek to include specific measures to reduce the impact of the Project on the surrounding environment during construction and

operation. For example, measures to reduce visual intrusion may include the use of landscaping and screening.
The landscape between Bourn and Toft, and the area of Bourn Valley were not specifically assessed at the non-statutory consultation stage. At the statutory consultation we'll share more information about the preferred RA1 (Tempsford variant) for specific areas, including the landscape between Bourn and Toft, and the potential environmental impact of the proposals. No landscape and visual impact is created by RA2 for Brickhill Country Park or the residents of Renhold, in contrast to the Reference Case (RA8).

For Roxton Park, RA1 and RA2 avoid creating an adverse impact on the park, whereas the Reference Case (RA8) is judged as having a relatively high impact upon the landscape character of the park.

We recognise that light pollution from both the construction and operation of the railway is an important issue for local communities. The potential effects of light pollution from the railway will be considered as we develop the designs for the Project. This will include considering the type, location and layout of lighting in construction compounds and work areas, stations, maintenance compounds and new access routes.

Through the design we'll seek to avoid impacts on "sensitive receptors", such as nearby residential areas or ecological habitats. For example, measures to reduce visual intrusion may include the use of landscaping and screening.
Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document.

8.2.2.21 Wildlife and biodiversity

Respondents voiced support for RA2 due to the reduced impact to ecology and biodiversity; stating that wildlife and wildlife centres will not be affected as much and Jackdaw Lake and Little Early Grove (woodland) will not be destroyed. It was also stated that RA2 provides a safe environment for foxes, badgers and rabbits.

There was support for RA2 due to the reduced impact to priority habitats and avoids impact to the Cambourne Nature reserve. Support was also expressed for RA2 due to the perceived avoidance of destruction of woodlands such Little Early Grove and the protection of Great Early Grove.

Respondents expressed general concern for the impact of RA2, and Cambourne South station options, would have on wildlife generally. There was concern for the impacts RA2 will potentially have on wildlife in the area, specifically habitats at Bourn Brook, Cambourne Reserve and conservation areas along the route.

We recognise the importance of ecological connectivity and reconnecting fragmented areas of habitat to strengthen them and promote movement of wildlife. Through the design we'll seek to avoid impacts on "sensitive receptors", such as ecological habitats and green bridges and other crossing types will be considered to mitigate severance of habitats, maintain historic features, improve connectivity, and positively integrate with landscape character.

We also understand the importance of biodiversity and protecting the habitats of local wildlife including priority habitats such as woodland and ancient woodland as well as parks and green spaces. As part of our commitment to changing the environment for the better, we're thinking carefully about protected species and their habitats when designing the railway.

In relation to priority habitat areas, RA2 has slightly lower impacts on such areas compared to the Reference Case (RA8), whereas by comparison, RA1 had relatively higher impacts, although given impacts within other environmental criteria including air quality, climate, historic environment and water resources and flooding this was not considered to be a differentiating factor affecting the choice of the preferred alignment.

RA2 would result in fewer losses of mapped priority habitat areas than the Reference Case (RA8). This alignment would, however, be likely to result in minor adverse impacts to the boundary of the Cambourne Nature Reserve. In terms of the potential negative impacts on this reserve. The Bourn Brook Valley is an important linear feature and wildlife corridor and the design would include features (e.g. viaducts and lineside planting) to ensure that its wildlife function is retained.

RA2 is further from woodlands at the Little and Great Early Groves than the reference case RA8. We don't anticipate that RA2, RA1 or Preferred RA1 (Tempsford variant) would directly impact Little or Great Early Grove or Jackdaw Lake.

We'll seek to ensure that landscape mitigation measures are closely integrated with the ecological requirements of both the Project and the wider area to make sure that the environmental legacy of the works is positive and to support our commitment to a biodiversity net gain. More information about our environmental approach is included in Chapter 2 of this report, Project-wide matters.
We're also aiming to mitigate direct impacts on the most significant nationally and internationally designated environmental assets including NNRs, SSSIs, Ramsar Sites, Special Areas of Conservation (SACs) and candidate Special Areas of Conservation (cSACs), Special Protection Areas (SPAs) and candidate Special Protection Areas (cSPAs), ancient woodland and Veteran Trees.

We're mapping where the new railway may cross and border habitats used by other important protected species, such as badgers, great crested newts and bird species, so that we can consider how best to avoid impacting them altogether or to mitigate impacts upon them.
A programme of habitat surveys and species-specific surveys is designed to help understand where species and habitats are in the landscape and how they are used, enabling the Project to avoid, reduce, mitigate and if necessary, compensate for identified impacts throughout the design of the railway. For example, we'll consider where to enhance or create wildlife corridors and green infrastructure where appropriate. The outcomes of this work and an assessment of impacts will be presented initially within the PEIR, published during statutory consultation, and then within the ES, submitted alongside the DCO application.

8.2.3 Route Alignment 6 (light blue)

8.2.3.1 Active travel

Respondents suggested building a cycle path to service St Neots South station, as well as bolstering local bus services.

One of our main priorities is to increase connectivity across the Oxford to Cambridge area. We're taking RA1 (Tempsford variant) forward for further design, which serves a station at Tempsford rather than St Neots. As detailed earlier, we'll promote and prioritise both active and sustainable transport modes, and will continue working with other organisations, including bus operators, to provide facilities. Working with local councils and Network Rail, we'll consider how to provide the best method of connecting an EWR station serving the East Coast Main Line with St Neots, its existing station and local communities. The objective will be to reduce impact on St Neots and surrounding villages while facilitating connectivity such as through new and enhanced footpaths, pedestrian routes, cycleways, and public transport options.

We're continuing to look for opportunities to improve active travel infrastructure in and around stations such as safe and signposted cycle paths, new and enhanced footpaths, and public transport options.

8.2.3.2 Alignment and station locations

Respondents voiced support for RA6 due to the stations that would be built to service St Neots South and Cambourne South and said that the more direct "south-to-south route" would be faster, simpler to build, and less disruptive to existing roads, while making use of existing transport corridors. Respondents also thought that this route would generate less traffic on the local road network than other alignment options, and that it would be more cost-effective, as less track would need to be built.

Our preferred alignment is RA1 - Tempsford variant, which is a variant of RA1 to serve a station at Tempsford, where there is understood to be greater potential for development to support economic growth than at St Neots. This localised variant of RA1 better achieves the Project objectives and will therefore be taken forward as our preferred route for further design development and assessment.

As mentioned earlier, we're committed to increasing prosperity and connectivity across the entire EWR route, so options to efficiently connect existing communities, such as St Neots, with the railway remains important. We'll continue to develop proposals to enable easy access for these communities to our proposed network, and we'll work with local stakeholders to enable new stations to be aligned with local transport plans, making it easy to walk, cycle or use public transport to get to and from the station. Our plan is to maximise connectivity to stations which we believe will deliver community-wide benefits. We will prepare a Transport Assessment to consider the impact on the strategic and local highway networks, road safety, and local sustainable modes of transport, including public transport.

As detailed earlier, the evidence suggests that development around the Cambourne North station would require fewer, or less significant, mitigation measures than around Cambourne South. As RA6 serves Cambourne South it was judged as neutral in comparison to the Reference Case (RA8) with regard to the contribution to enabling housing and economic growth Assessment Factor (AF2). RA1 was judged as a minor improvement for this Assessment Factor (AF2).

When considering transport user benefits, Cambourne South station performs slightly better as the Cambourne North Station is separated from Cambourne by the A428 which slightly reduces connectivity for active travel options. Alignments serving Cambourne South also tend to be slightly shorter with quicker journey times, than alignments serving Cambourne North. A station to the South of Cambourne would be more easily connected to the existing settlement of Cambourne, particularly taking account of the A428.

This is mitigated in part through proposals to provide a new foot and cycle bridge over the A428. Cambourne North also positions the station much further from Caxton (which is located to the south west of Cambourne) discouraging this existing community from active travel to the station. However, Cambourne North does have better connectivity to the current A428 (shorter access road) and the proposal to provide foot and cycle bridges could enable connections to communities south of the A428. Alignments such as RA2 serving Cambourne South station were judged as neutral for the Transport user benefits and Contribution to enabling housing and economic growth Assessment Factors (AF1 and AF2). However, alignments serving Cambourne North were judged as minor worsening for transport user benefits (AF1) and minor Improvement for contribution to enabling housing and economic growth (AF2).

Future bus routes, cycling and walking facilities and public transport in respect of our preferred alignment RA1 (Tempsford variant), will be considered at the next stage of development.

For the programme risk consideration (part of the capital costs Assessment Factor (AF3)) supporting consideration RA6 was judged to be a minor improvement compared to the Reference Case (RA8) as it required less import of fill and less structural work although it does require a cut and cover structure under the A428 Black Cat improvement scheme. RA2 was deemed to be cost neutral in comparison to the Reference Case (RA8). RA1 was deemed a minor improvement for the capital costs Assessment Factor (AF3) as the cost is expected to be more than 10% lower than the Reference Case (RA8).

8.2.3.3 Cost

Respondents raised concerns that RA6 is too costly, and that rail demand in the area doesn't justify the expense. They said that the cost will be compounded by complex construction, due to the terrain of RA6. They also expressed concern over the location of Cambourne South station, stating that there is not sufficient need for this station.

In comparing capital costs of RA6 and RA1, both represent a capital cost improvement over the Reference Case (RA8). These cost differences are expected to be more than 10% lower than the cost of the reference alignment even when taking account of the terrain affected.

As highlighted by respondents, RA6 requires more excavation works, which inherently carry more risk. However, the additional excavation material broadly balances the amount of material required for construction.

EWR would be vital in delivering a range of benefits for communities, businesses, academia and the wider economy. It would support economic growth through the provision of greener and faster transport in an area constrained by poor east-west connectivity, and attract both investment and top talent to the UK. Capitalising on the clear strengths in knowledge-based industries across the region is essential for long term sustainable growth, economic resilience, and international competitiveness.

It would also increase connectivity for households and businesses across the route. It would, in effective terms and through faster journey times, help businesses become closer to suppliers, and support a more dynamic and specialised labour market, with more opportunity to share knowledge. Businesses would also be able to attract an increased pool of labour because of the reduced journey time from areas along the EWR route. For households, residents would benefit from decreased journey times to areas along EWR, and workers would be better connected to additional job opportunities along the route.

We consider that there is a need for a Cambourne station, as it would serve the growing population of Cambourne with environmentally sustainable transport and could integrate with proposed improvements to the local transport network in south Cambridgeshire. Locating a station at Cambourne would allow customers to connect between rail services and other transport modes, whether the existing bus network or future transport infrastructure such as the proposed CSC busway to Cambridge, without duplicating such public transport provision.

8.2.3.4 Flooding

Respondents expressed support for RA6 because it would cross less floodplain than other alignment options.

RA6 would cross a shorter length of floodplain than some alignment options, particularly compared with the Reference Case (RA8), which would include a long crossing of the Great River Ouse floodplain. As a result, RA6 does perform well regarding flood risk, but RA1 performs similarly.

8.2.3.5 Footpaths and ProW

Respondents expressed support for RA6 as they think it would have a positive impact on roads and paths in the area.

Others said that RA6 would divide paths used by walkers to access heritage sites.

Our proposals for PRoW will be designed to the latest standards that will maintain or increase safety for pedestrians, cyclists and horse riders. Where it is not feasible to retain existing PRoW in their current location, we'll ensure that a suitable alternative is available which reduces the impact on communities. We'll aim to reduce impacts on PRoW, but where one is affected, we will consider options that include closing the route temporarily, providing a temporary diversion, or opening an alternative permanent route before the existing one is closed. How the impacts are mitigated will depend on factors such as the type of works in the area and the safety implications.

Impacts on PRoW were considered within the community consideration of the environmental impacts and opportunities Assessment Factor (AF14). All alignments cross between 51 and 77 PRoW, all of which would be expected to be maintained or diverted and so based on the level of information available, this was assessed as neutral for severance environmental supporting considerations for all options.

8.2.3.6 Homes and property

Respondents are concerned that RA6 could decrease the desirability of their area for potential future residents. Others are concerned that it could encourage further development in their villages.

Respondents express support for RA6 as they feel it would have a lower impact on homes along the route than other alignment options. They say it would not have a negative impact on the construction of the new housing development at Bourn Airfield; that it would service the growing community of St Neots; it would require demolition of fewer properties along the route; and it would have a lower negative impact on the rural communities in North Bedfordshire, as it would pass further from them.

There were suggestions to move RA6 slightly to reduce impact on Kingston, the Eversdens, Harlton and Haslingfield villages.

The potential impacts of future housing growth on existing settlements will be assessed and consulted upon by local planning authorities in preparing Local Plans and determining applications for planning permission.

One of EWR's core priorities is to increase connectivity across the Oxford to Cambridge area, supporting economic growth, housing and employment. We'll consider, alongside local councils, Network Rail and bus operators, how to provide the best method of connecting our ECML station with St Neots and surrounding communities. The objective will be to reduce impact on St Neots and surrounding villages while facilitating connectivity which could be achieved through new and enhanced footpaths, pedestrian routes, cycleways, and public transport options.

RA6 would not directly impact Bourn Airfield development. RA6 would pass within 500m of 1,224 homes and would require the demolition of nine properties, performing worse than RA1

in both regards. RA6 shares the same route in North Bedfordshire with RA1 and RA2, meaning that it performs similarly in respect of the rural communities in that area. We'll continue to develop the design for the preferred alignment RA1 (Tempsford variant) and including to further mitigate impacts within the area of Eversdens, Harlton and Haslingfield villages. Moving RA6 to reduce impacts on these villages would still not be expected to result in it performing better than RA1 or RA9 against the assessment factor criteria or being selected as the preferred option.

Where land is acquired or proposed to be acquired, the Compensation Code sets out the circumstances in which compensation is payable, EWR Co provided a guide to compulsory purchase compensation Guide to Compulsory Acquisition and Compensation. Compensation is also available for properties in proximity to the new railway which may be affected by various physical factors of the operation of the railway once it is in use, this is referred to as Part 1 compensation for which we included a guide on the website – Guide to Part 1 claims. Also, we've introduced a Proposed Need to Sell Property Scheme to assist people with a compelling need to sell but who are unable to do so other than at a substantially reduced value due to the Project. We consulted on a Proposed Need to Sell Property Scheme at the same time as the main non-statutory consultation and the details for the Guide to the Proposed Need to Sell Property Scheme are available here: The Guide to the Proposed Need to Sell Property Scheme. Further information will be presented at the statutory consultation.

We'll continue to work to mitigate any impacts we cannot avoid and work closely with people who could be affected.

8.2.3.7 Impact on existing infrastructure

Many respondents express concern about the impact of RA6 on the gas pipelines at Chequers Hill, Colesden and Chawston.

All alignment options cross major utility networks, including gas pipelines. These crossings have been identified and allowed for in our capital cost estimates. While any diversion of major utilities is significant and has associated risks, it is usual for projects of this scale to interact with them and mitigate risks.

We'll engage with utility companies to aim to reduce any disruption that may be associated with utility works. Any necessary interruptions to services will involve liaison with relevant parties in advance to discuss appropriate mitigation. Designs for any utility diversions that may be required to deliver the Project will be discussed and agreed with the relevant utility companies and where appropriate will be set out at the next consultation.

8.2.3.8 Community

Respondents expressed concern over potential negative impacts of RA6 on the community, including impacts on the rural nature of local villages; disruption to agriculture in the area; division of communities; and the loss of the playground in Bourn.

As mentioned, all the shortlisted alignment options would affect rural areas to some extent and were they not to do so they would pass through settlements, with a greater impact on residents. Compared to the Reference Alignment, RA6 and RA1 would be closer to fewer residential properties and therefore there would be lower air quality and noise impacts.

In terms of agricultural impact, RA6 is likely to impact approximately 40 farm holdings, of which two would be likely to experience a major adverse impact from the construction of the Project. Based on the length of RA6, it would require a broadly similar amount of agricultural land to the Reference Case (RA8). Nevertheless, RA6 is considered to be a minor improvement overall for agriculture, forestry and soils Assessment Factor consideration (AF14.1) as the Reference Case (RA8) would be expected to impact approximately 50 farm holdings. RA1 was considered to be neutral in terms of agricultural impact, as although it would be likely to impact approximately 35 farm holdings, one of these would be likely to experience a major adverse impact from the construction of the Project and it would impact on more agricultural land compared to the Reference Case (RA8). The PEIR will include information regarding baseline soils environment, including presence of best and most versatile (BMV) land, and existing agricultural and forestry land use and agricultural land holdings. Potential impacts and likely effects on agricultural and forestry land use and agricultural land holdings arising from land-take, demolitions of key agricultural infrastructure, severance and changes in accessibility will be part of the PEIR, presented at the statutory consultation.

In terms of dividing / splitting communities, all route alignments would create some level of severance between communities and services, although measures would be put in place to mitigate such severance at the next design stage. At this stage there is not expected to be any loss of recreational facilities or space (including playground at Bourn) as a result of any of the alignment options.

8.2.3.9 Noise and vibration

Respondents were concerned about noise from RA6, saying that the raised elements of the track and the use of diesel trains would further exacerbate this. Others said noise and vibration from both construction and operation would be more obvious in their quiet, rural area.

We recognise that noise and vibration from both the construction and operation of a railway is an important issue for local communities. At a later stage in the planning and development process, we'll develop a Noise and Vibration policy, which will set out a plan designed to establish and mitigate noise and vibration, to avoid any significant adverse impacts on health and quality of life. We're committed to considering measures that will reduce noise and vibration, such as the choice of trains, track technology and noise barriers.

Without any mitigation, RA6 on its current alignment has the potential to create adverse noise impacts at Clapham East, Clapham Park Wood, Woodlands Park, Graze Hill, Ravensden North-west, Lower Grange/Sunderland Hill, Wilden, Chequers Hill North, Wilden East, Duck's Cross, South Brook, Colesden, Spinney Road, Chawston, Chawston East, Abbotsley, Caxton, Lower Cambourne, Great Cambourne, Crow End, Caldecote, Kingston, and Little Eversden. Both RA6

and RA1 were scored as minor improvements in regards to noise and vibration consideration (AF14.13), in comparison to the Reference Case (RA8).

As stated, viaducts and embankments are needed on all alignment options, and we're reviewing the design to see where we could reduce the height of embankments and viaducts. It is correct that the vertical alignment of the railway, the types of train and the design of the railway and mitigation can affect the environmental consequences for noise.

We recognise concerns about the impact of noise and vibration and is committed to considering measures that will reduce noise and vibration. This includes:

- *Choice of trains.*
- *Track technology.*
- *Noise barriers – which form one of a number of mitigations that may be appropriate where tracks may create noise and vibration.*

Comprehensive assessments will be carried out and will use industry-leading computer modelling, which can incorporate information on local geology to simulate potential noise and vibration impacts along the whole route as part of the assessments on any mitigations required. The PEIR will include information regarding the existing baseline noise and vibration environment, together with construction and operational noise limits having had regard to the appropriate guidance and legislation. Construction and operational noise levels generated from the proposed works will also be presented as part of the PEIR which will form elements to be considered at the next consultation.

8.2.3.10 Roads

There were concerns about RA6 having a negative impact on traffic in the area, particularly where the A1 and the A428 meet at St Neots. Respondents said that local roads are already congested, and that EWR could exacerbate this.

Respondents also expressed support for RA6 as they think it would have a positive impact on roads in the area. They said that improved rail connectivity for St Neots would reduce congestion on roads in the town. There was also support for RA6 because it would not cross the A428.

As we continue to design EWR, we'll also continue to assess potential impacts on existing road networks during construction and operation. As mentioned, the CoCP, or similar document, will include measures aimed at maintaining safety for road users and reducing the impacts of construction traffic.

Regarding the A1, RA6 would cross it at the same point as RA1. Our preferred alignment, Alignment 1 (Tempsford variant), would cross the A1 south of the Black Cat roundabout. We acknowledge that our preferred Alignment 1 (Tempsford variant) would crosse the planned A428 Black Cat improvement scheme and we'll design a solution that can be safely constructed with minimal disruption. We're liaising with National Highways to understand how the design can be developed to mitigate potential impacts on their road network.

We'll consider, alongside local councils and Network Rail, how to provide the best method of connecting the proposed Tempsford station, which would interchange with the ECML with St Neots and local communities. The objective will be to reduce impact on St Neots and surrounding villages while facilitating connectivity which could be achieved through new and enhanced footpaths, pedestrian routes, cycleways, and public transport options.

8.2.3.11 Visual impact

Respondents expressed concern about the potential negative visual impact of RA6 on the surrounding countryside. They thought that the proposed viaducts and cuttings could have a particularly negative visual impact, as well as earthworks during construction. Concerns were also raised about the possible light pollution from floodlights during construction.

Others expressed support for RA6, stating the lower number of viaducts and embankments, when compared to other alignment options, would lessen the visual impacts.

There were suggestions to use tunnels instead of viaducts, to lessen visual impacts.

Overall RA6 and RA1 have less viaducts and earthworks (cuttings and embankments) than the Reference Case (RA8), although they would require the construction of additional complex structure to cross the A1, and for RA6 under the A428 Black Cat improvement scheme. RA6 and RA1 would result in a minor improvement in comparison to the Reference Case (RA8) in relation to landscape and visual Assessment Factor consideration (AF14.11). RA6 and RA1 would be likely to cause visual effects upon Chawston due to the necessary crossing of the A1 by viaduct. This large viaduct would not be required for the preferred Route Alignment 1 (Tempsford variant), as this alignment crosses the A1 south of the Black Cat roundabout, which would require a shorter bridge to cross the road. RA6 would also result in very high visual impact upon Crows End, to the South of Cambourne.

As mentioned, since the consultation, we've been reviewing the design of the Section D route and looking for opportunities to reduce the height of embankments and viaducts. Residents, communities and other stakeholders will be able to provide feedback on the updated route design as part of the statutory consultation.

We'll seek opportunities to avoid and reduce potential light pollution through the design of the preferred Route Alignment 1 (Tempsford variant). The PEIR will identify potentially significant adverse impacts resulting from the proposals – including light pollution – allowing them to be avoided or reduced where possible, as well as identifying any potential beneficial impacts.

We'll continue to explore the use of tunnels for the Project during the design process but only consider them to be a practical option in specific areas where they can provide a solution for addressing particular constraints, due to the complexity of construction and maintenance requirements associated with tunnels. The inclusion of tunnels would not improve the position of RA6 relative to other alignment options.

8.2.3.12 Wildlife and biodiversity

Respondents expressed concern about the potential impacts of RA6 on the local environment, including damage to wildlife and felling of woodland. There were also concerns about the potential negative impact on biodiversity due to loss of habitats, caused by earthworks.

Other respondents supported RA6 as they said it would have less impact on the local environment because of its shorter, more direct route and fewer viaducts and embankments. There were suggestions that brownfield sites could be developed along this alignment.

As stated, we recognise the importance of biodiversity and protecting the habitats of local wildlife including woodland, and as part of our commitment to changing the environment for the better, we're thinking carefully about this when designing the railway. We're committed to finding approaches that avoid, reduce or mitigate negative environmental impacts, and to delivering 10% BNG.

RA6 involves a reduced overlap with the Weaveley and Sand Woods SSSI IRZ, indirect impacts to fewer ancient (or potentially ancient) woodland sites (the route alignment would clash or be within a 50m buffer of two ancient woodlands), and slightly lower impacts to mapped priority habitat areas. Minor impacts are likely to the boundary of the Cambourne Nature Reserve (but these can be mitigated and compensated locally). Overall, RA6 represents a major improvement to the Reference Case (RA8). RA1 involves no overlap with SSSI IRZs and no indirect impact to ancient (or potentially ancient) woodland sites, but would have relatively higher impacts to mapped priority habitat areas, representing an overall minor improvement to the Reference Case (RA8) for the ecology and biodiversity Assessment Factor consideration (AF14.5).

We will avoid direct impacts on the most significant nationally and internationally designated environmental assets including, National Nature Reserves (NNRs), Ramsar Sites, Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and candidate Special Areas of Conservation (cSACs), Special Protection Areas (SPAs) and candidate Special Protection Areas (cSPAs), Ancient Woodland and Veteran Trees.

As mentioned, there is a colony of Barbastelle bats in the Eversden and Wimpole Woods SAC which is located within the route option area and within 3-4km of route alignments (RA1 and RA9) between Bedford and Cambridge. Throughout 2022 we carried out surveys to better understand the Barbastelle population in the area. Further bat surveys will be carried out in 2023. These will be used to ensure that the design doesn't significantly affect the population of Barbastelle bats and we'll develop a PEIR and Environmental Statement to describe the likely environmental effects of the proposals and report the results of survey work.

The presence of embankments and other earthworks has been factored into an ecology and biodiversity Assessment Factor consideration (AF14.5) and, as stated, RA6 represents a major improvement to the Reference Case (RA8).

Regeneration, and the unlocking of brownfield sites, was a consideration under Assessment Factor 2 (contribution to enabling housing and economic development). It is anticipated that a Cambourne North station would be a slightly better performing option for housing and development compared to a Cambourne South station. Therefore, RA1 and RA9 (which serve Cambourne North) perform better than RA6 in this regard. Our preferred alignment is RA1 (Tempsford variant), which would serve a station at Tempsford and at Cambourne North.

8.2.4 Route Alignment 8 (yellow)

8.2.4.1 Air quality and carbon

Respondents expressed concern that RA8 would have a negative impact on air quality along the route caused by diesel emissions from trains and increased emissions from traffic on road diversions or travelling to stations. Others think that the carbon emissions resulting from RA8 would be heavily mitigated by the cuttings, reducing the impact on air quality from this alignment.

We'll seek to reduce the impact the new railway may have on air quality. This will include considering what vehicles and equipment will be used during the construction and operation of the railway, as well as how to manage work sites to avoid and reduce any dust creation. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document, including setting out commitments on air quality and dust.

When considering the air quality Assessment Factor consideration (AF14.2), RA8 has been assessed as having a neutral impact. All but one of the other alignment options are judged to be either a minor or major improvement on this so RA8 is therefore the joint worst performing alignment in terms of air quality. RA1 was assessed as a major improvement for air quality as there will be significantly less properties impacted from this alignment and a lower volume of earthworks required compared to the Reference Case (RA8).

The impact on different types of receptors such as residential properties, schools and other educational facilities, care homes and hospitals has not been specifically assessed at this stage, but this will be considered as part of air quality assessments going forward. This will also include consideration of ecological receptors such as sites containing sensitive vegetation designated at European, national or local level.

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 and we are committed to running a sustainable railway in the long term, with reduced emissions, including for carbon, nitrogen oxides (NOx) and fine particulates (known as PM2.5 and PM10). We're aiming to deliver a net zero carbon railway and we'll be considering conventional and emerging technological solutions for powering trains.

In relation to greenhouse gas emissions, all other route alignment options would perform better than RA8. The impact from an increase in road traffic around stations has not been assessed at this stage of design but is thought to be similar for all options. As mentioned,

when the final route alignment has been chosen, the CoCP or equivalent document will include measures aimed at maintaining safety for road users and reducing the impacts of construction traffic.

The PEIR will include information regarding the baseline air quality environment and identification of the relevant air quality standards and targets. The ES will assess changes in NOx, PM2.5 and PM10, and dust. This assessment will follow best practice and guidance such as the guidance set by the Institute of Air Quality Management and other recognised bodies.

In terms of climate impact, which includes consideration embodied carbon, RA8 is judged to be the worst performing alignment due to the increase in viaducts and bridges required in comparison to the other route alignments. In relation to potential carbon reductions through the use of cuttings, whilst cuttings generally have lower embodied carbon than concrete and steel structures, depending on the size of such cuttings they may also result in significant embodied carbon emissions.

We'll continue to consider how best to reduce the carbon emissions associated with the project and the ES will include a full whole-life assessment of carbon emissions for the preferred alignment, including the embodied carbon of the materials used to construct the project – which will make up a significant proportion of the total emissions – as well as emissions during operation which will consider any energy use, including where additional energy may be required for gradients / hills. We'll continue to develop our approach to delivering a net zero carbon railway, and we will share we'll information on this at the next consultation.

8.2.4.2 Alignment route and station locations

Concerns were expressed that a Cambourne South station would be disruptive to local roads, that Tempsford is too small to have a station, and that RA8 could have a negative impact on the existing Sandy station.

There were suggestions to prevent people travelling to the station through Cambourne by using signposts at the entrances to the village as well as automatic number plate recognition. Other suggestions included constructing cycle and walking routes to Tempsford station and arranging for bus connections to serve surrounding villages.

Support was also voiced for the RA8 station locations and southern approach into Cambridge, stating the direct "south-to-south" approach would therefore mitigate some of the impacts of the line; and that because it follows existing transport corridors, in particular the A421, it would be cheaper and quicker to build and would provide faster journey times than other alignment options.

Others supported the route of RA8 because it would be possible to access the Cambourne South station without having to cross a major road; because it doesn't require deep cuttings near critical gas pipelines at Chequers Hill and Colesden; and because it would enable active travel to stations.

We've considered the accessibility of all potential station locations. Both proposed station options in Cambourne would be located close to existing communities. Cambourne North station is separated from Cambourne by the A428 which may reduce connectivity to the existing settlement, compared to Cambourne South. However, as previously mentioned, it is expected that this reduced connectivity could be partially mitigated by a foot and cycle bridge over the A428.

However, we have taken into consideration a number of factors when assessing the different station location options, including potential housing delivery opportunities and challenges. The evidence reviewed so far suggests that, on balance, development around the Cambourne North station would require fewer, or less significant, mitigation measures than around Cambourne South. There is more available land capable of development to the north of the A428 with fewer constraints such as heritage assets and areas of woodland. Housing development at Cambourne North is expected to be able to retain separation from and between existing settlements such as Papworth Everard, Knapwell and Elsworth, and a site in this area is already identified in the emerging Greater Cambridge Local Plan.

RA8 and our preferred alignment, RA1 (Tempsford variant), would both serve a station at Tempsford where there is expected to be greater potential for development to support economic growth than at St Neots. RA8 would have also served a station at Tempsford. EWR's ECML station is not designed to be a replacement for Sandy station or to have a negative impact on Sandy station.

There will be significant planning work for each of the stations/local areas in the subsequent design stages in collaboration with local planning authorities, which will include consideration of how passengers and vehicles can access the station. When designs for the proposed stations have been completed, these will be assessed against various factors. Further information on developing designs will be provided at the statutory consultation.

We'll consider traffic impacts and mitigations associated with new stations as part of a Transport Assessment, which will consider potential impacts on the strategic and local highway networks, road safety, and local sustainable modes of transport, including public transport. Outcomes of this will be reported in the PEIR which will be published at the next consultation, and in the ES submitted as part of the DCO application.

The development of door-to-door connectivity strategies (i.e. how people make their way to and from the station) will also be considered for any preferred option to mitigate such matters. Station designs for Cambourne will include provision for public transport interchange and active travel facilities and routes to maintain connectivity with neighbouring villages and communities. We'll work with local authorities and transport bodies to ensure public transport connectivity and the ability to use new and improved active travel modes are appropriately considered. It is important for the new railway to complement other local transport initiatives and infrastructure without duplicating them. Also, door-to-door connectivity strategies will be considered for RA1 (Tempsford variant) to mitigate any potential station connectivity issues.

Alignment options which serve a Cambourne South station would be more direct and provide shorter journey times than those which serve a Cambourne North station. It is acknowledged that there are potential benefits from building a new railway close to other transport infrastructure, however, RA8 only follows the A421 for a short distance. However, RA8 only follows the A421 for a short distance.

Whilst RA8 is the shortest alignmentand would have reduced journey times when compared to RA1 and RA9, it is not correct that RA8 would be cheaper. RA8 is estimated to be £310m to £340m more expensive than RA1, and £120m to £130m more expensive than RA9.

We recognise that RA1, RA2 and RA6 would need a cutting in the vicinity of gas utilities near Chequers Hill. Gas utilities nearer Colesden are crossed by the railway at grade or on embankment / in cuttings. However, all alignment options would have the potential to impact pipelines and other infrastructure, and this was not considered to be a differentiating factor.

8.2.4.3 Construction

Respondents expressed concern over the complexity of constructing RA8, saying that viaducts into Tempsford would add time to the build period, and increase carbon emissions from construction; and that the undulating terrain of the area, and the presence of bedrock, would make construction difficult.

We've considered the cost of construction and programme risk for each route alignment option. Complexity of construction is a factor in both cases and this includes the consideration of geology and construction durations. RA6 and RA1 represent the best options with regard to capital cost, with the differences expected to be more than 10% lower than the cost of the RA8. Programme risk was considered to be neutral for RA1 compared to the reference case (RA8) based on the engineering design presented at the 2021 consultation.

All the alignment options would require structural work, and the design for such works has been based on proven construction practices that have been carried out successfully on other projects. The designs have also been developed with consideration of the local context including topography, geology and environment factors, and consider requirements for inclines and bends.

At this stage, assessment of Green House Gas (GHG) emissions considered emissions related to the design of the Project such as track length, area of bridge and viaduct structures, earthworks required, and the embodied carbon in materials used to build the Project. In this regard, RA8 would have the highest embodied material GHG emissions and highest GHG emissions, associated with bridges and viaducts. GHG emissions related to construction (e.g. transport and logistics) and operation (including maintenance) will be assessed at a later stage of design development.

8.2.4.4 Cost

Respondents expressed concern about the value for money of RA8, stating that it is too expensive and/or unnecessary, and that the technical challenges of the alignment – including viaducts, cuttings and the terrain – exacerbate this.

Respondents also said that Tempsford is too small to warrant the cost of a station.

Others supported RA8 because they stated that it will cost less to build than other alignment options.

As outlined above, we've assessed the costs of all alignment options. Estimated costs of alignment options were published within the 2021 consultation documents. RA8 was estimated to be £310m to £340m more expensive than RA1. RA8 would likely have the longest length of structures such as bridges and viaducts. This, among other reasons, means it has not been chosen as one of our emerging preferred route alignments. As route development work progresses cost estimates will continue to be refined and further detail will be published at the statutory consultation for the preferred alignment, which includes stations at Cambourne North and Tempsford.

As a key part of the governance process in order to gain funding and approval to proceed with the Project, we're required to demonstrate a viable business case that includes a value-for-money metric. The Project will go through the full - business case rigour of the HM Treasury's Green Book. This is used to appraise projects and programmes in a consistent, but holistic manner. This includes scope, cost, social and environmental impact, as well as value for money for the taxpayer.

As mentioned before, the proposed EWR station locations have been selected to unlock the delivery of new housing and help create new jobs along the corridor. The majority of land within St Neots already contains housing and businesses and much of the land neighbouring the eastern side of the town is either already committed or allocated for future development. Therefore, our ability to support housing growth would be more effectively realised by constructing a new station at Tempsford (between St Neots and Sandy) rather than using the current station. A new station at Tempsford would also provide a connection with the ECML.

8.2.4.5 Environmental – general

Respondents expressed general concern about the potential negative impacts of RA8 on the local environment. Others felt its more direct route would affect a smaller area than other alignment options and would therefore have a lower negative impact on the environment.

We've considered the potential impact that each route alignment would have on surrounding environments and found that all would represent minor improvements compared to Reference Case (RA8) in terms of overall score for the environmental impacts and opportunities Assessment Factor (AF14). Although RA8 is a shorter route, RA1 represents a major improvement for reasons including that RA8 has a relatively long crossing of the River Great Ouse flood plain, crosses an area of flood risk at Tempsford and a groundwater SPZ south of Cambourne, is in close proximity to a larger number of properties, designated

heritage assets and Scheduled Monuments, and is expected to result in a higher carbon footprint due to having a greater area of bridge and viaducts and earthworks.

8.2.4.6 Farmland

Respondents raised concerns about the potential loss of farmland because of RA8. Others say they prefer RA8 over the other alignment options as less farmland would be lost.

We understand the importance of agriculture to the communities the railway will serve and we're focused on exploring ways to reduce the impact of the railway on agricultural practices, land holdings and soil resources. We'll continue to work with landowners, occupiers and managers to gather information that will help inform the design process. We'll share further information on the development of design at the statutory consultation.

We've considered the impact on farmland when assessing the performance of the route alignments – RA8 would likely impact approximately 50 farm holdings (based on available information), which is the highest for any of the alignments considered, and two of which would likely experience major adverse impact from the construction of the Project. Based on the length of RA1, it would be expected to require more agricultural land compared to the Reference Case (RA8) but fewer holdings, and is therefore considered neutral.

8.2.4.7 Flooding

Respondents think that RA8 would cause flooding in the area, as it travels over the River Great Ouse floodplain. Others support RA8 as they say it would avoid the floodplain.

All route alignment options include a crossing of the River Great Ouse floodplain. Our assessments identified that RA8 would have a relatively long crossing of this floodplain, while also crossing an area of flood risk at Tempsford and a groundwater SPZ south of Cambourne. RA1 would have a shorter crossing of the River Great Ouse flood plain and avoid the groundwater SPZ. RA1 was assessed to represent a major improvement compared to the Reference Case (RA8) for the water resources and flooding Assessment Factor consideration (AF14.18). RA8 would have the largest plan area of viaducts and bridges of all the route alignment options, so would have an increased amount of surface water run-off from these structures, compared to other alignments.

We take climate change and the future risk of flooding seriously and we'll continue to develop our approach to understanding and mitigating any project-related risks linked to climate change. This includes considering changes to climatic conditions and extreme events within the design of the Project.

We'll develop flood risk assessments, which will include planning for the future requirements of a changing climate. Further information will be provided at the statutory consultation. We've ongoing and regular engagement with the Environment Agency, to share information, data and modelling to support this work. We're also looking at ways to reduce flood risk by considering appropriate flood protection measures and flood compensation.

8.2.4.8 Homes and property

Respondents voiced concern over the impact RA8 would have on properties in the area, including the demolition of homes; structural damage to historic buildings caused by vibration; and negative impacts on house prices. It is suggested that RA8's close proximity to new housing developments could make the area less attractive to new residents.

Others said they support RA8 because they thought it would require the demolition of fewer homes than other alignment options.

RA8 would impact settlements including Renhold and Abbotsley and would require the demolition of eight residential properties, the majority which are located around Broadway, Bourn, and an isolated property near Sandy. It is not correct that RA8 would require the least demolition of homes – RA1 and RA9 would be expected to require the demolition of four properties and three properties respectively.

We've considered the impact on the historic environment, including potential impacts to listed buildings, Scheduled Monuments, and Conservation Areas. The assessments completed at this stage found that RA8 performs worse than RA1. As mentioned above, RA8 would have an adverse impact on the complex heritage resource area of the Bourn Valley and the route would be within 1km of approximately 232 listed buildings. This is the most of all route alignment options.

As detailed under 'Noise and vibration' below, we'll look for ways to construct EWR that reduce vibration but inevitably some activities, such as piling, will be necessary. In such instances, we'll ensure that working hours are limited and that surveys will be carried out to assess and manage the risk to homeowners where properties are likely to be affected.

Where land is acquired or proposed to be acquired, the Compensation Code sets out the circumstances in which compensation is payable, we have provided a guide to compulsory purchase compensation: Guide to Compulsory Acquisition and Compensation. Compensation is also available for properties in proximity to the new railway which may be affected by various physical factors of the operation of the railway once it is in use, this is referred to as Part 1 compensation for which we included a guide on the website – Guide to Part 1 claims. We consulted on a Proposed Need to Sell (NTS) Property scheme at the same time as the 2021 consultation and introduced the Proposed Need to Sell Property Scheme, which aims to assist eligible property owners who have a compelling need to sell, but who have been unable to do so other than at a substantially reduced value because of the EWR Project. The details for the Guide to the NTS scheme are available in the Guide to the Proposed Need to Sell Property Scheme on our website.

In selecting the preferred route option following the 2019 consultation, we took account of the ability for the new railway to serve developments in the Bedford and St Neots areas. The potential impact of EWR on existing housing – including housing that has planning permission or is under construction – was also taken into account when considering detailed potential

route alignments. RA8 is not expected to impact any committed developments, and all alignments options were considered neutral in this regard.

In addition, we've considered not only how the railway might interact with existing housing and current projects, but how it might best support future housing development by providing cost-effective, sustainable and accessible public transport options for new residents and settlements.

8.2.4.9 Community

Respondents are concerned about the potential impacts RA8 could have on their local communities, particularly those from the villages of Renhold, Abbotsley and Ravensden who feel RA8 could add to growing urbanisation in the area. Concerns about RA8 include barriers being created between interconnected villages, with a negative impact on community cohesion; potential negative impacts on the quality of life for local residents due the proximity of the new railway; and impacts on access to and enjoyment of amenities in the area. There were suggestions to take the entire alignment further away from local villages.

Support was expressed for RA8 due to its perceived lower impact on existing and future homes and communities along the route, compared to other alignment options. Respondents support a new station at Tempsford and say that a station at St Neots South is not needed and would add to existing congestion in St Neots. Respondents also think RA8 would have less of an impact on the rural nature of this area, including the villages of Wyboston, Chawston, Colesdon and Wilden, compared to other alignment options.

Others said that historic PRoW, particularly recreational footpaths, could be severed by the line.

Due to the scale and nature of EWR, some impacts on communities are inevitable and all route alignment options would have some impact on local villages. We've taken this into account in the assessment of route alignment options. RA8 would impact settlements, including Renhold and Abbotsley, and would pass close to Ravensden, however, RA1 and our preferred alignment RA1 (Tempsford variant) are further from these villages.

We anticipate that impacts on communities could be reduced by routing EWR close to the existing travel corridor of the A428 (as is the case for RA1, RA2 and RA9 and our preferred alignment RA1 (Tempsford variant)), as this would allow some adverse impacts to be concentrated in this corridor rather than in undeveloped areas.

In parallel with the ES and PEIR, we'll undertake an Equality Impact Assessment (EIA) to capture potential impacts, both positive and negative, on protected characteristic groups (PCGs) as a result of the Project, and how these have been taken into account.

With reference to concerns about the potential for increased urbanisation along the RA8, the allocation of land for development is a matter for local planning authorities. It is important to note that EWR is intended to provide new connections for existing settlements, residents and

businesses – not just future development. We've considered the potential for coalescence within the existing St Neots area. This is also considered to be a risk at Tempsford (i.e. with Tempsford, Everton, Little Barford and Sandy), but is not considered as large as the risk at St Neots as the Tempsford location is further away from the existing settlements. Likewise a station at Tempsford would also be anticipated to have less impact on existing traffic within St Neots than a station at the St Neots locations.

It is not expected that RA8 would have a different (if any) effect upon physical or mental human health to any other route alignment option. In developing our proposals, we've aimed to reduce the negative impact the Project may have on communities and in particular people's homes, but inevitably with an infrastructure project of this size there will be some people who could be directly affected. We'll continue to work to mitigate any impacts we cannot avoid and work closely with people who could be affected.

As we continue to develop the proposals for EWR, we'll consider a range of matters including noise and vibration, air quality, visual impact and light pollution, potential impacts on PRoWs and land and property requirements with the aim of avoiding and then reducing impacts. Through this process we'd also aim to reduce and mitigate impacts which could potentially affect residents' health, wellbeing and mental health.

We've 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. RA8 would cross 57 PRoW, and cross or impact three nationally or regionally designated PRoW. RA1 would cross 69 PRoW, and cross or impact three nationally or regionally designated PRoW. However, we're seeking to maintain existing highway connections wherever reasonably practicable and where this isn't feasible, we'll ensure that a suitable alternative is available. Where it is not feasible to retain existing highways, PRoW and private access roads in their current location, we'll ensurethat a suitable alternative is available which minimises the impact on communities. We'll share more detail on proposals for individual highways, PRoW and private access roads at the statutory consultation.

RA8 is expected to require the demolition of 8 residential properties, whilst RA1 would require the demolition of 4.

As stated above, following feedback received from the 2021 consultation, we've developed proposals for Alignment 1 (Tempsford variant). This variant alignment would significantly reduce and/or mitigate the potential impacts at Ravensden, Renhold and Roxton associated with RA8 (and RA9).

8.2.4.10 Noise and vibration

Respondents think that the rural nature of the local area would be negatively impacted by noise from RA8, both during the construction and operation of the railway, and during the day and at night. They feel there is a lack of information on the potential noise and vibration impact of the route, especially in places where the railway is elevated. They also feel that diesel and freight trains would be particularly noisy.

However, others think this RA8 will create less noise than other alignment options.

We've considered the potential noise and vibration impacts of each route alignment option, including potential impacts to listed buildings, Scheduled Monuments, and conservation areas. Our assessments found that RA8 performs worse than emerging preference RA1, as it would have an adverse impact on the complex heritage resource area of the Bourn Valley, and would be within 1km of approximately 232 listed buildings (the highest number of all the route alignment options). RA8 would also result in adverse impacts to several communities, though with appropriate mitigation, this potential impact could be reduced to a smaller number of communities at Ravensden Church End, Woodend Lane, Bedford Road and Crow End.

We'll seek to develop ways to build EWR that minimise vibration, but inevitably some activities, such as piling (the construction of deep foundations for structures), will be necessary. In such instances, we'll ensure that working hours are limited and that surveys are carried out to assess and manage the risk to homeowners where properties could be affected.

In relation to concerns about increased noise from elevated parts of the railway, we've been reviewing the design of the Section D route since the consultation and we're looking for opportunities to reduce the height of embankments and viaducts within the design. The updated design will be presented at the statutory consultation.

Comprehensive assessments and computer modelling will be carried out to simulate potential noise and vibration impacts along the route. We're also continuing to explore ways to reduce noise and vibration impacts when EWR services are operational, such as considering the types of trains used and track technologies.

The PEIR will include information regarding the existing baseline noise environment and construction and operational noise limits; as well as assessments of disturbance to ecological receptors, and to local amenity and tranquillity from construction and operational lighting. Ahead of the DCO submission, we'll develop a noise policy, which will set out a plan to mitigate noise and vibration to avoid any significant adverse impacts on health and quality of life. Further information will be provided at the statutory consultation, including our approach to avoiding or reducing potential noise and vibration impacts.

Construction working hours will depend on the activities being undertaken, with works taking place over extended periods of time and with variations in working hours between sites for practical and safety reasons. This will be developed further following the consultation process and agreed with the relevant local authorities and approval bodies. We're committed to ensuring that construction works are timed to be sensitive to potentially affected stakeholders and we'll be working closely with stakeholders to understand any concerns and to develop proposals for reasonable mitigation. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document, including setting out commitments on noise and vibration.

We proposed operational hours for passenger services in Appendices A and B of the 2021 Consultation Technical report, which referred to a potential pubic facing timetable (planned trains in passenger service), to provide some initial guidance. There will also be less intensive train movements as required outside these hours for infrastructure maintenance, inspection, freight, and other activities as part of the national rail network. We will continue to work on the concept of operation to inform the operational timetable.

8.2.4.11 Roads

Respondents voiced concern that RA8 would disrupt roads, making access to places used for amenity and recreation more difficult, and causing congestion during construction that would add to existing bottlenecks from St Neots and Cambourne. They also thought that roads around Renhold are unsuitable for larger vehicles.

As mentioned above, the Transport Assessment will include measures aimed at maintaining safety for road users and reducing the impacts of construction traffic. The Transport Assessment will consider the impact on the strategic and local highway networks, road safety, and local sustainable modes of transport, including public transport. It will also set out the impact of construction on the road network, including changes to existing traffic patterns because of predicted construction traffic.

We'll develop a comprehensive logistics strategy to be adopted by our contractors and suppliers. This will enable us 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 our 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. As a result, the potential impacts from construction traffic are not a consideration that differentiates between route alignments. A direct assessment of traffic and transport impacts of the route alignments was not undertaken prior to the 2021 consultation, due to information related to vehicle movements, non-motorised user movement and movement along waterways and canals not being available at this time. However, we've continued to consider potential traffic and transport impacts and are seeking to maintain existing highway connections wherever practicable.

8.2.4.12 Visual impact

Concerns were expressed about the potential for RA8 to obstruct views across the countryside, and respondents felt that measures such as cuttings would not be enough to mitigate this. The visual impact of viaducts and embankments was also raised as a concern, along with the impacts of lighting during construction and operation.

Other respondents said RA8 would have a lesser visual impact on the surrounding landscape than other alignment options, due to the shorter length and shallower depth of the cuttings proposed, and also the need for fewer raised elements such as viaducts and embankments. Respondents noted that RA8 avoids village centres in Renhold, Wilden, Clapham and Brickhill, therefore avoiding visual impacts on these communities.

In developing our proposals, we've aimed to reduce any potential negative impacts the Project could have on communities and people's homes, but inevitably with an infrastructure project of this size there will be some people who could be directly affected. We'll continue to develop proposals to mitigate any impacts that cannot be avoided, and work closely with those affected.

RA8 would have relatively high visual impacts upon landscape character because of the direct impact upon woodland and overall character and Brickhill Country Park and the River Great Ouse valley, and indirect impacts upon the character of Roxton Park. It would also result in some significant visual impacts to residents in Renhold, Roxton and Crow End; and moderate visual impacts to residents in some settlements including those to the south of Cambourne, Caxton, Caldecote, Great Cambourne, Lower Cambourne and Kingston. Overall, for landscape and visual Assessment Factor consideration (AF14.11) RA1 was judged as a minor improvement in comparison to the Reference Case (RA8). For landscape it has notably fewer landscape impacts due to avoiding impacts upon landscape designations at Brickhill Country Park, the River Great Ouse valley and indirect impacts upon the character of Roxton Park. However, North of Cambourne, RA1 does result in some areas of woodland loss in addition to the reference case. RA1 has a similar level of visual impact as the reference case. It does form very high visual effects upon Chawston due to the A1 viaduct, which is not required for our preferred alignment Route Alignment 1 (Tempsford variant).

RA8 would have the largest plan area of viaducts and bridges. Whilst the use of viaducts would create adverse visual impacts on some local communities, they would be required in order to reduce the impact on flood plains in the area.

We'll develop an understanding of the character of the existing landscape and how it is valued by communities, which will be used to inform our design of the railway where practicable. We're carefully considering how it can be designed to blend in with the local environment, looking at where to create embankments; where viaducts may be required; how landscape earthworks can be used to soften the appearance of embankments and integrate them into the wider landscape context; and where we can use appropriate planting to either screen views from sensitive receptors or soften the appearance of the railway. More information about this type of mitigation will be shared at the statutory consultation.

We'll also be considering the potential effects of light pollution from the railway as we continue to develop designs for EWR. We'll look at the location and layout of lighting in stations, maintenance compounds and new access routes. Through the design we'll seek to avoid impacts on sensitive receptors, such as nearby residential areas or ecological habitats. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document, including setting out commitments on lighting.

8.2.4.13 Wildlife and biodiversity

Concerns were raised about the potential negative impacts of RA8 on conservation areas, nature reserves and areas of ancient woodland and associated wildlife habitats. Respondents say that RA8 could lead to fragmentation of hunting grounds and travel corridors for wildlife.

Others think that this option would have the least negative impact on wildlife and biodiversity of the alignment options, as it travels through fewer priority habitats.

As stated, above we recognise the importance of biodiversity and protecting the habitats of local wildlife including woodland, and as part of our commitment to changing the environment for the better, we're thinking carefully about this when designing the railway. We're committed to finding approaches that avoid, reduce or mitigate negative environmental impacts, and to delivering 10% BNG.

We've considered any potential impacts on SSSIs and identified which route alignment options would cross the IRZs of these protected areas. RA8 would overlap with the IRZ of the Weaveley Woods and Sand Woods SSSI, risking an indirect impact to the interests of the site. However, RA8 would have a relatively low impact on priority habitats compared to most of the other route alignment options, both in terms of the extent of the impact and the number of sites (nine). RA1 involves no overlap with SSSI IRZs and no indirect impact to ancient (or potentially ancient) woodland sites, but would have relatively higher impacts to mapped priority habitat areas (clashing with 17 sites), representing an overall minor improvement to the Reference Case (RA8) for the ecology and biodiversity Assessment Factor consideration (AF14.5).

RA8 would potentially require the loss of two trees under TPO and would come within 50m of eight different ancient woodlands which is the highest number of ancient woodland sites out of the shortlisted route alignments. RA8 would result in direct impacts to woodland at Brickhill Country Park and the River Great Ouse valley, which would affect the overall character of these places. We're following the environmental mitigation hierarchy by seeking to avoid significant adverse effects on woodland and ancient woodland and where this isn't possible, seeking to reduce and mitigate impacts and if necessary, looking at compensation.

We'll also avoid direct impacts on the most significant nationally and internationally designated environmental assets. To the south of Cambourne, RA8 would cross land on the edge of Cambourne nature reserve, which is in the vicinity of the proposed Cambourne south station location. While we'd seek to minimise the amount of land we'd take in this area, mitigation would be required.

As part of the environmental appraisal, we've taken account of the impact on the Historic Environment, including impact to listed buildings, Scheduled Monuments and conservation areas. This found that RA8 would have an adverse impact on the complex heritage resource area of the Bourn Valley and would come within 500 metres of ten conservation areas, impacting the setting of listed buildings and Scheduled Monuments and the conservation areas of Bourn, Caldecote and Kingston. It would run just south of Great Barford Hill conservation area and north east of Great Barford Green End conservation area. Tetworth Hall is over 2km south of RA8, so it is not expected to be directly impacted by the Project. Tempsford Church End Conservation Area is one of the environmental and local heritage areas

that has been identified in the vicinity of the proposed Tempsford station location site, which would require appropriate mitigations to protect.

8.2.5 Route Alignment 9 (purple)

8.2.5.1 Active travel

There were suggestions regarding active travel (walking, wheeling and cycling), including building cycle parking at Tempsford station; building bike and footbridges over A428; providing additional bus services between the Cambourne North station and Cambridge, to connect with the proposed GCP Busway scheme; and providing cycle lanes and pedestrian crossings between Cambourne and Cambourne North station.

As mentioned, one of the core priorities for EWR is to increase connectivity across the Oxford to Cambridge area. That's why the consideration of local connectivity, bus services and customer experience while travelling to EWR stations is key in our station design work. We'll consider options for connecting the stations to existing settlements, transport networks and sustainable transport modes including the provision of active travel links to Tempsford and Cambourne stations as part of our preparation for the next consultation. As detailed, we'll continue working with other organisations to improve facilities, including interchanges with bus services and providing onward travel information. At Cambourne North, station designs will include provision for public transport interchange and active travel facilities including consideration of cycle parking and parking for adapted cycles, in addition to routes to maintain connectivity with neighbouring villages and communities. This includes a potential cycle and footbridge over the A428. It is also expected that any interfaces with a guided busway scheme serving Cambourne could be appropriately managed.

8.2.5.2 Air quality and carbon

Respondents raised concerns about the potential negative impacts of RA9 on air quality because of the use of diesel and freight trains producing particulates which they claim would be particularly harmful for children and people with asthma. They said that the raised elements of track could compound the negative effect on air quality; as could dust from construction.

RA9 would have a neutral impact in terms of air quality in comparison to the Reference Case (RA8). Overall, there would be slightly more properties impacted by RA9, but a slightly lower volume of earthworks required compared to the Reference Case (RA8). No AQMAs are likely to be impacted by this option. RA1 brings the alignment closer to residential properties both in Highfields and Chawston, but overall there will be significantly less properties impacted from this alignment and a lower volume of earthworks required compared to the Reference Case (RA8). No AQMAs are likely to be impacted by this option. Overall, RA1 is considered to be a major improvement for air quality Assessment Factor consideration (AF14.2) compared to the Reference Case (RA8).

As detailed, we're developing EWR in line with the policy and law of the Government, including the Clean Air Strategy, and we'll work with local authorities to consider relevant AQMAs. We're considering potential impacts on the community and how to avoid significant adverse impacts on health and quality of life, which involves assessment of air quality impacts. The PEIR will include information regarding the baseline air quality environment and identification of the relevant air quality standards and targets. The ES will assess changes in NOx, PM2.5 and PM10, and dust; will follow best practice and guidance; and will take account of the project design and the local environment.

Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document, including setting out commitments on dust. We'll encourage our 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, we'll consider the noise, vibration, and other impacts that these activities might have and plan the work to avoid or minimise the impacts where possible.

We're aiming to deliver a net zero carbon railway and will be considering conventional and emerging technological solutions for powering trains.

8.2.5.3 Alignment and station locations

Respondents voice opposition to Route Alignment (RA9), for reasons including its proximity to the village of Renhold, the plans for a Cambourne North station and a Tempsford station. Respondents also say that Tempsford is too small to warrant the cost of a station.
Others expressed support for RA9 because of its proposed station locations. They say a Cambourne North station would make better use of the flatter, less developed land in the area than a Cambourne South station. They stated that they would use a station at Tempsford more so than one at St Neots, and that a Tempsford station would be easier to access, considering existing congestion at St Neots.

Respondents also supported RA9 as it uses existing transport corridors, such as the A428 and A421, which they say would reduce the impacts of the line, containing air pollution and noise to a smaller area.

There were various suggestions about the alignment of RA9 including running the line through a tunnel at Clapham; utilising old rail beds and existing travel corridors to keep environmental impact to a minimum; moving the station further from Tempsford; moving the alignment away from homes and villages in the area; realigning the route to approach Cambridge from the north in order to improve access to Cambridge from villages to the north; and running the route from north stations to north stations or south stations to south stations, for example Bedford – St Neots – North Cambourne – North Cambridge.

The newly developed Route Alignment 1 (Tempsford variant) would significantly reduce and/or mitigate the potential impacts at Ravensden, Renhold and Roxton associated with RA9.

The decision to select a route option serving Cambourne was taken in 2020 following the 2019 consultation. Route options serving Cambourne were considered to perform better in assessments, were ranked more highly by the public than those not serving Cambourne and were supported by local authorities. This was because of the benefits not only of facilitating future housing growth, but also the ability to serve the existing settlement at Cambourne and to link with existing public transport options.

Like RA9, the new, preferred alignment RA1 (Tempsford variant) would serve a station at Cambourne North. We've taken into consideration a number of factors when assessing the different station location options, including potential housing delivery opportunities and challenges. The evidence reviewed so far suggests that, on balance, development around the Cambourne North station would require fewer, or less significant, mitigation measures than around Cambourne South. There is more available land capable of development to the north of the A428 with fewer constraints such as heritage assets and areas of woodland. Housing development at Cambourne North is expected to be able to retain separation from and between existing settlements such as Papworth Everard, Knapwell and Elsworth, and a site in this area is already identified in the emerging Greater Cambridge Local Plan. Cambourne North would have better connectivity to the current A428 (shorter access road) and the proposal to provide foot and cycle bridges could enable connections to communities south of the A428.

Running EWR along an existing transport corridor (alongside the A428), means that RA9 could cover a route used regularly to connect people to places. This could help to reduce some adverse impacts of the Project including visual changes to the landscape, which could be concentrated in the A428 corridor.

With regard to the respondents' suggestion of running the line through a tunnel at Clapham, we'll continue to explore the use of tunnels during the design process where they are a practical option for addressing a particular constraint. However, tunnels are more complex and expensive to build, operate and maintain than an above ground structure.

In terms of RA9 using existing rail infrastructure, as part of the Affordable Connections Project (ACP), a review of the strategic need for the Project and to investigate solutions which could deliver the majority of the original benefits and outcomes at a lower cost, we reviewed the potential for alignments approaching Bedford from the south and east, and following the route of the decommissioned Varsity Line. It was concluded that the preferred route remained a route approaching Bedford from the north via Bedford station. The ACP also reviewed the potential to follow the Varsity Line through Bedford and Cambridgeshire directly to Cambridge. Although a shorter route by not connecting to Cambourne or following the A428 road corridor, this route was considered to deliver significantly fewer benefits than the emerging preferred routes. Further information can be found within the Economic and Technical Report, which accompanies this Consultation Feedback Report.

Each alignment option was designed to maintain a reasonable distance from existing communities where reasonably practicable. RA9 would route approximately 3km north of

Renhold, approximately 5km north of Great Barford, and approximately 3km south of Knapwell. The new Route Alignment 1 (Tempsford variant) would significantly reduce and/or mitigate the potential impacts at Ravensden, Renhold, Great Barford and Roxton associated with RA9, by moving the route further from these communities.

Alternative station locations were also presented during consultation, as detailed earlier in this chapter. Our preferred alignment is Route Alignment 1 (Tempsford variant), which would serve a station at Tempsford where there is greater potential for development to support economic growth than at St Neots.

The proposed station location for RA9, and our preferred alignment is Route Alignment 1 (Tempsford variant), is further from the village of Tempsford than the alternative Tempsford location considered within the 2021 consultation. If the station was moved further away from Tempsford Village, as suggested, a future development at the station would be likely to be constrained by the A428 Black Cat improvement scheme. In addition, a station at Tempsford is expected to have greater potential for development to support significant economic growth than a station at St Neots, which is further from Tempsford.

Regarding the suggestion of moving the alignment in order to approach Cambridge from the north, full assessments of the five Route Options were completed in 2019 using the feedback from the consultation held earlier that year. These assessments were carried out using the Assessment Factors that had been previously agreed with DfT, and found that overall, Route Option E was the best performing and a southern approach to Cambridge was to be preferred.

In the 2021 consultation, the question of approaching Cambridge from the north or south was the subject of a specific question.

You can read our responses to matters raised relating to a northern approach to Cambridge are provided in this report, in Chapter 3: Approach to Cambridge. Our preference remains a route connecting Cambourne North and approaching Cambridge from the south, rather than a route running from north stations to north stations or south stations to south stations, for example Bedford – St Neots – North Cambourne – North Cambridge, as suggested.

8.2.5.4 Cost

Respondents expressed concern about the value for money of RA9, suggesting that it would be complex and costly to build, due to the undulating terrain. Respondents also said the terrain would increase journey times and therefore the cost of travelling on the route; and that building cuttings and tunnels could increase the cost to unacceptable levels.

Respondents expressed support for RA9 as they feel it would be cheaper than other alignment options as it is short and direct, making rail journey times and overall build costs lower.

As mentioned above, we've assessed the costs of all alignment options. RA9 has fewer earthworks and shorter overall length of structures. It is expected to be only slightly less

expensive than the Reference Case (RA8) and is therefore considered neutral in terms of upfront cost to implement the project. RA1 is expected to be over 10% cheaper than the Reference Case (RA8) and so was considered to be a minor improvement for the capital costs Assessment Factor (AF3). As route development work progresses, cost estimates will continue to be refined and further detail will be published at the statutory consultation, including further detail on the cost of our preferred alignment Route Alignment 1 (Tempsford variant), which includes new stations at Cambourne North and Tempsford.

As a key part of the governance process in order to gain funding and approval to proceed with the Project, we're required to demonstrate a viable business case that includes a value-for-money metric. The Project will go through the full financial and business case rigour of the HM Treasury's Green Book. This is used to appraise projects and programmes in a consistent, but holistic manner. This includes consideration of scope, cost, social and environmental impact, as well as value for money for the taxpayer.

With regard to journey times, RA9 would represent one of the longer journey times, being nearly two minutes longer than the Reference Case (RA8) and RA1 would be approximately one and a half minutes longer than the Reference Case (RA8). Both RA1 and RA9 were classed as minor worsening for the transport user benefits Assessment Factor (AF1).

All options to optimise journey time have been and will continue to be considered at all stages in the design of the railway. We're aiming to provide a frequent passenger service through designing a flexible railway, with two railway tracks for EWR services use throughout this section of the route, allowing the new services to offer attractive journey times.

Along with our operating partners, we will set fares to make sure that the service offers value for money and is inclusive to as many people as possible. Fares will be simple to understand and easy to buy, in line with the rail industry's fares reform programme, which seeks to increase the trust in the railway and remove both economic and convenience barriers to travel.

8.2.5.5 Flooding

Respondents expressed concerns about the potential impact RA9 would have on flooding in the area because it crosses flood plains at the River Great Ouse which they say could cause the line to flood or cause more flooding generally.

Others supported RA9 as they say it would cut across fewer floodplains than other routes.

The area of flood zone impacted by the potential alignments was considered as part of the assessment of the alignment options. RA9 has a similar alignment to the Reference Case (RA8) at the River Great Ouse crossing and Tempsford, but avoids the groundwater SPZ south of Cambourne by routing via the proposed A428 Black Cat improvement scheme and Cambourne North. RA9 represents a minor improvement to impacts on water resources and flooding Assessment Factor consideration (AF14.18), when compared to the Reference Case (RA8).

However, RA1 represents as major improvement for reasons including that it has a shorter crossing of the River Great Ouse flood plain.

As mentioned, flood risk assessments will help inform our design process. Work is ongoing in this area and the project has established and have ongoing engagement with the Environment Agency, to share information, data and modelling to support this work. We are also looking at ways to reduce flood risk by considering appropriate flood protection measures and flood compensation. Additionally, 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 reasonably practicable, these mitigation measures will provide multiple benefits to the route and local communities.

8.2.5.6 Future development and growth

Respondents were concerned about the impact that RA9 could have on the delivery of new housing developments.

There is support for RA9 from those who think it would serve current, planned, and potential housing developments in Cambourne, Bourn Airfield and Tempsford.

In terms of potential impacts on committed developments, the design for EWR aims to reduce and mitigate the impacts on the developments at Bourn Airfield and Highfields Caldecote. RA9, RA1 and RA1 (Tempsford variant) would only impact the north-eastern corner of the proposed Bourn Airfield development and it is considered most of the development could be delivered unimpeded. Since the consultation our design has been amended to avoid having a direct impact on the Linden Homes development at All Angels Park. Any additional mitigation required will be considered in later phases of Project development.

Contribution to enabling housing and economic growth was one of the Assessment Factors (AF2) considered during the 2019 consultation. It is considered that Cambourne North would be a better location for future housing delivery than Cambourne South, due to the larger area of space available to the north of the station and because fewer or less significant mitigation measures would be required.

Following further review of the opportunities associated with a station at either St Neots or Tempsford, it emerged that a station at Tempsford is expected to have greater potential for development to support significant economic growth than a station at St Neots.

8.2.5.7 Heritage

Respondents expressed concern regarding the impact of RA9 on heritage assets, both during construction and operation, including adverse impacts from noise and vibration.

Respondents also supported this alignment because it avoids listed buildings and Scheduled Monuments.

RA9 would pass within 250m of two Scheduled Monuments, and within 1km of 160 listed buildings. RA1 would pass within 250m of one Scheduled Monument and within 1km of 146 listed buildings. Both alignments would avoid the complex heritage resource of the Bourn Valley and represent major improvements to the Reference Case (RA8) for the Historic Environment Assessment Factor consideration (AF14.9).

We've taken into account the potential impacts to the historic environment for each of the alignment options, including built heritage (such as listed buildings), non-designated heritage assets, and the historic landscape. This has considered the potential noise and vibration impacts of each route alignment option on heritage assets.

As far as is reasonably practicable we'll aim to avoid harm to the setting of designated heritage assets, prioritising those of the highest sensitivity such as Scheduled Monuments, Grade I and Grade II listed buildings and parks and gardens. Where it is not possible to avoid impacts, appropriate mitigation measures will be incorporated into the design.

8.2.5.8 Homes and development

Respondents raised concerns about the impacts of vibration and potential land shifting on old properties along RA9. Concerns were also expressed about the potential demolition of homes, plus the impact that RA9 could have on the delivery of new housing developments. Furthermore, respondents voice concerns that RA9 could contribute to urbanisation, causing villages to be subsumed into larger settlements; and that RA9 would negatively affect property values.

Other respondents stated that RA9 would have fewer negative impacts on homes and communities in the area, saying it would require the smallest number of properties to be demolished.

There is support for RA9 from those who think it would serve current, planned, and potential housing developments in Cambourne, Bourn Airfield and Tempsford.

The design has regard to proven construction practices that have been carried out successfully on other projects. It has been developed while taking account of the local context including topography, geology and environment factors. The impact of vibration from construction activity and operation of the railway on buildings has not been specifically assessed at this stage. We'll take this into account for future assessments, should such properties be in the corridor of the final route alignment. We will consider ways to construct the railway that minimise impacts including vibration but inevitably some activities, such as piling (the construction of deep foundations for structures), will be necessary. In such instances, we will ensure working hours are properly considered and that where properties are likely to be affected, surveys will be carried out to assess and manage the risk to homeowners.

We've sought to design the alignment options in a way that reduces the negative impacts they may have on people's homes and land but, inevitably with an infrastructure project of this size, there will be some people who could be directly affected. We'll continue to work to mitigate any impacts we cannot avoid and work closely with people who could be impacted.

RA9 would be expected to require the demolition of three properties, which is the fewest of the alignment options and RA1 would be expected to require four. Where land is acquired or proposed to be acquired, the Compensation Code sets out the circumstances in which compensation is payable, and we've produced a Guide to Compulsory Acquisition and Compensation. Compensation is also available for properties in proximity to the new railway which may be affected by various physical factors of the operation of the railway once it is in use, this is referred to as Part 1 compensation for which we included a guide on the website – Guide to Part 1 claims. We consulted on a Proposed Need to Sell Property Scheme to assist people who have a compelling need to sell but are unable to do so other than at a substantially reduced value due to the project. We've launched this scheme and details can be found here: The Guide to the Proposed Need to Sell Property Scheme.

In response to concerns about smaller settlements being subsumed by larger developments, we've considered the potential coalescence within the existing St Neots area. This is also considered to be a risk at Tempsford (i.e. with Tempsford, Everton, Little Barford and Sandy), but is not considered as large as the risk at St Neots because the Tempsford location is further away from the existing settlements. Effects upon the identity of smaller villages and towns as a result of third party development is a matter for the assessment of those developments and not EWR Co.

8.2.5.9 Impact on access

Respondents said they are concerned about the construction of RA9 disrupting access to other parts of their communities, particularly in the villages of Renhold and Bourn. They mention the length of construction and the uncertainty as to where it could take place, as concerns. Others remark that disruption from construction could prevent farmers in the area from accessing their land. There was a suggestion that Sandy station could close following the construction of Tempsford station.

Respondents also said that RA9 could restrict their access to important amenities including Comberton Village College and Renhold VC Primary School; and Roxton, Brickhill and Ravensden Country Parks. They are concerned that potential growth caused by the line could put additional strain on amenities such as GP surgeries and shops.

As previously stated, we're seeking to maintain existing highway and PRoW connections wherever feasible, and to provide a suitable alternative which reduces the impact on communities where it is not. We'll develop a comprehensive logistics strategy for all contractors and suppliers 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 our 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.

While EWR may impact agricultural land and access for farm vehicles during construction, we'll seek to reduce and mitigate potential impacts by working closely with landowners as designs progress. We'll seek to ensure that access to severed land for farmers and farm vehicles is maintained during construction. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document and we'll work closely with our supply chain to ensure that land used would be secured and maintained appropriately throughout construction.

Tempsford Station is not designed to be a replacement for Sandy station but is intended to provide an interchange between EWR and ECML services and to provide connectivity for local communities.

We've considered the potential impacts on community and recreational facilities, including Comberton Village College and Renhold VC Primary School. RA9 and RA1 would pass the closest to Comberton Village College, routing just to the west of the school site. However, it would not be necessary to cross a railway line to reach schools in Comberton since pedestrian and road links would be maintained. Since the consultation we've moved the alignment slightly to the east and amended the design to run in cutting beneath the B1046 Comberton Road, between Comberton and Toft. This means with a minor realignment of the road a direct connection can be maintained between the two towns and the direct impact from the alignment on Cambridge Meridian Golf Club has been mitigated. It is therefore not expected that RA9, RA1 or RA1 (Tempsford variant) would make it significantly more difficult for school children to access the schools.

RA8 and RA9 would pass closer to Renhold VC Primary School than RA1. Through further work and taking into consideration the consultation feedback, we've concluded that the majority of Alignment 1 provides a better solution than the other alignments. However, in order for RA1 to serve Tempsford station Alignment 1 (Tempsford variant) was developed. As this alignment better achieves the Project objectives it will be taken forward as our preferred route alignment for further design development and assessment. This alignment will remove and/or mitigate the potential impacts at Ravensden, Renhold and Roxton associated with RA9.

There is no indication that EWR would hinder or prevent the access to Country Parks. As stated above, we're seeking to maintain existing highway connections wherever feasible. Where it is not feasible to do this, we'll ensure that a suitable alternative is available which reduces the impact on communities. RA9 and RA1 would however result in impacts to the landscape character of Brickhill Country Park and indirect impacts upon the character of Roxton Park.

Potential impacts upon amenities as a result of future third party development is a matter for the assessment of those developments and not for EWR Co to assess as part of our plans for the railway. Any potential impact on general amenities such as GPs and shops due to population expansion will be a matter for third party developers to address.

8.2.5.10 Impacts on existing infrastructure

Respondents expressed support for RA9 as it avoids alterations to the gas pipelines at Chequers Hill and Colesden.

There are a significant number of major pipeline crossings for RA9 that would have needed further assessment, including gas pipelines between Bedford and Tempsford. For our preferred Route Alignment 1 (Tempsford variant), this assessment will be undertaken prior to the statutory consultation. However, all alignment options would have the potential to impact pipelines and other infrastructure. As a result, this was not a differentiating factor in the selection of the preferred option.

8.2.5.11 Community

Respondents expressed concern about the potential negative impacts of RA9 on local people and communities including on the rural 'feel' of their communities, their quality of life and their mental health. Specific villages mentioned by respondents as potentially being affected include Great Barford, Knapwell, Roxton and Renhold.

Other respondents think that RA9 would have fewer negative impacts on local communities, particularly Caxton, Bourn, Hardwick, Colesden, Wilden and Comberton. They also support locating the line near Tempsford and Cambourne, as these settlements are larger and are currently underserved by existing infrastructure.

Both RA1 and RA9, the emerging preferred alignments at the 2021 consultation, are considered to be a minor improvement on the Reference Case (RA8) in relation to the community assessment Factor consideration (AF14.4). This appraisal took into account the potential impacts on Great Barford, Knapwell, Roxton and Renhold.

Following feedback received during the consultation, particularly regarding potential impacts associated with RA9 between Bedford and Tempsford station, we've developed the new Route Alignment 1 (Tempsford variant), as described in the introduction to this chapter. It would significantly reduce and/or mitigate the potential impacts at Ravensden, Renhold and Roxton associated with RA9.

While there is no reason to suppose that RA9 would have a different (if any) effect upon mental health to any other alignment option, we'll consider a range of matters including noise and vibration, air quality, potential impacts on PRoWs and land and property requirements with the aim of avoiding and then reducing any potential impacts on health and quality of life. Any such impacts will be assessed in the PEIR and then subsequently within the ES, which will detail the mitigation to be provided where appropriate.

In terms of any impacts of RA9 on the rural nature of the area, potential visual and landscape impacts were taken into consideration and while RA9 would have a lesser impact on Cambourne, Wimpole and Eversden, the assessment identified that it would impact a number

of landscape areas, including Brickhill Country Park, the River Great Ouse valley, All Angels Park and trees lining Bourne Brook.

Since the consultation, we've been considering how EWR can be designed to blend in with the local environment through measures such as landscaping and screening to reduce visual intrusion. That's why we've been reviewing the design of the Section D route and looking for opportunities to reduce the height of embankments and viaducts, take the railway under roads in cuttings instead of building viaducts over them, or make minor diversions to the railway alignment to allow the railway to be lowered. As our designs develop, we'll also consider the potential effects of light pollution and seek to avoid impacts on 'sensitive receptors', such as nearby residential areas or habitats. More detail on this will be provided at statutory consultation.

RA9 would avoid impacts to a number of communities, including Caxton, Bourn, Abbotsley. Although it would still impact some existing settlements and communities, we believe that following the A428 travel corridor for a longer distance will help to reduce these potential impacts. Our new, preferred alignment RA1 (Tempsford variant) also does this.

We'll work with local authorities and transport bodies to ensure public transport connectivity and the ability to use new and improved active travel modes are appropriately considered in the development of our station designs at Tempsford and Cambourne North, as part of the preferred alignment RA1 (Tempsford variant).

8.2.5.12 Noise and vibration

Respondents were concerned that RA9 would cause significant noise and vibration in the area, which they felt would be exacerbated by the raised sections of the track. Respondents also say that noise could disrupt children at local schools; and that vibration could structurally damage traditionally built houses nearby.

For RA9, with appropriate mitigation, the following communities would be expected to be subject to potential adverse noise impacts: Ravensden Church End, Woodend Lane, Bedford Road, Wintringham Hall, Highfields, Highfields Court. Alignment 9 is rated as neutral relative to the Reference Case (RA8), due to the similar numbers of dwellings potentially affected. Alignment 1 is rated as a minor improvement for the noise and vibration Assessment Factor consideration (AF14.13) relative to the Reference Case (RA8), due to the slightly smaller number of dwellings potentially affected. To inform the statutory consultation comprehensive assessments will be carried out to simulate potential noise and vibration impacts along the whole route, including any impacts on sensitive receptors such as schools.

The PEIR will include information regarding the existing baseline noise environment, and both construction and operational noise limits and predicted noise levels from the proposed works.

We'll develop a noise policy, which will set out a plan to mitigate noise and vibration. We're committed to considering measures that will reduce noise and vibration, including choice of trains, track technology, and noise barriers.

The impact of vibration from construction activity and operation of the railway on traditionally built houses mentioned by respondents has not been specifically assessed at this stage but will be taken into account for future assessments if appropriate.

8.2.5.13 Roads and footpaths

Respondents expressed concern about the potential for RA9 to increase traffic and cause disruption to roads, including the A1, the A421 and the A428, as a result of both the construction of EWR and people travelling to stations. There were concerns that the 'narrow and winding' roads around RA9 lack capacity for additional traffic.

Respondents also said that footpaths, bridleways and cycling routes could be severed by RA9, and that the presence of trains would lessen their enjoyment of these paths.

Other respondents felt that RA9 would have a positive impact on traffic in the area, and would avoid some of the negative impacts on roads and paths that they felt other alignment options may have. They said that by using existing transport corridors, RA9 would avoid traffic being routed through villages such as Bourn and Caxton, both during construction and operation. Such respondents support RA9 as it uses A-roads to service the line rather than more rural roads.

There were suggestions that the planning and construction of EWR should be coordinated with the improvements being made to the A428 and the Caxton and Black Cat roundabouts; to maximise the joint growth opportunity, and to create a shared travel corridor to reduce environmental impacts.

It was suggested that a speed limit should be put in place in certain sections of the RA9 route, to protect the tranquillity of nearby villages.

By providing quicker and more reliable journeys over long distances, EWR aims to encourage modal shift from private vehicles to rail. It is intended that EWR will help to reduce road congestion in favour of a more sustainable form of transport and pre-emptively help to avoid increases in private vehicle use which may otherwise be associated with new housing or economic development.

Impacts to the road network will be reviewed in detail when more information is available during later stages of design development. This traffic and transport Assessment Factor was therefore not applied during the assessment of the shortlisted alignment options.

The Transport Assessment will be developed to include measures aimed at maintaining safety for road users and reducing the impacts of construction traffic.

We'll develop a comprehensive logistics strategy to be adopted by our contractors and suppliers. This will mean that we can plan the way in which people, materials and equipment are moved to and from the various worksites along the route of the proposed railway. We'll

work with local authorities and other developers to ensure that our use of the local highway network is managed and that construction traffic is restricted to those roads which are suitable and have the capacity to safely accommodate the additional traffic and these roads are appropriate maintained during construction.

RA9 would include viaducts over the A421 and A1 roads and the River Great Ouse. The alignment crosses the proposed A428 Improvement Scheme and the B1046. We're working closely with other projects in the area including the National Highways A428 Black Cat improvement scheme to explore any potential opportunities between our projects. Running EWR parallel to this new road could help manage impacts within an existing and developing travel route. Visual changes to the landscape could be concentrated within the same area as the A428 rather than areas that are currently relatively untouched by infrastructure development.

RA9 would be expected to cross 64 PRoW and RA1 would be expected to cross 69. During construction, we'll seek to reduce impacts on PRoWs (and bridleways and cycling routes) by considering options that include closing the route temporarily, providing a temporary diversion, or opening an alternative permanent route before the existing one is closed. We'll seek to maintain existing highway connections wherever reasonably practicable, or to ensure that a suitable alternative is available which reduces the impact on communities. Likely impacts will be set out in the PEIR. We'll consult in more detail on proposals for individual highways, PRoW and private access roads at the consultation.

The suggestion that speed limits should be imposed on EWR to preserve amenity and tranquillity is not a matter to be considered at this stage – further measures to mitigate environment impacts will be considered at the subsequent design phases. Imposing lower speed limits than required by factors including track design would have a detrimental impact on journey times. We consider other mitigation options such as screening and earth mounds to be more appropriate than speed restrictions.

8.2.5.14 Visual impact

There was concern about the potential negative visual impact of RA9 on the local landscape, which respondents say would be unacceptable. They voiced concern about the height of the embankments and viaducts proposed for RA9, which they deem unsuitable for this rural area. Suggestions were made that floodlights from construction, as well as lighting the track itself, would impede the naturally dark skies of the region.

Other respondents thought that RA9 would have the fewest negative visual impacts on the surrounding landscape and countryside of all the alignment options due to its shorter length and lower number of cuttings. They say that the route of RA9, which avoids village centres and local 'beauty spots', would reduce the visual impact.

RA9 and RA1 are longer and require greater amounts of cuttings than the Reference Case (RA8). However, both routes offer the ability to concentrate impacts in the A428 corridor, rather than in areas not already subject to development. RA9 was judged as neutral for the

combined landscape and visual impacts consideration in comparison to the Reference Case (RA8). It would have landscape impacts upon Brickhill Country Park, the River Great Ouse valley and indirect impacts upon the character of Roxton Park. It has marginally higher landscape impacts due to loss of woodland on the North of Cambourne alignment (All Angels Park and trees lining Bourn Brook) which would impact upon local landscape character. RA1 is a minor improvement in comparison to the Reference Case (RA8) for the Landscape and Visual Assessment Factor consideration (AF14.11) as this alignment has fewer landscape impacts.

As mentioned, we've been considering how EWR can be designed to blend in with the local environment and we've been reviewing the design to find opportunities to reduce the height of embankments and viaducts.

The potential effects of light pollution from the railway will be considered as we develop our designs for the Project, once layout of stations, maintenance compounds and new access routes have been finalised. Light pollution was not assessed as part of the 2019 consultation and is therefore not considered as a differentiating factor. The PEIR will include assessments of disturbance to ecological receptors, and to local amenity and tranquillity from construction and operational lighting. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document.

8.2.5.15 Wildlife and biodiversity

Respondents expressed concern about the potential negative impact RA9 would have on the local environment, such as the woodlands at the Great and Little Early Groves, Hardwick Wood, Bourn Brook, and other ancient woodland at Caldecote, Toft, Clapham and Renhold. They are concerned about the loss of trees and the division of woodlands, as well as impacts on habitats for various birds and mammals, including deer, badgers, rabbits, hares and owls.

Conversely, others said that RA9 would have the least negative impact on the environment and biodiversity of the alignment options. Respondents suggested RA9 would directly affect the fewest parts of the Bedfordshire Biodiversity Network; and it would generate fewer carbon emissions than other alignment options, as it requires fewer cuttings and earthworks. Support was voiced for RA9 because it avoids wildlife reserves at Bourn Brook, Cambourne, Wimpole and Eversden.

RA9 represents a minor improvement on the Reference Case (RA8) in terms of environmental impacts and opportunities Assessment Factor (AF14) as it would have a smaller impact on heritage assets, avoid the groundwater SPZ south of Cambourne, and would also have reduced indirect impacts on confirmed and potential ancient woodland. There is a decrease in the number of structures associated with RA9, and therefore a lower carbon footprint. However, RA9 would impact priority habitats 22 times, the highest of all alignments. RA1 was classed as a major improvement.

As stated, we'll continue to consider the importance of environmental sustainability in our activities and the decisions we make so that EWR is designed, constructed, operated and

maintained in an environmentally responsible way that minimises negative impacts and delivers 10% BNG.

We'll ensure that measures are in place to protect the flora and fauna along the EWR route. This includes maintaining ecological connectivity.

We're mapping where the new railway may cross and border habitats used by other important protected species, such as badgers, Greater Crested newts and birds, in order to consider how best to avoid impacting them altogether or to mitigate impacts on them. Habitat and species surveys will help us to avoid, reduce, mitigate and if necessary, compensate for identified impacts throughout the design of the railway. We'll implement mitigation measures, for protected species such as badgers and bats, in line with legal requirements and best practice as a minimum. Often this will involve the use of alternative habitat provision, physical barriers or the relocation of species to an alternative location.

The PEIR and ES will describe the likely environmental effects of the proposals and report the results of survey work. They will include consideration of all potential impacts on wildlife, including those from noise or other sources of pollution.

For RA9, based on current mapped trees with TPOs or within ancient or veteran tree datasets, we anticipate the loss of five of these designated trees, which would be the highest number when compared to other alignment options. We're following the environmental mitigation hierarchy by seeking to avoid significant adverse effects on woodlands (particularly SSSI and Ancient Woodland) and where this isn't possible, seeking to reduce and mitigate impacts and if necessary, looking at compensation.

Assessment of expected GHG emissions show that RA9 would result in a 6% saving in carbon footprint compared to the Reference Case (RA8) and would have slightly reduced impacts to ancient (or potentially ancient) woodland sites. Overall, RA9 was considered a minor improvement over the Reference Case (RA8) with regard to environmental impacts and opportunities Assessment Factor (AF14). RA1 would be expected to result in a 32% saving and was assessed as a major improvement.

8.2.6 Other comments related to Section D

8.2.6.1 Air quality and carbon

Concerns were expressed about air quality, carbon emissions from construction and operation, and dust and dirt from building earthworks.

We've considered potential adverse impacts to air quality in the selection of a preferred option. For the purposes of the air quality appraisal, it has been assumed on a reasonable worst case basis that the Project will operate using diesel-powered trains to allow the potential extent of air quality impacts to be fully understood. This assumption doesn't mean that trains will be diesel powered. Rather, the methods of power to be used will continue to be considered as the Project develops. We're committed to running a sustainable railway, with an

ambition to be a net zero carbon railway. That's why we are considering how we can introduce new and emerging technologies, in addition to electrification, into the long-term train fleet and infrastructure. The PEIR, presented at statutory consultation, and the ES will describe the likely environmental effects of the proposals, including on air quality.

While RA1 would result in an increase to track length required compared to the Reference Case (RA8), it would require fewer bridge and viaduct structures, and a significant decrease in emissions associated with earthworks. Therefore, overall RA1 is considered to result in a 32% saving in carbon footprint compared to the Reference Case (RA8), and this represents the lowest carbon footprint of all shortlisted alignment options. The impacts of operational carbon emissions will form part of the next stage of assessment and the further information will be shared at the next consultation.

Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document, including setting out proposals for dust suppression.

8.2.6.2 Benefits

Respondents said that local people would not benefit from Section D. They questioned the need for each of the route alignment options for reasons including: existing stations at St Neots, Sandy and Biggleswade already serve the area; post-pandemic passenger levels won't match the expected demand; a general lack of interest in travel into Bedford; existing public transport is sufficient; and a lack of new stations along some alignment options mean local people won't benefit.

One of the key objectives of EWR is to enable sustainable housing and economic growth. In providing an efficient rail link between Bedford and Cambridge Section D of the route is crucial in achieving this. EWR is aiming to enhance connectivity across the Oxford to Cambridge area as a whole and work is still ongoing to understand how the Covid-19 pandemic may affect commuter travel patterns over the longer-term. The latest statistics released by the DfT in April 2023 show that national rail passenger usage was already around 80% of that observed in the equivalent period in 2019, i.e. pre-covid levels.

EWR would be vital in delivering a range of benefits for communities, businesses, academia and the wider economy. It would support economic growth through the provision of greener and faster transport in an area constrained by poor east-west connectivity, and attract both investment and top talent to the UK. Capitalising on the clear strengths in knowledge-based industries across the region is essential for long term sustainable growth, economic resilience, and international competitiveness.

It would also increase connectivity for households and businesses across the route. This would help businesses effectively become closer to suppliers, support a more dynamic and specialised labour market, and provide more opportunity to share knowledge. Businesses would also be able to attract an increased pool of labour because of the reduced journey time from areas along the EWR route. For households, residents would benefit from decreased journey times to

areas along EWR, and workers would be better connected to additional job opportunities along the route.

The proposed EWR station locations have been chosen to support the delivery of new housing and help create new jobs along the corridor, as well as helping to ease pressure on the housing market. We've considered the amount and location of stations along the route. Including additional stations would create longer journey times and may mean that the Project would not meet its key objectives. However, it is envisaged that the detailed design would not preclude additional stations being opened in the future if considered appropriate.

We believe that it is important for EWR to complement other local transport initiatives and infrastructure without duplicating them, including the A428 and C2C busway.

8.2.6.3 Concern

There was opposition to the route alignment options, or Section D in general. These responses were split between those opposing all of the more southern route alignments out of Bedford, and those opposing all of the more northern route alignments.

Full assessments of the five Route Options were completed in 2019, using the Assessment Factors that had been previously agreed with DfT (you can read more about this in the introduction to this chapter) and taking account of feedback from the 2019 consultation. These assessments found that overall, Route Option E was the best performing for reasons listed in the Preferred Route Option Report. Responses to concerns raised in relation to specific route alignment options are set out above.

8.2.6.4 Construction

Respondents expressed concern about the complex nature of construction, both in time and complexity, and the length of the railway. Concern was expressed that the elevated structure will make construction difficult and that there will be major disruption during works, particularly at the northern end of Highfields Caldecote.

Respondents expressed the view that RA2, RA6 and RA8 are shorter and will take less time to construct, reduce costs and carbon emissions, but they raised concerns around disruption associated with construction.

There was concern that construction of the route will impact critical infrastructure pipelines.

Concern was expressed that by trying to fit the track through the narrow channel between Spinney Road, Chawston and the new A421, rising to cross the new Black Cat Interchange, RA1, RA2 and RA6 would appear impractical and pose a structural danger to the new A421 embankments.

The project is confident that the design for RA1, RA2 and RA6 between Spinney Road and the A421 is feasible and would not result in any unacceptable safety risks, including to existing

infrastructure. The design is based on proven construction practices that have been carried out successfully on other projects. It has been developed while taking account of health and safety and the local context including topography, geology, environment factors and existing infrastructure. The amount and length of engineering works for the railway were considered against the Assessment Factors. RA1 requires a shorter total length of structures, including the proposed viaduct at the Black Cat interchange near to Roxton and fewer earthworks than the Reference Case (RA8).

However, we've developed a proposal for a new, localised variant of RA1 known as Alignment 1 (Tempsford variant) to serve a potential ECML station at Tempsford, where we believe there is greater potential for development to support economic growth than at St Neots South. This new variant better achieves the Project objectives and will therefore be taken forward as our preferred route alignment for further design development and assessment. Alignment 1 (Tempsford variant) deviates from RA1 south of Colesden, then runs north of Roxton before crossing the A1 south of the Black Cat roundabout.

Although route alignments, including the preferred RA1 (Tempsford variant) which serve a Cambourne North station are longer, the evidence reviewed so far suggests that, on balance, development around the Cambourne North station would require fewer, or less significant, mitigation measures than around Cambourne South. These routes also offer the ability to concentrate impacts in the A428 corridor, rather than in areas not already subject to development.

RA1 is considered neutral in terms of programme risk, which was considered as part of the capital costs Assessment Factor 3, compared to the Reference Case (RA8). It is expected that the construction programme would be around nine months longer than the best scoring option for this matter, RA6. However, due to the lower cost estimate for RA1 it was judged as a minor improvement for the overall capital costs Assessment Factor (AF3).

During construction, impacts to communities will occur to some extent for all route alignments, and we're committed to ensuring so far as reasonably practicable that the Project is able to mitigate disruption during the planning, construction and operation phases. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document. Further details will be provided at the statutory consultation.

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. We'll engage with utility companies with the aim of minimising any disruption that may be associated with utility works, and where appropriate further information will be provided at the statutory consultation.

8.2.6.5 Cost

Respondents expressed concern about cost, saying that the expense of cuttings, viaducts, embankments and earthworks in Section D would drive up the overall cost of the Project.

Conversely, others said that the perceived lower cost of Route E concerned them, as a cheaper line could represent low quality and poor value for money.

Respondents said that the complexities of constructing this line, due to the undulating terrain and clay soil, as well as the required cuttings and viaducts, would increase the cost and construction times. Bedford Borough Council also raised these concerns and suggested a cheaper and less impactful solution be considered.

Costs estimates took account of the costs for cuttings, viaducts, embankments and earthworks. The cost of the Project was assessed for route option selection in 2020, as reported within the Preferred Route Option Report. The assessment found that the difference between the route options in this respect was not sufficient to base the decision on cost alone. Revised indicative estimates of upfront capital costs suggested that the cost to deliver Route E (£3.7 billion) would be similar to the cost for Route A (£3.6 billion) and lower than the cost for the other shortlisted route options (£3.9 billion – £4.3 billion). All routes assessed for Section D ranged between £2.3 billion and £2.5 billion, and this was taken into consideration in the selection of a preferred route option.

8.2.6.6 Flooding

Respondents said that much of the area, particularly around the River Great Ouse and in Clapham, is prone to flooding, which could be made worse by Section D of EWR. The Environment Agency stated that they would prefer the option that provides the greatest benefit to the local communities with respect to flood risk. They added that identifying flood risk management options will enable EWR Co to consider flood risk when providing mitigation for other impacts.

We've assessed the potential flood risk of each of the proposed alignment options. All of them would include crossing the River Great Ouse floodplain at Clapham. We'll develop flood risk assessments to help inform the design process, and we'll continue working with the Environment Agency to share information, data and modelling to support this work.

8.2.6.7 Freight

Respondents objected to the use of freight on the line. They mentioned the potential challenges and increased pollution caused by heavy freight trains needing to go up hills – and suggested flatter areas in other route alignment options would address this. Huntingdonshire Council also requested more information about freight traffic.

Passenger services are at the heart of this Project. The key objective given to us by the DfT is to improve east-west connectivity by providing rail links in the Oxford to Cambridge area. While we're planning a passenger route, we've been asked by the Government to accommodate existing freight services that are already running through places like Oxford, Bicester, the Marston Vale Line and Bedford, and to make provision for potential future freight demand.

The maximum gradient of the railway would be no steeper than 1 in 80 to reduce the risk of freight trains running at slower speeds. Further information will be provided at the statutory consultation. As all the route alignments are designed to the same tolerances, consequently use by freight services is not a differentiator.

We considered the potential adverse impacts to air quality as part of the environmental appraisal of route alignments. For the purposes of the air quality appraisal, it was assumed that the Project would operate using diesel-powered trains to allow the reasonable worst-case air quality impacts to be understood. The impact on operational carbon emissions has not been assessed at this stage but will form part of the next stage of assessment. As all the route alignments are designed to the same tolerances, use by freight services is not a differentiator. We're developing the Project in line with relevant laws and UK government policies, including the Clean Air Strategy, and will continue to consider impacts on air quality (including CO2 emissions) throughout the design process. The PEIR will be presented at statutory consultation and include information regarding the baseline air quality environment and identification of the relevant air quality standards and targets.

The likely risks from construction activities and potential impacts from operation, including identification of mitigation and control measures, will also be presented as part of the PEIR. It will also include information about our approach to traction power. A full ES will then be submitted as part of the DCO application and will assess changes in nitrogen oxides (NOx), fine particulates (known as PM2.5 and PM10) and dust. This assessment will follow best practice and guidance, such as the guidance set by the Institute of Air Quality Management and other recognised bodies.

8.2.6.8 Homes and property

Respondents expressed concern about the demolition of homes along Section D and potential negative impacts on property values. The impacts of noise and vibration from Section D on historic and listed buildings was also a concern. Others said that the proposals don't consider the planned development at Bourn Airfield.

Where land is acquired or proposed to be acquired, the Compensation Code sets out the circumstances in which compensation is payable, and we've produced a Guide to Compulsory Acquisition and Compensation. Compensation is also available for properties in proximity to the new railway which may be affected by various physical factors of the operation of the railway once it is in use, this is referred to as Part 1 compensation for which we included a guide on the website. We consulted on a Proposed Need to Sell Property Scheme to assist people who have a compelling need to sell but are unable to do so other than at a substantially reduced value due to the Project. We've launched this scheme and details can be found on our website.

We've considered the potential noise impacts during both construction and operation when assessing the proposed alignment options for Section D. RA1 was judged as a minor improvement for the noise and vibration environmental Assessment Factor consideration (AF14.13) relative to the Reference Case (RA8), due to the slightly smaller number of dwellings

potentially affected. As mentioned above, comprehensive assessments will be carried out to simulate potential noise and vibration impacts along the whole route, including residential and historic buildings, as part of the assessments on any mitigations required. The PEIR and the ES will describe the likely environmental effects of the proposals, including from noise and vibration.

The design aims to reduce and mitigate the impacts on developments including at Bourn Airfield. RA1, RA9 and the preferred RA1 (Tempsford variant) would only impact the north-eastern corner of the proposed Bourn Airfield development and it is considered most of the development could be delivered unimpeded.

8.2.6.9 Impact on existing infrastructure

Concerns were raised about potential disruption to power and water supplies in the area.

All alignments, including the preferred RA1 (Tempsford variant), cross major utility networks, including gas pipelines. While any diversion of major utilities is significant and has associated risks, it is usual for projects of this scale to have to deal with them and given that they are common to some extent in relation to all alignments this was not a differentiating factor in the preferred route alignment decision.

As mentioned, we'll engage with utility companies with the aim of reducing 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. Designs for any utility diversions that may be required to deliver the Project will be discussed and agreed with the relevant utility companies. Further detail will be shared at the statutory consultation.

8.2.6.10 Impacts on businesses

Respondents expressed concern over impacts to businesses.

As part of the assessment of options presented at the 2021 consultation, impacts on housing and farms were considered, although there was insufficient detail at that stage of the design to specifically evaluate the socio-economic impact on businesses. A socio-economic impact assessment will be undertaken as part of the EIA for the preferred alignment. This will initially be presented in the PEIR, published at the statutory consultation, and then within the ES which will be submitted as part of the DCO application. This will consider disturbance, changes to access, severance and land take on commercial businesses, development land and agricultural land, as well as employment generation during construction and operation of the Project and the associated economic investment in the region.

8.2.6.11 Community

Respondents raised concerns about the potential negative impacts of Section D on local communities, specifically Brickhill, Wilden and Clapham, which they said would be disrupted

regardless of the chosen route alignment. These respondents felt that these communities would experience division and that the railway would diminish their rural way of life. Impacts on the mental health of residents was also a concern. Central Bedfordshire Council were mindful of the perceived negative impact of proposals on local communities; however, they did recognise that significant benefits could be realised for existing and future communities.

All alignment options within Section D have been assessed for community consideration, which looks at properties, community and recreational facilities affected and clashes with PRoW and open spaces. RA1 was considered as a minor improvement against the Reference Case (RA8) for the community Assessment Factor consideration (AF14.4).

We'll continue to consider the impact of planned work as the Project progresses, working with local communities and their representatives to ensure people impacted by the work are kept up to date with our activity. Throughout our design work, we'll seek opportunities to eliminate, reduce or mitigate disruption to local people, communities, and the environment in addition to considering how significant adverse impacts on health and quality of life can be avoided. As part of this, we're considering a range of aspects including sound, noise and vibration, air quality, as well as PRoW and land and property requirements. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document, in order to reduce disruption to local people, communities and the environment as far as is reasonably practicable.

Assessing potential impacts on the health and wellbeing of local people requires a greater level of detail about the Project than is available at this stage. This Assessment Factor has therefore not yet been applied and is not considered to assist in differentiating between alignment options. This is an assessment topic that will be the subject of detailed review in later phases of Project development. However, our ongoing design work has and will continue to seek to reduce and/or plan to mitigate adverse effects of the Project which could impact on quality of life and health and wellbeing, such as noise and air pollution and visual intrusion. This will also be assessed in the PEIR, which will be shared at the statutory consultation.

One of the key objectives of EWR is to enable sustainable housing and economic growth. The proposed new station locations have been chosen to support the delivery of new housing and help create new jobs along the corridor, as well as helping to ease some pressure on the housing market. Our preferred alignment RA1 (Tempsford variant) would include two new stations – one at Tempsford and one at Cambourne North.

8.2.6.12 Noise and vibration

Respondents were concerned that Section D could contribute significantly to noise in the area as a result of both construction and trains. They say that the use of viaducts and embankments would exacerbate noise impacts. This concern was also raised by Bedford Borough Council.

Respondents also remarked that they chose to live in the area for its tranquillity, and that it is unfair that they could now experience noise.

Huntingdonshire Council requested that EWR Co's assessments consider impact from noise and vibration.

Potential noise impacts to residential communities during both construction and operation have been considered and while all alignment options would be expected to cause some adverse noise impacts on communities, RA1, RA2 and RA6 each represent a minor improvement to the Reference Case (RA8) for the noise and vibration Assessment Factor consideration (AF14.13), due to a smaller number of dwellings potentially affected.

We'll carry out comprehensive assessments and will simulate potential noise and vibration impacts along the whole route to help identify any mitigations required. We'll consider the choice of trains and track technology. A Noise and Vibration Policy will be produced.

The PEIR will include information regarding the existing baseline noise environment, noise limits, and construction and operational noise levels from the proposed works and be presented at statutory consultation.

Construction contractors will be required to have due regard to the temporary construction-related adverse impacts and mitigation measures will be put in place to reduce noise and vibration impacts as far as practicable (such as temporary screening and the use of quieter or lower vibration construction methods and equipment).

8.2.6.13 Roads and footpaths

Respondents said that the roads and paths in their area would be disrupted by Section D. They said that many roads in North Bedfordshire are small, winding and poorly maintained, making them unsuitable for increased traffic from both construction vehicles and those driving to access EWR. Furthermore, there were concerns that Section D would create additional traffic on already congested roads around St Neots and Cambourne; and that transport networks would be disrupted where the railway would crossroads. Respondents expressed particular concern for Carriage Drive in Clapham, as well as the A428 and A421.

Respondents were concerned that footpaths and bridleways in North Bedfordshire could become inaccessible or severed.

We'll continue to assess the potential impacts of the Project on the existing road network as we develop the designs further, including for Carriage Drive, the A428 and A421. As mentioned, when the final route alignment has been chosen, the Transport Assessment will include measures aimed at maintaining safety for road users and reducing the impacts of construction traffic.

In choosing and assessing the station location options, we've taken into account a number of factors, including accessibility and land availability. At the next stage of design, further details around the design of stations including Tempsford and Cambourne will be developed including

consideration of parking requirements and active travel, with suitable access roads and paths provided.

We've considered the impact of the Project on existing highways, PRoW (including footpaths and bridleways) and private access roads as part of the design and assessment of route alignment options. We're seeking to maintain existing highways, PRoW and private access roads in their current location, but where this is not possible, we'll ensure that a suitable alternative is available which reduces the impact on communities. The safety of the public (including non-motorised users) and workers is key at all stages of design, and this will continue during construction and into operation and maintenance.

Impacts on PRoW were assessed within AF14 - severance environmental supporting consideration. However, as all crossed PRoW are assumed to be maintained or diverted, based on the level of information available, this was assessed as neutral for severance for all options. Due the lower number of residential demolitions required, RA1 was judged as an overall minor improvement when compared to the reference case (RA8).

Although complex road crossings were considered within programme risk (which forms part of AF3 - capital costs), the potential impact on road crossings was not considered as a differentiating factor in the preferred route alignment decision.

8.2.6.14 Safety

Respondents raised concerns that the railway will create security and anti-social behaviour issues and not be safe for those around it.
As mentioned, we take the safety of our people, contractors, landowners, residents, communities and the local environment seriously and we're legally required to put in place and enforce safe working policies. Mitigation measures for construction impacts will be set out in a CoCP or an equivalent document.
To include safety and security considerations within our design and the way the railway is operated we'll consult with DfT, British Transport Police and other security partners. Further information will be provided at the statutory consultation.

8.2.6.15 Support

A number of respondents expressed general support for Section D, saying that Bedford, and North Bedfordshire in particular, is underserved by transport links and has the potential for economic growth in the future. There was also support for a station to serve Cambourne.

The preferred alignment, Route Alignment 1 (Tempsford variant) serves a Cambourne North station. We were pleased to see general support for the proposals.

8.2.6.16 Visual impact

Concern was expressed over the potential negative visual impacts of Section D. Respondents said that the rural nature and undulating landscape of North Bedfordshire makes the area

unsuitable for large-scale infrastructure. Bedford Borough Council also raised this concern regarding the visual impact of cuttings and viaducts on the countryside.

Respondents also stated that any use of viaducts or embankments, regardless of length or location, would add an unacceptable level of visual intrusion. It was suggested that the people of Clapham would experience visual impacts regardless of the choice of route alignment.

Route Alignments 1 and 9 are considered to represent a minor improvement on the Reference Case (RA8) in terms of the landscape and visual Assessment Factor consideration (AF14.11), with other options (RA2 and RA6) being considered neutral. All routes follow a similar route through the Clapham area, and there is potential for landscape and visual impacts in this area, however we continue to carefully consider how the development can be designed to blend in with the local environment.

As explained, we're thinking carefully about how EWR can be designed to blend in with the local environment, including the potential use of landscape earthworks to soften the appearance of embankments and integrate them into the wider landscape context or using sensitive placement of appropriate planting to either screen views from sensitive receptors, or to soften the appearance and presence of engineering earthworks. We'll seek to identify and protect important views where possible. As also mentioned, we've been looking for opportunities to reduce the height of embankments and viaducts.

We've considered a range of environmental factors when assessing the proposed alignment options, including impacts to landscape character, habitats, and ancient woodland. The design process follows the environmental mitigation hierarchy as described. All proposed alignments would avoid direct impacts on the most significant nationally and internationally designated environmental assets, including ancient woodland, NNRs, SSSIs and SACs.

At the next stage an EIA will be undertaken and outcomes of this will initially be set out in the PEIR, published at the statutory consultation, and then within the ES, submitted as part of the DCO application. These will identify the impacts of the project in relation to landscape and visual impacts and set out proposals for mitigation.

8.2.6.17 Wildlife and biodiversity

Concerns were expressed about potential impacts along Section D on woodlands, wildlife and habitats. Respondents felt that this section could harm efforts to improve biodiversity in the area.

There were concerns that Cambourne South options would have detrimental impacts on the nature reserve and Bourn Brook Valley, and the area is prone to flooding which would affect the route.

We've considered a number of environmental factors in the development and assessment of alignment options, including ecology and biodiversity.

We've assessed the potential impacts to woodland and ancient woodland – all proposed alignment options would avoid direct impacts on ancient woodland. RA1 (Tempsford variant) would also involve no indirect impact to ancient or potentially ancient woodland sites and would not overlap with any SSSI IRZs.

We've taken into account the impact of the proposed route alignments on ecology and biodiversity and RA1 would have the potential to impact a greater number of priority habitats than other alignment options. However, RA1 is still considered a minor improvement when compared to the Reference Case (RA8) for the ecology and biodiversity Assessment Factor consideration (AF14.5) due to the reduction in overlap with SSSI IRZs and potential indirect impact on ancient woodland. Regardless, we're committed to delivering 10% BNG, and our plans for achieving this will be shared during the next consultation.

There is a colony of Barbastelle bats in the Eversden and Wimpole Woods SAC located within the route option area and within 3-4km of the route alignment options between Bedford and Cambridge. We've carried out a number of surveys to better understand the barbastelle population in the area and plan to carry out further bat surveys as the design develops.

RA5, RA6 and RA8 would overlap with the IRZ to the Weaveley SSSI, but direct impacts would not be expected. For all route alignments, we don't anticipate directly impacting Hardwick Wood SSSI, Mowsbury Hillfort Country Wildlife site, sites nearby Knapwell including Overhall Grove Nature Reserve and RSPB Hope Farm, or woodland areas neighbouring Renhold. We're committed to protecting the environment by finding approaches to delivery that avoid, reduce or mitigate negative environmental impacts and will continue to consider how we can best avoid impacts on these habitats as we develop the design.

Our programme of habitat surveys and species-specific surveys will help us to understand where species and habitats are in the landscape near the new railway and how the habitats are used. The findings will inform the design of EWR, with the aim of avoiding, reducing, or mitigating identified impacts and, if necessary, compensating for impacts. The outcome of this, including identification of impacts of the project on habitats and wildlife and the plans to mitigate these will be reported initially in the PEIR, published at the statutory consultation, and then within the ES, submitted as part of the DCO application.