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The Cambourne to Cambridge Order

Cambridgeshire County Council

Transport and Works Act 1992

Transport and Works (Inquiries Procedure) Rules 2004

Inquiry into:

THE CAMBOURNE TO CAMBRIDGE ORDER

PROOF OF EVIDENCE

of

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of WSP

On behalf of Cambridgeshire County Council

5th August 2025

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CONTENTS

Section	Page
1. INTRODUCTION	1
1.1 Qualifications and Experience	1
1.2 Scope of Evidence	1
1.3 Summary of Evidence	1
1.4 Summary of Evidence	2
2. CONTEXT OF MY EVIDENCE.....	6
2.1 Introduction	6
3. SCHEME DESCRIPTION	7
4. MAIN ISSUES FOR THE INSPECTOR RELEVANT TO MY EVIDENCE	8
5. SCHEME DESIGN.....	8
5.1 Design Approach	8
5.2 Design Standards and Guidance.....	8
5.3 Guidance system	9
5.4 Horizontal and Vertical Alignment	10
5.5 Junctions	10
5.6 Cross section	11
5.7 Interaction with existing rights of way	13
5.8 Speed management	14
5.9 Approach to Safety	14
5.10 Health & Safety	15
5.11 Evolution of the scheme design	16
5.13 Scheme Construction	19
5.14 Scheme Operation.....	20
5.15 Extent of land and rights required - permanent and temporary - Matter 6D.....	21
5.16 Temporary and Permanent Land Required	22
5.17 Effect on pedestrians, cyclists and motorists - Matter 4b.....	25
5.18 Impact on statutory undertakers - Matter 5	26
5.19 Representations made relevant to my Evidence.....	27
5.20 Summary of points made and impact of the scheme on OBJ52 Coton Orchard Limited, Houston Crest Properties Limited and Anna Gazeley	27
5.21 The Main issues raised	27
5.22 My Responses	28
5.23 Summary of points made and impact of the scheme on OBJ175 Gough Way Residents Association (K Fry).....	28
5.24 The Main issues raised	28
5.25 My Responses	28
5.26 Summary of points made and impact of the scheme on OBJ54 S Lucy	29
5.27 The Main issues raised	29
5.28 My Responses	29
5.29 Summary of points made and impact of the scheme on OBJ213 Clare Hall, University of Cambridge	29
5.30 The Main issues raised	29
5.31 My Responses	29
5.32 Summary of points made and impact of the scheme on OBJ251 CPPF & Coton Parish Council (Richard Buxton).....	29

5.33	The Main issues raised	29
5.34	My Responses	29
6.	CONCLUSIONS AND SUMMARY	30
6.1	Matter 4a.....	30
6.2	Matter 4b	30
6.3	Matter 5.....	30
6.4	Matter 6d	30
7.	STATEMENT OF TRUTH	30

1. INTRODUCTION

1.1 Qualifications and Experience

- 1.1.1 I hold a Bachelor of Engineering (Honours) degree in Civil Engineering from the University of Leeds and a Master of Sciences degree in Engineering Management from the University of Loughborough.
- 1.1.2 I am a Chartered Engineer, and a Fellow of both the Institution of Civil Engineers and the Geological Society of London, and a member of the Chartered Institution of Highways & Transportation, the Permanent Way Institution and the Association of Project Management.
- 1.1.3 I have over 39 years of construction experience, primarily working on transport infrastructure construction and upgrades, initially with a civil engineering contractor, then with a consultant in developing construction and delivery strategies for projects in the preconstruction phase.
- 1.1.4 I worked for Balfour Beatty on various highway, infrastructure and rail projects for eleven years, then with consultants (Parsons Brinckerhoff and WSP) as a Project Engineer then as Technical Discipline Lead for their Construction and Logistics team and is experienced in construction planning and management; including buildability and delivery (in rail, trams, structures, nuclear highways and structures)
- 1.1.5 I recently worked on the High Speed Two (phase 2A) Hybrid Bill development, leading the Construction Team for the Technical Partner. I am currently working on the East west Rail Core area, as the Eastern Construction Lead for the Technical Partner.

1.2 Scope of Evidence

- 1.2.1 The scope of my evidence covers the engineering basis of the design, including both alignment and cross section, then the development of the design, including affected highways and rights of way
- 1.2.2 The evidence I have presented in this Proof of Evidence (PoE) does not unnecessarily replicate the technical information presented in the Environmental Statement (ES) (CD1-10.01) that was submitted as part of the TWA Order application material for the Scheme. Instead, it signposts where relevant information may be found in the ES and addresses issues raised by statutory consultees and objectors.
- 1.2.3 The scope of my evidence and the issues addressed are summarised in section 1.5.2 below.

1.3 Summary of Evidence

- 1.3.1 The Scheme works will include:
 - (a) A mostly segregated guided busway and adjoining emergency and maintenance access track to also be used for active travel.
 - (b) public transport stops.
 - (c) operational lighting.
 - (d) bridges over the M11 motorway and Bin Brook.

- (e) signalised junctions where the route crosses existing roads.
- (f) Travel Hub (Park and Ride) provides spaces for cars, bicycles and coaches.
- (g) Amendments to existing highways and accesses, parking arrangements, drainage and the construction of fencing, environmental mitigation, earthworks and landscaping.
- (h) Along with other ancillary works as required.

1.4 Summary of Evidence

1.4.1 Cambridgeshire County Council (CCC) on behalf of the Greater Cambridgeshire Partnership (GCP) is applying to the Secretary of State (SoS) for Transport for a Transport and Works Act Order (TWAo) to authorise the construction, operation and maintenance of a guided busway between the town of Cambourne and Cambridge City. The guided busway is referred to as the Cambourne to Cambridge Better Public Transport project ('the Scheme'). The objectives of the Scheme are set out in the Outline Business Case. Standards and guidance

1.4.2 My evidence is set out in the order below:

- (a) **Standards and guidance** - I explain which standards were used and their relevance to the design of the guided busway. The busway alignment has been equated to that of a single carriageway highway as set out in Method 2 of the Britpave - Guided Busway Design Handbook 2017 (BGBD) [CD9-04, Appendix B, paragraph B2, page 43]. Other highway design standards were also used, and these are explained.
- (b) **Guidance system** - It is envisaged that the project will implement Intelligent Speed Assistance Technology - already proven successful on the Cambridgeshire Guided Busway since 2023 - to maintain optimal speeds for both safety and passenger comfort. Full details of the guidance technology and vehicle design for the Scheme have not been fully defined at this stage of the project.
- (c) **Horizontal and vertical alignment** - The busway alignment has been equated to that of a single carriageway highway as set out in Method 2 of the BGBDH [CD9-04, Appendix B, paragraph B2, page 43]. Method 2 in the BGBDH refers to the DMRB standard TD 9/93 which has now been superseded by the DMRB Standard CD 109 [CD9-07]. The geometric design parameters for single carriageway highways are set out in CD 109 [CD9-07], including curvature, gradient, and sightline requirements. Both horizontal and vertical alignments have also been carefully developed to integrate with existing and proposed developments, infrastructure, and the site's natural topography
- (d) **Junctions** - The DMRB standard CD 123 [CD9-08] has been used for the preliminary design of the junction layouts which will be developed within the constraints of the final Order and the Environmental Statement as the detailed scheme design progresses.
- (e) **Cross sections** - The cross section varies along the route. Indicative sections at key locations are provided in the Proposed Site Sections [CD1-16.05], which form part of the deemed planning drawings. Main Carriageway (Guided Busway) - The

main carriageway is a core element of the Scheme, forming the running surface for the proposed sensor-based guided transport system, and a 7.3m wide carriageway is proposed. Emergency and Maintenance Access Track –This is a core part of the Scheme and the need for this is outlined, the four requirements are:

- (i) First, the track will enable maintenance teams to access the Scheme to carry out routine maintenance activities without disrupting bus services or creating a potential safety hazard.
 - (ii) Secondly, the track will also provide a utility corridor for the Scheme, and create opportunities for existing utilities impacted by the Scheme to be relocated outside the main busway. Safe access for inspection and maintenance of utilities can be achieved without disrupting the flow of bus services.
 - (iii) Thirdly, the track reduces the risk of pedestrian and cyclist incursions providing them with a safe dedicated shared path. This removes risk of obstruction and hazard from the busway.
 - (iv) Fourthly, in times of emergency, the track provides a safe evacuation route and access for emergency vehicles.
- (f) **Interaction with existing rights of way** - The Scheme intersects with several private access routes used by local residents and businesses. While there is a need to close some of these private means of access to build and safely operate the proposed busway, the Scheme ensures that no one loses their vital connections.
- (g) **Speed management** - A speed management and enforcement strategy are expected to be developed in the subsequent detailed design stages. This strategy will confirm the final control measures that will be implemented to ensure adherence to speed restrictions by all vehicles authorised to use the busway. Preliminary operational speed restrictions for each section of the route have been established and these are shown on the Proposed Site Plans [CD1-16.04] which form part of the deemed planning drawings. It is envisaged that the project will implement Intelligent Speed Assistance Technology - already proven successful on the Cambridgeshire Guided Busway since 2023 - to ensure adherence to the operational speed restrictions by public transport vehicles.
- (h) **Safety** - The Scheme is committed to delivering safety and engineering excellence. The design draws upon the relevant design standards including the Design Manual for Roads and Bridges (DMRB) [CD9-06 to CD9-14], the specialised Britpave Guided Busway Design Handbook [CD9-04], Manual for Streets 2 [CD9-03] and the National Guidance contained in relevant Local Transport Notes [CD8-23]. The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) provides a recognised and robust framework for managing safety in guided transport systems. Its application to the Scheme offers assurance that safety risks have been systematically identified, assessed, and mitigated. This includes independent external review of the safety work

undertaken, thereby reinforcing confidence in the integrity of the design and the effectiveness of the safety measures implemented.

- (i) **Evolution of the scheme design** - The design submitted for the TWAO application has been developed to a level of detail which is broadly in line with that required for outline planning permission. Aspects of the scheme design are reserved matters in the draft conditions, and the final details for these aspects will be developed within the constraints of the final Order and the Environmental Statement as the scheme progresses, following further consultations with statutory bodies and affected landowners throughout the subsequent detailed design stages of the project. The interaction with other schemes which will be delivered concurrently and impact the Scheme are described.
- (j) **Scheme construction** - I outline the construction approach; a more detailed construction phasing, methodology and programme will be developed and refined during the detailed design stage of the project. Construction is anticipated to be undertaken over a period of approximately 24 months, with work sequenced to suit the type of work, economic use of resources, traffic management requirements, seasonal constraints, etc. Thus, work will not be carried out in all areas of the works for the full duration of the programme and will progress on a series of work fronts.
- (k) **Scheme operation** - The Scheme has been envisaged to form part of a wider network of busways serving the city. Developments in technology mean that transport systems can now be guided by non-physical means. This includes the use of simple sensor systems that detect paint or other road markings to direct a vehicle, or more complex sensor systems which read the surrounding environment to direct a vehicle.
- (l) **Extent of land and rights required - permanent and temporary - Matter 6d** - In order to construct the Scheme works to be authorised by the Order, permanent acquisition of land, the temporary possession of land and the temporary use of land for access will be required over third-party land/property.
- (m) **Effect on EWR - Matter 4a** The new railway infrastructure planned between Bedford and Cambridge is part of the third stage of EWR which is still in planning and is dependent on final government funding and approval, the project teams on both EWR and the Scheme are actively engaging in ongoing discussions to ensure effective coordination.
- (n) **Effect on pedestrians, cyclists and motorists - Matter 4b** - The realignments and stopping up of vehicular highways and Public Rights of Way are each outlined, The stopping up of part of the former A428 is necessary to remove an existing area of highway which became redundant when the A428 was previously realigned and upgraded to a dual carriageway. The stopping up of St Neots Road is necessary to remove an existing area of highway which will become redundant as a result of the proposed realignment of St Neots Road which forms part of the Scheme proposals. The proposed route is intersected by four existing public rights of way, predominantly to the east of the route as follows and covered separately in my evidence:

- (i) Bridleway 39/30: runs between the A1303 Madingley Road and the M11 footbridge, to the east of the M11.
- (ii) Footpath 39/31: connects with Bridleway 39/30, running east to Wilberforce Road.
- (iii) Footpath 55/2: runs between A1303 Madingley Road and High Street, Coton.
- (iv) Footpath 66/17: runs from Dry Drayton to the A428 to the north of Hardwick, running east of the travel hub. Includes a footbridge over the A428 to the southeast of the Travel Hub before meeting the guided busway.
- (o) **Impact on statutory undertakers - Matter 5** - The Fens Reservoir and associated infrastructure. Anglian Water and Cambridge Water are proposing a new reservoir, discussions between the two project teams are ongoing and this collaboration will continue to ensure that any interfaces between the two transformative infrastructure projects will avoid conflict with each other. A number of utility diversions are required, principally within highway boundaries, of existing utility services are located within the Order Limits that may be affected by the Scheme. These include existing overhead and underground electricity distribution network cables, water and drainage pipes and medium pressure gas mains. In addition, communication network apparatus may be affected, including the UoC's Granta Backbone Network.

1.4.1 **Table 1.1: Coverage of certain matters in Proofs of Evidence as set out in the Statement of Matters [CD25-01, pages 1 and 2]**

Statement of Matters [CD25-01] Reference	Statement of Matters text	Coverage through my Proof of Evidence	Coverage through Proofs of Evidence of Others
4a	The effect of the implementation, operation and maintenance of the scheme.	I will describe the effect of the implementation, operation and maintenance of the scheme	
4b	The effect on residents, pedestrians, cyclists, and motorists.	I will describe the design and mitigations of the impacts on residents, pedestrians, cyclists, and motorists.	Further details on the environmental effects on local residents are provided in the Proofs of Evidence of Toby Lewis (Noise) [CD26-01-APP-W11-1] and Chris Carolan (Visual Effects [CD26-01-APP-W5-1]. Effects on motorists are dealt with in the Proof of Evidence of Jo

			Baker [CD26-01-APP-W1-1].
5	The effects of the scheme on statutory undertakers, statutory utilities and other utility providers, and their ability to carry out their undertakings effectively, safely and in compliance with any statutory or contractual obligations and the protective provisions afforded to them.	I will describe effects of the scheme on statutory undertakers, statutory utilities and other utility providers	The coordination with East West Rail is covered in Jo Baker's evidence [CD26-01-APP-W1-1].
6d	<p>Having regard to the criteria for justifying compulsory purchase powers in paragraphs 12 to 15 of the Ministry of Housing, Communities & Local Government 'Guidance on the Compulsory Purchase Process' published in October 2024 and updated in January 2025:</p> <p>d. Whether all the land and rights over land which CCC has applied for are necessary to implement the scheme.</p>	I will describe how the land and rights over land which CCC has applied for are necessary to implement the scheme	<p>My evidence supports James Franklin on land acquisition [CD26-01-APP-W7-1].</p> <p>This justification is also supported by Jo Baker [CD26-01-APP-W1-1], Chris Whitehouse [CD26-01-APP-W6-1] and Ralph Lewis [CD26-01-APP-W10-1]</p>

2. CONTEXT OF MY EVIDENCE

2.1 Introduction

- 2.1.1 I am Technical Director with WSP, and the WSP Technical Discipline Lead for the Construction and Logistics team.
- 2.1.2 I have been the WSP Construction Lead on the GCP Guided Busway Scheme since 2020, working as part of the WSP multidisciplinary design team. I have developed the construction strategy and programme and been part of developing the engineering design where it impacts stakeholders and the existing highway network.
- 2.1.3 My evidence covers matters 4a, 4b, 5 and 6d, and the items listed in section 1.2 and 1.4

3. SCHEME DESCRIPTION

- 3.1.1 Cambridgeshire County Council (CCC) on behalf of the Greater Cambridgeshire Partnership (GCP) is applying to the Secretary of State (SoS) for Transport for a Transport and Works Act Order (TWAO) to authorise the construction, operation and maintenance of a guided busway between the town of Cambourne and Cambridge City. The guided busway is referred to as the Cambourne to Cambridge Better Public Transport project ('the Scheme').
- 3.1.2 The objectives of the Scheme as set out in the Outline Business Case are to:
- (a) Achieve improved accessibility to support the economic growth of the Greater Cambridge region.
 - (b) Deliver a sustainable transport network/system that connects areas between Cambourne and Cambridge along the A428/A1303 transport corridor; and
 - (c) Contribute to enhanced quality of life by relieving congestion and improving air quality within the surrounding areas along the A428 /A1303 corridor and within Cambridge City.
- 3.1.3 The Scheme proposes the construction of a dedicated guided busway, running for approximately 13.6km between the town of Cambourne and the edge of Cambridge City. The busway will route to the south of the A428 and A1303, with a Travel Hub provided at Scotland Farm. The Scheme will provide bus stops at the existing communities of Cambourne, Hardwick, Coton and the West Cambridge campus as well as the consented Bourn Airfield development. An emergency and maintenance access track will be provided alongside most of the guided busway, which would be accessible to pedestrians and cyclists. Part of the service track will also function as a bridleway.
- 3.1.4 The Scheme will provide an attractive alternative to the car, encouraging more people from existing and future communities to travel by active modes and public transport for a range of journey purposes. Delivering an attractive service is fundamental to achieving modal shift from private vehicles and supporting sustainable economic growth of Cambridge and South Cambridgeshire by providing inclusive access to jobs, services and opportunities.
- 3.1.5 The key factors in the attractiveness of public transport are high frequencies, reliable and competitive journey times and consistent performance. To be attractive to the commuter market it should provide competitive journey times to private vehicles during the peak travel periods. Reliability is a key attribute for attracting users, requiring high levels of segregation.
- 3.1.6 As a result, the Scheme includes high levels of segregation to provide operational resilience during periods of regular peak period network congestion and increased congestion during incident periods (roadworks and accidents), The operational resilience provided by segregated running, combined with the journey time benefits substantially contribute to the attractiveness of the Scheme.

4. MAIN ISSUES FOR THE INSPECTOR RELEVANT TO MY EVIDENCE

5. SCHEME DESIGN

5.1 Design Approach

- (a) The design is based on the Preferred Route Alignment established prior to WSP's involvement, from which we developed the horizontal and vertical alignment, the land requirements, detailed highway design and the interfaces with highways, rights of way and stakeholders.
- (b) Amendments made to preferred alignment during our design, see Consultation Report November 2004 [CD1-06.01 from page 55 of the PDF and is covered in sections 7.12, 7.13 and 7.14].
 - (i) Offline to Online along St Neots Road through Hardwick – the preferred alignment was updated to run on road in response to considerable concern in the St Neots Road area or on St Neots Road and local community about the loss of trees between the A428 and St Neots Road, which at the narrowest point would mean the loss of all existing screening, albeit that some lower planting would be provided.
 - (ii) Realignment to avoid Waterworks Site - Alignment was amended at the recommendation of stakeholders to mitigate the ecological impact of the preferred route on protected trees and wildlife habitats on the Waterworks site.

5.2 Design Standards and Guidance

- 5.2.1 The design of The Scheme draws upon the relevant recognised standards and guidance including the Design Manual for Roads and Bridges (DMRB) [CD9-06 to CD9-14], the specialised Britpave Guided Busway Design Handbook (BGBDH) [CD9-04], Manual for Streets 2 (MFS2) [CD9-03] and the National Guidance contained in relevant Local Transport Note LTN 1/20 Cycle Infrastructure Design [CD8-23].
- 5.2.2 The DMRB [CD9-06 to CD9-14] is a collection of guidance and standards for work on high-speed all-purpose roads in the UK. It draws on the combined expertise of road authorities, contractors, and industry bodies, offering requirements based on research, operational experience, and legal compliance.
- 5.2.3 BGBDH [CD9-04], first published by Britpave in 2004, outlines best practice for the design and implementation of kerb-guided busway systems in the UK. It covers essential elements including design standards, safety, layout, stops, and crossings. Although the guidance focuses on kerb-guided systems, its core design principles remain relevant to sensor-based guidance systems, as both rely on line-of-sight (LOS) operation. LOS refers to the vehicle's ability to navigate within the direct visual range of either the driver or onboard sensors. For sensor-guided systems, safe operation depends on both the driver and sensors maintaining LOS to interpret surroundings and respond to hazards. In the absence of UK-specific standards for sensor-guided busways, BGBDH has been adopted to inform the design of this scheme.

- 5.2.4 MFS2 expands on Manual for Streets 1 (MFS1) by detailing how its core principles apply to busier streets and non-trunk roads, bridging the perceived gap in the design guidance between MFS1 and the DMRB. The guidance contained in MFS1 and MFS2 are considered relevant for the sections of the route within the Bourn Airfield Development and West Cambridge Site, the details of which will be developed in further detail in the subsequent design stages through close collaboration with the Bourn Airfield Developer and the University.
- 5.2.5 The design team has drawn on guidance from Local Transport Note LTN 1/20 Cycle Infrastructure Design [CD8-23, page 10] to shape the emergency and maintenance access track, which also serves as an active travel route. In particular, the recommended minimum horizontal separation between the carriageway and cycle tracks [CD8-23, Table 6-1, page 54] has been applied to ensure safety and compliance with best practice.

5.3 Guidance system

- 5.3.1 It is envisaged that the project will implement Intelligent Speed Assistance Technology - already proven successful on the Cambridgeshire Guided Busway since 2023 - to maintain optimal speeds for both safety and passenger comfort. A safety driver would always be present and have the ability to override and take manual control of the vehicle if required at all times.
- 5.3.2 Through a combination of advanced Radio Detection and Ranging (i.e. Radar), Light Detection and Ranging (LiDAR), Global Positioning Systems (i.e. GPS) and Camera technology the vehicles will navigate their environment, constantly monitoring their surroundings and position relative to other road users. This approach takes advantage of some of the technologies already widely deployed for some years in many production vehicles such as lane keeping assist.
- 5.3.3 Perhaps most importantly, these new sensor-based guidance systems offer a significant safety advantage over traditional kerb-guided systems. Unlike the existing Cambridgeshire Guided Busway, where vehicles are locked into a fixed path, these new vehicles can perform emergency manoeuvres using the full width of the carriageway. This crucial improvement means drivers can actively avoid obstacles or people on the busway, rather than relying solely on braking to prevent collisions. Forward facing cameras can also detect potential obstacles providing an additional layer of safety over and above driver observation.
- 5.3.4 In preparation for the roll-out of the busways, GCP has been engaged for some years in the Government funded Centre for Connected and Autonomous Vehicles programme running a series of projects building up to deployment of buses similar to those planned to be used for the Scheme. GCP has also had regard to practical examples, such as the CAVForth Pilot Scheme in Scotland which has adopted similar technology to that proposed for the Scheme on bus lanes with mixed traffic. Further trials are being prepared in Cambridge.
- 5.3.5 These vehicles have the potential to run in a fully autonomous mode but for the time being the expectation is that the driver will still control vehicles speed.

- 5.3.6 Full details of the guidance technology and vehicle design for the Scheme have not been fully defined at this stage of the project.
- 5.3.7 It is understood that the final specifications for the sensor-based guidance systems and other technologies that will be included on the bus fleet will be confirmed during the detailed design stage.

5.4 Horizontal and Vertical Alignment

- 5.4.1 The busway alignment has been equated to that of a single carriageway highway as set out in Method 2 of the BGBDH [CD9-04, Appendix B, paragraph B2, page43].
- 5.4.2 Method 2 in the BGBDH refers to the DMRB standard TD 9/93 which has now been superseded by the DMRB Standard CD 109 [CD9-07]. The geometric design parameters for single carriageway highways are set out in CD 109 [CD9-07], including curvature, gradient, and sightline requirements. Both horizontal and vertical alignments have also been carefully developed to integrate with existing and proposed developments, infrastructure, and the site's natural topography. The DMRB Standard CD 109 [CD9-07] Highway Link Design, gives standard design guidelines and parameters for highway link design in the UK.
- 5.4.3 Standard design practice for highway geometry involves ensuring that interfaces between sections of road with different design speeds are designed so as not to suddenly present the driver with low radius horizontal curves, sharp crests or shorter sight distances. This approach results in a road layout which intuitively signals how drivers should behave, minimising reliance on signs or enforcement, with drivers regulating their speeds to safe levels based on their perception of what lies ahead.
- 5.4.4 The CtoC route that has been developed to fit within the existing landscape and planned developments has resulted in an alignment which is not geometrically consistent in some areas, with changes in the geometric parameters present which deviate from standard highway design practices. An example of this is the section through Bourn Airfield heading westbound where there is a 127m radius left-hand bend preceded by a 1km straight section.
- 5.4.5 However, this is not considered to be an issue given that the guided busway will be a controlled system with access restricted to authorised vehicles, allowing for tighter controls to be applied such as mandatory driver training.
- 5.4.6 As, such drivers of authorised vehicles will be familiar with the route, meaning that vehicle speeds will not rely solely on drivers regulating speeds based on their perception of what lies ahead.

5.5 Junctions

- 5.5.1 Where the guided busway interfaces with the existing highway network at grade priority or signal-controlled junctions are proposed as detailed on the Proposed Site Plans [CD1-16.04].
- 5.5.2 The DMRB standard CD 123 [CD9-08] has been used for the preliminary design of the junction layouts which will be developed within the constraints of the final Order and the Environmental Statement as the detailed scheme design progresses.

- 5.5.3 The busway interfaces with the existing highway and public rights of way in several locations. The land in these areas is required to facilitate seamless integration, including formation of new junctions, public right of way diversions and crossing points which comply with the sight line requirements and other geometric parameters set out in CD 123 **[CD9-08]** and CD 143 **[CD9-10]**.

5.6 Cross section

- 5.6.1 The cross section varies along the route. Indicative sections at key locations are provided in the Proposed Site Sections **[CD1-16.05]**, which form part of the deemed planning drawings.
- 5.6.2 Illustrative cross sections showing key components at various points along the scheme are provided in the Deemed Planning Drawings **[CD1-16.05]**. While the overall corridor width varies in response to route context, topography, and constraints, each element included in the outline design is justified below, with reference to drawings **[CD1-16.04 to CD1-16.06]**.
- 5.6.3 While none of the cross sections exactly replicate the typical layouts in CD 127 **[CD9-09]**, Figures 2.1.1.N1a to 2.1.1.N1h, pages 16–23], the design team has applied professional judgement to select appropriate components and dimensions, guided by the principles and requirements set out in CD 127 **[CD9-09]** and the BGBDH **[CD9-04]**.
- 5.6.4 Corridor Cross Section – Illustrative cross sections showing key components at various points along the scheme are provided in the Deemed Planning Drawings **[CD1-16.05]**. While the overall corridor width varies in response to route context, topography, and constraints, each element included in the outline design is justified below, with reference to drawings **[CD1-16.04 to CD1-16.06]**.
- 5.6.5 Main Carriageway (Guided Busway) - The main carriageway is a core element of the Scheme, forming the running surface for the proposed sensor-based guided transport system. A 7.3m wide carriageway is proposed which is based on the standard traffic lane width for a rural all-purpose single carriageway in CD 127 **[CD9-09]**, page 21, figure 2.1.1.N1e].
- 5.6.6 Emergency and Maintenance Access Track – This is a core element of the Scheme, and in the absence of a UK-specific design standard for emergency and maintenance access tracks alongside sensor-guided busways, the design has been based on authoritative and relevant guidance:
- (a) BGBDH **[CD9-04]**, page 28, para. 7.2] recommends a 4m-wide maintenance track in rural areas where space permits, with a reduction to 3m where necessary **[CD9-04]**, page 19, Fig. 4.2].
 - (b) DMRB CD 123 **[CD9-08]**, page 28, para. 4.2.2] specifies a minimum width of 3.5m for access to fields, utility sites, and highway maintenance areas.
 - (c) DMRB CD 143 **[CD9-10]**, page 32, para. E/3.5] requires a minimum width of 3m for unsegregated shared-use routes with 200+ users per hour.
 - (d) LTN 1/20 **[CD8-23]**, page 42, Table 5-2] recommends a 3m minimum width for two-way cycle tracks with peak flows over 300 cycles/hour, increasing to 4m for flows over 1000 cycles/hour.

- a) Taking these standards into account, along with the essential functional requirements for the track outlined, the design team has selected a 3.5m as an appropriate width for the emergency and maintenance access track at the outline design stage. The final width of the track will be confirmed during detailed design stage and may vary to accommodate site-specific constraints and needs along the proposed route. The widths are selected to be resilient in long term for the foreseeable future vehicle sizes.
- 5.6.7 Verges – Verges provide essential lateral clearance between the carriageway and roadside hazards. The minimum verge width for a rural all-purpose single carriageway is 2.5m as specified in CD 127 [CD9-09, page 21, figure 2.1.1N1e]. However, the final width of the verges varies along the route to accommodate traffic signs, vehicle restraint requirements, drainage requirements, active travel separation, to maintain clear sightlines and many other aspects as set out in CD 127 [CD9-09, page 27, paragraph 2.13.1].
 - 5.6.8 Drainage Swales – These are required to both store and convey the increased volumes of surface water runoff expected to be generated by the proposed infrastructure. The width of the drainage swales included in the outline design varies along the route to reflect differences in catchment areas, topography, and gradients as detailed in the Surface Water Drainage Strategy for the scheme [CD1-11.13.02, Pages 6-8, Paragraphs 6.1-6.8, Annex TR13.1.3]. The width of the drainage swales in the outline design varies along the route to reflect differences in catchment areas, topography, and gradients. As the scheme progresses, the surface water drainage design will be refined within the parameters set by the final Order and the Environmental Statement.
 - 5.6.9 Drainage Basins and Ponds - Surface water storage and attenuation measures have been incorporated into the Scheme design. This includes several attenuation basins, ponds as detailed in the Surface Water Drainage Strategy for the scheme [CD1-11.13.02, Pages 12-13, Paragraphs 12.1-12.4, Annex TR13.1.3]. Attenuation has been incorporated to control any increase in the rate of flow towards the impacted watercourses resulting from increased impermeable areas.
 - 5.6.10 Embankment and Cutting Slopes – These vary in width as detailed in CD 127 [CD9-09, page 21, figure 2.1.1N1e] and are necessary to address level differences between the proposed infrastructure and existing ground. While the vertical alignment generally follows the current terrain, larger embankments and cuttings are needed where the route bridges over existing roads, ditches / watercourses and where the scheme meets existing roads. The side slopes of cuttings and embankments have been modelled with either a 1 in 3 or a 1 in 4 side slopes based on the preliminary geotechnical assessment. See Appendix A Technical Note 2 Preliminary Geotechnical Assessment
 - 5.6.11 Earthworks Drainage - The corridor cross section includes flat areas (berms) as detailed in CD 127 [CD9-09, page 21, figure 2.1.1N1e] for the provision of toe drains and cut-off drains at the top and bottom of embankment and cutting slopes. These drainage measures are essential to control water ingress, reduce the risk of slope failure, and extend the lifespan of embankments, cuttings, and adjacent infrastructure such as road pavements. The design of the earthworks drainage system will be undertaken as part of the detailed design stage.
 - 5.6.12 Retaining Features – Retaining features will be required at several locations along the scheme to minimise its overall footprint and avoid impacts on existing infrastructure or

site constraints—such as the section between the A428 and Childerley Lodge. Due to their higher financial and carbon costs, retaining features are only proposed where standard cuttings or embankment slopes are not feasible.

- 5.6.13 Boundary Treatments - Fencing or other boundary treatments will only be provided where justified—for example, for safety, security, property demarcation, wildlife exclusion, or visual screening. The detailed design will typically include standard boundary treatments, such as post-and-rail or post-and-wire fencing, where a specific need is identified. Any deviation from this standard will require agreement with landowners and planning approval. Discussions with some affected parties are already underway.
- 5.6.14 Berms – In addition to providing space for the installation of earthworks drainage the berms as detailed in CD 127 [CD9-09, page 21, figure 2.1.1N1e] also facilitate access for the inspection and maintenance of the boundary treatments, landscaping, drainage, utilities, retaining features and other assets along the scheme. The final width of the berms is likely to vary following refinement of the Horizontal and Vertical Alignment at the detailed design stage within the permitted limits of lateral and vertical deviation as set out in the Draft Order [CD1-02a, page 11].
- 5.6.15 Earth bunds – Incorporated into the outline design as environmental mitigation, earth bunds provide visual screening and help reduce wildlife collision risks—such as encouraging bats to cross the transport corridor at height. These functions are detailed in the Environmental Mitigation Register within the Environmental Statement Appendix ES1 [CD-1-10.02, Pages 2, 4 & 5, Ref's 5, 23, 24, 26, 28 & 30].

5.7 Interaction with existing rights of way

- 5.7.1 The Scheme intersects with several private access routes used by local residents and businesses. While there is a need to close some of these private means of access to build and safely operate the proposed busway, the Scheme ensures that no one loses their vital connections.
- 5.7.2 Where any Private Means of Access is to be Stopped Up another reasonably convenient alternative means of access to the affected properties will be made available, ensuring residents and businesses can continue their daily journeys with minimal disruption.
- 5.7.3 Where no reasonable convenient alternative could be identified private rights of access will be granted over part of the guided busway as shown detailed on the Rights of Way, Traffic Regulation, and Highway Plans [CD1-12.05] which form part of the Deposited Order Plans. The section of the busway which these private rights of access are to be granted will be subject to 20 and 30mph speed restrictions as shown on the Proposed Site Plans [CD1-16.04].
- 5.7.4 Access control measures and safe systems of work covering the use of this section of the busway by private individuals will be developed within the constraints of the final Order and the Environmental Statement as the scheme progresses, following further consultations with the affected landowners.
- 5.7.5 Affected Rights of Way

- (a) All existing public rights of way intersecting with the proposed Scheme will be maintained, with minor realignments to improve safety and connectivity with the emergency and maintenance access track where appropriate. The Application includes provisions for maintaining access across the guided busway via public rights of way as follows (refer to the proposed site plans [CD1-16.04] for further details).
- (b) An at-grade crossing will be provided for the proposed diversion of Footpath 55/2 north of Coton village. [CD1-16.04, sheet 12]
- (c) Bridleway 39/30, which currently runs parallel to the M11 motorway, will be diverted east and then west around the toe of the embankment forming the approach to the M11 motorway bridge. [CD1-16.04, sheet 14]
- (d) Footpath 39/31, which runs along the southern boundary of the West Cambridge development parallel to Charles Babbage Road, will be diverted to accommodate the guided busway passing into the arable land to the south and to provide a combined crossing point with the existing walking and cycling facilities located in the West Cambridge campus site. [CD1-16.04, sheet 16]

5.8 Speed management

- 5.8.1 A speed management and enforcement strategy are expected to be developed in the subsequent detailed design stages. This strategy will confirm the final control measures that will be implemented to ensure adherence to speed restrictions by all vehicles authorised to use the busway, including:
 - (a) Public transport vehicles
 - (b) Maintenance vehicles
 - (c) Emergency vehicles
 - (d) Any other authorised vehicles
- 5.8.2 Preliminary operational speed restrictions for each section of the route have been established and these are shown on the Proposed Site Plans [CD1-16.04] which form part of the deemed planning drawings. These restrictions have been set based on the geometric design parameters, route context, and identified hazards to ensure:
 - (a) the safe passage of buses over the guideway,
 - (b) that passenger comfort is maintained, and
 - (c) risks to all workers, users and other parties are as low as reasonably practicable.
- 5.8.3 It is envisaged that the project will implement Intelligent Speed Assistance Technology - already proven successful on the Cambridgeshire Guided Busway since 2023 - to ensure adherence to the operational speed restrictions by public transport vehicles.

5.9 Approach to Safety

- 5.9.1 In the context of ensuring operational safety, the Scheme has voluntarily adopted the principles of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) [CD5-19], despite guided bus systems not being legally subject to these

requirements. This decision reflects a deliberate and considered approach to safety management, informed by industry best practice.

- 5.9.2 ROGS provides a recognised and robust framework for managing safety in guided transport systems. Its application to the Scheme offers assurance that safety risks have been systematically identified, assessed, and mitigated. This includes independent external review of the safety work undertaken, thereby reinforcing confidence in the integrity of the design and the effectiveness of the safety measures implemented.
- 5.9.3 Considering the Scheme's Road operational system, the comprehensive safety assurance framework incorporates road safety standards, including GG 104 from the DMRB [CD9-12]. GG 104 sets out the approach for safety risk assessment and provides a framework for identifying hazards, assessing, evaluating and managing safety risks and assuring safety risk governance.
- 5.9.4 The application of the relevant design and road safety standards, Road Safety Audit Process and following the Principles of ROGS [CD5-19] will ensure that the final Scheme design will have a high degree of inherent safety.
- 5.9.5 A minimum separation of 2m is proposed between the busway and emergency and maintenance access track throughout all high-speed running sections in line with DMRB Standards and LTN 1/20 National Guidance [CD8-23, Table 6-1, page 49 pdf]. This buffer helps to protect cyclists from the air turbulence created by passing buses and debris thrown up from the carriageway. It also serves to reduce the risk of an errant cycle or other user of the maintenance track reaching the main carriageway.
- 5.9.6 Where the Scheme interfaces with public highways, a Road Safety Audit process in line with DMRB GG 119 has been followed [CD9-13]. The Road Safety Audit process will continue throughout the subsequent detailed design stages in collaboration with National Highways and CCC.

5.10 Health & Safety

- 5.10.1 The Scheme is committed to delivering safety and engineering excellence. The design draws upon the relevant design standards including the Design Manual for Roads and Bridges (DMRB) [CD9-06 to CD9-14], the specialised Britpave Guided Busway Design Handbook [CD9-04], Manual for Streets 2 [CD9-03] and the National Guidance contained in relevant Local Transport Notes [CD8-23]. These proven guidelines shape every aspect of the design process, ensuring the Scheme provides a transport system that exceeds expectations for safety and reliability. In addition, we have applied the lessons learned from the operation of the existing CGB
- 5.10.2 Whereas the existing CGB has cyclists immediately adjacent to high-speed running sections, a minimum separation of 2m is proposed between the busway and emergency and maintenance access track throughout all high-speed running sections in line with DMRB Standards and LTN 1/20 National Guidance [CD8-23, Table 6-1, page 49]. This buffer helps to protect cyclists from the air turbulence created by passing buses and debris thrown up from the carriageway. It also serves to reduce the risk of an errant cycle or other user of the maintenance track reaching the main carriageway.
- 5.10.3 Where the Scheme interfaces with public highways, a Road Safety Audit process in line with DMRB GG 119 has been followed [CD9-13]. The Road Safety Audit process will

continue throughout the subsequent detailed design stages in collaboration with National Highways and CCC.

- 5.10.4 Going above and beyond standard requirements, the Scheme has chosen to embrace the principles of the Railways and Other Guided Transport Systems (Safety) Regulations (ROGS) [CD5-19]. While guided bus systems are not legally required to follow these stringent railway safety standards, the Scheme has voluntarily adopted the principles of this framework to create a robust safety management structure.
- 5.10.5 Considering the Scheme's road operational system, the comprehensive safety assurance framework incorporates road safety standards, including GG 104 from the DMRB [CD9-12]. GG 104 sets out the approach for safety risk assessment and provides a framework for identifying hazards, assessing, evaluating and managing safety risks and assuring safety risk governance.
- 5.10.6 The application of the relevant design and road safety standards, Road Safety Audit Process and following the Principles of ROGS [CD5-19] will ensure that the final Scheme design will have a high degree of inherent safety.
- 5.10.7 Lessons from the existing CGB:
 - (a) Kerb guidance as used on the existing CGB prevents evasive manoeuvres. Fully reliant on breaking to avoid collisions with hazards or persons on the guideway. On the busway steering can be used for evasive manoeuvres if required.
 - (b) There is a kerb upstand on the Maintenance track side of the existing CGB. If a cyclist were to catch their pedal or front wheel on this, it could potentially cause them to lose control and fall into the guideway. No such upstand is proposed on CtoC. This was part of the HSE prosecution in 2025. the proposed busway maintenance track has been designed to eliminate this hazard.
 - (c) A structured process to assess and address risks is required, and the busway has voluntarily adopted the principles of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) [CD5-19], despite guided bus systems not being legally subject to these requirements.
- 5.10.8 Along the short sections where there is no lateral separation, these will be addressed with the use of: 20/30mph Speed limit/restrictions; reduced carriageway width to be considered at detailed design stage, through the most constrained section adjacent to CURUFC grounds. This may allow some separation to be provided.
- 5.10.9 Other controls are the use of the guidance and speed control technology, the drivers will have mandated training and evasive manoeuvres are possible in the absence of kerb sided guidance. Other options to be considered at the detailed design stage are physical barriers (for example fencing, planting or deterrent paving) and signage and road markings.

5.11 Evolution of the scheme design

- 5.11.1 The design submitted for the TWAO application has been developed to a level of detail which is broadly in line with that required for outline planning permission. Many aspects of the scheme design are reserved matters in the draft conditions at Schedule 1 to the Request for Deemed Planning Permission [CD1-14, page 14]. The final details for these

aspects will be developed within the constraints of the final Order and the Environmental Statement as the scheme progresses, following further consultations with statutory bodies and affected landowners throughout the subsequent detailed design stages of the project.

5.11.2 It is understood that the final specifications for the sensor-based guidance systems and other technologies that will be included on the bus fleet will be confirmed during the detailed design stage. These guidance systems and technologies are expected to play a key role in ensuring safe busway operation.

5.11.3 Alternative alignments were considered during the development of the design, and the option development and selection of the final route is set out in the Outline Business Case [CD1-20.13].

5.11.4 A recent outline proposal of a route along the A428 was developed by CPPF, and our response to this is included in the CPPF Report in CPPF Alternative Scheme – Engineering Assessment [CD9-31]

5.12 Interaction with Other Schemes

(a) There are two covered under Matters 4a:

(i) The first is EWR which intends (amongst other things) to build brand new railway infrastructure between Bedford and Cambridge.

(ii) The second is the Fens Reservoir and associated infrastructure.

(b) East West Rail

(i) The new railway infrastructure planned between Bedford and Cambridge is part of the third stage of EWR which is still in planning and is dependent on final government funding and approval.

(ii) The latest proposals put forward by EWR for this section of the route include a potential tunnel under the A428 and the Proposed Bourn Airfield Development. This proposed tunnel would also cross under the proposed route of the Scheme.

(iii) The EWR scheme remains in its early stages, and the project teams on both EWR and the Scheme are actively engaging in ongoing discussions to ensure effective coordination, and no issues that prevent delivery of the Scheme are anticipated.

(c) Fens Reservoir

(i) Anglian Water has proposed a pipeline corridor and a service reservoir site at Madingley, northwest of Cambridge, east of Coton, adjacent to Long Road. Both overlap with the Scheme's Order Limits.

(ii) Following recent discussions with Anglian Water, we understand the proposed reservoir is likely to be located within plots north of the CtoC Order Limits, avoiding any direct conflict with the busway.

(iii) Future pipelines, including reservoir drain downs, could be installed beneath the busway using trenchless techniques. Alternatively, if pipeline

routes are confirmed before CtoC construction begins, passive provision—such as duct crossings—can be incorporated to accommodate them.

- (iv) Collaboration between both project teams is ongoing to ensure that these two major infrastructure schemes are coordinated effectively and avoid any interface conflicts.
- (d) Other schemes
- (i) Cambourne West - Within South Cambridgeshire, the Scheme will support the projected growth associated with Cambourne West, which has a resolution to grant permission for the erection of up to 2,350 dwellings, together with formal and informal open space, new community and retail facilities and new infrastructure under planning ref: S/2903/14/OL [CD4-01]. Outline planning permission has already been granted for a bus link between Sterling Way Upper Cambourne and the Broadway (planning ref: S/3329/16/OL) in January 2023 [CD4-03]. A Reserved Matters application related to access, appearance, landscaping, layout and scale has been approved (planning ref: S/4594/18/RM) [CD4-04]; The alignment shown on the drawings [CD16-04, sheets 1 to 3] are included in development, and the busway passes through the development and stops will be included in this area in the detail design.
 - (ii) Bourn Airfield and Bourn Quarter - Between Broadway and St Neots Road the Scheme will pass through the former Bourn Airfield site, which has the potential to deliver approximately 3,500 new dwellings with outline planning permission applied for in 2018 (planning ref: S/3440/18/OL) - outline permission granted 30 July 2024 [CD4-06]. The alignment shown on the drawings [CD16-04, sheets 1 to 3] are included the development and stops will be included in this area in the detail design.
 - (iii) West Cambridge - The West Cambridge Area of Major Change is subject to a current outline application on behalf of the UoC for 383,300m³ of employment comprising predominantly academic floor space (planning ref: 16/1134/OUT) [CD4-05]. This application was granted outline planning permission on 21 June 2024; and while the Scheme does not run through this development the potential passengers are included in the design.
 - (iv) North-West Cambridge - The 150-hectare North-West Cambridge development was granted outline planning consent (planning ref: 11/1114/OUT) in 2013 [CD4-07] for 1,500 homes for UoC and College key workers, 1,500 homes for sale, accommodation for 2,000 post-graduate students, 100,000m² of research facilities (including 40,000m² for research institutes and private research facilities linked to the UoC), and a wide range of community facilities. At the development, now known as Eddington, by March 2020 858 dwellings were complete (including 686 affordable dwellings), along with 325 student rooms. While the Scheme does not run through this development the potential passengers are included in the design

5.13 Scheme Construction

5.13.1 Approach to Construction

- (a) The construction contracts will include compliance with the Code of Construction Practice [CD1-26].
- (b) The construction work is anticipated to require the use of 16 worksites, including one main compound at Scotland Farm Travel Hub, five secondary compounds and ten local works compounds to support construction activities. The locations of these proposed compounds are shown on both the Works and Land Plans [CD1-12.01] and the Deemed Planning Drawings [CD1-16.07].
- (c) The main compound will provide strategic support to secondary and local worksites. It will have space for storage and lay down of materials along with parking and maintenance facilities for plant and machinery. This will reduce storage requirements at satellite compounds.
- (d) The delivery of plant and materials to each phase of the construction strategy will be managed by the principal contractor. Construction traffic will access the works from two principal points: the A428/ Scotland Road junction and the Madingley Mulch roundabout. From the west, construction traffic will travel on the A428 and access the works via either the A428/Scotland Road junction or the Madingley Mulch roundabout. From the east, construction traffic will travel via the M11 and Madingley Road to the Madingley Mulch roundabout, and from there access the works via St Neots Road.
- (e) Some construction traffic will use Madingley Road and the UoC's West Cambridge campus's on-site roads to provide access for the M11 bridge and the section of busway between the M11 and Grange Road. Limited amounts of construction traffic will be permitted to travel on Madingley Road and Grange Road in order to construct the tie-in between the Busway and Grange Road.
- (f) The volumes of construction traffic along each of these routes will vary throughout the total construction period. The construction of each element of the Scheme will involve different activities as it is built, and a consequent variation in the number of vehicles needed to service it. The timing and duration of peak construction activity and peak construction traffic will vary for each Scheme element.
- (g) No construction traffic will pass through the core parts of the villages of Hardwick or Coton.
- (h) An indicative construction programme and sequence drawings will be developed and refined during the detailed design stage of the project.
- (i) More detailed construction phasing, methodology and programme will be developed and refined during the detailed design stage of the project.
- (j) Construction is anticipated to be undertaken over a period of approximately 24 months, with work sequenced to suit the type of work, economic use of resources, traffic management requirements, seasonal constraints, etc. Thus,

work will not be carried out in all areas of the works for the full duration of the programme and will progress on a series of work fronts.

5.13.2 Traffic Management

5.13.3 Refer to the Request for Deemed Planning Permission [CD1-14, pages 10 and 11] which sets out elements to be included within the Construction Traffic Management Plan.

5.13.4 Major Traffic Management areas are:

- (a) M11 bridge – discussions have commenced with National Highways, in terms of lane closures and a motorway closure to install the deck over the motorway.
- (b) A428 and associated roundabout in the St Neots Road area - discussions have commenced with National Highways,
- (c) Side road crossings

5.13.5 Construction Compounds

5.13.6 The construction work is anticipated to require the use of 16 worksites, including one main compound at Scotland Farm Travel Hub, five secondary compounds and ten local works compounds to support construction activities. The locations of these proposed compounds are shown on both the Works and Land Plans [CD1-12.01] and the Deemed Planning Drawings [CD1-16.07].

5.13.7 The main compound will provide strategic support to secondary and local worksites. It will have space for storage and lay down of materials along with parking and maintenance facilities for plant and machinery. This will reduce storage requirements at satellite compounds. This will be located at the Park and Ride location. Location shown on [CD1-16.04 sheet 7].

5.14 Scheme Operation

5.14.1 The Scheme has been envisaged to form part of a wider network of busways serving the city. As time has progressed since the construction of the Cambridgeshire Guided Busway transportation innovation has advanced, creating an opportunity to adopt newer technology to create a safer, more efficient public transit system.

5.14.2 Developments in technology mean that transport systems can now be guided by non-physical means. This includes the use of simple sensor systems that detect paint or other road markings to direct a vehicle, or more complex sensor systems which read the surrounding environment to direct a vehicle.

5.14.3 In 2022, the UK government recognised this opportunity and amended the 1992 Order to include new guided transport technologies. This amendment permits projects like the Scheme to use sensor-based guidance systems that provide vehicle guidance without physical guideways.

5.14.4 Emergency And Maintenance Access Track

5.14.5 An emergency and maintenance access track runs parallel to the main busway. This track is an essential and integral component of the Scheme for the following headline reasons.

- 5.14.6 First, the track will enable maintenance teams to access the Scheme in order to tend to be landscaping, drainage, and signage and other routine maintenance activities without disrupting bus services on the main carriageway or creating a potential safety hazard. This is critical to the success of the Scheme because the Scheme's efficacy depends on the provision of a robust and reliable operation.
- 5.14.7 Secondly, the track will also provide a utility corridor for any power, communications cables etc. required for the Scheme and will also create opportunities for existing utilities impacted by the Scheme such as the Granta Backbone Network to be relocated outside of the main busway. Safe access for inspection and maintenance of utilities can be achieved without disrupting the flow of bus services.
- 5.14.8 Thirdly, the track reduces the risk of pedestrian and cyclist incursions providing them with a safe dedicated shared path. This removes risk of obstruction and hazard from the busway. This improves safety and also contributes to the provision of a robust and reliable operation.
- 5.14.9 Fourthly, in times of emergency, the track provides a safe evacuation route. Should an incident occur, passengers can quickly reach safety on the track. Emergency vehicles, too, rely on this track as their backup route, ensuring they can reach those in need even if the main busway becomes blocked.
- 5.14.10 One of the recommendations highlighted in the HSE prosecution of the CGP in 2025 was the segregation of the public from the busway, using separators such as grass verges, physical barriers or fences to keep them to the maintenance track, and these are included in the design.
- 5.14.11 The track is not suitable as a diversion for general road traffic or road traffic in the event of a problem in the area and has not been designed for this.
- 5.14.12 For maintenance track for routine maintenance, utilities are located in the maintenance track, minor maintenance works to the busway, such as grass cutting and fence repairs can be accessed from vehicles parked on the maintenance track, the 3.5m allows the public and emergency vehicles to pass these.
- 5.14.13 Existing rights of access, for example Clare College, St John's College, Jesus College, the Rifle Range and emergency vehicles and Blue light vehicles will be maintained, and the maintenance track offers the opportunity for access in this area.
- 5.14.14 The proposed Grange Road junction is intended for busway and emergency vehicle use only; however existing access rights will be maintained.

5.15 Extent of land and rights required - permanent and temporary - Matter 6D

- (a) Temporary possession and access
- (b) In determining the extent of compulsory acquisition and temporary possession powers proposed in the draft TWAO the Applicant has had regard to the advice in the CPO Guidance [CD8-28, pages 13 and 14]. The Applicant's position is that the scope of powers sought and the extent of the interests in the land to be acquired by compulsory acquisition are required for the Scheme and are the minimum necessary that will allow the Applicant to construct, operate and maintain the Scheme. The Applicant does not seek any greater interest in land than is

reasonably required for the construction use, maintenance and operation of the Scheme and its associated mitigation. The power to acquire the required interests in land compulsorily is essential to enable the Scheme to be implemented and for the Applicant to deliver the Scheme within a reasonable timescale.

- (c) The land required has been identified from the Scheme layout drawings [CD16-04, sheets 1 to 17] to cover the permanent works, with the addition of identifying compound and material storage areas. These have been located, where practical, to be away from existing residences, to avoid leaving uneconomic parcels of land and to minimise land take.
- (d) In order to construct the Scheme works to be authorised by the Order, temporary possession of land and the temporary use of land for access will be required over third-party land/property. Powers of temporary possession will be available over all plots for which the power of freehold acquisition or the acquisition of new rights has not commenced.
- (e) In addition, powers of acquisition, temporary possession of land/property may be required for a temporary worksite to construct the Scheme works. As set out above, those plots of land identified as required on a temporary basis only are listed in Appendix 2, Table 3, of the Statement of Case.

5.15.2 **Park and Ride** – The layout is designed for maximum functionality, with up to 2,000 car parking spaces, 300 cycle spaces, and a perimeter buffer for visual screening. The site's scale—including bay sizes, roadways, and supporting infrastructure—reflects projected demand and aligns with existing Park and Ride facilities around Cambridge. See Appendix B - Technical Note1 C2C P&R CAPACITY

5.16 Temporary and Permanent Land Required

- 5.16.1 A section of the busway is proposed to run along existing and diverted highway corridors (known as on-highway running) at St Neots Road, to the north of Hardwick. Additionally, a private road known as Charles Babbage Road on the West Cambridge Campus is also proposed to be utilised in the same manner, with buses using the private highway alongside other authorised road vehicles. The land ownership pattern along the route is a mixture of freehold owner-occupier and freehold tenanted land held by private individuals, developers, institutions, and public bodies.
- 5.16.2 The busway corridor generally averages 38 metres in width, between junctions, this will be confirmed in the detailed design, as it varies with the topography, required earthworks and drainage. This is to allow for the use of a parallel temporary access track to facilitate construction and minimise the construction vehicle loadings on the new busway, local topsoil storage and temporary fencing. The temporary land will be returned to the landowner on completion of the busway. Section 5.6 explains the cross section and design requirements for the busway route.
- 5.16.3 Set out below is a description of current land uses as they relate to the Order Land running from east to west.
 - (a) The Order Land commences at Sterling Way, in Cambourne West, an existing housing development. Compulsory land acquisition powers are not sought over

this land as there is a deed made under section 106 of the TCPA 1990 dated 29 December 2017 [CD4-08] providing for the transfer of the required land for a new bus only route, between Sterling Way and Broadway, to CCC. The land forming this area, which is within the Order as Work No.1, is excluded from compulsory acquisition powers by way of Article 23(3) [CD1-02, page 21] and Schedule 6 of the draft Order [CD1-02, page 54]. It is currently used as an access path and follows the path of the disused Oxford to Cambridge Railway, within the existing fence lines.

- (b) Moving eastward, the Scheme passes through Bourn Airfield, a former military site that is partially put to agricultural and commercial "meanwhile uses" and is to be developed into residential housing in line with its planning permission. The busway will be accommodated within this development, in line with the approved masterplan for the development of the Airfield. CCC and the owner have reached agreement for the carrying out of works and provision of land for the Scheme in this location. [CD16-04, sheets 2 and 3].
- (c) East of Bourn Airfield, the busway will run adjacent to the existing A428 road corridor before following the alignment of the existing St Neots Road. The ownership comprises a combination of Public Highway, National Highways land and some private ownership parcels. [CD16-04, sheets 4, 5 and 6]. Temporary compounds are located east and west of the St Neots Road junction, and where the busway diverges south from the public highway.
- (d) The land required for the Park and Ride site is located to the north of Hardwick and the A428, to the east of Scotland Road. The land is presently put to agricultural use and is owned by a large-scale commercial farming business. See drawing [CD16-04, sheet 7] and Technical Note 1 in Appendix B for the area and design requirements.
- (e) To the east of Hardwick, the busway alignment heads towards, and north of, the village of Coton before meeting the M11 motorway. Both of these areas are predominantly rural land principally put to agricultural use but with some parcels associated with adjacent residential and leisure properties. The scheme passes north of Coton and south of the Garden Centre on Cambridge Road, to minimise the impact on both residents and local businesses.
- (f) The scheme passes north of Coton in a shallow cutting to reduce the visual impact from Coton. The land is owned by a combination of private landowners and UoC colleges. The Scheme crosses the Cambridge Road north of Coton and south of the Garden Centre, to minimise the impact on both of these.
- (g) The busway is near to existing ground level in this section, with compounds and drainage ponds located away from the orchard to minimise width of the busway corridor. [CD16-04, sheets 8 to 13]. As no construction traffic will pass south of the Scheme on the Cambridge Road (apart from during the required highway works immediately south of the crossing), the temporary land includes space for construction vehicles entering and leaving to the north, and a compound area to the north of the busway, away from the orchard.

- (h) The Scheme will cross the M11 motorway by means of a new bridge to carry the busway over the M11 motorway. Land is included for the construction of the new bridge on both sides of the M11, with a drainage basin to the south west of the new bridge. [CD16-04, sheets 14].
- (i) To the east of the M11 is the UoC West Cambridge Campus, where the bus services will use the existing road alignment along Charles Babbage Road before turning south. A new bridge will be constructed over the existing drainage ditch, and temporary land take is included during construction. [CD16-04, sheets 14 and 15].
- (j) The alignment then passes broadly southeast through the rural fields put to agricultural use and owned by colleges of UoC, with drainage ponds located near the nature reserve, and on the south side, then passing south and east to cross the Bin Brook with a bridge, before merging with an existing track known as the Rifle Range track. Note that construction access is from the west, apart from for the upgraded Grange Road junction, so an area for a compound for the works in this section is included. [CD16-04, sheets 16 and 17].
- (k) The busway alignment and maintenance track then follow the Rifle Range track, which will be rebuilt to form part of the busway, before it concludes at its junction with Grange Road. [CD16-04, sheets 16 and to 17].
- (l) Two buildings will require demolition to facilitate the Scheme. One building is located on the Western side of Bourn Airfield (Gofers House within plot 1-015 as shown on the Works and Land Plan [CD1-12.01, page 3]). This is on the alignment of the Scheme. The second is known as the Atlas Building on the West Cambridge Campus (plots 14-155b and 14-158b) [CD1-12.01, page 16], this is partially under the eastern approach to the M11 bridge. It is envisaged that both buildings will be demolished by their owners in advance of the Scheme commencing. It should be noted that no businesses are anticipated to require relocation as a consequence of the Scheme.

5.16.4 Effect on EWR - Matter 4a.

- (i) The new railway infrastructure planned between Bedford and Cambridge is part of the third stage of EWR which is still in planning and is dependent on final government funding and approval.
- (ii) The latest proposals put forward by EWR for this section of the route include a potential tunnel under the A428 and the Proposed Bourn Airfield Development. This proposed tunnel would also pass under the proposed route of the Scheme. The tunnel is part of the current EWR design being prepared for a Development Consent Order submission, as the EWR is designed to pass under the existing A428 highway. The alternative is the Scheme crossing EWR on an overbridge, as a level crossing would be too disruptive to both schemes and be unacceptable in terms of both risk and safety.

- (iii) The EWR scheme remains in its early stages, however the project teams on both EWR and the Scheme are actively engaging in ongoing discussions to ensure effective coordination.

5.17 Effect on pedestrians, cyclists and motorists - Matter 4b

5.17.1 Stopping up of vehicular highways

- (a) The stopping up of part of the former A428 is necessary to remove an existing area of highway which became redundant when the A428 was previously realigned and upgraded to a dual carriageway. This redundant area of highway which formed part of the former A428 alignment also falls within the proposed limits of deviation (Order Limits) for the Scheme. Formally stopping up this disused section of road will unlock valuable space for the new transit system.
- (b) The stopping up of St Neots Road is necessary to remove an existing area of highway which will become redundant as a result of the proposed realignment of St Neots Road which forms part of the Scheme proposals. The proposed realignment of St Neots Road [CD16-04 sheet 6]:
 - (i) (a) creates a more perpendicular approach to the junction, improving intervisibility for drivers and giving them more time to react, enhancing safety for all road users. This approach follows the requirements and advice contained in the relevant design standards.
 - (ii) puts public transportation at the forefront, giving priority to buses and creating a more efficient flow of transit vehicles, helping to make public transportation the most attractive travel option for local residents.
 - (iii) incorporates natural traffic calming features that will transform the character of St Neots Road. By encouraging lower speeds and discouraging cut-through traffic, it helps to create a more pleasant environment for local residents while ensuring that regional traffic stays on the A428 where it belongs; and
 - (iv) eliminates the need for additional traffic signals that would have caused potential delays for buses using the Scheme busway. Avoiding these potential bottlenecks, helps to ensure that public transport can move smoothly and efficiently through this crucial corridor.
- (c) Stopping up of Public Rights of Way
 - (i) The Scheme includes the stopping up and diversion of sections of the public rights of way that fall within the Order Limits as indicated on the Rights of Way Plans [CD1- 12.05] and set out in Schedule 4 of the Order [CD1-02, pages 50-53].
 - (ii) The proposed route is intersected by four existing public rights of way, predominantly to the east of the route as follows: AC_214710982_1 69
 - (A) Bridleway 39/30: runs between the A1303 Madingley Road and the M11 footbridge, to the east of the M11. This is being stopped up to limit the overall span of the M11 Overbridge thereby decreasing the

structural depth which in turn helps to limit the gradients on the approach embankments including the emergency and maintenance access track thus improving accessibility. The short diversion of the bridleway provides an opportunity to link into the emergency and maintenance track which will also be dedicated as a Bridleway. The existing route is diverted around the new embankment, using the new signalled crossing at Ada Lovelace Road, and back to the existing bridleway alignment. This provides a controlled at grade crossing. [CD16-04, sheet 14].

- (B) Footpath 39/31: connects with Bridleway 39/30, running east to Wilberforce Road. The footpath is diverted across the stream to enable a perpendicular crossing, then back across the stream to rejoin the original alignment. This adjustment improves visibility and ensures that both bus drivers and pedestrians can see each other earlier and more easily, thus improving safety. [CD16-04, sheet 16]
- (C) Footpath 55/2: runs between A1303 Madingley Road and High Street, Coton. The footpath is diverted to the east to enable a perpendicular crossing, then rejoins the original alignment. This adjustment improves visibility and ensures that both bus drivers and pedestrians can see each other earlier and more easily, thus improving safety. [CD16-04, sheet 12]
- (D) Footpath 66/17: runs from Dry Drayton to the A428 to the north of Hardwick, running east of the travel hub. Includes a footbridge over the A428 to the southeast of the Travel Hub before meeting the guided busway. This new footbridge removes the current need to cross the A428. [CD16-04, sheet 6]
- (iii) By stopping up and diverting the footpaths that intersect with the proposed route we are creating more direct paths that cross the busway at a right angle. This adjustment improves visibility and ensures that both bus drivers and pedestrians can see each other earlier and more easily, thus improving safety.

5.18 Impact on statutory undertakers - Matter 5

- (a) The Fens Reservoir and associated infrastructure
 - (i) Anglian Water and Cambridge Water are proposing a new reservoir in the Fens to help meet the growing demands on water supply in the East of England. The proposed reservoir is recognised as being a strategic regional asset. The volume of water it would hold means it is a Nationally Significant Infrastructure Project (**NSIP**). The current timeline for the project suggests that the DCO application would be submitted in 2026.
 - (ii) Water stored at the reservoir will be treated ready for public supply, before being transferred into Anglian Water and Cambridge Water supply networks. The scheme proposals include an underground pipeline to transport treated water to Cambridge Water customers. The pipeline would

be approximately 45 kilometres long, running south to a connection point and new service reservoir.

- (iii) Anglian Water have identified a proposed Pipeline Corridor at this stage which is 500 metres wide and have also identified a proposed service reservoir site at Madingley, northwest of Cambridge, east of Coton, adjacent to Long Road. Both the Pipeline Corridor and the proposed Service Reservoir site overlap with the Order Limits for the Scheme.
 - (iv) Discussions between the two project teams are ongoing and this collaboration will continue to ensure that any interfaces between the two transformative infrastructure projects will avoid conflict with each other, by integrating the design in the area of the crossing and including this in the detailed design of both Schemes.
- (b) A number of diversions are required, principally within highway boundaries, of existing utility services are located within the Order Limits that may be affected by the Scheme. These include existing overhead and underground electricity distribution network cables, water and drainage pipes and medium pressure gas mains. In addition, communication network apparatus may be affected, including the UoC's Granta Backbone Network.
- (c) Based on highway projects designed by WSP, all of the required works to divert or otherwise interfere with the apparatus and rights over statutory undertakers can be undertaken without serious detriment being caused to the relevant utility operator. In addition, Schedules 11 and 12 of the Order [CD1-02, pages 70-113] contain provisions protecting statutory undertakers including both generic and utility specific protective provisions contained within Schedule 12. 12.16.5 A small number of statutory undertakers have made representations and/or objections to the powers contained within the Order. The Applicant continues to negotiate with these and all other relevant utilities to allow for the diversion of apparatus and the provision of new rights in favour of affected utilities
- (d) The maintenance and access track will also provide a utility corridor for any power, communications cables etc. required for the Scheme and will also create opportunities for existing utilities impacted by the Scheme such as the Granta Backbone Network to be relocated outside of the main busway. Safe access for inspection and maintenance of utilities can be achieved without disrupting the flow of bus services

5.19 Representations made relevant to my Evidence

5.20 Summary of points made and impact of the scheme on OBJ52 Coton Orchard Limited, Houston Crest Properties Limited and Anna Gazeley

5.21 The Main issues raised

- 5.21.1 This objection suggests that 'The construction impacts, such as pollution, noise, and landscape scars are environmentally damaging'. See Section 5.18 above.

5.22 My Responses

- 5.22.1 While some adverse noise impacts are unavoidable, they will be temporary and appropriately minimised via the adoption of a LEMP, the prohibition of construction vehicles using the road south of the busway, limits on working hours, the minimization of construction compounds in this area.
- 5.22.2 The design of the busway minimises the corridor width in this area, and both construction compounds and drainage basins have been located away from the orchard
- 5.22.3 The construction contracts will include compliance with the Code of Construction Practice [CD1-26]
- 5.22.4 The permanent works design includes the design and implementation landscape mitigation to reduce the long-term impact on the local area, and to ensure that the biodiversity is maintained and improved.

5.23 Summary of points made and impact of the scheme on OBJ175 Gough Way Residents Association (K Fry)

5.24 The Main issues raised

- 5.24.1 Safety of users the section of the route along Rifle Range Road , Seev Section 5.6)
- 5.24.2 Increased risk of flooding in this area and to the north
- 5.24.3 The residents also comment on the safety impact on Grange Road of the additional traffic. (See section 5.5)

5.25 My Responses

- 5.25.1 The maintenance and access track has been designed to allow for the anticipated usage, in terms of width, alignment and visibility. There is also separation between the access track and busway. It is anticipated that some of the active travel users on the maintenance track will use the existing route to the north of Clare Hall.
- 5.25.2 During construction the use of Grange Road will be minimised, and Grange Road will only be used when unavoidable for the construction of the new junction works. The construction of the works in this area will be accessed from the west.
- 5.25.3 The design has included flood modelling and minimises the impact on the Bin Brook, and these constraints will be included in the construction contracts, covering both temporary work and construction compound location and design. [Flooding assessment CD1-11.13.02]
- 5.25.4 When operational the junction will be controlled with traffic signals, this will cover all bus movements, and the junction will be the subject of a Road Safety Audit.

5.26 Summary of points made and impact of the scheme on OBJ54 S Lucy

5.27 The Main issues raised

- 5.27.1 The objector suggests the use of the existing A428 and entering Cambridge from the north

5.28 My Responses

- 5.28.1** The alternative alignments were considered during the development of the design, , and the option development and selection of the final route is set out in the Outline Business Case [CD1-20.13].
- 5.28.2** An outline of this proposal was developed by CPPF, and our response to this is included in the CPPF Report in CPPF Alternative Scheme – Engineering Assessment [CD9-31]

5.29 Summary of points made and impact of the scheme on OBJ213 Clare Hall, University of Cambridge

5.30 The Main issues raised

- 5.30.1** Concern over the impact on the current and future work and planned developments of Clare Hall, including access along Rifle Range Road, for maintenance, delivery, and operational purposes.

5.31 My Responses

- 5.31.1** Discussions on the detailed design of the access and maintenance track in this area have commenced, including for the access and maintenance of Clare Hall's property, and the planting to shield the windows overlooking the track.
- 5.31.2** Existing rights of access, for example Clare College, St John's College, Jesus College, the Rifle Range and emergency vehicles and Blue light vehicles will be maintained, and the maintenance track offers the opportunity for access in this area.

5.32 Summary of points made and impact of the scheme on OBJ251 CPPF & Coton Parish Council (Richard Buxton)

- 5.32.1** Prefer to use the existing A428 and enter Cambridge from the north. (section 5.11).

5.33 The Main issues raised

5.34 My Responses

- 5.34.1** Alternative alignments were considered during the development of the design, and the option development and selection of the final route is set out in the Outline Business Case [CD1-20.13].
- 5.34.2** An outline of this proposal was developed by CPPF, and our response to this is included in the CPPF Report in CPPF Alternative Scheme – Engineering Assessment [CD9-31]

6. CONCLUSIONS AND SUMMARY

6.1 Matter 4a

- 6.1.1** In relation to Matter 4a, I have explained the design of the scheme, and the mitigations of the impact effect of the implementation, operation and maintenance of the scheme, and confirmed that discussions with EWR are being undertaken.
- 6.1.2** I have also addressed Matter 4a: the effect on East West Rail land safeguarded for the construction of a new railway between Bedford and Cambridge and the upgrading of existing railway between Oxford and Bedford.

6.2 Matter 4b

- 6.2.1 In relation to Matter 4b, I have explained the design of the scheme, and the mitigations of the impact on residents, pedestrians, cyclists, and motorists, going through the individual interfaces. I have included details of the interfaces with the highway and NMU network and how we have included these in our design.

6.3 Matter 5

- 6.3.1 For Matter 5, I have explained how we mitigated the effects of the scheme on statutory undertakers, statutory utilities and other utility providers. Discussions with the statutory undertakers have commenced and will continue through the detail design stage.

6.4 Matter 6d

- 6.4.1 In relation to Matter 6D, I have explained why the land and rights over land which CCC has applied for are necessary to implement the scheme
- 6.5 **Summary** - The land identified in the Order is essential to accommodate the various components of the Scheme, ensuring compliance with design parameters and enabling safe, efficient operation. As the Scheme progresses, the design will be refined within the limits set by the final Order and the Environmental Statement. The land included is demonstrably required to deliver a technically feasible, safe, and sustainable guided busway system that serves the public interest.

7. STATEMENT OF TRUTH

The evidence which I have prepared and provided in this Proof of Evidence is true and is given in accordance with the guidance of my professional institution. I confirm that the opinions expressed are my true and professional opinions.