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The Cambridge South East Transport Order

Cambridgeshire County Council

Transport and Works Act 1992

Transport and Works (Inquiries Procedure) Rules 2004

Inquiry into:

THE CAMBRIDGE SOUTH EAST TRANSPORT ORDER

PROOF OF EVIDENCE of

Mark Connelly, BEng (Hons), CEng, FICE, FCIHT

of AtkinsRéalis

In respect of Scheme Design, Construction and Operation

On behalf of Cambridgeshire County Council

10th November 2026

Planning Inspectorate Reference: DPI/E0535/25/7

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1. INTRODUCTION

1.1 Qualifications and Experience

1.1.1 I am a Chief Engineer and Professional Head of Highways in AtkinsRéalis, and the AtkinsRéalis Design Expert Witness for the Cambridge South East Transport project.

1.1.2 I have been the Design Expert Witness for the project since May 2025. The design and construction outline data have been developed prior to my involvement.

1.1.3 I hold a Bachelor of Engineering (Honours) degree in Civil Engineering from the University of Strathclyde.

1.1.4 I am a Chartered Engineer, and a Fellow of the Institution of Civil Engineers (ICE). I am also a Fellow of the Chartered Institution of Highways & Transportation (CIHT).

1.1.5 I have over 30 years post-graduation experience of design and construction, primarily working on transport infrastructure construction and upgrades. All of my experience has been with engineering consultancies and covers all project lifecycle stages from feasibility through to construction and handover of projects.

1.1.6 I have previously worked for Carl Bro and Grontmij, but most of my experience has been with AtkinsRéalis (formerly Atkins). My current role is Chief Engineer within our Transportation business. I also hold the role of “Professional Head of Highways” within the business, and am the chair of our “Highways, Roads, and Active Travel” global technical network covering all our worldwide teams.

1.1.7 I carry out numerous project-facing roles, mostly as Project Director (e.g. A9 Dualling Dalraddy to Slochd for Transport Scotland, and Westerhill Road Project, Design & Build delivery for a Contractor) or Project Technical Reviewer (e.g. projects currently such as M25 Junction 10, East Airdrie Link Road, and Lower Thames Crossing). I specialise in the delivery of design in relation to infrastructure projects.

1.2 Scope of Evidence

1.2.1 The scope of my evidence covers the engineering basis of the Scheme design, including the busway alignment and cross section, then the development of the design, including affected highways and rights of way and aspects of the anticipated construction.

1.2.2 The evidence I have presented in this Proof of Evidence (PoE) does not unnecessarily replicate the technical information presented in other documents, most notably the Applicant’s Statement of Case (SoC) **[CD3-01]**. Where other information is replicated or quoted a Core Document **[CD]** reference is provided.

1.2.3 My evidence covers matters listed in this proof section 1.3 and the relevant main topics of objection raised in the third-party Statements of Case and where Objections raised by third parties relate to matters of Design and/or Construction.

1.3 Summary of the Scheme and Evidence

1.3.1 Works of the Cambridge South East Transport Phase 2 (CSET2), hereafter referred to as “the Scheme”, will include:

1) A mostly segregated busway and adjoining “Emergency and Maintenance Access Track” (EMAT) to also be used for active travel.
2) Bus stops at key locations.
3) Operational (street) lighting.

4) Bridges over the River Granta (in two locations) and Hobsons Brook.

5) Signalised junctions where the Scheme interfaces with existing roads.

6) Travel Hub (Park and Ride) providing spaces for cars, bicycles and coaches.

7) Amendments to existing highways and accesses, parking arrangements, drainage and the construction of fencing, environmental mitigation, earthworks and landscaping.

8) Ancillary works as required.

1.3.2 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) (hereafter referred to as 'the Order') to authorise the construction, operation and maintenance of a guided busway to the South East of Cambridge between a proposed Travel Hub adjacent to the A11 and the southern end of Francis Crick Avenue. The objectives of the Scheme are set out in the Outline Business Case **[CD1-19]**. Standards and guidance (including references) are provided as Core Documents (CDs).

1.3.3 My evidence is set out in the order below:

1) **Design standards and design guidance** - I explain which standards were used and their relevance to the design of the Scheme. For the purposes of design, the busway alignment has been equated to that of a single carriageway road as set out in CD 109 of the Design Manual for Roads & Bridges (DMRB) **[CD17-02]**. Other design standards were also used, and these are explained in 2.3 of this proof.

2) **Busway Guidance –** The Scheme will make use of advanced guidance systems, using vehicle-based sensors. This means that the busway design is largely similar to a standard single carriageway road. Further details of guidance systems are included in Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01]**.

3) **Horizontal and vertical alignment** - The busway alignment geometric design parameters use DMRB Standard CD 109 'Highway Link Design' **[CD17-02]** including curvature, gradient, and visibility requirements. Both horizontal and vertical alignments have been carefully developed to integrate with existing and proposed developments and infrastructure, and the natural topography along the route. Further information is given in section 2.5 of this proof.

4) **Junctions -** DMRB CD 123 'Geometric Design of at-grade priority and signal-controlled junctions' **[CD17-03]** has been the predominant standard 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. Further information is given in section 2.6 of this proof.

5) **Cross sections** - The Scheme (busway and EMAT) cross section is generally consistent along its length between the Travel Hub and the roundabout at Francis Crick Avenue. Indicative sections at key locations are provided in the Proposed Site Sections **[CD1-12.07]**, which form part of the deemed planning drawings. The main busway forming the running surface for the buses is 7.3m wide. Each side of the busway has a grassed verge. On one side (the northbound side, generally to the west) of and parallel to the busway (separated by the grassed verge) is a 3.0m wide EMAT which will also be used as an active travel path. Further discussion on the full cross section within the land take is provided in section 2.7 of this proof.

6) **Speed management** – Preliminary operational speed restrictions for each section of the route have been established and these are shown on the Proposed Site Plans **[CD1-12.04 to CD1-12.06]** which form part of the deemed planning drawings. The general approach to speed limits on the busway is to have a 50mph or 40mph limit on the "non-event" sections, reducing to 30mph in the sections where there are signalised junctions and bus stops. A 20mph section is implemented on the busway's immediate approach to and exit from the Travel Hub. Further information is given in section 2.9 of this proof.

7) **Bus stop facilities** – There are three intermediate bus-stops on the route. These are located at the three main residential areas of Great Shelford, Stapleford, and Sawston. Each bus

stop will provide shelters for waiting passengers, cycle parking provision, and “blue badge” parking spaces, as well as pick-up & drop-off loops. Further information is given in section 2.10 of this proof.

8) **Travel Hub** – Designed to minimise interaction between buses and other users and common spaces and buildings. The Travel Hub provides 1250 mixed car-parking spaces, plus bus/coach bays, motorcycle parking and cycle parking. It accommodates the existing public footpath linking Babraham and Great Abington over the A11. Further information is given in section 2.11 of this proof.

9) **Drainage and Flood Risk** – The Scheme proposes a combination of Sustainable Drainage Systems (SuDS) along the route. The surface water runoff from the busway and EMAT is proposed to be conveyed within swales and filter drains for the purpose of close to source treatment. Ponds / basins are proposed at the low points along the route to allow surface water conveyed via the swales to be attenuated and treated appropriately prior to discharge. The maximum storage required has been calculated by considering the Flood Studies Report rainfall, the impermeable area of the catchment, and the maximum allowable discharge including an additional allowance for climate change, to mitigate against flood risk. Further information is given in section 2.12 of this proof.

10) **Bridge Structures** – there are four proposed new bridge structures as part of the Scheme. These comprise two bridges over the River Granta, one bridge over Hobson’s Brook, and one footbridge taking the north end of the realigned DNA path over a small stream near Addenbrookes road. In addition, there are four culvert structures to accommodate small unnamed watercourses and field ditches. Further information on the Bridge structures is given in section 2.13 of this proof.

11) **Safety in design** – The Scheme is committed to delivering safety and engineering excellence. The design draws upon the relevant design standards including the DMRB **[CD17-01 to CD17-06 and CD17-08 to CD17-22]**, Manual for Streets 2 **[CD17-07]** and the Local Transport Note LTN 1/20 Cycle Infrastructure Design **[CD13-11].** These design standards and guidance documents embody collective experience of the overseeing organisations, their agents and industry bodies, resulting from years of research and practical experience. The GG 119 Road Safety Audit **[CD17-06]** process from DMRB will be followed for the Detailed Design stage to provide an effective, independent review of safety, managing the different design requirements for new roads. Provision of the EMAT considers safety in operation and maintenance building on CCC’s operational handbook **[CD9-25]** in place for the existing busways in Cambridge. Hazard identification (HAZID) workshops took place in April 2024. The first session reviewed the hazards identified from the previously conducted Stage 1 Road Safety Audit. The second session considered scenarios for buses operating on the entire length of the busway. Recommendations were either taken on board and incorporated into the outline design or deemed to be matters for detailed design.

12) **Construction and risk mitigation** – Construction changes to the roundabout at the south end of Francis Crick Avenue will be required as advanced works. These works will include construction of the bus-lane through the roundabout and changes to the southern edge of the roundabout to facilitate the new busway. Temporary traffic management, site compounds and temporary disruption due to construction and movement of goods and people will be the main impacts felt along the path of the construction corridor. Requirements on the Contractor to maintain “blue light routes” around the medical campus will be included as requirements in the CoCP (draft **[CD1-10.07, page 33])** and CEMP (draft **[CD1-10.08, page 21])** for the delivery of the construction works.

13) **Earthworks Management** - The Scheme design aims for a balance of earthworks to limit the amount of materials to be removed from site and imported to site as part of the works. The design keeps the vertical profile of the busway as close to existing ground as possible, however some excavation through localised areas is required, and some embankment construction is required at the main bridge structures. Topsoil also needs to be stripped and stored before the main ‘bulk’ earthworks operations can begin. An initial assessment of the re-usability of both excess topsoil and excavated bulk material has been undertaken. Further detail is provided in section 2.16 of this proof.

14) **Extent of land and rights required** – to construct the Scheme works authorised by the Order, permanent acquisition of land and rights, the temporary possession of land and the temporary use of land for access will be required over third-party land/property. The land/rights required have been identified from the Scheme and is shown on the Works and Land Plans including Long Sections **[CD1-11.01]** to cover the permanent works, as well as construction compound and material storage areas. Changes put forward to the land required to the north of the proposed Travel Hub area have been identified as a result of negotiations with National Gas Transmission (NGT) regarding the high-pressure gas pipeline (discussed further in this proof in section 4.14). Further detail is provided in section 2.17 of this proof.

15) **Effects on statutory undertakers – Matter 5** – There are a number of interfaces between the Scheme and Statutory Undertaker's apparatus. The design team has received information on locations for all apparatus. Indicative costs have been received for diversion and protection of apparatus where construction of the Scheme requires it. Precise costings will be procured during the detailed design stage. The location of the high pressure NGT gas pipeline nearby to the proposed Travel Hub has required additional liaison with NGT which has resulted in proposed changes in 2026 to the design of the Travel Hub layout and the A1307 junction, as well as additional land requirements for the localised diversion and the protective mesh matting installation. Further detail is provided in section 2.18 of this proof.

16) **Alternative On-Road Option – Matter 3** – There have been calls from local campaign groups to re-consider an on-road alternative design along the A1307 to CBC in place of the Scheme. Based on reports prepared by the BW4B group, the Applicant has undertaken a further quantitative appraisal to review the performance of their outline proposals for an on-road option compared to the Scheme **[CD12-12]**. This work was undertaken in early 2025 and appraised the options in terms of "Benefits to Cost Ratios" (BCR). The BCR of the on-road alternative was calculated as 0.4 (a low value) and for the Scheme was calculated at 1.53 (a medium value). Further detail of the appraisal process is outlined in Ms Diamant's Proof of Evidence **[CD27-01 App-W3-01]**. Further discussion relating to design and construction is provided in section 2.19 of this proof.

17) **Potential disruption to users of Non-Motorised User (NMU) routes – Matter 4c** - The Scheme crosses a number of existing routes used by non-motorised users (pedestrians, cyclists and equestrians). These include public rights of way and side roads. The Scheme design maintains these routes either in the same location or very nearby, as crossings provided across the busway. In some instances, change to surface applications will be required. Consultation with stakeholders including the Ramblers and the British Horse Society will continue during the detailed design stage to review design layouts for crossings and to look at the implementation of any requirements on the permanent design or through the construction phase. During construction, communication and liaison with the public and concerned groups will be a requirement of the Contractor regarding planned works and their impacts and any agreed mitigation to limit adverse effects on users. Further detail is provided in section 2.8 of this proof.

1.4 Tabulated coverage of certain matters in Proofs of Evidence as set out in the Statement of Matters dated 19 October 2026

Table 1

Statement of Matters dated 19 October Reference	Statement of Matters dated 19 October text	Coverage through my Proof of Evidence	Coverage through Proofs of Evidence of Others
3	The main alternative options considered by CCC and the reasons for choosing the preferred	I address off-line alternatives and the basis for cost estimates in Section 2.19.	Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01 section 4]**.

Statement of Matters dated 19 October Reference	Statement of Matters dated 19 October text	Coverage through my Proof of Evidence	Coverage through Proofs of Evidence of Others
	option set out in the Order. The cost of the Scheme and overall benefits.		Mr Parsons' Proof of Evidence **[CD27-01 APP-W7-01 sections 4 and 8.2]**. Ms Diamant's Proof of Evidence **[CD27-01 APP-W3-01 section 6]**.
4c	The effect of the implementation, operation and maintenance of the Scheme. The potential disruption to, and effects on the safety and wellbeing of users of, non-motorised routes such as cycleways, footpaths and bridleways.	I describe the effect of the implementation, operation and maintenance of the Scheme and the design and mitigations of the potential disruption to and effects on the wellbeing of non-motorised routes in Section 2.8.	Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01 section 9.4]**. Mr Parsons' Proof of Evidence **[CD27-01 APP-W7-01 section 6.6.7]**. Ms Diamant's Proof of Evidence **[CD27-01 APP-W3-01]**.
5	The effects of the Scheme on statutory undertakers, statutory utilities and other utility providers, and their ability to carry out their current and future undertakings effectively, safely and in compliance with any statutory or contractual obligations and the protective provisions afforded to them.	I describe effects of the Scheme on statutory undertakers, statutory utilities and other utility providers further in section 2.18.	
6d	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.	I describe how the land and rights over land which CCC seek are necessary to implement the Scheme in Section 2.17.	Mr Franklin's Proof of Evidence **[CD27-01 APP-W11-01]**.

Statement of Matters dated 19 October Reference	Statement of Matters dated 19 October text	Coverage through my Proof of Evidence	Coverage through Proofs of Evidence of Others
	Whether all the land and rights over land which CCC has applied for are necessary to implement the scheme.		

2. MAIN ISSUES FOR MY EVIDENCE

2.1 The Application (Overview)

2.1.1 The design work undertaken as part of the Application is to an "outline design" standard, which establishes the overall alignment and look of the Scheme in sufficient detail to be used for decision making and budgeting and properly assess the impacts and benefits. Certain design information will be developed at a future "detailed design" stage, which will provide data required to plan construction of the works in greater detail.

2.1.2 In general, reference to the "Scheme" covers all aspects associated with the application. Specific references to "busway" are included when discussing only the carriageway that is intended for use by the guided buses.

2.1.3 The design is based on the preferred option established with some design developments to produce the outline design for the horizontal and vertical alignment, land requirements, and interfaces with existing infrastructure including roads and public rights of way.

2.1.4 Amendments to the preferred option in preparation of the Application have been made to improve the design and operation of the busway during the outline design phase, including:

1) A new scheme design for Francis Crick Avenue (FCA). Buses will now run on the existing carriageway, and the roundabout will be enlarged with a northbound bus cut through.
2) A revised proposal for the existing path to Nine Wells LNR, which will provide access from the EMAT and under the proposed Hobson's Brook structure.
3) An alternative alignment around the Stapleford Retirement Village to accommodate recent development. This was achieved by amending the horizontal geometry of the busway, pushing slightly further out to the east to skirt past the proposed retirement village boundary.
4) The spans of the Stapleford and Babraham River Granta structures have been reduced, as well as the height of the Babraham structure, minimising the footprint of the approach embankments and the visual impact of the Scheme, whilst maintaining the flood plain underneath.
5) The drainage strategy and design required additional conveyance swales to be positioned alongside the busway to convey water to the identified outfalls within the drainage strategy.
6) busway speed limits have been revised at junctions with the existing highway network from 20mph to 30mph, to preserve journey time benefits.
7) Where the busway runs alongside the railway line, high containment vehicle protection has been specified following an updated Vehicle Incursion Risk Assessment and Road Restraint Risk Assessment update.

2.1.5 Further amendments were proposed as a result of consultations with landowners and stakeholders held after the submission of the application. Three substantive change requests which have been accepted by the Inspectors are as follows:

1) Following submission of the Application for the Scheme, NGT made a representation **[CD2-OBJ-370]** in respect of possible impact to the Feeder Main FM03 – GT Wilbraham to Whitwell gas pipeline that would be crossed by the Scheme at two locations, approximately 255 m north of the Travel Hub on the Scheme alignment, and approximately 200m north of the A11 roundabout on the A1307. There have been four resulting changes: (1) additional land required for / diversion of the gas pipeline at the busway crossing point; (2) reconfiguration of the Travel Hub layout to maintain safe distance between Hub users and the pipeline; (3) change from a roundabout to a signal-controlled junction with the A1307 for access/egress to the Travel Hub; and (4) additional land required for the installation of additional protective matting over the pipeline between the busway and the A1307.
2) The paths and access tracks to the south of FCA. To enable a reduction in the amount of land required immediately south of FCA, the two proposed ecological ponds 1 and 2 have

been relocated from their original location to the east of the busway, to a new location to the west of the busway. The revised location of the two ecological ponds allows for the alignment of the proposed access and maintenance tracks in this location to be straightened and the small parcel of land where the two ecological ponds were originally located is no longer required. Ecology pond 3 has also been removed. The layout of the attenuation pond in this area is also further developed.

3) Negotiations with the landowner at the River Granta (Stapleford) Crossing have progressed resulting in a design change to remove two triangular shaped land parcels from the Order Limits. As described in the ES addendum **[CD1-10.02.01, page 12]** the land that will be removed was intended to provide landscape mitigation to the River Granta (Stapleford) Crossing, in the form of screening vegetation, and some enhancement, in the form of wildflower meadow planting. The enhancement is not required to mitigate any assessed environmental effects so can be removed from the Scheme. The landscape design has been amended within the revised Order limits as follows:

   (i) Triangular block of woodland providing visual screening moved closer to the southern bridge abutment

   (ii) Additional woodland planting on the bridge abutment

   (iii) Reconfiguration of the compensatory ditch habitat

2.2 Scheme description

2.2.1 The busway section of the Scheme commences at the Addenbrooke's Road Roundabout, through the creation of a fourth "arm" to the south of the roundabout. The Emergency and Maintenance Access Track (EMAT) follows the busway for most of the route from Addenbrooke's to the Travel Hub.

2.2.2 Works on Francis Crick Avenue including amendments to the Addenbrooke's Road Roundabout, ensure onward connectivity from the proposed busway to the existing Cambridgeshire Guided Busway. This is discussed further in Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01]**.

2.2.3 The roundabout works for the busway traffic include adding a new arm at the southern edge for buses to access the busway, and construction of a northbound (toward Cambridge centre) "through lane" which passes through the central island of the roundabout as a means to prioritise northbound bus movements through the roundabout at certain times of the day. Only buses will be permitted to use the through lane. This layout is often referred to as a "hamburger" layout due to its shape when viewed from above.

2.2.4 The Scheme continues south, bending round and then running parallel to Addenbrooke's Road for approximately 100m before veering south to run parallel to the Railway line for approximately 400m, crossing over Hobson's Brook on a proposed new bridge structure.

2.2.5 The Scheme then heads in a south-easterly direction over farmland to the eastern edge of Great Shelford, requiring new side road junctions at Granham's Road and at Hinton Way.

2.2.6 The Scheme levels generally follow the existing ground, unless they are elevated over the bridge structures along the route (see section 2.13).

2.2.7 A Bus-stop facility is to be provided on the southern side of Hinton Way to the west side of the Scheme.

2.2.8 The Scheme continues in a south-easterly direction towards the eastern edge of Stapleford at the new Haverford Retirement village and Haverhill Road where a new junction is to be provided.

2.2.9 A bus stop facility is provided on the west side again of the Scheme at Haverhill Road.

2.2.10 The Scheme continues south-easterly to cross the River Granta, which separates the parishes of Stapleford and Sawston, on an approximately 4-metre-high embankment.

2.2.11 The Scheme then passes to the east of Sawston, where it meets Babraham Road / Sawston Road at a new junction.

2.2.12 A bus stop facility is provided on the east side of Babraham/Sawston Road, with the main access being to the west of the Scheme.

2.2.13 The Scheme continues in a south-easterly direction towards High Street, where a new junction is proposed.

2.2.14 Once past High Street the Scheme bends round in a more easterly direction towards the proposed Travel Hub park & ride site, crossing the River Granta for a second time.

2.2.15 The Scheme ends at the Travel Hub site adjacent to the A11. Overall, the busway and EMAT will be 8.5 kilometres in length from the Addenbrooke's Road roundabout to the Travel Hub.

2.2.16 The Travel Hub site will provide 1250 parking spaces, plus spaces for coaches, motorcycles, cyclists and drop-off/pick-up. The Travel Hub is accessed by road users from a new junction on the A1307, approximately 200m north of the existing A11 roundabout.

2.2.17 In summary the Scheme works include:

1) the mostly segregated busway;
2) an adjacent EMAT to also allow for active travel use;
3) bus stop facilities;
(a) operational lighting to be provided at the Travel Hub and at junctions and bus stop facilities. New street lighting will be installed at the amended Addenbrooke's Road Roundabout;
4) two bridges over the River Granta and one over Hobson's Brook;
5) signal controlled junctions where the route meets existing roads;
6) uncontrolled crossings for rights of way crossing the busway and EMAT;
7) Travel Hub providing spaces for cars, coaches and storage for bicycles, as well as waiting facilities for passengers;
8) amendments to existing highways and accesses, parking arrangements, drainage and the construction of fencing, environmental mitigation, earthworks and landscaping;
9) environmental mitigation, such as landscape planting and ecology ponds; and
10) other ancillary works as required.

2.3 Design Standards and Design Guidance

2.3.1 The design of the Scheme draws upon the relevant recognised standards and guidance including the Design Manual for Roads and Bridges (DMRB) **[CD17-01 to CD17-06 and CD17-08 to CD17-22]**, Britpave's Guided Busway Design Handbook (BGBDH) **[CD21-10]**, Manual for Streets 2 (MFS2) **[CD17-07]** and the National Guidance contained in relevant Local Transport Note LTN 1/20 Cycle Infrastructure Design **[CD13-11]**.

2.3.2 The DMRB **[CD17-01 to CD17-06 and CD17-08 to CD17-22]** 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.

2.3.3 The design draws on guidance from Local Transport Note LTN 1/20 Cycle Infrastructure Design **[CD13-11]** to help model the EMAT; to cater for the fact it also serves as an active travel route. In particular, the recommended minimum horizontal separation between the carriageway and cycle tracks **[CD13-11, page 52]** has been applied for safety reasons and compliance with best practice.

2.3.4 Cambridgeshire County Council's "Cambridgeshire Highways Development Management, General Principles for Development" document calls a variety of standards and guidance into play **[CD9-24]**. Recognising this, the Scheme design will be in accordance with standards/ guidance including:

1) The DMRB documents, including:
   i. CD 109 Highway Link Design **[CD17-02]**
   ii. CD 127 Cross-Section and Headroom **[CD17-04]**
   iii. CD 123 Geometric design of at-grade priority and signal-controlled junctions **[CD17-03]**
   iv. CD 143 Designing for walking, cycling and horse-riding **[CD17-17]**
   (b) Manual for Streets 2 **[CD17-07]**
   (c) Local Transport Note LTN 1/20 Cycle Infrastructure Design **[CD13-11]**
   (d) Britpave Guided Busway Design Handbook (BGBDH) **[CD21-10]**

2.4 Busway Guidance System

2.4.1 The guidance system associated with the Scheme is based on optical guidance technology fitted to the buses. This is discussed further in Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01]**.

2.5 Horizontal and Vertical Alignment

2.5.1 The busway alignment geometric design parameters use DMRB Standard CD 109 **[CD17-02]** for single carriageways, including curvature, gradient, and sightline requirements. Both horizontal and vertical alignments have been carefully developed to integrate with existing and proposed developments and infrastructure, and the natural topography along the route.

2.5.2 The busway alignment follows the requirements equivalent to an "urban single carriageway" as set out in Britpave Guided Busway Design Handbook (BGBDH) **[CD21-10, page 43]**.

2.5.3 Method 2 in the BGBDH refers to the DMRB standard TD 9/93 which has now been superseded by the DMRB Standard CD 109 **[CD17-02].** The geometric design parameters for single carriageway highways are set out in CD 109 **[CD17-02]**, including curvature, gradient, and visibility/stopping distance requirements, proportionate to the intended vehicle speeds. The "design speed" for the different sections of the route is chosen in relation to the constraints and hazards along the route as well as the anticipated vehicle speed and speed limits.

2.5.4 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.

2.5.5 The busway route of the Scheme has been developed to limit the impact on the landscape and planned developments. The impact on landscape and the design of the landscape mitigation is discussed in more detail in Ms Macleod's Proof of Evidence **[CD27-01 App-W8-01]**.

2.6 Junctions

2.6.1 Where the busway interfaces with the existing local road network signal-controlled junctions are proposed as detailed on the Proposed Site Plans **[CD1-12.04-CD1-12.06]**.

2.6.2 DMRB standard CD 123 "Geometric design of at-grade priority and signal-controlled junctions" **[CD17-03]** has been used for the outline 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. All interactions with the existing highway network will be subject to Road Safety Audit.

2.6.3 Active travel users of the EMAT will be catered for by the crossing facilities provided, including traffic signals and “tactile” paving to guide users to the appropriate crossing locations.

2.7 Cross section (including separation between busway and EMAT)

2.7.1 The busway carriageway cross section is generally consistent along the whole route.

2.7.2 Indicative sections at key locations are provided in the Proposed Site Sections **[CD1-12.07],** which form part of the deemed planning drawings.

2.7.3 The main carriageway is a core element of the Scheme, forming the running surface for the buses. A 7.3m wide carriageway is proposed, in line with CD 127 ‘Cross-sections and Headroom’ (Fig 2.1.1N1g) of DMRB **[CD17-04],** to an “Urban All-Purpose Single Carriageway” standard.

2.7.4 The other elements in the cross-section have their design origins from a mixture of DMRB and the Britpave Guided Busway Design Handbook, decided upon relative to their purpose.

2.7.5 The busway will be separated from the EMAT by a grassed verge/swale. Deterrent fencing is shown across the three main bridges where the separation is a hardened surface. Deterrent fencing similar to that installed on the existing guided busways in Cambridge is discussed in Mr Baker’s Proof of Evidence **[CD27-01 App-W2-01]**.

2.7.6 A 3.0m EMAT is provided adjacent to the verge on the northbound (inbound) verge of the busway for its full length, being a core part of the Scheme. The design has been based on guidance in both LTN 1/20 **[CD13-11, page 42, Table 5-2]** which recommends a 3m minimum width for two-way cycle tracks with peak flows between 300 and 1000 cycles/hour, and in DMRB CD 143 **[CD17-17, page 32]** which requires a minimum width of 3m for unsegregated shared-use routes with 200+ users per hour. The BGBDH **[CD21-11, page 19]** permits a reduction in maintenance track to 3m where necessary. Such minimums are deemed necessary to limit the footprint of the Scheme.

2.7.7 Road Restraints provision (to prevent buses from leaving the busway) between the busway and the EMAT, with appropriate openings for access will be determined at detailed design stage. Proprietary Road Restraint Systems will be subject to safety risk and will depend on factors such as the speed of buses and any hazards adjacent to both the EMAT and the busway. Such systems will be limited based on the specific hazards and risks, and typically no taller than 1.0m in height.

2.7.8 Although some emergency and maintenance access could be achieved from the busway itself, the benefits to safety in operation are deemed to justify provision of a separate EMAT. GG104 ‘Requirements for Safety Risk Assessment **[CD17-05]** sets out the process for assessing risk, which can be summarised by first categorising the types of activity and then assessing the potential impacts on the different classifications of people. Applying this process, the main advantages in having a separate track for maintenance and emergency use include:

1. Enabling maintenance teams to access the busway to carry out routine maintenance activities with limited interaction with bus services. The Construction, Design & Management Regulations 2015 (CDM Regs) require Designers to eliminate or control foreseeable risks during the entire lifecycle of a built asset **[CD4-28]**. This means that Designers must design for safe access, inspection, cleaning and repair, not as an afterthought, by incorporating features such as permanent access systems. Routine maintenance activities for the Scheme will include:
    i. Grass cutting
    ii. visual inspection of the busway surface and edges
    iii. inspection of drainage features
    iv. visual condition surveys of bridges and walls

v. inspection of landscape mitigation planting

vi. fencing, including ecological, noise and boundary fences

vii. traffic signals and street lighting inspection/repair

2. By allowing maintenance personnel to access the busway without using the busway itself minimises the interaction with the bus services. Maintenance vehicles can be parked at any point along the EMAT giving swift and easy access for personnel to carry out visual inspections or activities which do not impact the bus services without having to deploy temporary traffic management on the busway itself. CCC's Operations Handbook **[CD9-25]** will be reviewed to ensure that impacts on active travellers will be considered as part of the operations plan, including use of warning signs, limiting speed of maintenance vehicles, and how to park and maintain safe space for passing. Small to medium sized van drivers and mini road-sweepers or small gritters using the EMAT will maintain as much space as possible for active travellers to pass. Large gritting vehicles intended for gritting the busway will use the busway and will coordinate with the bus operators.

3. In times of emergency whilst emergency vehicles may use the busway for vehicular access, the EMAT provides a safe evacuation space for bus users and additional access space for emergency responders. The existing busway in Cambridgeshire is managed with the aid of an Operations Handbook (v1.19, last updated December 2024) **[CD9-25]** which includes the use of a separate track in various emergency scenarios. The document provides a common methodology for dealing with maintenance and emergencies on busways across the region which helps to rationalise activities and processes, ultimately increasing safety.

4. Provision of a utility corridor for the Scheme:

   i. to create opportunities for existing utilities impacted by the Scheme to be relocated outside the main busway.

   ii. to provide safe access for inspection and maintenance of utilities can be achieved without disrupting the flow of bus services.

   iii. to provide a future facility for the Granta Backbone Network in the proposed southern extension towards the A11 and Linton.

2.7.9 A further grassed verge is provided adjacent to the EMAT, primarily to accommodate drainage apparatus that receives surface water run-off from both the busway and the EMAT but in doing so also provides separation between the busway and the EMAT.

2.7.10 Earthworks slopes are adjacent to the outermost verges and where required they are designed at an angle of 1 in 3 (1 vertical unit rise for every 3 horizontal units laterally). The busway is generally at the same level as the existing ground, or slightly above, except where there are constraints such as river crossings that need to be bridged over. The width of the earthworks slopes are dependent on the height of the busway relative to the existing ground.

2.7.11 Berms are provided at the base of all earthworks slopes to provide space for maintaining assets such as boundary fences, drainage, landscaping and culverts.

2.8 Interaction with Rights of Way

2.8.1 There will be effects on users of the Rights of Way that interface with the Scheme across the Construction phase and when the amended Rights of Way are in operation after opening of the busway. Impacts during maintenance of both the busway and the paths (EMAT and other PRoW's) themselves need also to be considered.

2.8.2 The Scheme does not sever or close-off any PRoW's, although it does partially re-align them. During construction some routes will need to be temporarily diverted in order to accommodate construction activities. It is recognised that closures for long periods are unacceptable to users. Requirement are included in the CoCP **[CD1-10.07]** and CEMP **[CD1-10.08]** requiring the Contractor to keep suitable routes open or manage access to them if live construction works

means it is unsafe for users to pass, unless the construction works/traffic is stopped to allow safe passage.

2.8.3 During operation, PRoW users will have uncontrolled crossing rights over the busway. Warning signs and road markings, along with adequate visibility along both directions of the busway will provide users safe opportunities to cross the busway.

2.8.4 During maintenance activities, appropriate warning signage to alert PRoW users of maintenance activities will be required. The busway operations manual would include appropriate activities for maintainers to follow.

2.8.5 The proposed EMAT, which runs parallel to most of the busway will be designated as a PRoW. Specifically, as a: Permissive Cycleway between South of Addenbrooke's (connecting the existing DNA Cycle Path) to Granham's Road; Bridleway between Granham's Road and Babraham High Street; and Permissive Cycleway between Babraham High Street and the Travel Hub.

2.8.6 Existing PROW's crossing the Scheme will be realigned within the order limits to account for user's safety while crossing the busway. The PROW proposals are demonstrated in PROW and TRO Plan Layouts **[CD1-11.04 and CD1-11.05]**.

2.8.7 The proposed route interfaces with existing public rights of way, as follows:

1. DNA path at Addenbrooke's Road and Hobsons Conduit. It is proposed to realign the DNA path onto the EMAT over a 500m length. This length of diversion can be built with minimal impact on the existing path and temporary paths can be constructed, which will manage some form of public access through the construction period.
2. Bridleway 212/2 (reference points PS08.01 to PS08.02) **[CD1-11.04, page 9]** approximately 900m south of Haverhill Road is a localised perpendicular crossing of the busway. Temporary access will be a requirement, as referenced in the CEMP **[CD1-10.08, pages 23-24]** for the Contractor to manage through the construction contract.
3. Restricted Byway 12/10 (reference points PS10.01 to PS10.02) **[CD1-11.04, page 11]** west of Sawston Road is another localised perpendicular crossing of the busway. Temporary access will be a requirement of the Contractor to manage through the construction contract. Contract requirements will be set taking into account consultation input from stakeholders through the detailed design and contract preparation stage.
4. Footpath 12/9 (reference points PS11.01 to PS11.02) **[CD1-11.05, page 2]** east of Sawston Road is another localised perpendicular crossing of the busway. Temporary access will be a requirement of the Contractor to manage through the construction contract. Contract requirements will be set taking into account consultation input from stakeholders through the detailed design and contract preparation stage.
5. Permissive Cycleway 12/4 (reference points PS14.01 to PS14.02) **[CD1-11.05, page 5]** which passes through the Travel hub from Granta Park over the A11. This route will have space provided in the proposed Travel Hub arrangement, possibly with localised realignments. Temporary access will be a requirement of the Contractor to manage through the construction contract. Contract requirements will be set taking into account consultation input from stakeholders through the detailed design and contract preparation stage.

2.8.8 Any negative impacts on the wellbeing of users can be minimised by having appropriate management around the activities to be undertaken during construction, operation and maintenance. Information for PRoW users during construction will be kept current and accessible to all using appropriate means, such as Newsletters, information boards and Website data. Contact email and phone numbers will be provided to individuals and groups to maximise the spread of information on how PRoW users can safely navigate through any construction works. The CEMP **[CD1-10.08]** sets out the requirements for the Contractor to follow.

2.9 Speed management

2.9.1 Preliminary operational speed restrictions for each section of the route have been established, and these are shown on sheets 1 to 16 of 16 **[CD1-12.05 and CD1-12.06]** which form part of the deemed planning drawings. It is envisaged that the Scheme will implement Intelligent Speed Assistance Technology - already proven successful on the Cambridgeshire Guided Busway since 2023 - to safeguard adherence to the operational speed restrictions by public transport vehicles. Further detail is provided in Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01]**.

2.9.2 Speed restrictions for the Scheme are set based on the geometric design parameters, route context, and identified hazards to consider: (a) the safe passage of buses over the busway, (b) that passenger comfort is maintained, and (c) risks to all workers, users and other parties are as low as reasonably practicable.

2.10 Bus stop facilities

2.10.1 As well as the Travel Hub at the southern end of the Scheme there are three main bus stop facilities provided along the route **[CD1-12.04 to CD1-12.06].** These are located to the east of the three main settlements along the route at Great Shelford (off Hinton Way), Stapleford (off Haverhill Road) and Sawston (off Babraham Road).

2.10.2 All bus stop facilities have footway and/or cycleway connectivity and are provided on the northbound (inbound to Cambridge) side of the busway. At each facility there is vehicle access for drop-offs, blue-badge spaces, as well as waiting shelters and facilities for cyclists.

2.10.3 Southbound busway users are expected to alight on/off the buses after using the specific crossings provided from the facilities on the northbound side of the busway.

2.11 Travel Hub

2.11.1 The proposed Travel Hub is located adjacent to the A11 and is accessed by car users from a new junction on the A1307, around 200m from the A1307/A11 Roundabout. An active travel connection is provided at the southern end of the Travel Hub via the existing PRoW to connect into the bridge over the A11. A new bridge over the A11 is to be provided as part of a separate project, CSET 1, also known as Linton Greenway.

2.11.2 The site's scale—including bay sizes, roadways, and supporting infrastructure—reflects projected demand and takes account of existing Park and Ride facilities around Cambridge. The Travel Hub will provide 1250 car parking spaces, 10 coach bays, 29 drop-off bays and 20 motorcycle spaces. There will be cycle facilities including around 200 cycle parking spaces.

2.11.3 The layout is designed with woodland planting on the perimeter for visual screening, as well as trees and wildflower planting generally in open spaces not taken up with space for vehicles and users. Sustainable drainage systems feature as part of the layout providing treatment and storage of water run-off.

2.11.4 The Travel Hub building will provide a covered waiting area for passengers, toilets and maintenance facilities.

2.12 Drainage works and flood risk

2.12.1 The Scheme proposes a combination of Sustainable Drainage Systems (SuDS) along the route, designed in accordance with advice from the Lead Local Flood Authority, the Environment Agency and other relevant stakeholders. The design of the Scheme's drainage system is in accordance with CCC Surface Water Guidance **[CD9-08]** and attenuates proposed additional run-off by controlling the flows to pre-development (sometimes referred to a "green-field run-off") levels.

2.12.2 Surface water runoff from the busway and EMAT is proposed to be conveyed within swales and filter drains for the purpose of primary treatment, as it passes over the filter strip and through the filter material. Infiltration at shallow depths is not feasible therefore the filter drains and swales will

be used for conveyance only. Surface water runoff conveyed via swales is to discharge to ponds or directly into the River Granta and ditches associated with the river along the route. This manages and contains surface water close to source and following the topography of the route.

2.12.3 Sizing of the SuDS swales and ponds features is based on the maximum storage required which is estimated by considering the Flood Risk Assessment **[CD1-10.23]** rainfall, the impermeable area of the catchment, and the maximum allowable discharge including an additional allowance of 40% for future climate change. Based on the storage assessments, the requirement for ponds will be assessed at the next design stage. If the available storage from the proposed filter drains, swales and permeable pavements is observed to be greater than the storage requirement, then ponds will be re-sized, or alternatively, pipes may be proposed to accommodate the storage requirement.

2.12.4 Hobsons Conduit Trust (HCT) has raised a concern over impacts of water quality from the busway and EMAT finding its way into the Hobson's Conduit and affecting the brook. Specific measures have been agreed following consultation with HCT and these will be further advanced at the detailed design stage. To manage water quality during construction, the Contractor will implement temporary drainage systems, silt control measures, settlement facilities and pollution prevention controls in accordance with the Code of Construction Practice **[CD1-10.07].** Further details regarding flood risk, discharge arrangements and environmental mitigation are contained within Mr Parson's Proof of Evidence **[CD27-01 APP-W7-01]** and in the Written Statement of Mr. Rouse appended to Mr Parsons' Proof of Evidence **[CD27-01 APP-W7-02]**. The planning conditions (specifically items 10, 11 and 15 of the draft Planning Conditions) will control the approval of future designs.

2.13 Bridge structures

2.13.1 There are four new bridge structures as part of the Scheme to cater for the busway route. These comprise two bridges over the River Granta, one bridge over Hobson's Brook, and one footbridge. There are four culvert structures over small unnamed watercourses and field ditches.

2.13.2 The busway crosses the River Granta twice, once at Stapleford (Structure 6), as shown in proposed Deemed Planning Section Drawings 000004 and 000005 **[CD1-12.07, pages 5-6],** and again at Babraham (Structure 8), see proposed Deemed Planning Section Drawings 000009 and 000010 **[CD1-12.07, pages 10-11]**. The bridge at Stapleford spans the River Granta and the majority of the river flood zone (an area classified by flood risk from rivers or the sea, as defined by the Environment Agency). The bridge abutments have been positioned close to the flood boundary to minimise the impact on the storage capacity of the flood zone. Flood compensation areas have been identified for the small, displaced volume, which are all located within the landscaped areas of the Scheme. The bridge outline design is a five span steel and concrete composite viaduct structure. The outline design shows that the ends of the bridge will likely be supported on piled reinforced concrete abutments with in-line wingwalls parallel to the alignment of the bridge. The bridge is proposed to be supported on four sets of intermediate piers, each comprising two columns at each pier, on bored piles with a pile cap. It is likely that the columns will support the bridge deck at each pier location by means of a steel diaphragm between the beams. The bridge has a minimum clearance of 3 m for a 40 m wide corridor to afford landowner access. The abutment heights are set as a minimum of 1.5 m to be maintainable.

2.13.3 At the Babraham crossing, the bridge spans the River Granta, and the abutments are positioned to minimise impact to the flood zone of the river. Flood compensation areas have been identified for the small volume of displaced storage. The outline design of the bridge is a five span steel and concrete composite viaduct structure. The ends of the bridge will be supported on piled reinforced concrete abutments with inline wingwalls parallel to the alignment of the bridge. The bridge will be supported on four sets of intermediate piers, each comprising two columns at each pier on bored piles with a pile cap. It is likely that the columns will support the bridge deck at each pier location by means of a steel diaphragm between the beams. The materials for the bridge beams will be determined at the detailed design stage and could include reinforced concrete or weathering steel. Piers are positioned to avoid being located within the River Granta watercourse. The earth approach embankments to the bridge will be landscaped and profiled to

minimise the visible exposed concrete. Drawings 5212868-ATK-SGN-WHL_AL_SCHME-DR-CB-000009 and 5212868-ATK-SGN-WHL_AL_SCHME-DR-CB-000010 **[CD1-12.08, pages 10-11]** shows the elevation of the River Granta (Babraham) Crossing Bridge.

2.13.4 Hobson's Conduit Bridge (Structure 4) as shown in drawings 5212868-ATK-SGN-WHL_AL_SCHME-DR-CB-000001 and 5212868-ATK-SGN-WHL_AL_SCHME-DR-CB-000002 **[CD1-12.08, pages 2-3]** is proposed to be a single span integral structure with a deck formed from pre-cast pre-stressed concrete beams with an in-situ reinforced concrete deck supported on piled reinforced concrete abutments. The bridge will have a clear span of 15 m and was initially 14.4 m wide, however, as discussed in 4.17.11 and 4.17.17 of this proof, the bridge width is reduced to 13.15m. There will be a minimum clearance from the underside of the deck to the ground of each side of the brook of 2.4 m to allow the pedestrian footpath to run under the bridge to access the existing track on the eastern side. On each side of the bridge there will be reinforced concrete wingwalls with earth approach embankments. At the northwest approach a reinforced concrete ramp structure will connect the EMAT to the existing Nine Wells Nature Reserve access path. The access ramp will cut into the bridge embankment and will be supported by a concrete retaining wall. The bridge deck, wingwalls and ramp will be protected with 1.8 m high H4A containment parapets due to the height of the structure and the proximity of the railway line on the west side. HCT has also raised a concern regarding the shadowing/shading impacts of the proposed bridge over the brook and requested that changes be made to allow more daylight to reach the brook. These issues are discussed further in this proof at section 5.10.

2.13.5 There are four culverts (Structures 1 / 2, 5, and 7) proposed along the Scheme, to carry the busway and EMAT over three small unnamed watercourses. Structure 1 / 2, and 3 are all located just south of Addenbrooke's Road. Shown in drawing 5212868-ATK-SGN-WHL_AL_SCHME-DR-CB-000006 **[CD1-12.08, page 7],** structure 1 / 2 comprises a culvert which carries the busway (Structure 1) and a farm access track (Structure 2) across a drainage ditch.

2.13.6 Structure 3 is a footbridge, possibly of either timber, composite, or glass fibre construction, located just east of Structure 1 / 2 over the same unnamed watercourse. The design for this structure will be similar to the existing DNA Cycle Path footbridge over Hobson's Brook.

2.14 Safety (in design, construction & maintenance/operation)

2.14.1 The Scheme design draws upon the health and safety provisions in the relevant design standards including the DMRB **[CD17-01 to CD17-06 and CD17-08 to CD17-22]**, the specialised Britpave Guided Busway Design Handbook **[CD21-10],** Manual for Streets 2 **[CD17-07]** and the Local Transport Note LTN 1/20 **[CD13-11].** These proven guidelines shape all aspects of the design process, ensuring the Scheme provides a transport system that meets expectations for safety and reliability.

2.14.2 All Designer and Construction organisations involved in the design and build of the Scheme will be subject to the CDM Regs **[CD4-28].** The CDM Regs place the appropriate responsibilities at the different stages of the project that require those involved in the development of the project manage risk, including having the right people with the relevant skills, knowledge, training and experience and that they coordinate between them. The aim being to minimise risks during construction and maintenance (operations) phases where possible.

2.14.3 Considering the Scheme's operational system, a number of safety standards apply to the design of the Scheme. Primarily this includes GG 104 from the DMRB **[CD17-05].** 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.

2.14.4 The application of the relevant design and road safety standards, Road Safety Audit Process and following the principles of CDM **[CD4-28]** will lead to a final Scheme design with a high degree of inherent safety.

2.14.5 A minimum separation of 2m is proposed between the busway and EMAT throughout all high-speed running sections in line with DMRB Standards and Local Transport Note LTN 1/20 Cycle Infrastructure Design **[CD13-11, section 6.2, pages 49-58].** 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 EMAT reaching the main carriageway.

2.14.6 Where the Scheme interfaces with public highways, a Road Safety Audit process in line with DMRB GG 119 has been followed **[CD17-06]** and will continue to be followed through the design phases into construction and operation, in collaboration with the relevant CCC teams, the bus operators and relevant stakeholders.

2.14.7 A "HAZID" (hazard identification) workshop took place on 24 and 26 April 2024. The first session reviewed the hazards identified from the previously conducted Stage 1 Road Safety Audit. The second session considered a Day In The Life Of (DITLO) scenario for a bus operating on the entire length of the busway. Recommendations from these processes have been considered when developing the Scheme's design where relevant in the outline design plans. Such changes include the extension of street lighting and 30mph speed limit south to include the active travel crossing of the busway south of Addenbrooke's roundabout. For matters of further detail, such as specific road markings or traffic signs these will be covered in the detailed design stage. The Scheme development will continue to use best practice from the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) regulations **[CD4-19]** which take into account the added dimension (to that of a 'standard' roadway) of the guidance systems being deployed as part of the Scheme.

2.15 Construction and risk mitigation

2.15.1 The primary construction-related health, safety, and stakeholder disturbance risks relate to dust, noise, and vibration. Effective dust control begins at source, so the Contractor will be required to undertake regular water spraying on haul roads, dampen earthworks materials, and manage stockpiles to prevent windblown dust. Where deemed high risk of dust spread, haul roads could be constructed using bound materials, swept or dampened frequently, and supported by 10 mph speed limits and wheel wash facilities to prevent dirt being tracked out onto public roads. Daily inspections, housekeeping, and weather monitoring will be required in the CoCP **[CD1-10.07]** and the CEMP **[CD1-10.08]** and will support the early identification and mitigation of dust risk conditions.

2.15.2 Noise impacts during construction will be managed through engineering and procedural controls. Temporary acoustic fencing or solid hoardings will be installed to protect sensitive receptors. Noisy activities will be controlled through the CoCP **[CD1-10.07]** and the CEMP **[CD1-10.08]** to be scheduled within daytime working hours and include respite periods, with advance notice provided to nearby residents and businesses. Section 61 consents, agreed with local Environmental Health Officers, will define enforceable limits and approved working methods. Clear and consistent communication through work alerts, updates, and requirements for a 24/7 helpline, will further support effective engagement and rapid response to concerns. At residential locations assessed at higher risk of noise sensitivity, such as those along Hinton Way, Haverhill Road and Sawston Road the construction noise impacts could be reduced. For example, noisy works such as kerb cutting could be moved a minimum distance (20m from any residential curtilage) away from the property receptors, or temporary noise fence erected to mitigate noise levels such that they are deemed 'not significant' after mitigation measures are taken. Requirements for noise mitigation and monitoring, as well as working hours, are included in the CEMP **[CD1-10.08]** for the Contractor to adhere. Requirements for the CEMP are covered under item 9 of the draft planning conditions for the Scheme.

2.15.3 Construction related vibration will be controlled through the application of Best Practicable Means (BPM). This includes selecting plant and methods that reduce vibration levels and avoiding multiple vibration intensive operations running concurrently. Continuous real-time monitoring, routine site checks, and compliance audits will be undertaken in accordance with the contract requirements. This will include a Noise and Vibration Management Plan as a requirement for the

Contractor, as secured in the CEMP **[CD1-10.08]** to provide prior to construction start. Where there are sensitive receptors such as residential properties, laboratories, or medical facilities that may be affected, additional mitigation such as altered sequencing, buffer zones, or alternative construction methods may be required.

2.15.4 Although much of the Scheme will be constructed offline, there are seven key locations where the alignment intersects the existing highway network: Addenbrooke's Road roundabout, Granham's Road, Hinton Way, Haverhill Road, Sawston Road, High Street, and the connection to the A1307 Cambridge Road. At these sensitive interfaces, the Contractor must maintain access and provide safe segregation of vehicles and pedestrians through well marked entrances, exits, crossings, barriers, and adequate visibility. Site vehicle movements will be minimised through careful planning, scheduling, controlled access, and appropriate parking provision for the workforce and any visitors.

2.15.5 As set out in the CoCP **[CD1-10.07]** the Contractor will be required to take measures such that 'Blue light routes' are in place and maintained throughout the construction phase to allow all fire, ambulance and police vehicles to reach any part of the site and especially to local hospitals. Keeping these routes operational is both a legal safety requirement and a core part of CDM (Construction Design & Management) Regulations **[CD4-28].** Pre-construction information will be prepared at detailed design stage which will identify information for blue-light routes, as secured within the CEMP **[CD1-10.08, page 21]** and CoCP **[CD1-10.07, page 33].** This will require the Contractor to plan and budget appropriately and set out compliance with all requirements in their Construction Phase Plans.

2.15.6 Seven site compounds will be used for construction of the Scheme. The main site compound will be located at the proposed Travel Hub near the A1307 (Cambridge Road) and will serve as the primary site office location for the Scheme works, including welfare facilities, security, and associated support functions. This location has been selected for its excellent access to the major road network for commuting and deliveries, reliable utility connections, and relative remoteness from neighbouring properties and public areas.

2.15.7 Material-storage compounds are planned across the Scheme to position construction materials and plant close to their points of use. Distributing deliveries in this way will reduce bottlenecks, alleviate pressure on the main compounds, and avoid unnecessary double-handling of materials, which can increase costs, programme duration and carbon emissions.

2.15.8 Satellite compounds are planned at strategic points along the route, for example at the larger bridge structures to facilitate foundation construction, crane operations and material storage. These will provide local welfare facilities and temporary office space to support close management of specific construction phases and activities.

2.16 Earthworks management

2.16.1 Earthworks assessments indicate that the Scheme will generate approximately 100,000m³ of excavated "bulk" material and require approximately 180,000m³ of bulk fill material, with quantities to be refined during detailed design. 70% of the excavated bulk material has been assessed as suitable for re-use as fill material, with around 30,000m3 of material currently classed as 'unsuitable' and ear-marked for off-site disposal.

2.16.2 In addition to bulk earthworks operations, around 310,000m3 of topsoil will be stripped, and currently around 265,000m3 of topsoil will be re-used, and around 45,000m3 being removed off-site. Topsoil will be stripped and stored separately to preserve soil quality and maximise reuse opportunities. A significant proportion of the topsoil will ultimately be incorporated into ecological mitigation and wildflower habitat. Soil nutrient testing has been undertaken to identify areas where topsoil can be retained and areas where nutrient-rich soils require removal to facilitate successful habitat establishment. Within construction compounds, stripped topsoil will be used to form perimeter bunds providing visual screening and noise attenuation before being redistributed as part of landscape reinstatement, ecological mitigation and habitat creation works.

2.16.3 The Scheme earthworks strategy will be developed further during detailed design and construction stages on the principle of maximising reuse of material wherever practicable. Further surveys and material classification assessments will be required to determine suitability for further re-use and re-incorporation within the Scheme order limits.

2.16.4 Imported material will predominantly comprise engineered structural fill for embankments, bridge approaches and other infrastructure requiring specific engineering performance characteristics, supplemented by localised areas of general fill. Materials are anticipated to be sourced through the Contractor's supply chain and, where practicable, will utilise recycled aggregates in line with the Scheme's sustainability objectives.

2.16.5 In my opinion, the proposed earthworks comprise conventional 'cut-and-fill' operations that can be delivered using established construction methods. The combination of a sustainable material reuse strategy, use of internal 'haul roads', distributed material storage areas, environmental controls and conventional geotechnical solutions provide a practical and deliverable construction approach. I am therefore satisfied that there are no earthworks, ground preparation or geotechnical constraints that would prevent the Scheme from being delivered safely, efficiently and in accordance with the commitments set out within the Code of Construction Practice **[CD1-10.07]**.

2.17 Extent of Land required for the Scheme

2.17.1 In order to construct, operate and maintain the Scheme works authorised by the Order, permanent acquisition of land, temporary possession of land and temporary use of land for access will be required over third-party land/property.

2.17.2 The Applicant does not seek any greater interest in land than is reasonably required for the construction, 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.

2.17.3 The land required has been identified from the Scheme and is shown on the Works and Land Plans including Long Sections **[CD1-11.01, pages 3-18]** to cover the permanent works, as well as construction compound and material storage areas. Further evidence in relation to land acquisition is provided in Mr Franklin's Proof of Evidence **[CD27-01 App-W11-01]**.

2.18 Effects on Statutory (Utility) Undertakers

2.18.1 A number of existing utility services are located within or close to the Order Limits that are affected by the Scheme. These include existing overhead and underground electricity distribution network cables, water and drainage pipes and both medium and high-pressure gas mains. In addition, communication network apparatus may be affected.

2.18.2 A number of diversions are required, principally within highway boundaries. Initial indicative diversion designs and costs have been received by undertakers.

2.18.3 All required works to divert or otherwise amend the apparatus and rights over statutory undertakers should be able to be undertaken without serious detriment being caused to the relevant utility operator or operations.

2.18.4 Two gas supplier statutory undertakers have made representations and/or objections to the powers contained within the Order. Cadent Gas and National Gas Transmission (NGT) both have apparatus affected by the Scheme. 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. The Applicant has agreed Protected Provisions with Cadent and these are being included in the draft Order. Only the SoC from NGT has required further consultation in relation to the design and has resulted in changes to the design.

2.18.5 NGT's SoC **[CD3-21]** highlighted a concern with the proximity to its pipeline infrastructure of the busway, the changes to the A1307, and the proposed Travel Hub. The concerns related to the potential for there being more people in closer proximity to the pipeline (due to gathering at the Travel Hub building and bus stops, which in case of a pipe failure could lead to more impact on human lives) as well as the two locations where the pipeline would cross underneath the new busway and the existing A1307. The existing location of the pipeline is deemed to be far enough away from human 'population' to be acceptable in its current state, but with the construction of the Travel Hub, this potentially could have brought more people into a hazard zone.

2.18.6 GCP engaged with NGT and proposed solutions to mitigate the concerns of NGT through re-design of the A1307 junction and a re-configuration of the Travel Hub layout. In the area where the Scheme crosses the NGT pipeline a localised diversion over the extents of the Scheme construction is now agreed with NGT as mitigation. NGT also requested that additional protective mesh matting be installed above the pipeline for the length between the A1307 and the Scheme in order to limit the risk to Travel Hub users that could result from any potential damage to the pipe in future by unauthorised digging in the field where it's located. A detectable mesh is agreed, and the specification is a high-strength and rot-resistant plastic mesh, including detectable wire and carries a repeated printed warning. Designed to be highly visible when pulled up in an excavator bucket. It is made from a highly visible, highly durable and rot proof yellow HDPE with the words "CAUTION - BURIED GAS PIPE" printed on it.

2.18.7 In respect of the design changes to satisfy NGT's requirements, additional land has been included, as well as updated design information in the 2026 planning drawings.

2.19 Alternative On-road (A1307) option

2.19.1 The timeline for consideration of different options for bus provisions extends back to 2015. Ms Diamant's Proof of Evidence **[CD27-01 App-W3-01, Section 4]** describes in more detail the options assessment and selection processes alongside each of the 'business case' stages. On-road alternatives were a feature of the options assessment at a number of stages prior to the Application being made. Most recently, a comparative review of on-road and off-road options was conducted in January 2025 **[CD1-25.07].** In February 2022, Smarter Cambridge Transport **[CD12-05]** published a 'report' which promoted an "Optimised Alternative to Cambridge South East Transport Study Proposal", presenting information in relation to "low cost" measures along the A1307 ("On-Road Alternative").

2.19.2 The AtkinsRéalis design team translated the indicative descriptions from the text and figures in the Smarter Cambridge Transport report (particularly figures 4 to 7) **[CD12-05, pages 9-11]** onto layout plans in January 2025, appended to the 'On-Road Option Technical Note' dated September 2025 **[CD12-12]**.

2.19.3 A second report to describe similar proposed on-road works to the A1307 was prepared by RGP in September 2025 as part of the Better Ways for Busways (BW4B) Consortium's SoC **[CD3-23.2].** This report did not include any meaningful design or layout drawings, so there is some interpretation as to the intentions when it was analysed.

2.19.4 When comparing the On-Road Alternative and the (off-road) Scheme for costs and benefits it is important to represent the alternative provided as accurately as possible. As mentioned in 2.19.2, the AtkinsRéalis team has attempted to create a series of layout drawings based on the descriptions from the RGP report. This representation is included as appendix C in the 'On-Road Option Technical Note September 2025' report **[CD12-12, page 89-100].** The AtkinsRéalis team estimated the construction costs reflecting 'low' and 'high' cost scenarios, based on anticipated project preparation construction works for the On-road option layouts. These costs were then used in the calculations for the 'Benefit to Cost Ratio' calculations. The same methodology was used in the calculation of the BCR for the Scheme, with costs being built up in 'Bills of Quantities' and using published rates for construction items where costs can be identified.

2.19.5 The SoC produced by BW4B **[CD3-23.1]** provides only an outline descriptive text of the on-road proposals with no design information provided beyond a sketch plan in **[CD3-23.2].** Section 14 of

the SoC explains that a "detailed illustrative plan of BW4B's alternative scheme will be presented in proofs of evidence prior to the Inquiry." A request has been submitted to BW4B for the "detailed illustrative plan" to be released as soon as it is available. As of the date this proof was exchanged the Applicant has not received a copy of this document.

2.19.6 Design standards applicable when considering the On-road Alternative would be assumed to be the DMRB, which accords with the guidance in the CCC's "Cambridgeshire Highways Development Management, General Principles for Development" **[CD9-24, page 7].** The principles in DMRB should be applied to strategic links such as the A1307 at this location. In addition, the speed limit through the A1307 corridor (south of Hinton Way) of 50mph is generally considered more suited to DMRB standards, as it would still be classed as a higher speed road.

2.19.7 Deliverability risks associated with the on-road option include engineering feasibility, land acquisition uncertainty, construction-phase disruption and planning conflict. These risks further undermine the on-road option's viability. Factors include:

1) Engineering feasibility – the proposed on-road alternative provides only partial dedicated bus-lanes and therefore do not represent an alternative scheme so much as a Do-Minimum intervention to the A1307.
2) A new link to the CBC from the A1307 is proposed on the basis that this will be provided for CBC Phases 3 and 4 but at present the timescale for expansion of the CBC is not yet certain.
3) The Travel Hub will still be required, but land acquisition could not be achieved through the use of TWAO powers.
4) Provision of the bus-lanes indicated would still require intrusive construction works and additional land associated with the construction of a series of on-line improvements which would cause a disruption along the A1307.

2.19.8 Priority junctions and roundabouts along the A1307 route serve as spatial constraints and interruption points to the flow of traffic including buses. Bus lanes either need to be terminated before the junctions or additional space taken to include bus lanes at/through the junctions.

2.19.9 Street Lighting provision, particularly at the priority junction locations should be subjected to a street lighting assessment which will take account of safety benefits and running costs. Any requirement for lighting takes account of the whole life costs of a proposed lighting scheme and its environmental impact set against the resultant saving in personal injury collisions. The A1307 exhibits a disproportionately high rate of cycling related injury collisions, potentially leading to proposed lighting improvements/installations to enhance safety. Previous proposals for safety improvements including street-lighting on the A1307 at Haverhill Road have been rejected because of the impact on Barbastelle Bats as discussed in **[CD5-23, page 104]**. As such it is not clear that a safe solution could be achieved at this location.

2.19.10 The conclusions of the studies to compare the On-Road Alternative to the Scheme show that an On-Line alternative comparable to the proposed Scheme has not been identified. The improvements proposed to date by BW4B do not deliver the benefits the Scheme provides. Moreover, the need to provide the Travel Hub and a new link to the CBC means that this On-Road Alternative does not offer a major cost saving and is complex to deliver in planning and construction terms.

3. STAKEHOLDER ENGAGEMENT

3.1 A comprehensive set of consultation activities have been conducted throughout the development of the Scheme. These have helped to shape the design options that have been taken forward for this Application. The consultation process and further details on the consultation activities that were undertaken is outlined in the Consultation Report **[CD1-05.02]**.

3.2 Sections 2.1.4 and 2.1.5 of this Proof describe the amendments made to the design in the development of the application documents, and the subsequent changes post-application.

4. THIRD PARTY STATEMENTS OF CASE, OBJECTIONS AND REPRESENTATIONS RELEVANT TO MY EVIDENCE

4.1 Introduction

4.1.1 This section sets out issues raised in third party Statements of Case, Objections and/or Representations that are relevant to my area of expertise and evidence. For each SoC or Objector I set out a Summary, and their detailed points, as well as my response to those issues, and conclusions.

4.2 Mr. Ben Kingsley [CD2-OBJ-64, CD3-03]

Summary of points made and impact of the Scheme

4.2.1 Mr Kingsley's SoC raises points regarding the need for the Scheme and the alternative raised by BW4B.

The Main issue raised in relation to my area of expertise is as follows:

4.2.2 From Mr Kingsley's SoC, he quotes: "…we are concerned that the busway will, ironically, make cycling more hazardous, particularly for our children, both because of disruption to the DNA trail and because the busway/road crossings will result in more traffic backing up and frustrated drivers speeding to 'beat' the multiple proposed crossing points, or to 'make up time' after having been held waiting at a crossing point" **[CD3-03 OBJ-64, page 1]**.

My Response

4.2.3 With respect to traffic "speeding to 'beat' the multiple proposed crossing points". There are five new side road crossings, all proposed to be controlled by traffic signals to aid bus priority. These are located at Granham Road, Hinton Way, Haverhill Road, Sawston Road and High Street. The frequency of the buses crossing at each of the side roads will be relatively low, expected to be once every 4 minutes in both directions (8 minutes in each direction). Given that there is only one, or generally at most, two buses passing through the signal control section, the interruption time will be minimal. Assumptions at this outline design stage is that the cyclic time for the signals would be 90-seconds as a maximum even accounting for pedestrian and cyclist phases. This would equate to a maximum wait time for drivers of around 50 seconds. Disruption to the DNA trail will be minimised and managed by the Contractor through the construction period, by providing protective fencing, temporary paths where required, and maintaining the DNA path in-situ, until such times that the new EMAT is available (either partially or wholly) for use by pedestrians and cyclists.

Conclusions on Objections

4.2.4 There will be operational changes to road users on the five affected side roads crossing the Scheme. This will be in the form of new traffic signals which will be activated by both buses on the busway, which will be prioritized above all traffic, and pedestrians & cyclists who will have to manually activate the signals. Signal timings will seek to reduce the impact to pedestrians, traffic and cyclists.

4.3 Mr Paul Cutmore, Ramblers' Association [CD2-OBJ-233, CD3-05.1]

Summary of points made and impact of the Scheme

4.3.1 Mr Cutmore's SoC raises several objections regarding access to Nine Wells, the pedestrian crossing at the A11, closure of PROWs during construction, and the link between Babraham bridleway 12 and Gog Magog **[CD3-05.1 OBJ-233, page 1].** In this regard the SoC is:

4.3.2 "…. objecting to the inadequate provision for footpaths in the CSET Order, both public rights of way and permissive or customary footpaths. In particular the Order Plans fail to make effective or safe provision for

a. ***Nine Wells Access.*** *Pedestrians' access to the Nine Wells Local Nature Reserve (LNR) from areas to the west and south of the proposed busway.*
b. ***Pedestrian Crossing at A11 Hub.*** *Pedestrians to cross multiple lanes of vehicles entering and leaving the proposed hub beside the A11.*
c. ***Blanket closure of PROW's****. The CSET Order Plans propose giving blanket permission to close a number of Public Rights of Way throughout the duration of the Works.*
d. ***Additional Footpath****. In the 2020 we were asked for any suggestions on footpath improvements. Not a Specific Objection**

The Main issues raised (pertinent to my evidence)

4.3.3 Inadequate provision and ineffective or unsafe provision for footpaths **[CD3-05.1 OBJ-233, page 1]**:

A. Nine Wells
Pedestrians' access to the Nine Wells Local Nature Reserve (LNR) from areas to the west and south of the proposed busway. Such areas include the Clay Farm development, Hobson's Park and Addenbrookes Road - these areas currently have ready access to Nine Wells via the (permissive) DNA cycle path. (Attached Att4 Appendix G of the Cambridge South Station TWAO shows the aforementioned areas and their location with respect to Nine Wells.)

B. Pedestrian Crossing at A11 Hub
Pedestrians to cross multiple lanes of vehicles entering and leaving the proposed hub beside the A11.

C. Diversion or closure of Public Rights of Way (PROW). The CSET Order proposes to temporarily close the following public rights of way:

1) Bridleway 212/2 between Stapleford and Babraham
2) Restricted Byway 12/10 between Sawston and Bridleway 212/2
3) Footpath 12/9 between Sawston and Babraham
4) Footpath 12/4 between Babraham and the Abingdons

D. Additional footpath. In 2020 we suggested a link path between Babraham bridleway 12 and Gog Magog Hub. Not a Specific Objection*

My Responses

A. Nine Wells LNR Access
Public access from the west of the Scheme (e.g. Addenbrookes Road, Hobson's Park, Clay Farm) is maintained via the remaining section of DNA path from Addenbrookes Road to the new link to the EMAT, designated as a Permissive Cycleway over this section, and then around and underneath the proposed Hobson's Conduit bridge on a section designated as footpath. These connections are shown on drawing number 5212868-ATK-GEN-WHL_AL-DR-CH-000002 **[CD1-12.07, page 3]**. The connection with existing cycle tracks towards the north east of Nine Wells is retained by provision of an uncontrolled crossing of the busway, located in the 30mph limit section of the busway.

B. Pedestrian Crossing at A11 Hub
Connection from PROW 12/4 to the A11 crossing will be maintained through the Travel hub. A crossing of the internal car park road feeding the west car parks connects to the bridge over the A11. A further crossing of the busway is required as the buses enter/exit the Travel hub. This is proposed as an uncontrolled crossing of the busway. Bus frequency is around one every four minutes, and bus speeds limited to a maximum of 20mph in this location, limiting risk to users. The proposed EMAT will provide an alternative north-south connection. There are plans for an upgrade to the bridge over the A11, but this is being taken forward as part of a different project.

C. **Diversion or closure of Public Rights of Way (PROW)**
PROW's listed are all impacted by the construction works and closures or diversions will be required for operational and safety reasons. Movement of construction materials, machinery & plant, and personnel between works areas will cut across the PRoW's. During the development of the detailed design phase and contract preparation phase, construction requirements will be drafted to minimise the impact and extents of closures and diversions to the PROW's. Actions such as stationing personnel at gated and controlled accesses during working hours and fenced off works with temporary PRoW surfaces can all be considered during the construction period to maintain an appropriate level of access. Requirements around consultations, communications and provision for users are set out in of the CEMP **[CD1-10.08, Section 7.2.9 & 7.2.10, page 24]**. See also 2.8.2 of this proof.

D. **Additional footpath**
Suggestion of a link path between Babraham bridleway 12 and Gog Magog Hub is beyond the remit of the CSET project.

Conclusions on Objections

4.3.4 Nine Wells access is maintained via an altered network of paths, retaining all movements. Signage will encourage use of the DNA path to/from Addenbrookes Road. Uncontrolled crossing of the busway is provided, with appropriate signage, paving and lighting for users' safety.

4.3.5 Users of the PROW connecting to the A11 will need to negotiate the Travel Hub, including a car park access road and the busway itself as buses enter and exit the Travel hub. Appropriate signing, paving and lighting facilities for users of the PROW crossing the busway will be provided. All appropriate design standards and requirements for visibility is provided also. Expectations for minimising impact on users during the construction period can be agreed and set-out during the detailed design phase when the contractual requirements will be drafted. Whilst the CoCP **[CD1-10.07]** and CEMP **[CD1-10.08]** were submitted in support of the order, there are anticipated planning conditions that will ensure that details relating to controls on construction management are submitted and approved before works can commence. Ms McDade's Proof of Evidence **[CD27-01 App-W10-01]** describes this further.

4.4 Cambridge University Hospitals Trust (CUHT) [CD2-OBJ-466, CD3-06]

Summary of points made and impact of the Scheme

4.4.1 CUHT are seeking "that the Trust's vital operations on the Cambridge Biomedical Campus will not be impeded as a result of exercise of the rights and powers sought in the proposed order" [**CD3-06 OBJ-466, page 1]**. There are four points in the SoC relating to the design and operation of the Scheme that are covered below.

The Main issues raised are as follows:

4.4.2 In item 2.1 **[CD3-06 OBJ-466, page 5]** "… It is critical that the BLR remain available and unobstructed … during operation to ensure patient safety."

4.4.3 In item 4.2 **[CD3-06 OBJ-466, page 6]** "… not to allow any soil or 'other substance' to be discharged into, or cause any obstruction to the free flow of, the Conduit or to cause it to overflow the adjoining freehold land".

4.4.4 In item 4.3 third bullet **[CD3-06 OBJ-466, page 6]** "… should any contamination incident be found to be caused by the construction works, or ongoing operation of the CSET service, then the contamination will be mitigated, removed and cleansed by the CCC".

4.4.5 In item 7.3 **[CD3-06 OBJ-466, page 8]** "… the emergency and maintenance access/service track will replace a dedicated active travel route which will introduce vehicular traffic, CUH requires further clarity on the proposals for the track and what measures will be put in place to ensure that users of the path are unaffected by the scheme, both during construction and operation. In

particular, CUH would like confirmation that the access track will be wide enough to accommodate not only existing use but future use."

My Responses

4.4.6 Against each item:

4.4.7 In item 2.1 – the Blue Light Route will continue to function at all times on the basis of the final design layout. Access via Addenbrookes Road, Dame Mary Archer Way and Francis Crick Avenue, and the roundabout (that connect the three roads and the busway) will be subject to the same rules and regulations as the public highway. The CoCP **[CD1-10.07]** requires the Contractor to maintain the BLR unobstructed throughout the period of construction. Keeping these routes operational is both a legal safety requirement and a core part of CDM (Construction Design & Management) Regulations **[CD4-28, page 18].** A traffic management and diversion plan, along with monitoring plans, will be completed by the contractor as part of their pre-construction work. It will also be a contractor requirement that access to Commercial and Private properties are maintained at all times.

4.4.8 In item 4.2 - the drainage design for the Scheme will attenuate (store temporarily) water run-off from the busway and EMAT. The design will provide attenuation calculated to be the same as the pre-development flows into the Hobsons Conduit at the discharge points, in accordance with Cambridge County Council (LLFA) Surface Water Planning Guidance **[CD9-08].** Discharge points will be separate to any existing drainage networks or outfall points. Any specific design changes as a result of consultations with HCT can be incorporated into the Detailed Design stage.

4.4.9 In item 4.3 – as the busway is equivalent to a "low traffic road", it has been deemed a "Low" pollution hazard level in accordance with CIRIA C753 SuDS Manual **[CD19-02, page 596].** The use of Filter drains and Swales, as well as the attenuation pond prior to discharge, as proposed in the design are deemed an adequate "treatment train" for any potential pollutants.

4.4.10 In item 7.3 – the EMAT will be 3.0m wide and where new lengths of path are being proposed these will also be 3.0m wide, which will accommodate existing use and future use. Vehicles using the EMAT will be busway maintenance vehicles and emergency vehicles only. The frequency of access by maintenance vehicles will be low and localized, so impact on active travel users of the EMAT will be minimal/negligible. Provisions associated with the EMAT are described further in section 2.7.8 of this proof.

Conclusions on Objections

4.4.11 Based on the technical detail presented in this proof in 4.4.3 above, the outline design as it currently stands is suitable to address the concerns raised by Cambridge University Hospitals Trust.

4.5 Fen Line Users Association (FLUA) – [CD2-OBJ-325, CD3-11]

Summary of points made and impact of the Scheme.

4.5.1 In relation to the design the main point in the SoC appears to relate to protection of land where the former rail track bed is located. A second point in the SoC relates to design concerns the "northern terminus" on Francis Crick Avenue.

The Main issues raised are as follows

4.5.2 From the FLUA SoC 3.1 **[CD3-11, page 1]** – "Sheet 10 of the Existing Layout drawings **[CD1-12.02]** shows the busway occupying a parcel of land (identified as 101 on Sheet 10 of the Works and Land Plan **[CD1-11.01]** also parts of 098 and 103) immediately adjacent to an industrial estate which has been built partly over the trackbed of the former railway." And 3.2 – "If a busway

were to be built on that alignment, reopening the railway would require either moving the busway or acquiring and demolishing the buildings that have been constructed on the former trackbed".

4.5.3 Item 4.2 states **[CD3-11, page 2]** "The terminus on Francis Crick Avenue is a very constrained site. There needs to be provision on the east side for substantial numbers of people to be waiting for their bus home in the evening peak."

My Responses

4.5.4 Mr Baker **[CD27-01 APP-W2-01, page 18]** explains the historic option development work which ruled out a rail option.

4.5.5 Regarding FLUA point 3.1, the parcel of land noted as 098 runs adjacent to the disused railway line. Land parcel 101 runs partially over the disused railway line, and adjacent to the industrial units. It should be noted that parts of the disused railway are built over by a number of industrial units. Land parcel 103 covers land previously occupied by the disused railway.

4.5.6 The alignment of the Scheme has been chosen to stay as close as possible to the east side of the villages along the route to limit overall land take and to limit distances travelled by users from the villages to the busway passenger bus stop areas.

4.5.7 There are no definitive plans from FLUA or RailFuture to utilise the section of disused railway in the location of the land parcels. A report commissioned by RailFuture by Jonathan Roberts, JRC, February 2024 **[CD12-20, page 32]**, which is referenced in footnotes 1 and 2 of the FLUA SoC, shows a potential route further to the east of the Scheme's location.

4.5.8 If the rail line were to be reopened on the old track alignment and the Scheme was to move further east to accommodate it, then there would need to be a bridging over of either the Scheme or the Railway to facilitate their route alignments to the south-east of Sawston, requiring a significant structure.

4.5.9 Regarding the item in FLUA's SoC item 4.2 "The terminus on Francis Crick Avenue is a very constrained site" it should be noted that this location is not a terminus, it's a bus stop. The design for this bus stop on FCA is constrained due to the land take provisions. However, by utilising the existing paved footway area adjacent, there will be sufficient width of around 4.5m for bus-stop users and path users to pass.

Conclusions on Representations

4.5.10 There are no definitive plans to re-open on the line of the old railway in the vicinity of the land parcels referenced. The RailFutures report **[CD12-20, page 32]** shows a proposed alignment for a light rail route between Shelford and Granta Parka few hundred metres to the east of the old rail alignment, which would have interfaces with the Scheme in the vicinity of Stapleford and at the north end of the Travel Hub. The RailFuture alignment would include a bridge structure over the A505/A11 junction. There are existing constraints over the old railway track-bed in the shape of the industrial units and to re-open the railway on the previous alignment would require removal of these industrial units.

4.5.11 The design of the northern bus-stop on FCA provides sufficient width users and those passing on the adjacent (existing) paved footway area.

4.6 One Haverhill Partnership & Haverhill Town Council [CD3-07 REP-03]

Summary of points made and impact of the Scheme

4.6.1 The One Haverhill Partnership and Haverhill Town Council raise points around additional extension to Haverhill and a proposed amendment to the Scheme. The proposed amendment described in section 4 of their SoC **[CD3-07 REP-03, pages 5-6],** to add a link to the A505/A11

interchange is discussed below. The statement (also in section 4 of their SoC) that there could be a more efficient crossing of the River Granta (less skewed) is also discussed.

4.6.2 The point in section 3 regarding parking provision has been covered in Mr Shipley's Proof of Evidence **[CD27-01 App-W4-01, section 2.9.12 and 2.9.13].**

The Main issues raised are as follows

4.6.3 The One Haverhill SoC states in section 4 – Proposed amendment: Our proposed amendment aims to unlock a route for future development, with less cost and less disruption of the existing developments. We believe that our proposed (and modest) request for an amendment to the busway is designed in such a way to allow for a future extension which would not disrupt the operation of the working busway. Whilst of course we accept that it is down to the GCP to choose the most economic method for creating the amendment we request, our route suggests a repositioning of Babraham Viaduct to cross the River Granta at a different angle allowing for a shorter overall span, which may release funds to pay for the amendment **[CD3-07 REP-03, page 5]**.

My Responses

4.6.4 Mr Baker **[CD27-01 APP-W2-01, page 18]** explains the historic option development work which ruled out an extension to Haverhill. There do not, however, appear to be any major engineering reasons why the proposal would be unfeasible from an initial design viewpoint, although it would need to be assessed to an equivalent level of detail as the Scheme to determine an estimate of cost. Traffic Modelling and Business Case work would be required to determine the wider project benefits.

4.6.5 The angle of the bridge crossing of the River Granta and its associated flood plain in the Scheme does not appear to be significant enough to make a major change to the cost of the proposed structure. The structure represented in the deemed planning drawings for this location **[CD1-12.08, page 10]** is a 4-span bridge structure, designed to maintain the flood plain for the River Granta below. The span which crosses the river is 31.5m long and the river in this location is only a few metres wide. Therefore, lessening the skew of the bridge in relation to the river is not going to result in any major difference to the overall size and span of the bridge, when bridging the flood plain is the overall design criteria. In my opinion it is highly unlikely that a change to the bridge angle would generate project cost savings to offset the additional cost of the proposed new link as suggested by One Haverhill.

Conclusions on Representations

4.6.6 The extension discussed in the One Haverhill SoC is outside of the scope of the Scheme. The Scheme proposals do not exclude or preclude any future extension however such a connection is not part of the scope of this Order.

4.7 West Suffolk Council [CD2-REP-07; CD3-12]

Summary of points made and impact of the Scheme

4.7.1 The statements relate to the integration with the existing road network at the south end particularly with the A1307 and to road links beyond towards Haverhill. As well as the operation (non-segregation) of buses and cars using the access into the Park & Ride Travel Hub site.

The Main issues raised are as follows

4.7.2 "Access & Egress …. the design of the scheme will not integrate with the existing highway network as it has been described. In particular, the access and egress from the A11 Travel Hub to the A1307 for buses which are not terminating at the Travel Hub but instead continue east onto the A1307 towards Haverhill" **[CD3-12 REP-07, page 2]**.

4.7.3 “Segregation of bus and cars …. not convinced that the development will ‘minimise interaction between busway vehicles and other users’ (Design and Access Statement, page 52 **[CD1-17, page 56]**). An individual, separate bus lane through the site segregated from car traffic is not provided, nor would priority be afforded to buses exiting the site, giving way to westbound traffic, a potential area of congestion. We strongly advise that the design of the Travel Hub is reconsidered, noting a significant level of commuting and growth within Haverhill (The Future Growth in Cambridge Technical Note pages 26 – 29)” **[CD1-25.01, Section 4, pages 30-34]**.

My Responses

4.7.4 As noted above, Mr Baker **[CD27-01 APP-W2-01, page 18]** explains the historic option development work which ruled out an extension to Haverhill. In relation to the access & egress point, following acceptance of the Change Request, the design proposes a new signal-controlled junction on the A1307 which provides unrestricted access for buses between the A11 and A1307 and the Travel hub and the wider road network, e.g. to Haverhill. Operation of the proposed signal-controlled junction is described in Mr Shipley’s Proof of Evidence **[CD27-01 App-W5-01, section 2.10.6]**.

4.7.5 In relation to the segregation of buses and other users, this is described in the Design and Access Statement, page 52 **[CD1-17].** A separate bus lane is provided, over part of the Travel Hub. From the access point for buses to the north of the bus terminal stances and the proposed A1307 junction, any buses accessing the A1307 will share the proposed Travel Hub access road with vehicles using the park & ride facilities.

Conclusions on Representations

4.7.6 In my opinion the designed layout of the Travel Hub affords a good level of access and egress for all users. Provision of future bus infrastructure from the A11 towards Linton and Haverhill are not restricted by the layouts of the Travel hub and busway or EMAT.

4.7.7 Levels of segregation in and around the Travel Hub limit the amount of interaction points between different users to a minimum. Such a variety of user needs and routes are difficult to completely segregate. Vehicle speeds within the main part of the Travel Hub are limited to 20mph and 30mph therefore reducing the risk to users. At detailed design stage there is potential scope to reduce the speed limit of the internal car park roads to 20mph.

4.8 AstraZeneca [CD2-OBJ-365, CD3-09]

Summary of points made and impact of the Scheme

4.8.1 Points regarding “Ground Water Drainage” items 3.11 to 3.14 **[CD3-09 OBJ-365, page 5]** relate to design.

The Main issues raised are as follows

4.8.2 Item 3.12 **[CD3-09 OBJ-365, page 5]** states “The route of the drainage scheme (running in part along Francis Crick Avenue and then from Addenbrooke’s Road through the various plots identified in the attached amended version of the Book of Reference against which the “Deed of Grant” has been noted) must be protected and maintained or replaced without interference with its ability to take the flow of water arising.”

4.8.3 Item 3.13 **[CD3-09 OBJ-365, page 5]** states “In its objection of 6 March 2025 AstraZeneca UK Limited and Medimmune Limited sought an assurance that the drainage scheme will not be affected by the CSET works and for any interference with its legal rights to use the drainage scheme arising as a consequence of the works of the CSET works to be rectified without detriment at the promoter’s cost.”

4.8.4 Item 3.14 **[CD3-09 OBJ-365, page 5]** states “As at the date of issuing this Statement, no such assurance has been offered or provided.”

My Responses

4.8.5 The design of the Scheme's drainage system is in accordance with Cambridge County Council (LLFA) Surface Water Planning Guidance **[CD9-08]** and attenuates all proposed additional run-off by controlling the flows to pre-development (sometimes referred to a "green-field run-off") levels. There will be no impacts on the drainage scheme.

Conclusions on Representations

4.8.6 The proposed drainage strategy provides for sufficient attenuation within the Scheme's network and hence will not have any impact on existing drainage rights. The attenuation ponds will be lined and so would have no effect on groundwater flows. Further detail on the drainage design methodology is given in Ms Surdevan's Written Statement which is appended to Mr Parsons' Proof of Evidence **[CD27-01 APP-W7-02]**.

4.9 The University of Cambridge [CD2-OBJ-439, CD3-10]

Summary of points made and impact of the Scheme

4.9.1 The University of Cambridge submitted a statement that they wish for the time being that their objection be observed as their SoC for the inquiry. There are three areas of concern raised that relate to Design, namely Drainage, Access to the Campus for pedestrians and cyclists, and Design Observations.

The Main issues raised are as follows

4.9.2 Drainage item 3.2.1 **[CD3-10, page 6]** states "In order to ensure that the University's drainage rights are not impeded as a result of exercise by CCC of the powers and rights sought in the TWAO, we request that provisions are incorporated in the Order to ensure that:

4.9.3 (i) exercise of CCC's proposed rights do not impinge the University's drainage rights.

4.9.4 Access Item 5.3 **[CD3-10, page 7]** states "Noting that the emergency and maintenance access/service track will replace a dedicated active travel route with a route which will introduce vehicular traffic, the University requires further clarity on the proposals for the track and what measures will be put in place to ensure that users of the path are unaffected by the Scheme, both during construction and operation. In particular, the University would like confirmation that the access track will be wide enough to accommodate not only existing use but projected future use".

My Responses

4.9.5 Drainage: The design of the Scheme's drainage system is in accordance with CCC Surface Water Guidance **[CD9-08]** and attenuates proposed additional run-off by controlling the flows to pre-development (sometimes referred to a "green-field run-off") levels. Further detail on the drainage design methodology is given in Ms Surdevan's Written Statement which is appended to the Proof of Evidence of Mr Parsons **[CD27-01 APP-W7-02]**.

4.9.6 Access: During operation, the Scheme's EMAT will be 3.0m wide and where new lengths of path are being proposed these will also be 3.0m wide, which will accommodate existing use and future use. For the section of realigned DNA path, the width increases to 4.0m. The EMAT will be used by authorised busway maintenance vehicles and emergency vehicles. The frequency of access by maintenance vehicles will be low and localized, so impact on active travel users of the EMAT will be minimal/negligible. For discussion around impacts during construction, refer to section 2.8 of this proof.

Conclusions on Representations

4.9.7 The design for the Scheme as it currently stands is suitable to address the concerns raised by The University of Cambridge.

4.10 Mr Partridge-Hicks & Ms Hathaway and the Better Ways for Busways ("BW4B") consortium [CD2-OBJ-440, CD3-23.1]

4.10.1 Summary of points made and impact of the Scheme

4.10.2 The SoC contends that the transport assessment is not valid, and that "On-road" amendments could be made to the A1307 for less cost, less land-take, less impact on the environment and still provide similar benefits **[CD3-23.1, page 7]**. In relation to design, the need for the EMAT is disputed in item 5 **[CD3-23.1, page 3]** of the BW4B SoC given that the proposed busway of the Scheme can be accessed by maintenance, recovery & emergency vehicles.

4.10.3 Reference is made in item 14 **[CD3-23.1, page 8]** to the RGP report "BW4B Alternative Proposal" **[CD3-23.2]**. The RGP report sets out in text format possible solutions to provide on-road bus provisions within existing road space.

4.10.4 It is claimed in item 22 **[CD3-23.1, page 11]** that the applicant has "specified a relatively novel, costly, risky and carbon-intensive construction method" for the busway.

The Main issues raised are as follows:

4.10.5 Item 12 of the SoC **[CD3-23.1, page 7]** states "BW4B has revisited and refined one of the in-highway options and will demonstrate that this can deliver similar transport and economic benefits but at much lower financial and environmental cost and without the need for Compulsory Purchase".

4.10.6 Item 5 under "The Scope of the TWAO" in the SoC **[CD3-23.1, page 3]** states: "The Scheme includes the option for the busway to be operated using physical guidance or an optical guidance system. BW4B contend that an EMAT which is included within the draft Order would only be "ancillary" to the busway in the event that the busway is operated using a physical guidance system. If the busway is not operated using a physical guidance system, then the maintenance track would not be ancillary to the operation of the busway as maintenance, recovery and emergency vehicles could use the busway without the need for the maintenance track. BW4B will ask the Secretary of State to consider whether the EMAT falls within the scope of the matters in respect of which the Secretary of State may make an Order in the event that a physical guidance system for the Scheme is adopted". Item 23 **[CD3-23.1, page 11]** also makes reference to the EMAT.

4.10.7 The RGP report "BW4B Alternative Proposal" **[CD3-23.2]** sets out in text format possible solutions to provide on-road bus provisions within existing road space. However, there are no design data or drawings included so it is difficult to follow the proposals in any detail and therefore to analyse the proposals effectively. The SoC states further in item 14 **[CD3-23.1, page 8]** "A detailed illustrative plan of BW4B's alternative scheme will be presented in proofs of evidence prior to the Inquiry."

4.10.8 Item 14 e. **[CD3-23.1, page 8]** makes reference to "A new route (Section E to F) between the Hinton Way roundabout (the segment with the most consistent congestion issues) and the Cambridge Biomedical Campus (Point F). This section is already proposed to be built under Phases 3 and 4 of CBC expansion".

4.10.9 Item 22 **[CD3-23.1, page 11]** states "The Applicant has not justified why it has specified a relatively novel, costly, risky and carbon-intensive construction method (of a concrete base topped with asphalt), especially as it has indicated for the CtoC busway that its preferred guidance system is sensor-based (i.e. using emerging autonomous driving technology), which should not lead to wheel-rutting, unlike with kerb-guidance and simple optical guidance systems."

My Responses

4.10.10 Regarding the economic benefits claimed by BW4B in item 12 of their SoC **[CD3-23.1, page 7]** Ms Diamant's Proof of Evidence **[CD27-01 App-W3-01]** sets out the detail of the appraisal process is to compare the benefits of the Scheme and the BW4B On-road alternative, demonstrating that the Scheme benefits are significantly greater than the On-road alternative.

4.10.11 As discussed in 2.4 of this proof, the guidance technology will be sensor based, mounted in the buses. As discussed in 2.7.8 of this proof although emergency and maintenance access could be achieved from the busway itself, the consideration of the safety of users and workers during operation as well as the impact of disruption to the bus services is deemed to justify provision of a separate track. Under Health & Safety regulations in the UK, designers are required to consider the maintenance and operational activities of infrastructure and how these will be carried out safely during operation.

4.10.12 In addition, the width of the EMAT has been set at the minimum suggested by guidance to 3.0m and the verges narrowed all to minimise the land take required for the Scheme.

4.10.13 The main advantages of providing the EMAT are set out in 2.7.8 of this Proof and summarised as follows:

4.10.14 Enable maintenance teams to access the busway to safely carry out routine maintenance activities with limited disruption to bus services.

4.10.15 In times of emergency, the EMAT provides a safe evacuation space for bus users and additional access space for emergency responders. These are laid out in CCC's current operation manual **[CD9-25]**

4.10.16 Provision of a utility corridor for the Scheme, to 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.

4.10.17 Where the SoC states further in item 14 "A detailed illustrative plan of BW4B's alternative scheme will be presented in proofs of evidence prior to the Inquiry", this information has been requested from BW4B (via email November 2025) but to date, has not yet been provided.

4.10.18 Deliverability risks associated with the on-road option include engineering feasibility, land acquisition uncertainty, construction-phase disruption and planning conflict. Factors affecting the feasibility of the on-road alternative are outlined in 2.19.7 and 2.19.8 of this Proof. The A1307 is a busy strategic route with some sections of existing bus lane. Although the A1307 is wider than a standard single carriageway road in some areas and already has some sporadic lengths of bus lane provision, it will not be possible to add the level of bus lane provision indicated by BW4B without significant roadworks, verge & drainage works, and sections of earthworks. Where the existing A1307 is not wide enough to cater for the BW4B proposals, additional land will likely be required on the west side of the A1307 between Hinton Way and Haverhill Road and on the east side of the A1307 south of the BRC roundabout towards High Street. Extensive lengths of temporary traffic management would be required for significant periods of time, causing disruption and delay to users of the A1307, and possibly impacting on the connecting routes beyond. These risks further undermine the on-road option's viability.

4.10.19 In response to item 14 e. regarding connection to the existing Hinton Way roundabout, some reconfiguration of the roundabout would be required. The design would be expected to follow the standards and guidance in DMRB 'CD 116 Geometric design of roundabouts' **[CD17-20]**. The existing roundabout appears to be large enough to accommodate a bus-lane arm to the CBC. Any development or enhancements to the roundabout would need to be subject to traffic analysis and engineering assessment to determine feasibility and deliverability. Initial traffic analysis for a busway connection to the roundabout resulted in the roundabout operating over-capacity, which is why the Atkins layout drawings illustrate the connection at the Babraham Park 'n' Ride junction on the A1307.

4.10.20 The SoC claims that the busway construction is “novel, costly, risky and carbon-intensive”. At this stage the design is based on the design parameters available and uses standard design and construction methods of a cement bound granular material base underlying a continuously reinforced concrete slab, with a bituminous surfacing course. These forms of construction are tried and tested, and not novel or risky. It is possible that in further design phases with additional site information, that lower cost and less carbon-intensive options may be viable, which will be considered across the whole-life of the busway operation. Carbon reductions at future stages will be investigated in line with the Carbon Management Plan **[CD1-10.57].**

Conclusions on Representations

4.10.21 Further information is needed in order to be able to assess RGP’s On-road design **[CD3-23.2]**. Based on the information provided in text and outline diagrammatic form, an outline layout has been developed by the AtkinsRéalis design team. However, the cost benefits for such proposal are substantially less than they are for the Scheme as described in 4.10.10 of this Proof.

4.10.22 There are benefits from having a separate emergency and maintenance track adjacent to the busway, which would further protect the levels of bus services using the busway.

4.11 Cambridge Medipark, CBC Estate, Prologis 120 Ltd & Prologis CCCIX S.A.R.L – [CD2-OBJ-430-433, CD3-17]

Summary of points made and impact of the Scheme

4.11.1 The organisations named in the SoC have a variety of land and development interests in the area around Francis Crick Avenue and the northern section of the proposed busway of the Scheme. The concern is that the “Scheme as contained in the Draft Order would give rise to adverse effects upon the existing Campus and its planned and permitted expansion which are not outweighed by its benefits.” Mr Franklin’s Proof of Evidence **[CD27-01 App-W11-01]** provides more detail on land ownership position.

The Main issues raised

4.11.2 In relation to Design there are two items raised that I would provide comment on.

4.11.3 Item 10. Highways Safety, in 10.1 states **[CD3-17 OBJ-430-433, page 11]**

4.11.4 “There are safety concerns related to the design and layout of the proposed cycle route crossing at the base of the busway ramp south of Addenbrooke's Road roundabout. These concerns relate to the potential conflict between the buses approaching at speed down the curved ramp against slow moving cyclists using the crossing at the base of the ramp. The design and location of the cycle route crossing should be reviewed with ideally a location on a straight flat section of busway selected for the crossing.”

4.11.5 Item 13. Impact on Drainage Systems, states **[CD3-17 OBJ-430-433, pages 11-13]**

4.11.6 “CML and CBC remain to be satisfied as to whether the Promoter has demonstrated an appropriate drainage solution for the Scheme. The existing drainage system has been designed to have the capacity to accommodate the existing development and drainage from the plots and infrastructure that will come forward in the later phases of the Campus development. It has not been designed to accommodate flows from development additional to this. The addition of flows from the Scheme into the drainage system without the provision of additional capacity could thus inhibit the development of later phases of the Campus development. There is as yet no evidence to demonstrate that the Scheme will result in the provision of a drainage system to accommodate the any additional demands arising from the addition of the Scheme without inhibiting later phases of growth at the Campus.”

My Responses

4.11.7 The location proposed for the cycleway to cross the busway is located in a 30mph limited zone for buses. The horizontal geometry of the busway on approach to this point is a gentle lefthand bend with the standard-compliant visibility of 90m for both buses approaching the crossing and for users of the crossing to see oncoming buses. Frequency of buses on the busway will be around one bus every 4 minutes on average (every 8 minutes coming from the westerly direction) and so there will be ample and safe crossing opportunities afforded. Street lighting is extended from the roundabout to cover the crossing point to aid in times of darkness. Signage will be incorporated on both sides of the crossing to warn users approaching the crossing to look in both directions before crossing. Warning signs along the busway will alert the driver to approach the crossing with caution. Tactile paving has been incorporated into the design to warn visually impaired users of the uncontrolled crossing.

4.11.8 The design of the Scheme's drainage system is in accordance with CCC Surface Water Guidance [CD9-08] and attenuates proposed additional run-off by controlling the flows to pre-development (sometimes referred to a "green-field run-off") levels. As such, the Scheme drainage design does not preclude later phases of growth at the campus.

Conclusions on Representations

4.11.9 Based on the technical detail presented in this proof at 4.11.7 and 4.11.8, the outline design as it currently stands is suitable to address the concerns raised by Medipark, CBC and Prologis.

4.12 Greater Cambridge Shared Planning Service (GCSP) – [CD2-REP-04, CD3-20 REP-04]

Summary of points made and impact of the Scheme

4.12.1 In relation to Design, item 19 "Conditions" states "…certain aspects require further refinement to ensure that the proposed mitigation is both robust and effectively secured." **[CD3-20 REP-04, pages 61-64]**.

The Main issues raised

4.12.2 The issue relating to Design in Item 19 include:

a) Condition 4 – "Construction Environmental Management Plan"
   - Code of Construction Practice needs to include water efficiency
   - Must secure implementation of contamination mitigation
   - production of Risk Assessment Method Statements and adoption of Personal Protective Equipment
   - unexpected contamination protocols
   - contaminated land watching briefing, and ground gas
   - vapour assessment at detailed design stage if enclosed buildings are to be included

b) Condition 14 – "busway detailed"
   - "Details of pedestrian and vehicle barriers are required and should be added to the text"

My Responses

4.12.3 In relation to GCSP's item 19 Condition 4, all relevant items are dealt with in the draft Planning Conditions items 9 and 18 specifically, for inclusion in the various control plans for the project to be prepared at either Detailed design stage or Construction stage.

4.12.4 Item relating to GCSP item 19 condition 14 is subject to Detailed Design and is therefore not available at this time. Appropriate design and mitigation will be discussed and agreed with GSCP as proposals evolve to comply with item 21 of the draft Planning Conditions.

Conclusions on Representations

4.12.5 The Outline design as it currently stands is suitable to address the concerns raised by GCSP. Any residual matters are capable of being addressed at detailed design stage and secured

through the imposition of appropriately worded planning conditions, more specifically items 9 and 18 of the draft Planning Conditions.

4.13 Wellcome Genome Campus (WGCL)- [CD2-REP-09, CD3-15]

Summary of points made and impact of the Scheme

4.13.1 "WGCL believe that the Cambridge South East Transport (CSET) objectives would be more fully realised, particularly those related to supporting economic development in the Southern Cluster, if the scheme were extended beyond the proposed Travel Hub to the Campus and onward to Whittlesford Parkway Station. The proposal of the Scheme should demonstrate, through the TWAO Inquiry process, that the preferred alignment and design of the A11 Travel Hub does not preclude the future extension of the public transport network." **[CD3-15 REP-09, page 3]**.

The Main issues raised

4.13.2 Under "Key Design Considerations for a Future Extension", items 1, 2, and 4 relate to Design:

4.13.3 Item 1. – Access and Alignment at the Travel Hub **[CD3-15 REP-09, pages 5-6]**

4.13.4 "*The Travel Hub at Fourwentways should incorporate a dedicated access point for a future extension, ensuring that additional infrastructure (such as new junctions, land acquisition, or costly modifications) is not required later.*

4.13.5 *The alignment of busways and turning circles should allow for a seamless continuation of high-quality public transport infrastructure, rather than forcing a future extension to retrofit around an inflexible layout*."

4.13.6 Item 2. – Avoiding Physical Constraints **[CD3-15 REP-09, page 5]**

4.13.7 "*The design should ensure that any road layouts, bus interchanges, or park-and-ride facilities do not block or complicate a future southern extension.*

4.13.8 *Space should be safeguarded for additional bus stops, active travel links, and onward connections to Wellcome Genome Campus and Whittlesford Parkway Station*."

4.13.9 Item 4. – Active Travel Integration **[CD3-15 REP-09, page 5]**

4.13.10 "*The Travel Hub should also allow adequate space to incorporate high-quality active travel links that enable direct pedestrian and cycle connectivity towards Wellcome Genome Campus; this would align with the GCP's aim of creating a seamless multi-modal transport network in Greater Cambridge*."

My Responses

4.13.11 Item 1. – Access and Alignment at the Travel Hub. It is unclear where the objector considers that the dedicated access point should be located, or if there is a suggestion of an alternative location. Access to the busway is taken from a proposed signal-controlled junction (following the accepted change request **[CD24-07]** to alter this from a roundabout to a signal-controlled junction) on the A1307 to the north of the existing A11/A1307 roundabout. Route extensions are not known at this stage and would be subject to further route appraisal and optioneering exercises.

4.13.12 Item 2. – There is space within the Travel hub for future expansion, albeit not as part of this Scheme. Depending on optioneering appraisals, there is space in the Travel Hub that allow future-proofing.

4.13.13 Item 4. – It should be possible to provide future expansion and southerly connections to the Wellcome Campus without too much disruption to the space within the Travel Hub. However, any

future-proofing provision would be subject to engineering feasibility and be part of a wider agreed strategy within Cambridgeshire to avoid abortive work. There are no existing routes or PROWs between the proposed Travel Hub location and the Campus to connect into the active travel provision at the Travel hub.

Conclusions on Representations

4.13.14 No specific design changes to the Scheme are required as a result of the points raised. Should future plans come to fruition for extensions to additional destinations, there is locations in the Travel Hub layout where potential routes could be added to reach destinations to the east of the Travel Hub. The scope of the Scheme does not include designing for potential future links which may or may not be implemented.

4.14 National Gas Transmission PLC – [CD2-OBJ-370, CD3-21]

Summary of points made and impact of the Scheme

4.14.1 National Gas Transmission (NGT) raised concerns over their current pipeline, known as FM03 – Gt Wilbraham to Whitwell, not being suitable to be within a certain proximity to additional traffic routes and increases in population which increase the potential for resulting harm (to said population) should there be a failure of the gas pipeline. As part of the development of the Scheme AtkinsRéalis (and prior to that, Mott MacDonald) requested information relating to the interface of the proposed Scheme with NGT via the New Roads and Street Works Act (NRSWA) consultation process. The specific issues raised in NGT's SoC were not communicated during that process.

The Main issues raised are as follows:

4.14.2 There are three areas of concern to NGT, which they list as Area A, B and C. Areas A and C are where the A1307 road and the Scheme cross-over the gas pipeline, and Area B is where the Travel hub is parallel and within a set distance to the pipeline.

4.14.3 "NGT has concerns with regards to the proposed overpassing of the Existing Pipeline in Interface Area A and in Interface Area C both during construction and operation …. due to the current specification of the Existing Pipeline. The Pressure Systems Safety Regulations 2000 (PSSR) are the health and safety regulation for certain kinds of pressure systems (which include the Existing Pipeline) and were made under the general Health and Safety at Work etc. Act 1974. The aim of PSSR is to prevent serious injury from the hazard of stored energy (pressure) as a result of the failure of a pressure system or one of its component parts. Owners of relevant infrastructure have duties under the PSSR and the accompanying Approved Code of Practice and Guidance1 to ensure that, amongst other things, the apparatus is safe for operation".

4.14.4 "NGT's concerns with Interface Area B of the Scheme relate to the suitability of locating a development that would increase the population density in proximity to the Existing Pipeline to a level that is contrary to relevant regulations and guidance." Parts of the Travel Hub are located in this increased proximity zone.

4.14.5 Clauses 6.10.2 and 6.10.3 in the PSSR set out the acceptable standards where pipelines either cross or encroach within minimum proximity distances to certain types of traffic routes.

My Responses

4.14.6 The matters raised by NGT in their SoC have been subject to further consultation since receipt of the SoC. Additional design work by the design team and additional assessment by NGT.

4.14.7 Area A is where the A1307 crosses over the pipeline just north of the proposed location for the access/egress for the proposed Travel Hub. In the configuration depicted in the initial TWAO application drawings **[CD1-12.06, pages 5-6],** the pipeline crosses under the road and for the existing extents of the (wider) highway boundary is encased in a grout filled steel sleeve. The

Design of the proposed road layout connection was a roundabout which required the road to take a deviation away from the current alignment such that the proposed carriageway would be above an unprotected (i.e. with no sleeve surround) section of the pipeline. During consultation with NGT (post submission of the application) the advice given was to realign the design such that the proposed extents do not exceed the existing roadway. The Atkins design team has prepared an outline design layout for an alternative traffic-signal controlled junction which meets NGT's request and avoids construction over the pipeline. This new signal-controlled junction layout forms part of the accepted change request **[CD24-07, page 1]** being the proposed new layout, reducing the construction works associated with the junction thereby avoiding interaction with the NGT apparatus.

4.14.8 Area B concerns the adjacent Travel Hub and the "Building Proximity Distance" (BPD) factor determined by NGT. An estimated "population" of between 100-1000 people has been used to assess the BPD and that within this distance there is an increased risk to that population. An alternative layout for the Travel Hub has been produced **[CD24-07]** and now forms part of the application, which satisfies the requirements of the BPD, essentially moving the hub building further south towards the A11. The number of parking spaces and other provisions will be maintained. Further details for the Travel Hub will be developed at detailed design stage. NGT has also requested to place protective mesh matting under the soil's surface and above the pipeline to act as a protective warning barrier to avoid unwarranted future excavations, which has subsequently been included in designs submitted in support of the TWAO.

4.14.9 Area C concerns the Scheme crossing of the pipeline. NGT has stated that it would be unacceptable for the Scheme to cross the pipeline in its current condition, even with structural protection (e.g. concrete slab) above the pipeline. The solution in this location is to construct a localised diversion of the pipeline, to thicken the pipe and deepen it over the area being crossed by the Scheme. The Scheme will then be constructed as per the current design proposals and as per the updated Scheme application following the accepted change request **[CD24-07]**.

Conclusions on Representations

4.14.10 By working with NGT through this period of abeyance, since receipt of the NGT SoC, it has been possible to find acceptable solutions agreeable and acceptable to both parties which comply with the relevant gas pipeline standards. Updated design information, and land requirements (for the diversion and mesh matting installation) have been incorporated, as described in section 2.18.6 of this proof, into the application submission following acceptance of the change request.

4.15 The Pembertons – [CD2-OBJ-444, CD3-25.01]

Summary of points made and impact of the Scheme

4.15.1 In relation to Design, there are 5 items raised which relate to highways safety and drainage/flood risk.

The Main issues raised are as follows:

4.15.2 Item 5.8 **[CD3-25, page 11]** relates to Safety concerns, with the Objection stating "There are safety concerns related to the design and layout of the proposed cycle route crossing at the base of the busway ramp south of Addenbrooke's Road roundabout. These concerns relate to the potential conflict between the buses approaching at speed down the curved ramp against slow moving cyclists using the crossing at the base of the ramp. The design and location of the cycle route crossing should be reviewed with ideally a location on a straight flat section of busway selected for the crossing."

4.15.3 Item 5.10 **[CD3-25, pages 11-12]** refers to the Multi Storey Car Park and the potential impacts upon it. Confirmation of the drainage (with particular reference to a manhole shown in close proximity to the boundary of the MSCP) is requested.

4.15.4 Item 5.11 **[CD3-25, page 12]** refers further to impacts on existing drainage systems and flood risk assessment.

4.15.5 Items 6.4 and 6.6 **[CD3-25, pages 18 - 20]** refers the track from the Roundabout alongside the busway, and to the location of Ecology Ponds 1 and 2.

4.15.6 Item 6.7 **[CD3-25, pages 20-21]** refers to "Diversion of the Sustrans Route" requiring unnecessary land take and reducing the complexity of the layout of the cycle ways and tracks in this location.

My Responses

4.15.7 In relation to the safety concerns raised in Pembertons' item 5.8, my response is the same as stated in the Prologis response in 4.11.7 of this Proof.

4.15.8 In relation to the concerns over the Multi Storey Car Park (MSCP) in Pembertons' item 5.10, the Scheme design avoids encroaching into the existing surface level car park. No information relating to the MSCP has been provided, but assuming that the MSCP footprint keeps within the same footprint as the surface car park, the interaction should be limited to boundary treatment and noise and visual concerns between the two construction areas. Proposed assets shown on the application drawings such as the manhole and retaining wall close to the car park will be developed further to avoid encroachment beyond the order limits. The detailed design stage will be used to develop the design further such that there will be no need to close areas of the existing car park. If construction of the MSCP and the Scheme is coincident, then it will be a requirement on the chosen Contractor to collaborate closely with the MSCP team to allay any concerns around delays. Such contract requirements will be developed further at Detailed Design stage and will be shaped by further consultations with landowners including the Pembertons.

4.15.9 In relation the concerns around Pembertons' item 5.11. Regarding flood risk, the Scheme has been designed in accordance with advice from the Lead Local Flood Authority (LLFA), the Environment Agency and other relevant stakeholders, to utilise sustainable drainage systems and discharge water in line with the drainage hierarchy throughout the Scheme. The design will provide attenuation, calculated to be the same as the pre-development flows into the Hobsons Conduit at the discharge points, in accordance with Cambridge County Council (LLFA) Surface Water Planning Guidance **[CD9-08].** Discharge points will be separate to any existing drainage networks or outfall points. With regards to the specific point in 5.11.12 **[CD3-25 OBJ-444, page 14]** relating to differences in information between the Environmental Statement drawings and the deemed planning drawings, this is due to further refinement of the design between the period in which the ES was prepared and the submission of the deemed planning drawings, however the overall design intent and strategy remains. Further detailed information can be found in the Written Statement of Ms. Surdevan with regards to drainage **[CD27-01 APP-W7-02]**, and the Written Statement of Mr. Rouse regarding flood risk **[CD27-01 APP-W7-02],** both of which are appended to the Proof of Evidence of Mr. Parsons.

4.15.10 With regards to the location of Ecology Ponds 1 and 2, the proposed locations have been amended as outlined in the accepted Change Request **[CD24-07, page 1].** Ecology Ponds 1 and 2 have been moved to locations east of the busway.

4.15.11 In relation to the proposals around cycle ways and tracks in Pembertons' item 6.7, care has been taken to maintain connections to existing paths and tracks to promote walking, cycling and public transport use. The layout of the paths leading to Ninewells and to the busway crossing point have been rationalised as outlined in the accepted Change Request **[CD24-07, page 1]** meaning that the overall land requirement is lessened. Parts of the EMAT will replace a section of the DNA path, but with an enhanced width for improved active travel provision. Accessibility to paths to the east of the Scheme, including the Nine Wells paths will be afforded by both the Private Means of Access crossing the busway and by the footpath crossing under the proposed structure at Hobsons Conduit.

Conclusions on Representations

4.15.12 The outline design as it currently stands is suitable to address the concerns raised by the Objectors. The accepted Change Request layouts **[CD24-07, page 1]** address two of the five items of concern in relation to design**.** The remaining three concerns do not need changes to the design. Further consultations during the Detailed Design stage will develop further detail around potential interaction with the adjacent MSCP development works, should there be an interface in future.

4.16 British Horse Society (BHS) – [CD2-OBJ 245, CD3-29.1]

Summary of points made and impact of the Scheme

4.16.1 In relation to Design, there are 11 items BHS objects to, which question the extents of the Bridleway and the various interfaces with existing bridleway facilities **[CD2-OBJ-245, pages 4-13]**.

The Main issues raised are as follows:

4.16.2 The 11 items are:

1) Ambiguity about the inclusion of equestrians on the service track / bridleway
2) Inclusion of equestrians all the way from CBC to the A11 (including access over the A11)
3) Diversions and Alternative routes for equestrians
4) Hobson's Conduit crossing
5) Stapleford
6) Stapleford Bridleway 212/2
7) River Granta (Stapleford) Crossing
8) Sawston
9) River Granta Babraham Crossing
10) Babraham (extents and 'loops')
11) Rights of Way Opportunities

My Responses

4.16.3 Taking each item:

4.16.4 As stated in the CCC SoC section 14.10.2 **[CD3-01, page 137]** "The bridleway will be provided on the EMAT between Granham's Road and High Street, Babraham as shown on the Rights of Way and Traffic Regulation Plans". And section 14.10.3 **[CD3-01, page 137]** "The bridleway route has been agreed and developed in discussions with the CCC searches team. The bridleway has been terminated at Granham's Road as there are no onward connecting existing bridleways. Continuing the path further towards CBC would raise safety concerns as it will increase conflict points between pedestrians, equestrians and motorised vehicles." Any changes to this would need to be consulted upon with the CCC Searches Team and require additional infrastructure provision outside the Scheme land boundary. The bridleway designation ends at points on the existing "all-purpose" road network, at Granham's Road in the north and High Street to the south.

4.16.5 See response to item 1 above regarding extents of bridleway designation. Regarding the provision of any new bridge over the A11, such provision is outside the scope of the proposed Scheme. As the scheme moves towards detailed design, if consent for the CSET scheme is granted, consideration will be given with CCC's PRoW team as to whether permission for bridleway usage can be given over other areas of the route.

4.16.6 I agree that suitable and reasonable access needs to be granted for Equestrian use, and that closures should be temporary and either alternative access provided, or arrangements put in place by the Contractor to provide safe passage at appropriate points through the site. The team preparing the Works Requirements and Specification should work with CCC and BHS to provide appropriate or alternative access and that accessibility and inclusion are considered. This is covered by item 9 in the draft Planning Conditions.

4.16.7 Access south-north over Hobsons Conduit will be provided as part of the Scheme, as well as access below the proposed busway adjacent to the Hobson Conduit. The proposed structure in the TWAO application has 1.8m high parapet fences on the bridge deck, catering for potential future equestrian use. The path under the bridge has a proposed headroom clearance of 2.4m to allow pedestrians access under the bridge to the Nine Wells area. 2.4m is the minimum clearance allowed for pedestrians and cyclists in DMRB CD 143 'Designing for walking, cycling and horse-riding' **[CD17-17, page 37]**.

4.16.8 The Deemed Planning drawing **[CD1-12.05, page 8]** shows grassed verge on the east side of Haverhill Road either side of the Scheme. This could be re-instated in its current (or previous) condition so that if the Definitive Map Modification Order (DMMO) is successful it can continue to be used (BHS state on page 8 of their SoC "*The Drift Track has always been an amenity for the residents of Stapleford. It is not currently on the Definitive Map but there is a DMMO awaiting determination for correction of the status to a public bridleway based on historic evidence*"). Access to the country park will be provided for equestrian usage within the boundary of the Scheme.

4.16.9 Such details as crossings of the bridleways will be finalised at the next stage of design and in consultation with CCC Highways team and BHS, as required by item 9 of the draft Planning Conditions, and in accordance with best practice design guidance and standards.

4.16.10 The bridge crossing over the River Granta will have a continuation of the EMAT, albeit in a hardened surface. The parapet fencing proposed is 1.8m high to future-proof for equestrian usage.

4.16.11 Warning signals for instances of buses approaching the byway crossing are possible to install and can be specified at the detailed design stage of the project. This detail will be developed in consultation with CCC and BHS, as required by item 9 of the draft Planning Conditions, and subject to the appropriate Safety Audits and Active Travel reviews, following best practice and design guidance.

4.16.12 The height of the parapet fence on the River Granta Babraham Crossing is set at the same 1.8m high as the Stapleford Granta crossing to future-proof for equestrian usage. Changes to the heights of bridge parapets are difficult to achieve after construction as the parapet system is an integral part of the design of the bridge deck. Refer to items 1 and 2 responses above for comments relating to the A11 crossing.

4.16.13 Proposals for equestrian provision are dealt with in Mr Baker's Proof of Evidence **[CD27-01 APP-W2-01]**.

4.16.14 It should be noted that the physical construction of the EMAT adjacent to the busway will be the same for most of its route. It is the CCC Definitive Map team who have placed the restrictions on the bridleway designation extents for safety reasons, as there are currently no defined destinations or connecting Bridleway points beyond Granham Road to the north or High Street to the south. Consultations in future to amend this is a matter that can be addressed at detailed design stage.

Conclusions on Representations

4.16.15 I have provided a reasoned justification which responds to the BHS concerns. On this basis, no changes need to be made to the design of the EMAT. The physical make-up of the EMAT is generally consistent along its length from just south of Addenbrookes Road through to the Travel

hub. Bridleway extents are due to safety concerns around connecting bridleways to links with permitted equestrian use. High Street to Granham's Road are the two links with permissive use by equestrians. This follows consultation and restrictions set down by the CCC Definitive Map team for safety reasons.

4.16.16 Consultation is required in item 9 of the draft Planning Conditions to continue with BHS on both the detailed design of the Scheme and the Works specification for dealing with maintaining suitable access during the construction period.

4.17 Hobsons Conduit Trust (HCT) – [CD2-OBJ-435, CD3-26]

Summary of points made and impact of the Scheme

4.17.1 In relation to Design, HCT make reference to the dimensions of the proposed bridge structure over the brook and the size of the embankment (items 33 and 35 in OBJECTION 1 and item 87 in OBJECTION 6) **[CD2-OBJ-435, page 11, 26]**. Also, in OBJECTION 6 item 78 refers to the adequacy of the proposed drainage design **[CD2-OBJ-435, page 24]**.

4.17.2 In relation to construction and operation, HCT request moving of the fence and boundary of the 'triangular field' and to accessing the proposed pond from the track linked to Granham's Road (item 76 in OBJECTION 5) **[CD2-OBJ-435, page 23]**. Item 82 in OBJECTION 6 **[CD2-OBJ-435, page 25]** refers to the impacts of concrete and piling works adjacent to the brook (this is further mentioned in item 86). In OBJECTION 6 items 85 and 86 refer to the use of de-icing salt and the potential to use alternative less harmful de-icing compounds **[CD2-OBJ-435, pages 25-26]**. OBJECTION 7 refers to the size and proximity of the temporary compound seven **[CD2-OBJ-435, pages 32-40]**.

The Main issues raised are as follows:

OBJECTION 1

4.17.3 Item 33 – "Hobson's Brook would have to pass under a 14.5 m wide, 15 m long concrete bridge deck which will create a dark, sterile cavern with little sunlight penetrating for most of the day. This will be unattractive to fish and will deter other wildlife movement" **[CD2-OBJ-435, page 11]**.

4.17.4 Item 35 – "The intrusion of the busway, on its massive embankment, and passing buses, would seriously reduce the area's value and tranquil attractiveness in this respect" **[CD2-OBJ-435, pages 11-12]**.

OBJECTION 5

4.17.5 Item 76 – "Both the temporary and permanent land take boundaries must be moved away from the Brook to preserve the Trustees' access rights under the 1610 Tripartite Indenture. The fencing proposed around the triangular field should be moved closer to the foot of the proposed embankment, aligned instead with the busway, with a gate access from the track from Granham's Road for pond maintenance during the operational phase. This would be consistent with the Trustees' long-held vision for expanding Nine Wells and would benefit public access to the additional triangular open area currently shown to include Ecology Pond 3 and Attenuation Pond 1, which would otherwise be denied by the proposed fence" **[CD2-OBJ-435, page 23]**.

OBJECTION 6

4.17.6 Item 78 – "Polluted runoff from the busway surface not captured by built-in drains, traps and other pollution control measures, or via any infiltration from swales, would be included in flows that would then pass into attenuation ponds, and would then drain into Hobson's Brook, the South Ditch and the feeder ditch along the west side of Francis Crick Avenue" **[CD2-OBJ-435, page 24]**.

4.17.7 Item 85 – “We require to see only de-icing compounds with less noxious effects on fish than rock salt, white salt and brine employed along at least the relevant parts of the busway, and we look for specific undertakings in this regard. For example, Sodium or Potassium Formate-based proprietary de-icing compounds would be acceptable to the Trustees” **[CD2-OBJ-435, page 25]**.

4.17.8 Item 86 – “Construction of the bridge should require specific working methods that will remove the possibility of contamination of the Brook by concrete spillage and of the aquifer by piling, and appropriate method statements shall be agreed with the Trustees and our advisors” **[CD2-OBJ-435, page 26]**.

4.17.9 Item 87 – “The adoption of a smaller, lighter more elegant bridge structure design using materials other than concrete and splitting the multi-user path bridge from the busway bridge, for which we have been asking consistently, would facilitate much less intrusive foundation work close to the Brook and Nine Wells” **[CD2-OBJ-435, page 26]**.

OBJECTION 7

4.17.10 Items 116 and 118 – “We have found no explanation of description of or rationale behind a ‘temporary structure’ over the south end of Hobson’s Brook marked on the plans where the spring 35 water emerges from Nine Wells. This would have the potential to cause structural harm to the Brook. Pollution of the spring water in the Brook would occur should the ‘structure’ be used for vehicular access. The applicants must explain the need, nature and use of the ‘temporary structure’ crossing the Brook. These are at present lacking” **[CD2-OBJ-435, pages 34-35]**.

My Responses

4.17.11 OBJECTION 1, Item 33 - The design of the bridge over the brook has been reviewed and the width of the structure has been reduced to limit the impacts on sunlight reaching the brook. By reducing the width of the verges and separation between the busway and the EMAT to their absolute minimum, the total bridge width is reduced from 14.4m to around 13.15m.

4.17.12 OBJECTION 1, Item 35 – The embankments either side of the brook bridge structure are as low as they can be to provide the absolute minimum height for pedestrians to pass safely and comfortably beneath the structure. 2.4m is the minimum clearance allowed for pedestrians and cyclists in DMRB CD 143 ‘Designing for walking, cycling and horse-riding’ **[CD17-17, page 37]**.

4.17.13 OBJECTION 5, Item 76 – The size of the compound in the triangular area of land has been reduced to ensure a minimum 40m buffer between both the edge of Ninewells and Hobsons brook. The two proposed Ecological Ponds 1 and 2 have been relocated from their original location to the east of the busway, to a new location to the west of the busway as shown on the Amended Proposed Site Section Sheets (1) **[CD24-07]**. A drainage attenuation pond to the south of Hobson’s Brook (east of the busway) is required as part of the water run-off treatment.

4.17.14 OBJECTION 6, Item 78 - the busway is equivalent to a “low traffic road” and as such it has been deemed a “Low” pollution hazard level in accordance with CIRIA C753 SuDS Manual **[CD19-02, page 568].** The use of Filter drains, swales and attenuation pond 1 as proposed in the design are deemed adequate treatment of any potential pollution. Further details of the drainage design are provided in Ms Surdevan’s Written Statement appended to Mr Parsons’ Proof of Evidence **[CD27-01 APP-W7-02]**.

4.17.15 OBJECTION 6, Item 85 – CCC does not intend to deviate from their current policy for de-icing materials as it is anticipated this will provide operational and cost challenges for the council’s road maintenance programme that are in excess of the ability of the council to manage for this single specific purpose. This is particularly in respect of storage and handling of materials solely for the purposes of de-icing this specific section. Mitigation measures have been proposed including filter drains, swales and other SuDS measures that will minimise the concentrations of pollutants entering the surface watercourse so that no significant effects will occur to the water quality. The provision of the reed beds in Attenuation Pond 1, which will filter material and will reduce concentration of the limited run-off entering the brook, will resolve any impacts in the use

of salt for de-icing. Further details of the water treatment are provided in Ms Surdevan's Written Statement appended to Mr Parsons' Proof of Evidence **[CD27-01 APP-W7-02]**.

4.17.16 OBJECTION 6, Item 86 – Construction of the bridge abutments will be set-back far enough from the edge of the brook to enable the working area to be sealed off from the brook. Concreting and piling works will be governed by the CoCP **[CD1-10.07]** and CEMP **[CD1-10.08]**, avoiding any concrete or other materials pollution of the brook. Some temporary de-watering (pumping out) of the abutment excavations is likely to be required, but any water (which is expected to be mostly groundwater) will be treated appropriately (for example through the use of 'silt-busters') prior to discharge. Monitoring of water quality will be expected frequently to ensure compliance with expected limits.

4.17.17 OBJECTION 6, Item 87 – The design team investigated the options put forward by HCT to split the structure for the busway and the EMAT (multi-user path). In effect it created more bridge deck area to block more sunlight. In discussion with HCT, it has been agreed that the design of the bridge is reduced to mitigate the impact of the structure on shading the brook. This reduces the structure width from 14.4m to 13.15m over the length of the bridge and is considered an optimal design in both function and aesthetic to minimise the impacts on the brook.

4.17.18 OBJECTION 7, Items 116 and 118 – a temporary structure over the brook is shown on the Deemed Planning drawing **[CD1-12.08, page 12].** The structure illustrated is a basic 3m wide timber bridge spanning Hobson's Brook with simple concrete foundations on either side of the Brook, designed to take pedestrians and cyclists. Construction of such temporary works is subject to item 3 of the draft Planning Conditions.

Conclusions on Representations

4.17.19 The design of the bridge over the brook has optimised to provide a functional busway and EMAT crossing, minimising the width of the bridge, as well as optimising the height and span of the bridge to allow pedestrians to cross beneath to access Ninewells and provide space behind the edges of the brook for construction and operational maintenance of the edges by HCT. Construction impacts of the bridge abutments (concreting and piling works) will be managed in such a way as to avoid any negative impacts on the brook. The drainage design of attenuation pond 1 will provide appropriate treatment for any de-icing materials.

4.17.20 Consultation with HCT will continue through detailed design phase and any proposed requirements for the construction and operational phases of the busway will be duly considered. The development of the design and planning for the construction of the proposed bridge is subject to items 3 and 21 of the draft Planning Conditions.

4.17.21 HCT wrote to the Inspectors after the PIM, letter **[CD23-04]** emphasising their agreement with Astra Zeneca and Medimmune in relation to the modifications to the swales on Francis Crick Avenue (FCA), which ultimately outfall to the South Ditch. As mentioned in 4.8.5 of this Proof of Evidence, the design of the Scheme's drainage system, including flows from FCA, is in accordance with Cambridge County Council (LLFA) Surface Water Planning Guidance **[CD9-08]** and attenuates all proposed additional run-off by controlling the flows to pre-development (sometimes referred to a "green-field run-off") levels.

5. CONCLUSIONS

5.1 In relation to the Design and Construction of the Scheme there are some specific and some recurring points raised by the third party SoC's. The main points are summarised and my conclusions presented below in sections 5.3 to 5.6 relation to the relevant points from the Statement of Matters dated 19 October.

5.2 My evidence demonstrates that the Design and Construction matters pertaining to the Scheme have been considered appropriately and relevant codes, standards and guidance followed in the development of the application documentation and accepted change requests. The requirements and conditions set out in the outline CEMP, CoCP and draft Planning Conditions, as highlighted

in my proof will serve to address any residual points at the detailed design and/or construction stages.

5.3 On-road alternative on the A1307 (Matter 3)

5.3.1 Various SoC's and objections make reference to the On-road alternative on the A1307 with claims that the alternative will provide similar benefits to the proposed Scheme at a significantly lower cost and reduced overall impacts. Some statements claim that the bus provisions on the A1307 can be made within CCC land.

5.3.2 Deliverability risks associated with the on-road option include engineering feasibility, land acquisition uncertainty, construction-phase disruption and planning conflict. These risks further undermine the on-road option's viability and are discussed in greater detail in sections 2.19.7, 2.19.8 and 4.10 of this Proof.

5.3.3 It is likely and has been demonstrated in the work carried out to compare the Scheme and On-Road Alternative **[CD1-25.07]**, that the latter will cost less. However, it has been shown by the economic appraisal work undertaken that the Alternative would deliver significantly less overall benefits than the Scheme. Ms Diamant's Proof of Evidence **[CD27-01 APP-W3-01]** describes the alternative options considered and the reasons for choosing the preferred option which would be delivered by the Scheme.

5.4 Effects of the Scheme on Non-Motorised Users (Matter 4c)

5.4.1 There will be effects on users of the Rights of Way paths that interface with the proposed Scheme across the Construction phase and when the amended Rights of Way are in operation. Impacts during maintenance of both the busway and EMAT needs also to be considered.

5.4.2 Rights of Way are important to the everyday lives of those who use them. The Scheme does not sever or close-off any routes, although it does partially re-align them. During construction some routes will need to be temporarily diverted in order to suit construction activities. It is recognised that closures for long periods are unacceptable to users, so the Planning Conditions will ensure that appropriate action is taken to mitigate impacts on users (item 9 of the draft Planning Conditions specifically). Effective communications and media information management will be a requirement on the contractor during construction.

5.4.3 PRoW users will have uncontrolled crossing rights over the busway. Warning signs and road markings, along with adequate visibility along both directions of the busway will provide users safe opportunities to cross the busway.

5.4.4 During maintenance activities, appropriate warning signing to alert PRoW users of maintenance activities will be required. The busway operations manual will include appropriate activities for maintainers to follow, including methods for safe working in live environments.

5.5 Effects of the Scheme on Statutory Utilities (Matter 5)

5.5.1 A number of existing utility services are located within or close to 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 gas mains. In addition, communication network apparatus may be affected.

5.5.2 With the exception of the high pressure NGT gas main at the southern end of the Scheme, all required works to divert or otherwise amend the apparatus and rights over statutory undertakers will be able to be undertaken without serious detriment being caused to the relevant utility operator or operations.

5.5.3 By working with NGT through this additional consultation period since receipt of the NGT SoC it has been possible to find acceptable solutions agreeable to both parties which comply with the

relevant gas pipeline standards. Updated design information, and land requirements (for the diversion and mesh matting installation) have been submitted in support of the TWAO.

5.6 Land necessary to implement the Scheme (Matter 6d)

5.6.1 To construct, operate and maintain the Scheme works authorised by the Order, permanent acquisition of land, temporary possession of land and temporary use of land for access will be required over third-party land/property.

5.6.2 The Scheme design including associated mitigation aims to minimise the footprint of the busway and related infrastructure for constructing, operating and maintaining it to achieve the benefits for which it is intended to deliver.

5.6.3 The Applicant does not seek any greater interest in land than is reasonably required for the construction, 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.

5.6.4 The land required for the Scheme is shown on the Works and Land Plans including Long Sections **[CD1-11.01, pages 3-18]** to cover the permanent works, landscape mitigation, as well as construction compounds and material storage areas.

6. STATEMENT OF TRUTH

6.1 The evidence which I have prepared and provide in this Proof of Evidence is true and is given in accordance with the rules of professional conduct guidance of the professional institutions of which I am a member. I confirm that the opinions expressed are my true and professional opinions.

6.2 I understand that my duty in providing written evidence is to help the inquiry, and that this duty overrides any obligation to the party by whom I am engaged or the person who has paid or is liable to pay me. I confirm that I have complied and will continue to comply with my duty.

6.3 I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.