



Cambridge South East Transport Phase 2

Alternative Shelford Railway Alignment

Client: Great Shelford and Stapleford Parish
Councils

i-Transport Ref: PH/VP/ITL16234-002C

Date: 19 March 2021

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ITL16234-GA-002 - Impact of i-Transport Alternative Alignment on Properties

APPENDICES

Appendix A – CSET Phase 2 Route Options (Cambridge Connect 2020)

GLOSSARY

AQMA	Air Quality Management Area
BCR	Benefit to Cost Ratio
BRT	Bus Rapid Transit
CAM	Cambridge Autonomous Metro
CBC	Cambridge Biomedical Campus
CC	Cambridge Corridor
CGB	Cambridge Guided Busway
CIHT	Chartered Institution of Highways and Transportation
CRTM	Cambridge Regional Transport Model
CSET	Cambridge South East Transport
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
ES	Executive Summary
GCP	Greater Cambridge Partnership
HSE	Health and Safety Executive
INSET	Investment Sifting and Evaluation Tool
LLF	Local Liaison Forum
LTN	Local Transport Note
LTP	Local Transport Plan
MM	Mott MacDonald
NCN	National Cycle Network
NR	Network Rail
NMU	Non-Motorised User
NPPF	National Planning Policy Framework
OAR	Option Appraisal Report
OBC	Outline Business Case

ORR	Office for Rail Regulation
PJT	Perceived Journey Time
SCLP	South Cambridgeshire Local Plan
SOBC	Strategic Outline Business Case
SRA	Shelford Railway Alignment
TAG	Transport Analysis Guidance
TSCSC	Transport Strategy for Cambridge and South Cambridgeshire
TWAO	Transport and Works Act Order
VfM	Value for Money

EXECUTIVE SUMMARY

1. This report has been prepared for the Parish Councils of Great Shelford and Stapleford, to provide an independent and objective review of:
 - The **strategy and process** adopted by Mott McDonald (MM) in their assessment of options for CSET and the appraisal and methodology adopted in the OBC. It also provides an overview of the development of the CSET proposals and the associated policy context; and
 - The **technical feasibility** of an alternative Shelford Railway Alignment (SRA) with specific reference to the MM assessment of the SRA (June 2020).

Key Findings:

2. The key findings of this study are:
 - A **fully segregated CAM compliant route can be provided** via a technically feasible alternative SRA;
 - The MM assessment of a SRA:
 - Substantially overestimates the extent of **Demolition** required;
 - Omits to identify that there is a feasible route which achieves full **Segregation**; and
 - Over-states concerns in respect of **Deliverability**.
 - The **alternative SRA is a viable route option** compared to the GCP's preferred Brown route through Green Belt land;
 - There are **weaknesses in the appraisal process** of the preferred CSET Phase 2 scheme which undermine the selection of the preferred Brown route option. These include:
 - The re-use of the **former railway line was discounted** without proper appraisal against objectives;
 - There is a **lack of transparency** in the assessment process with key decisions unsubstantiated;
 - The **SRA route was excluded from the study area** agreed with GCP without justification or assessment; and

- The ***feedback from public consultation has been overlooked*** and not properly taken into account.
- The costs of the scheme relative to the benefits demonstrate that ***the GCP's preferred Brown route provides poor Value for Money*** (a calculated BCR of just of 0.81 compared to 1.5-2.0 sought by the GCP Executive Board);
- The GCP's proposals ***would not offer a high-quality service*** with the assumed level of bus services operating at capacity upon opening;
- Over ***half the travel time benefits accrue from 20% of passengers*** for the preferred scheme with those passengers originating in Stapleford and Great Shelford despite the location of the route on the periphery of these settlements; and
- The ***Sawston Greenway and CSET Phase 2 schemes are not integrated*** with the potential for a duplication of infrastructure and a poor return on investment.

Recommendations

3. Based on the findings presented within this report we recommend:
 - Weaknesses with the appraisal process should be addressed with additional appraisal or documentation provided;
 - INSET analysis should be updated for the alternative Shelford Railway Alignment to provide an equitable comparison;
 - Benefits of the alternative SRA should be properly assessed and the Benefit to Cost Ratio (BCR) calculation and Value for Money should be revisited; and
 - New consultation should be undertaken to determine feedback on a technically feasible SRA.
4. To enable these recommendations to progress in the most effective and efficient manner it is considered that a workshop should be convened between relevant stakeholders and their consultants. The purpose of the workshop will be to determine terms of reference for future assessment and ongoing collaboration to deliver a scheme which maximises benefits and minimises all costs.

Strategy & Process

5. Several clear and consistent themes of transport policy across Cambridge and South Cambridgeshire translate into the key transport objectives for the area. These themes are generally echoed by the GCP in their aims and objectives for the area and to some extent they translate into the objectives and aims for CSET. However, there are some differences, notably those relating to:
 - Road safety for users of the A1307 corridor; and
 - Improving connectivity to employment sites in south east Cambridge.
6. Improving road safety along the A1307 is understandably specific to the area, this being the main radial route, and is consistent with policy and general GCP objectives. The development of scheme options was guided by the stated objectives and therefore the focus of connectivity on employment locations would have influenced the range and choice of options subsequently considered.
7. It is notable that there does not appear to be an appraisal of the use of the former railway line against the strategic policy objectives as it was dismissed early on in the scheme development process.
8. The CSET Phase 2 scheme is being advanced separately to the Sawston Greenway, which is counter intuitive as they are located along the same corridor and the CSET Phase 1 scheme includes the Linton Greenway. This disconnect between what should be two complementary schemes risks failing to capture the full benefit of infrastructure investment.
9. WSP, on behalf of the GCP, concluded early on in their study that the re-opening of the disused Haverhill to Cambridge railway line would not be viable for either heavy rail or Bus Rapid Transit (i.e. a busway). Numerous options were considered as a combination of both BRT and conventional bus including part use of the former Haverhill to Cambridge railway line. However, all options with any use of the former railway line were discounted.
10. This is a flaw in the appraisal and the consequence of this approach was that no conceptual public transport options were included that proposed partial re-opening of the disused railway line.
11. There were also clear weaknesses in the initial appraisal process during the option appraisal workshops in 2017 including:
 - Discounting of the use of the former railway. between Haverhill and Cambridge clearly influenced the judgement of those hosting and participating;

- A lack of transparency in decision making, with no details of the 210 comments received at the Local Liaison Forum (LLF) workshops available in the public domain; and
 - The rationale behind why the CSET Phase 2 Scheme route is located remote from the centre of Stapleford and Shelford and away from the former railway.
12. This 'blind spot' to the use of the railway line west of Sawston is highlighted in the minutes of the LLF meeting on 7 February 2018 when it was queried whether it would be better to route Strategy 1 through the villages. The response on behalf of GCP was *"there is no route through the villages available without using existing roads..."*. Clearly, the remainder of the disused rail line and alongside the existing rail line was not considered.
13. Our review of the Outline Business Case (OBC) (May 2020) demonstrates that there are a number of omissions and weaknesses in the appraisal:
- The study area is not properly defined and therefore does not align with the requirements of the **Government's Transport Analysis Guidance (TAG)**;
 - The appraisal discounts a large part of the A1307 transport corridor with no recorded justification, narrowing the subsequent option appraisal unfairly;
 - No evidence of assessment of the former railway is provided or how it was considered in the Stage 1 appraisal;
 - The use of the former railway is discounted along with any option involving demolition with insufficient reasoning; and
 - A retrospective review discounts the railway option without clear assessment and justification.
14. Subsequent sifting and Stage 2 appraisal similarly includes a number of weaknesses including:
- An initial 'gateway' assessment (the purpose of which is to define the 'make or break' criteria for the scheme) excludes options which require demolition of property or loss of high value land. Essentially, they give undue weight in the process to these costs; and
 - The reduction in the number of options with no objective appraisal and no documenting of the decision-making process.
15. Another concern with the process is that public consultation in 2019 clearly identified, and reported, numerous comments made about CSET (and the preferred route options identified) notably:

- The negative impact the proposals would have on the environment, due to the use of Green Belt land;
- The negative impact that travel hub access routes and proposed stop locations would have on congestion along connected roads and in villages;
- The poor accessibility of the stop locations which were not well-located to settlements; and
- The possibility of using existing infrastructure (A1307 or former railway lines) in place of the proposed route.

16. In the context of the importance placed on stakeholder and public consultation in the Transport and Works Act Order process, the lack of any documented review of how these key themes were subsequently responded to is a further weakness of the appraisal process. The scheme should be reappraised for each of these key themes.

Technical Appraisal

17. In terms of the technical feasibility of a SRA, the "CSET Phase 2: Shelford Railway Alignment - Design Development and Feasibility Assessment (18 May 2020)" (referred to as "MM Report 2020") stated that *"a number of significant barriers would need to be overcome to construct the route"* at an additional cost of £29.1m. While acknowledging that this "questions its viability" the MM Report 2020 does not explicitly state that the alternative alignment is not feasible. Indeed, it actually demonstrates that a SRA is feasible (albeit defining a different, and inferior alignment to that which is considered within this report).

18. The MM Report 2020 concludes that the SRA:

- Would have been excluded at the longlisting stage as a result of gateway criteria relating to the loss of residential dwellings and private property (*Demolition*);
- When compared with the shortlisted options the former railway alignment would be less desirable as:
 - A number of residential and commercial properties would need to be acquired (*Demolition*);
 - The alignment would not provide full segregation meaning reliability and compatibility with CAM requirements would be reduced (*Segregation*);

- Journey times from the travel hub would be expected to increase, and overall patronage of the route would be forecast to decrease (*Passenger Demand*);
 - Greater noise impacts would be expected (*Environmental*);
 - It presents a number of practical challenges which would be expected to seriously impact deliverability; and
 - The scheme costs are expected to be approximately £29.1m greater (*Cost*).
19. The SRA was not considered by MM to be a viable alternative to the GCP preferred Brown route (identified within the GCP report to the GCP Joint Assembly dated 4 June 2020), with the principal issues relating to Demolition, Segregation, Deliverability and Cost.
20. Our report has reviewed the appraisal contained in the MM Report 2020 focusing on these principal issues. The working assumptions used for determining the alignment and width of the route corridor assessed in the MM Report 2020 are generally acceptable. However, at this high-level stage it is appropriate to allow for some flexibility in these assumptions without compromising the design objectives. In addition, flexibility on the location of the NMU provision (as the MM Report 2020 notes at A1301 Cambridge Road bridge) is a reasonable approach which would not compromise the scheme.
21. This report demonstrates that the application of flexible working assumptions and NMU routing would enable substantial reductions in property *Demolition*. Our analysis shows that, according to the MM Report 2020, a total of 22 residential and 4 commercial premises would be affected by the alternative SRA under MM's own assessment. Our report shows that minor modifications to the high-level design would reduce the impact to just 4 premises being affected (refer to paragraph 11.1.17 for details). This is a significant difference to the MM study.
22. In respect of *Segregation*, contrary to the MM Report 2020's conclusions, it would be possible to create a fully segregated design along the entire alternative SRA. Small amendments to the assumed layout design alongside Chaston Road, coupled with re-aligned NMU provision, would enable this section to be fully segregated.
23. The assertion in the MM Report 2020 that *Deliverability* would be seriously impacted is unsubstantiated. Further, it should be reviewed in light of the revised alignment appraisal presented herein, which demonstrates that a route is feasible and would only directly affect four residential properties. Thus, even at initial feasibility stage flexible design can reduce the risks associated with deliverability. Subsequent design phases would seek to reduce risk even further.

24. Thus, this independent report confirms that the alternative SRA is a technically feasible alternative to the preferred route option. It has shown that the MM Report 2020:
- Substantially overestimates the extent of *Demolition* required;
 - Omits to identify that there is a feasible route which achieves full *Segregation*; and
 - Over-states concerns in respect of *Deliverability*.
25. Therefore, the alternative SRA is likely to be a viable alternative to the GCP's preferred Brown route.
26. The passenger demand assessment presented in the MM Report 2020 along with the assessment in the OBC raises a number of concerns:
- It assumes very low demand arising in Stapleford;
 - The low vehicle capacity of the route could undermine its quality and hence benefits; and
 - The assessment of perceived journey time should not be relied upon to differentiate between the preferred option and the SRA.
27. Whilst cost is an important consideration, without quantification of the associated benefits it is not on its own a reason to consider the alternative SRA unviable. It is clear from the OBC that the benefits of the preferred scheme are heavily reliant on the journey time savings of passengers using the route to/from Stapleford, Great Shelford and Sawston. There would appear to be considerable potential to capture more of these benefits with a route which is closer to the centre of these settlements. This is pertinent in light of the poor BCR the currently proposed scheme returns and the recommendation of the GCP Joint Assembly to improve it.
28. There remains a concern that the MM assessment dismissed the option of an alternative SRA too early in the process and that no thorough and detailed assessment has been undertaken. Even when the Alternative SRA was retrospectively assessed using the INSET methodology, the route that was assessed by MM was not the most robust option for an alternative SRA that could have been assessed, as has been demonstrated by the findings of this report. Thus, the scoring awarded was negatively skewed and should be revisited. Indeed, once revisited it is likely that the alternative Shelford Railway Alignment would, as a minimum, be comparable to the preferred Brown route in which case BCR, analysis of Value for Money and need for further consultation must also be revisited.

SECTION 1 Introduction

- 1.1 i-transport LLP has been appointed by the Parish Councils of Great Shelford and Stapleford to provide an independent and objective review of the technical feasibility study undertaken by MM¹ on behalf of the Greater Cambridge Partnership (GCP), of a proposed public transport route to the south east of Cambridge which is Phase 2 of a wider scheme of improvements known as the Cambridge South East Transport (CSET) proposals.
- 1.2 In addition, to inform the technical appraisal the study has reviewed the history of the CSET scheme proposals with a focus on the option and appraisal process and associated studies for Phase 2.
- 1.3 This report is divided into two stages as follows:
- **Stage 1: Strategy & Process**
 - This stage of work considers the strategy and process adopted by MM in their assessment of options for CSET and the appraisal and methodology adopted for option development and the OBC. It also provides an overview of the development of the CSET proposals and the associated policy context; and
 - **Stage 2: Technical Appraisal**
 - This stage of work presents our findings on the technical feasibility of an alternative SRA in terms of deliverability, segregation, impact to property and feasibility in comparison to the preferred option route with specific reference to the MM report "*CSET Phase 2: Shelford Railway Alignment - Design Development and Feasibility Assessment (18 May 2020)*" which is referred to in the remainder of this document as "MM Report 2020". It includes a review of passenger demand and journey times along with a re-evaluation of the comparative appraisal.

¹CSET Phase 2: Shelford Railway Alignment - Design Development and Feasibility Assessment (18 May 2020, ref: 403394-MMD-TRA-00-RP-0279_B)"

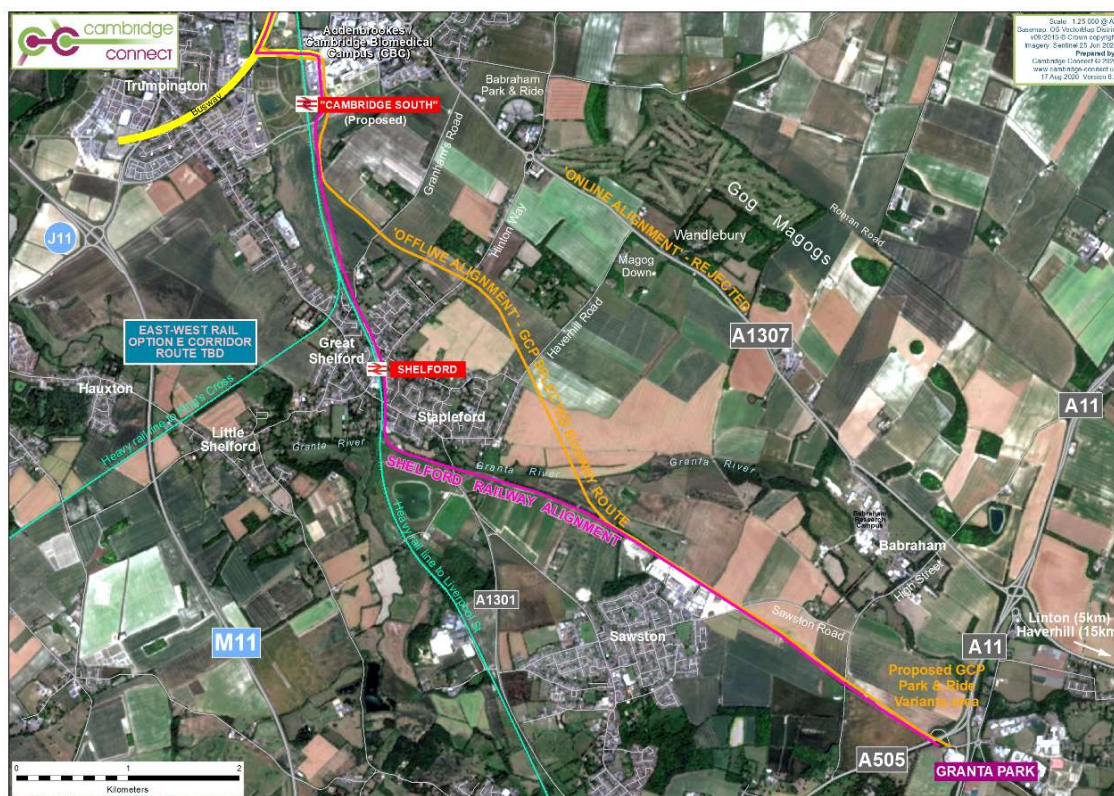
The Scheme

- 1.4 The CSET Phase 2 Scheme comprises a new fully segregated public transport route between the Cambridge Biomedical Campus (CBC)/Addenbrookes Hospital and the A11 via Sawston and Shelford, with a new Travel Hub site near the A11/A1307 junction.
- 1.5 Our understanding is that the scheme is required to incorporate a form of vehicle guidance system. The system is yet to be defined but is expected to include either optical tracking of road markings or physical guidance like that used by the Cambridge Guided Busway.
- 1.6 We also understand that the Cambridgeshire and Peterborough Combined Authority (Combined Authority) propose that the new public transport route, if secured, would become part of the Cambridgeshire Autonomous Metro (CAM) scheme, which comprises a wider regional public transport network extending from Haverhill to St Neots and other destinations including tunnelled sections under Cambridge city centre. The CAM is intended to operate with high-quality, low emission, rubber tyred, 'trackless metro' vehicles according to the Strategic Outline Business Case (Steer, 2019). To be converted to part of CAM at a later date the public transport route must be "fully or largely segregated on the 'regional' sections" (Steer, 2019) to ensure integration and ultimately in order to gain approval.
- 1.7 A number of consultants have worked on development of the CSET since 2015 including WSP, MM and LDA alongside GCP.
- 1.8 The aims of Phase 2 CSET are:
- secure future economic growth,
 - provide better public transport, cycling & walking,
 - connect homes with places of work or study,
 - reduce congestion & limit traffic growth.
- 1.9 A number of route alignment options have been considered at various stages in respect of CSET Phase 2. These include three principal options and variations of them as follows:
- the **Online Alignment** – an on-road bus lane along the existing A1307 highway;
 - the **Offline Alignment** – an off-road route that in part follows the former railway line route to Haverhill, with a deviation across green belt land below the Gog Magog Hills to skirt east of the villages of Stapleford and Great Shelford; and

- the alternative **Shelford Railway Alignment** – an off-road route that fully follows the former railway line route from CBC to Granta Park, including through the villages of Stapleford and Great Shelford, where it would run parallel to the existing mainline railway.

- 1.10 The conclusion of work undertaken by GCP to date is that the proposed CSET Phase 2 Scheme should follow the offline alignment deviating from the former railway line south east of the village of Stapleford and traversing the green belt to the east of Stapleford and Great Shelford before re-aligning with the mainline railway corridor south of Cambridge South station.
- 1.11 The three route options are shown at Figure 1.1 (Cambridge Connect 2020) which is an extract of the plan included at **Appendix A** to this report.

Figure 1.1 – CSET Phase 2 Route Options (extract from Appendix A)



- 1.12 There have been a number of reports over recent years prepared on behalf of the GCP assessing the various scheme options. Various reports are referred to within this study. However, the following reports prepared by MM provide much of the context and basis for this study:
- CSET Phase 2: Feasibility of Old Railway Alternative Route (16 August 2019);
 - CSET Phase 2: Outline Business Case (15 May 2020); and

- CSET Phase 2: Shelford Railway Alignment - Design Development and Feasibility Assessment (18 May 2020).

Structure

1.13 This report comprises 14 sections, of which this first chapter provides the introduction. The remaining sections are divided into two distinct stages and are structured as follows:

- **Stage 1 – Strategy & Process**
 - Section 2: Objectives & Policy
 - Section 3: Appraisal Process & Methodology
 - Section 4: Option Appraisal Report – Identification and Sifting
 - Section 5: Economic Case Considerations
- **Stage 2 – Technical Appraisal**
 - Section 6: Alignment Options
 - Section 7: Technical Review
 - Section 8: Impact to Property
 - Section 9: Segregation
 - Section 10: Deliverability
 - Section 11: Design Alternative
 - Section 12: Demand & Journey Time Review
 - Section 13: INSET Appraisal/ Review
 - Section 14: Summary and Recommendations

STAGE 1 – STRATEGY & PROCESS

SECTION 2 Objectives & Policy

2.1 Overview

2.1.1 The objectives of the CSET proposals provide a basis for all subsequent appraisal. It is therefore essential that a thorough review of the scheme objectives is carried out in the context of wider transport policy to establish that they are a reasonable and appropriate set of 'criteria' for the development of options that follows.

2.1.2 This Section considers relevant transport policy and the scheme objectives to determine their appropriateness in underpinning all subsequent assessment of CSET, and particularly the SRA.

2.2 Local Planning Policy

South Cambridgeshire Local Plan 2018

2.2.1 The South Cambridgeshire Local Plan sets out the planning policies and land allocations to guide the future development of the district up to 2031. It includes policies on a wide range of topics such as housing, employment, services and facilities, and the natural environment.

2.2.2 Paragraph 1.5 of the Plan states that ***'the Plan aims to strike the right balance between growth and conservation, valuing what makes the area unique. It is about making sure jobs are created, and new homes provided, in the right areas, and that all transport needs are considered, and people have a choice about where to live so they do not have to rely on cars for all of their journeys'***.

2.2.3 The objectives of the South Cambridgeshire Local Plan are contained in Policy S/2 within Chapter 2 which defines the Spatial Strategy. Policy S/2 states the Plan objectives, as follows:

- ***'To support economic growth by supporting South Cambridgeshire's position as a world leader in research and technology-based industries, research, and education; and supporting the rural economy.'***
- ***To protect the character of South Cambridgeshire, including its built and natural heritage, as well as protecting the Cambridge Green Belt. New development should enhance the area and protect and enhance biodiversity.'***
- ***To provide land for housing in sustainable locations that meets local needs and aspirations, and gives choice about type, size, tenure and cost.'***

- *To deliver new developments that are high quality and well-designed with distinctive character that reflects their location, and which responds robustly to the challenges of climate change.*
- *To ensure that all new development provides or has access to a range of services and facilities that support healthy lifestyles and well-being for everyone, including shops, schools, doctors, community buildings, cultural facilities, local open space, and green infrastructure.*
- *To maximise potential for journeys to be undertaken by sustainable modes of transport including walking, cycling, bus and train'.*

(SCLP 2018, Policy S/2, pp22-23)

Cambridge Local Plan 2018

- 2.2.4 The Cambridge Local Plan forms part of the development plan for Cambridge. It sets out the vision, policies and proposals for the future development and land use in Cambridge to 2031.
- 2.2.5 Policy 5 of the Cambridge Local Plan refers to sustainable transport and infrastructure and states that ***'development proposals must be consistent with and contribute to the implementation of the transport strategies and priorities set out in the Cambridgeshire Local Transport Plan (LTP) and the Transport Strategy for Cambridge and South Cambridgeshire (TSCSC). Cambridge City Council, Cambridgeshire County Council and developers will work together to achieve the objectives and implement the Cambridge specific proposals in the LTP and the TSCSC, with particular emphasis on securing modal shift and the greater use of more sustainable forms of transport'***. (Cambridge Local Plan 2018, Section 2, p31).
- 2.2.6 It goes on to states that the following will be supported, in principle:
- ***'delivery of local and strategic transport schemes, subject to the outcome of up-to-date, detailed assessments and consultation, where appropriate;***
 - ***promoting greater pedestrian and cycle priority through and to the city centre, district centres and potentially incorporating public realm and cycle parking improvements;***
 - ***promoting sustainable transport and access for all to and from major employers, education and research clusters, hospitals, schools and colleges;***
 - ***working with partners in supporting the TSCSC's aim for a joined-up, city-wide cycle and pedestrian network by addressing 'pinch-points', barriers and missing links;***
 - ***linking growth to the proposed city-wide 20 mph zone; and***
 - ***easing pressure on the air quality management area (AQMA) in the city centre'.***

(Cambridge Local Plan 2018, Section 2, p31).

- 2.2.7 The policies at a local planning level are broadly aligned across Cambridge City and South Cambridge with an emphasis of delivering sustainable transport connections through the implementation of the TSCSC.

2.3 **Transport Strategy for Cambridge and South Cambridgeshire (2014)**

- 2.3.1 The Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) covers the district of South Cambridgeshire and the city of Cambridge, but also considers the transport corridors beyond the district boundaries from the ring of towns around Cambridge. Within the respective Local Plans for both areas around 33,000 new homes are proposed to be built to help accommodate the 44,000 new jobs projected for the area in the period to 2031. The purpose of the strategy is therefore to:

- ***'Provide a detailed policy framework and programme of schemes for the area, addressing current problems and consistent with the policies of the Third Cambridgeshire Local Transport Plan 2011-26 (LTP3).***
- ***Support the Cambridge and South Cambridgeshire Local Plans, and take account of committed and predicted levels of growth, detailing the transport infrastructure and services necessary to deliver this growth'.***

(Transport Strategy for Cambridge and South Cambridgeshire, 2014, Section 1, p1-2).

- 2.3.2 Eight specific Strategy Objectives are set, as follows:

- ***'To ensure that the transport network supports the economy and acts as a catalyst for sustainable growth.***
- ***To enhance accessibility to, from and within Cambridge and South Cambridgeshire (and beyond the strategy area).***
- ***To ensure good transport links between new and existing communities, and the jobs and services people wish to access.***
- ***To prioritise sustainable alternatives to the private car in the strategy area, and reduce the impacts of congestion on sustainable modes of transport.***
- ***To meet air quality objectives and carbon reduction targets, and preserve the natural environment.***
- ***To ensure that changes to the transport network respect and conserve the distinctive character of the area and people's quality of life.***

- ***To ensure the strategy encourages healthy and active travel, supporting improved wellbeing.***

- ***To manage the transport network effectively and efficiently'***

(Transport Strategy for Cambridge and South Cambridgeshire, 2014, Section 2, p2-8).

2.3.3 In respect of travel demand in South Cambridgeshire Policy TSCSC 3 (*Transport Strategy for Cambridge and South Cambridgeshire, 2014, Section 2, p2-11*) identifies how travel demand should be accommodated which includes:

- Passenger transport services on main radial corridors will be used for part or all of more trips to Cambridge and to other key destinations.
- More people will walk and cycle to access these services.

2.3.4 This serves to demonstrate that at a strategic level public transport is important to accommodate future travel demand as well as walking and cycling to public transport nodes.

2.4 Greater Cambridge Partnership (GCP)

2.4.1 Cambridge City Council and South Cambridgeshire District Council are working together to create a joint Local Plan covering the two areas, jointly referred to as Greater Cambridge Shared Planning. The two authorities along with Cambridgeshire County Council and other stakeholders form the Greater Cambridge Partnership (GCP).

2.4.2 The GCP vision is ***"Working together to create wider prosperity and improve quality of life now and into the future"***. Within this vision there is reference to ***"Better Greener Transport – connecting people to homes, jobs, study and opportunity"***.

2.4.3 The specific transport Aims of the GCP are to:

- ease congestion and prioritise greener and active travel, making it easier for people to travel by bus, rail, cycle or on foot to improve average journey time;
- keep the Greater Cambridge area well connected to the regional and national transport network, opening up opportunities by working closely with strategic partners;
- reallocate limited road space in the city centre and invest public transport (including Park & Ride) to make bus travel quicker and more reliable;
- build an extensive network of new cycle-ways, directly connecting people to homes, jobs, study and opportunity, across the city and neighbouring villages;

- help make people's journeys and lives easier by making use of research and investing in cutting-edge technology; and
- connect Cambridge with strategically important towns and cities by improving our rail stations, supporting the creation of new ones and financing new rail links.

2.4.4 These transport aims follow the GCP vision and are consistent with the aims of the TSCSC.

2.5 CSET Phase 2

2.5.1 The CSET Phase 2 scheme has developed the general GCP aims into specific aims as follows:
(MM OBC, May 2020, Executive Summary)

- Secure future economic growth and quality of life;
- Better public transport;
- Better cycling and walking links;
- Connect homes with places of work or study; and
- Reduce congestion and limit growth in traffic.

2.5.2 These aims have been used to determine CSET Phase 2 scheme specific objectives as follows:

- Support the continued growth of Cambridge and south Cambridge's economy;
- Relieve congestion and improve air quality in south east Cambridge;
- Improve active travel infrastructure and public transport provision in south east Cambridge;
- Improve road safety for all users of the A1307 corridor; and
- Improve connectivity to employment sites in south east Cambridge and central Cambridge.

2.6 Review of Policy and Objectives

2.6.1 It is apparent that there are some clear and consistent themes of transport policy across Cambridge and South Cambridgeshire which translate into the key transport objectives for the area. These themes are generally echoed by the GCP in their aims and objectives for the area and to some extent they translate into the objectives and aims for CSET. However, there are differences.

- 2.6.2 The last two scheme specific objectives are most notable i.e. improving road safety for users of the A1307 corridor and improving connectivity to employment sites in south east Cambridge.
- 2.6.3 Firstly, improving road safety along the A1307 is understandably specific to the area, this being one of the main radial routes. Hence, a specific road safety objective is appropriate and is consistent with general local transport policy and the overall GCP objectives.
- 2.6.4 Secondly, connectivity to employment sites has a different emphasis than other policy and objectives relating to connectivity. The focus of connectivity is towards the employment locations. This raises the importance of employment locations and diminishes the importance of residential locations in terms of connectivity. Clearly the two are linked therefore any objective should be balanced such as TSCSC's strategy objective to have ***"good transport links between new and existing communities, and the jobs and services people wish to access"***. (Transport Strategy for Cambridge and South Cambridgeshire, 2014, Section 2, p2-8).
- 2.6.5 It is noted that the CSET scheme objectives have developed over the lifetime of the project. In 2016 the objective in relation to connectivity was similarly more balanced ***"improve connectivity between villages and places of employment"*** (GCP presentation 15.06.2016; www.greatercambridge.org.uk).
- 2.6.6 The development of scheme options was guided by the stated objectives and therefore the focus of connectivity on employment locations would have influenced the range and choice of options. Further comment is made at Section 4 of this report.
- 2.6.7 Finally, it is noted that one of the strategic objectives of the TSCSC was to ensure transport schemes ***"respect and conserve the distinctive character of the area and people's quality of life"***. The CSET Phase 2 objectives appear to have largely overlooked this strategic objective which clearly would have influenced the development of the CSET Phase 2 scheme and potentially provided greater weight to environmental implications.

2.7 History of CSET Objectives

- 2.7.1 The CSET was originally conceived as the A1307 Haverhill to Cambridge Transport Corridor which was an overall part of the approach developed in the TSCSC. The initial Concept Study (2016) was undertaken to inform the first tranche of the City Deal infrastructure programme with the following objectives:

- To identify a variety of options which will improve the reliability, safety and speed of movement along this corridor, and ultimately reduce the number of vehicles driving into the city of Cambridge;
- To investigate whether combinations of schemes will provide the greatest benefit;
- To ensure provision for cyclists and pedestrians is inherent in all proposals (and where appropriate, consideration of other non-motorised users, such as equestrians);
- To generate options capable of maintaining traffic levels at today's levels in Cambridge;
- To consider the potential for enhancing the environment, streetscape and air quality in this corridor;
- To assess the impacts on existing residents and highway capacity for each option;
- To identify areas along the corridor, and measures, where safety for all modes of travel can be improved; and
- To improve the connectivity with surrounding villages and places of employment along the corridor. (*GCP Concept Study 2016*)

2.7.2 These objectives were set out in the 2016 Concept Study which included the 2015 Rail Technical Note which concluded that the re-opening of the Haverhill to Cambridge rail line was unviable due to the low Benefit to Cost Ratio (BCR) of less than 1 (further comment is provided at Section 4 of this report).

2.7.3 There does not appear to be an appraisal of the use of the railway line against the above objectives or against the objectives of the TSCSC. Further, in July 2017 the Greater Cambridge City Deal became the Greater Cambridge Partnership and set out its own objectives as noted earlier in this section. There does not appear to have been any re-appraisal of discounted options against the GCP objectives.

2.7.4 This omission was a missed opportunity to revisit, review and potentially a re-appraise both the CSET Phase 2 scheme objectives and the consideration of route options that had gone before. It is noted the LLF was formed at a similar time which provided the ideal platform.

2.8 **Sawston Greenway**

2.8.1 The Greater Cambridge Greenways is another transport infrastructure project being advanced by the GCP. It comprises 12 'spokes' around the 'hub' of central Cambridge and is intended to

facilitate sustainable travel to and from the City. Two of the spokes to the south/south east of the city are the Sawston Greenway and the Linton Greenway (under construction), which route broadly along the A1301 and A1307 corridors respectively. The Linton Greenway connects CBC to the Babraham Research Campus (BRC) and is an integrated part of the Phase 1 CSET Scheme.

2.8.2 The CSET Phase 2 scheme effectively routes between the two Greenways. As noted, one of the principal aims of the CSET Scheme is better walking and cycling routes and accordingly the CSET Phase 2 Scheme includes dedicated provision for pedestrians and cyclists. The connections the CSET Phase 2 Scheme would provide for pedestrians and cyclists are those which the Sawston Greenway could equally deliver. However, it appears the Sawston Greenway scheme is being advanced separately to CSET Phase 2 Scheme.

2.8.3 Clearly the Sawston Greenway should be an integrated part of the CSET Phase 2 Scheme in the same way the Linton Greenway has been an integrated part of the CSET Phase 1 Scheme. Advancing them separately risks:

- the duplication of infrastructure, offering poor value for money; and
- the two schemes essentially 'competing' for existing infrastructure, leading to one scheme receiving priority to the detriment of the other.

2.8.4 Clearly, the Sawston Greenway should be advanced as part of the CSET Phase 2 Scheme in an integrated manner to provide cost effective infrastructure which delivers optimal benefits. Further comment in respect of the alternative SRA on this matter is made at Section 7.2 and 11.1.

2.9 Green Belt

2.9.1 It is not within the scope of this report to review or comment on wider planning policies insofar as they relate to the CSET Phase 2 Scheme. However, it is understood that the preferred Brown route would be located within a designated area of Green Belt land. In this respect it is worth noting the policy requirements of National Planning Policy Framework (NPPF) at paragraph 146:

"Certain other forms of development are also not inappropriate in the Green Belt provided they preserve its openness and do not conflict with the purposes of including land within it. These are:

[..]

c) local transport infrastructure which can demonstrate a requirement for a Green Belt location;” (NPPF 2020, paragraph 146).

- 2.9.2 This over-arching national policy, to maximise use of previously developed land and protect the character of the Green Belt, also accords with Local Plan policy S/4, and Cambridge South Fringe Area Action Plan Policy CSF/5. Thus, for policy compliance it must be demonstrated that there is a requirement for CSET Phase 2 scheme to route through the Green Belt around Great Shelford & Stapleford. To do so, it must be shown there is no suitable alternative which affords greater protection to the Green Belt.

SECTION 3 Appraisal Process & Methodology

3.1 History of Appraisal

3.1.1 The CSET proposal was originally conceived as the A1307 Haverhill to Cambridge Transport Corridor which was part of the overall approach developed in the TSCSC. The initial studies were undertaken under the Greater Cambridge City Deal to inform the first tranche of the City Deal infrastructure programme.

3.1.2 Within this section each report/stage is considered in respect of the process and methodology adopted with a commentary on any weaknesses or omissions.

3.2 A1307 Haverhill to Cambridge Corridor Draft Concepts Report (2016)

3.2.1 The A1307 Haverhill To Cambridge Corridor Concepts Report (2016) sets out the initial appraisal undertaken in developing scheme options. Alongside this report two related studies were undertaken which informed the selection of the concepts: Cambridge-Haverhill Corridor Study - Rail Viability Technical Note (2015); and A1307 Haverhill To Cambridge Corridor Draft Road Intervention Technical Note (2016).

3.2.2 The Rail Viability Technical Note (2015) concludes that the re-opening of the disused Haverhill to Cambridge railway line would not be viable for either heavy rail or Bus Rapid Transit (i.e. a busway similar to CSET Phase 2).

3.2.3 Within the A1307 Haverhill To Cambridge Corridor Concepts Report (2016) numerous options are considered which are a combination of both Bus Rapid Transit (BRT) and conventional bus including part use of the former Haverhill to Cambridge railway line. However, all options with any use of the former railway line are discounted with reference to the Rail Viability Technical Note (2015). For example, it is noted at Table 4.6 which summarises all the concepts appraised **Option 05 Bus Rapid Transit D** is discounted with reference to the previous appraisal of the disused corridor.

Figure 3.1 – Extract of A1307 Haverhill To Cambridge Corridor Concept Report Table 4.6

Bus Rapid Transit D	On highway (A1307) from Linton to Haverhill. Use disused railway corridor from Linton to Cambridge. Run alongside existing railway to connect to Busway near Addenbrooke's Hospital (two way segregated busway)	N	Disused rail corridor not viable for BRT in this study
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3.2.4 However, the re-use of the railway line in part rather than in its entirety was not fully examined as part of the Rail Viability Study. Thus, to rely on the Rail Viability Technical Note (2015) to discount use of the railway line even in part is incorrect.

3.2.5 This is a weakness in the early appraisal process which determined subsequent option development. The consequence of this approach was that no concept public transport options (including busways such as CSET Phase 2) were included that included even partial re-opening of the disused railway line as can be seen from the concept short list:

Figure 3.2 – Extract of A1307 Haverhill To Cambridge Corridor Concept Report Table 4.8

Table 4-8 Concept Short List	
INTERVENTION TYPE	GENERAL DESCRIPTION
Park & Ride	
Concept 1A	Babraham Road Park & Ride Improvements
Concept 1B	Proposed A11 Park & Ride
Rapid Transit	
Concept 2A	Granta Park to Addenbrooke's Hospital / Cambridge Biomedical Campus (off Highway)
Concept 2B	Granta Park to Addenbrooke's Hospital / Cambridge Biomedical Campus (on highway)
Concept 2C	Linton Bus Priority
Concept 2D	Babraham Road Park & Ride to Addenbrooke's Hospital / Cambridge Biomedical Campus (off highway)
Concept 2E	Babraham Road Park & Ride to Addenbrooke's Hospital / Cambridge Biomedical Campus (on highway)

3.2.6 Essentially, the A1307 Haverhill To Cambridge Corridor Concept Report (2016) identified options for improved rapid transit which included on or off highway routes between CBC and Granta Park/Babraham Park & Rides along with bus priority measures through Linton.

3.3 Preferred Options Report (2017)

3.3.1 Following consultation on the concepts in the A1307 Haverhill To Cambridge Corridor Concept Report, the A1307 Haverhill To Cambridge Preferred Options Report was published in February 2017. It set out a preferred package of improvements focused in and around the A1307 corridor. Between the A11 and CBC this comprised a new Park & Ride (P&R) site between Granta Park/Babraham Research Campus, a bus lane inbound to Cambridge, bus priority, safety, pedestrian/cycle improvements and enhanced Babraham P&R.

3.3.2 The preferred options were abandoned following workshops with the LLF during 2017 which culminated in the publication of A1307 Study Options Report Addendum in November 2017.

- 3.3.3 During 2017 the LLF contributed to a series of workshops to expand and identify options for the corridor improvements. A total of 210 comments were distilled into 49 options, which were then discussed and scored to identify three core strategies. These core strategies were developed and packaged with localised enhancement measures to provide eight scenarios for testing.

Discounted Options

- 3.3.4 No details of the 210 comments are available in the public domain. It is not known if any comment included the re-use of the former railway line either in part or whole. However, the report notes at paragraph 2.4.1 that various options were discounted including rail options with the explanation ***“these far exceed budget allowances, cannot be delivered in the timescale allocated for the project and had been previously discounted”***. The final point is important. One of the sifting criteria for the 210 comments was ***“have they previously been discounted?”***. This appears contrary to the stated purpose of the LLF consultation of ***“identify any missing opportunities for sustainable transport interventions”***. This is a weakness in the appraisal process and unnecessarily narrowed the development of options.
- 3.3.5 The previous discounting of the re-opening of the rail line between Haverhill and Cambridge clearly influenced the judgement of those hosting and participating in the workshops.

Transparent Process

- 3.3.6 It is however curious that the busway option identified in the A1307 Study Options Report Addendum (2017) was partially located along the disused railway line between the A11 and Sawston. Clearly, the re-use of the line was not completely discounted. However, it is not transparent from the A1307 Study Options Report Addendum why the busway route deviates around Stapleford and Shelford away from the disused railway. Again, this lack of transparency makes it difficult to judge whether there is a sound reason the route shown was chosen. It appears that the re-use of rail line through Stapleford/Shelford was not even entertained.
- 3.3.7 There is a lack of transparency with this process with no details of the 210 comments received and no record of which were dismissed and why. This is a weakness in the process.
- 3.3.8 It is interesting to note that this ‘blind spot’ to the use of the railway line west of Sawston is highlighted in the minutes of the LLF meeting on 7 February 2018 when it was queried whether it would be better to route Strategy 1 through the villages. The response from on behalf of GCP was ***“there is no route through the villages available without using existing roads...”***.

Clearly, the remainder of the disused rail line and alongside the existing rail line was excluded from consideration for this statement to have been made.

- 3.3.9 The A1307 Study Options Report Addendum (2017) included an assessment of the eight 'scenarios' to determine their relative transport performance including mode share, travel times and bus patronage. One of the key findings of the assessment was:

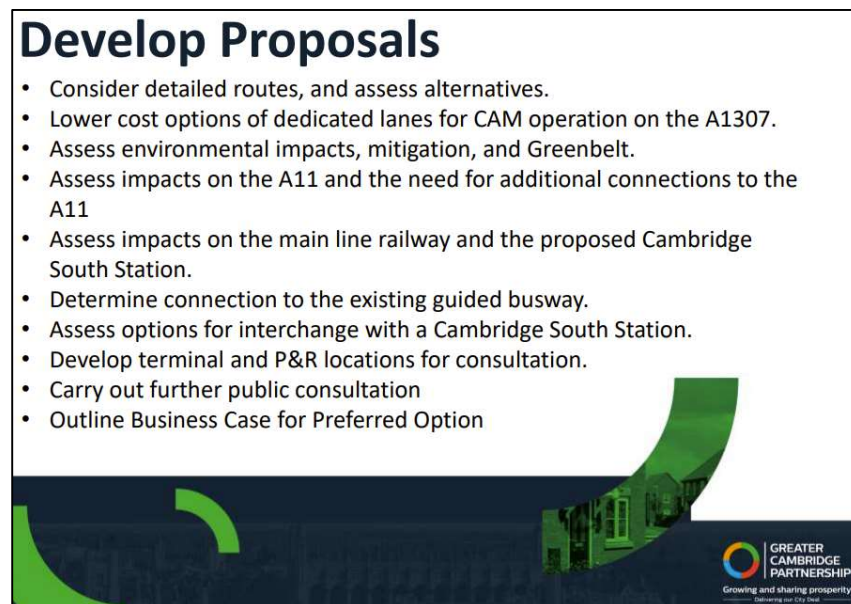
'The busway located close to existing villages in the A1301 corridor enables additional settlements to benefit from faster journey times' (A1307 Study Options Report Addendum, para 3.7.1).

- 3.3.10 Further interrogation of the preferred three strategies which were subsequently taken forward for public consultation showed that over 20% of the patronage of the new busway would be from Stapleford, with 30% from Sawston. This indicates the benefits of the busway largely arise from the settlements it would serve. It is revealing that even at the edge these settlements reasonable numbers of passengers would be attracted. Surprisingly, it is noted that the appraisal shows no passengers were expected to board/alight at Shelford in the morning peak hour.
- 3.3.11 In light of these initial findings it is difficult to understand why options to enable the busway to better serve these settlements were not explored in more detail. Further comment in relation to these benefits is made at Section 5.
- 3.3.12 One of the key concerns with Strategy 1 highlighted by the LLF as part of the workshops was the environmental impact of the route to the east of Stapleford and Shelford and its associated land take. It was the worst performing of the three preferred strategies (the subsequent public consultation identified the environmental impact of Strategy 1 as a major theme). This potential environmental impact could be substantially reduced had the option of a route through Stapleford/Shelford been included for consideration.
- 3.3.13 This is the stage at which alternative alignments should have been considered. Strategy 1 was only a concept at the start of the process but developed into a busway alignment – there is no record of the decision-making process for the chosen alignment during this period. There is reference to various appendices providing results, but these are not included in the published document. We question why this is the case.
- 3.3.14 Strategy 1 was consulted on with the alignment shown as "indicative only" noting in the consultation leaflet that it was "subject to design and consultation" yet it seems that the indicative alignment was simply taken forward as the route option as noted below.

3.4 Preferred Strategy

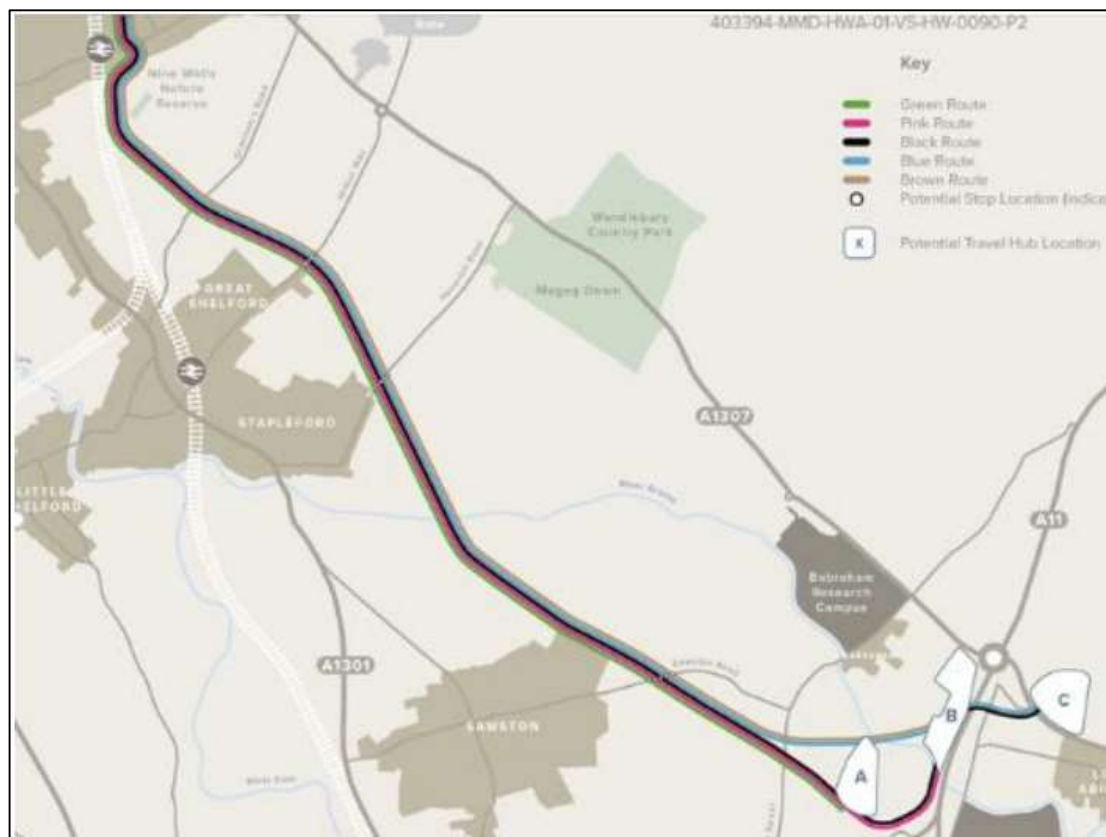
- 3.4.1 Following the 2018 consultation 'Strategy 1' was taken forward. In a presentation to LLF (12.9.18) it was recommended by MM to develop the proposals further noting the need to consider detailed routes and assess alternatives. An extract of that presentation is included at Figure 3.3.
- 3.4.2 No alternatives were assessed at this stage although further comment is made at Section 4 of this report in respect of the OBC appraisal process.

Figure 3.3 – Extract of LLF Presentation (September 2018)



- 3.4.3 In a further presentation to LLF on 4 June 2019 the following Strategy 1 options were identified, which it is understood were taken forward for consultation late in 2019.

Figure 3.4 – Extract of LLF Presentation (June 2019): Strategy 1 Options



3.4.4 The only variation to the routes is at the south eastern end with the locations and connections to three alternative travel hub locations. There does not appear to be any record of the public consultation material from 2019.

3.4.5 There do not appear to be any documentation during this period which records the appraisal process which determined how Strategy 1 was developed into the preferred options consulted on in 2019. This is a weakness in the options process. It is noted the OBC provides more information on the appraisal which it is assumed took place at this time. However, it is not clear how the consultation feedback was fed into this process (further comment is made at Section 4 of this study).

3.5 Summary Remarks

3.5.1 There are a number of weaknesses in the option development and appraisal process which undermine the credibility of the options taken forward. It is notable that during the evolution and development of the Phase 2 CSET scheme there appears to have been no consideration of a scheme which routed more directly through the settlements of Stapleford and Great Shelford.

Furthermore, there does not appear, during this period, to have been any proper assessment of the use of disused rail line.

- 3.5.2 The Phase 2 CSET scheme was progressed to the OBC stage during late 2019 and 2020 and this is considered in following section.

SECTION 4 Option Appraisal Report – Identification and Sifting

4.1 Overview

- 4.1.1 As part of the OBC prepared by MM in support of the scheme, Appendix A is the Option Appraisal Report (OAR) which provides details of the identification, appraisal, sifting and determination of the preferred option for the CSET Phase 2 Scheme. The previous studies (as referred to in Section 3 of this report) are broadly, collectively categorised by MM as the Strategic OBC process.
- 4.1.2 The OAR states that it provides an appraisal in line with the requirements of the Department for Transport's (DfT) Transport Analysis Guidance (TAG) 'The Transport Appraisal Process' (Executive Summary page 1). TAG process broadly covers two stages: Option Development and Further Appraisal. The OAR provides a four-stage process (1A, 1B, 1C and 2) which broadly aligns with the two TAG stages.

4.2 Option Identification

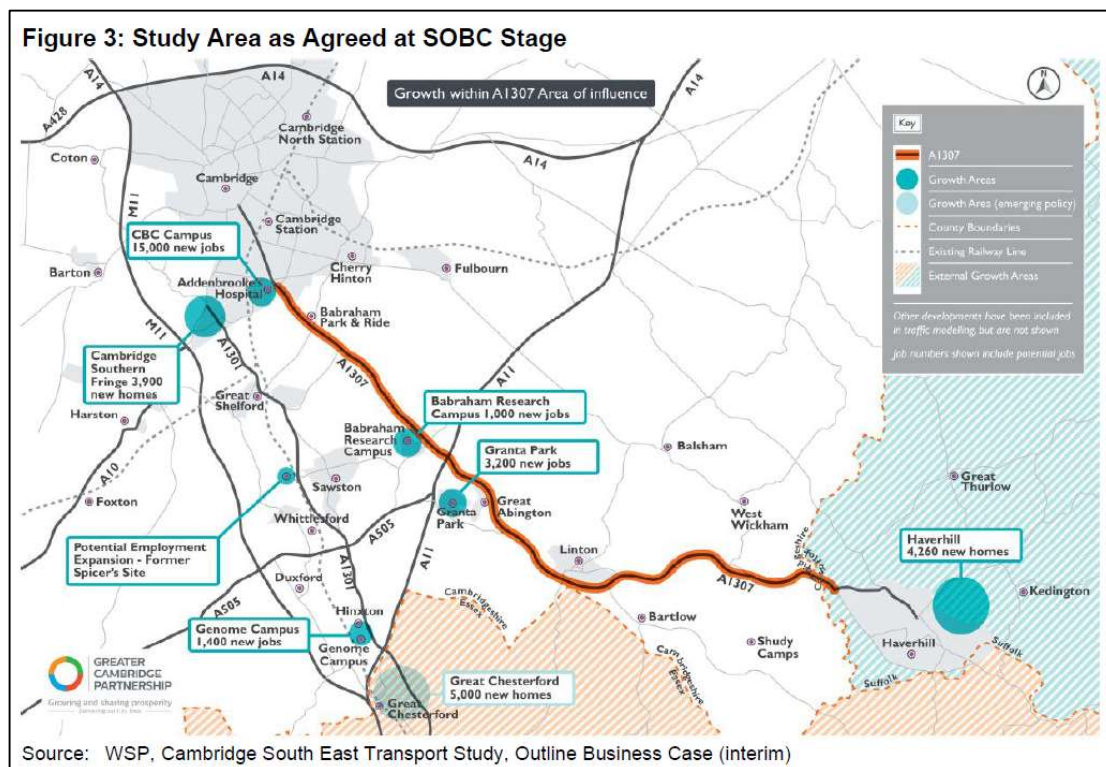
Study Area

- 4.2.1 One of the key steps in identifying appropriate options is to **Define Geographic Area of Impact to be Addressed by the Intervention** which is Step 4b in the TAG process. Section 4 of the OAR is titled "Scheme Objectives and Scope", which aligns with Step 4a and Step 4b of the TAG process. However, Section 4 of the OAR provides no details on the scope of the scheme. Specifically, it does not define the geographic scope (i.e. study area) of the appraisal process.
- 4.2.2 This is a notable omission. Currently the OBC does not align with TAG.
- 4.2.3 However, whilst the study area isn't clearly defined in the OBC, review of the OAR reveals a number of statements in relation to study area. Firstly, within the Executive Summary (page 2) it is noted:

'At SOBC stage in agreement with GCP it was established that the study area would cover the south east quadrant of Cambridge and South Cambridgeshire between A1307 and A1301 corridors, extending from the Cambridge Biomedical Campus at its north western edge to the Suffolk town of Haverhill in the east, encompassing key settlements of Linton, the Abingtons, Babraham village, Pampisford, Sawston, Stapleford and Great Shelford' (Mott MacDonald OAR 2020, p2).

- 4.2.4 There is an accompanying figure, **Figure 3**, identifying the extent of the study area agreed at Strategic OBC stage, an extract of which is included at Figure 4.1.

Figure 4.1 – Extract of OAR 2020 Figure 3

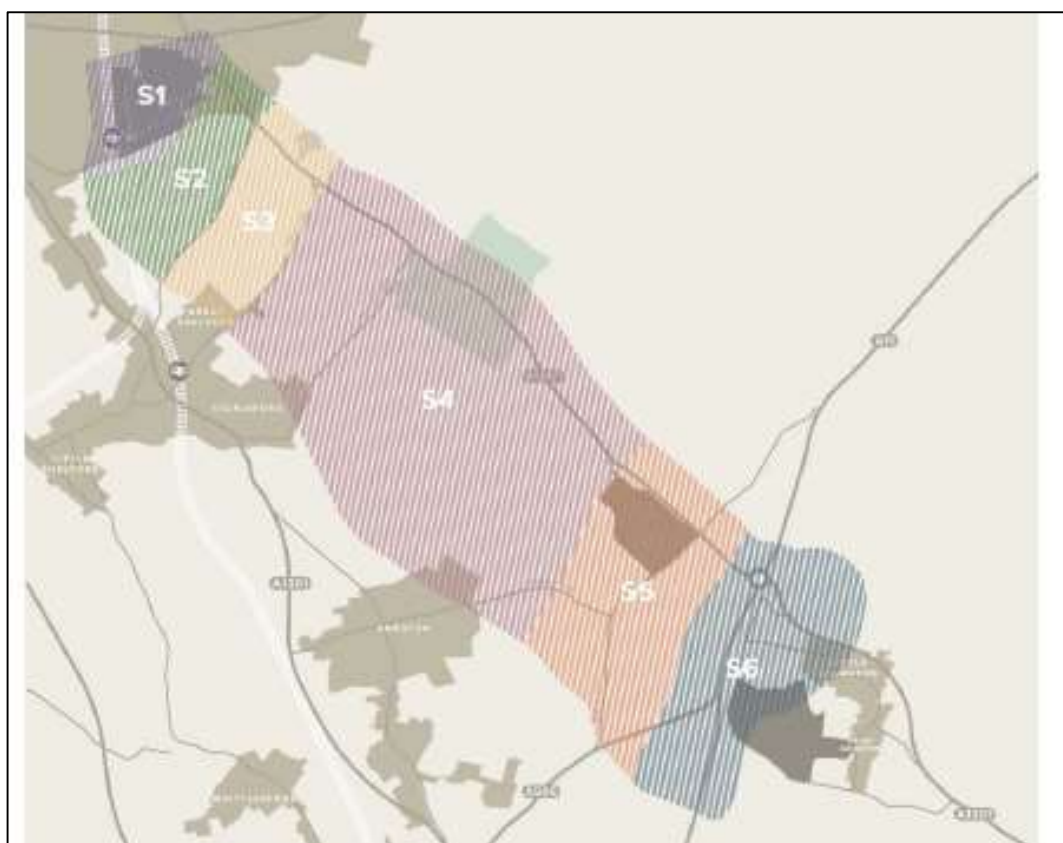


- 4.2.5 It is clear that this study area specifically included the settlements of Sawston, Great Shelford and Stapleford² and the area between the A1301 and A1307 corridors.
- 4.2.6 However, Figure 20 within the OAR defines six route segments within the study corridor as shown on the extract included at **Figure 4.2**. It is worth noting that Stage 1A was intended to look holistically at the whole study area, but Fig 4.2 shows that the six segments S1 - S6 excluded the key settlements. The exclusion is not properly explained.
- 4.2.7 What is clear from Figure 4.2 is that the route segments do not cover the whole study area.

² The population according to the 2011 Census of these settlements was Sawston 7,281; Great Shelford 4,472; and Stapleford 2,044

- 4.2.8 The OAR goes on to note that at the first appraisal stage (1A) the whole study area was considered holistically, irrespective of previous identified strategies (OAR, Executive Summary, page 4). Clearly, this is not reflected in the area identified for route segments which excludes almost half of the defined study area previously agreed with GCP.
- 4.2.9 There is no explanation as to the extent of area shown on Figure 20 of the OAR. It is merely noted that ***“six route segments within the study corridor were defined”***.
- 4.2.10 Without clear rationale for excluding a large part of the study area, and key settlements, the remaining option selection process must be viewed cautiously. This lack of transparency is a weakness in the option selection process and should be reviewed.

Figure 4.2 – Extract of OAR Figure 20



Use of former railway line

- 4.2.11 As noted in Section 3.3 initial studies identified a preferred option 'Strategy 1' which provided the basis from which to progress the OBC. However, the OAR notes that the assessment process has been reviewed for all of the three previously identified Strategies. The OAR summarises

each of the Strategies and notes that Strategy 1 aims to provide connectivity for Stapleford and Great Shelford and would follow:

“the alignment of the former Cambridge-Haverhill railway where possible.” (OAR 2020, para 5.1, p43)

- 4.2.12 There is no appraisal of the ability of the CSET Phase 2 Scheme to follow the former railway in earlier studies as noted in the previous section. There is also no assessment within the OAR Stage 1 process when alternatives should be included. The only commentary relating to use of the former railway line in the OAR is set out in Section 7.2.2, as part of refining the short list of options where it is noted that ***“consideration was given to developing options under the initial Strategies 1 and 2 that would follow the former Haverhill railway”.*** (OAR 2020, Section 7.2.2.)
- 4.2.13 There is no documentation or evidence of this appraisal. This is a weakness in the process.
- 4.2.14 It is explained that options to re-use the former railway line would have required a route closer to the village of Great Shelford and thus cutting through buildings on Hinton Way. As all options requiring demolition were discounted it is stated that the initial conclusion was that a route ***“via the former Haverhill railway to the south of Stapleford and through Great Shelford was infeasible”.***
- 4.2.15 There is no supporting documentation to substantiate this statement. A weakness of the appraisal.
- 4.2.16 It does not logically follow that the use of the former Haverhill railway would necessitate demolition of properties on Hinton Way. Further comment is made in Section 8 of this report in relation to impact on property of the alternative SRA.
- 4.2.17 The OAR notes that following feedback from the LLF the feasibility of using the former railway line was revisited. The OAR goes on to identify ‘constraints’ based on what appears to be a cursory review of the route, with four photographs being presented as evidence that there are structural, demolition and property acquisition constraints which would increase costs by £15m. For these ‘reasons’ it was not considered a feasible alternative.
- 4.2.18 This is an incomplete assessment and weakness of the appraisal.
- 4.2.19 Further comment is made in Part 2 of this report, with specific reference to the MM June 2020 report. However, it is worth noting that there was no proper appraisal of the alternative SRA in

accordance with the process set out in the OAR. Further, it is interesting to note in section 7.2.1 of the OAR (part of the same refinement of options section) that an appraisal was undertaken of an alternative travel hub option which was similarly suggested by the LLF. This suggestion was more comprehensively assessed with scoring presented in Table 18 (OAR 2020, p113). It would appear that the two suggestions identified by LLF were not reviewed in an equitable manner.

4.3 Sifting & Selection

4.3.1 The OAR process goes through a number of steps to refine the scheme options. These are a combination of gateways and sifting appraisals. It is noted that MM's INSET sifting appraisal tool has been accepted by DfT. However, it is considered that the process could be better explained and be more transparent. Further, the INSET tool clearly has bespoke elements for each project and that former acceptance does not guarantee acceptance for this appraisal. The INSET process is reviewed in respect of the alternative SRA later at Section 13 of this report.

Gateway Assessment

4.3.2 At Stage 1C a total of 231 option packages are identified and these were then reduced to 90 through a Gateway Assessment. The Gateway Assessment sets three criteria as follows:

Figure 4.1 – Extract of MM Gateway Assessment Criteria



4.3.3 There is no explanation for the choice of these criteria. Whilst each is an understandable appraisal criterion, applying them in a 'gateway' manner gives them additional weight in the appraisal process.

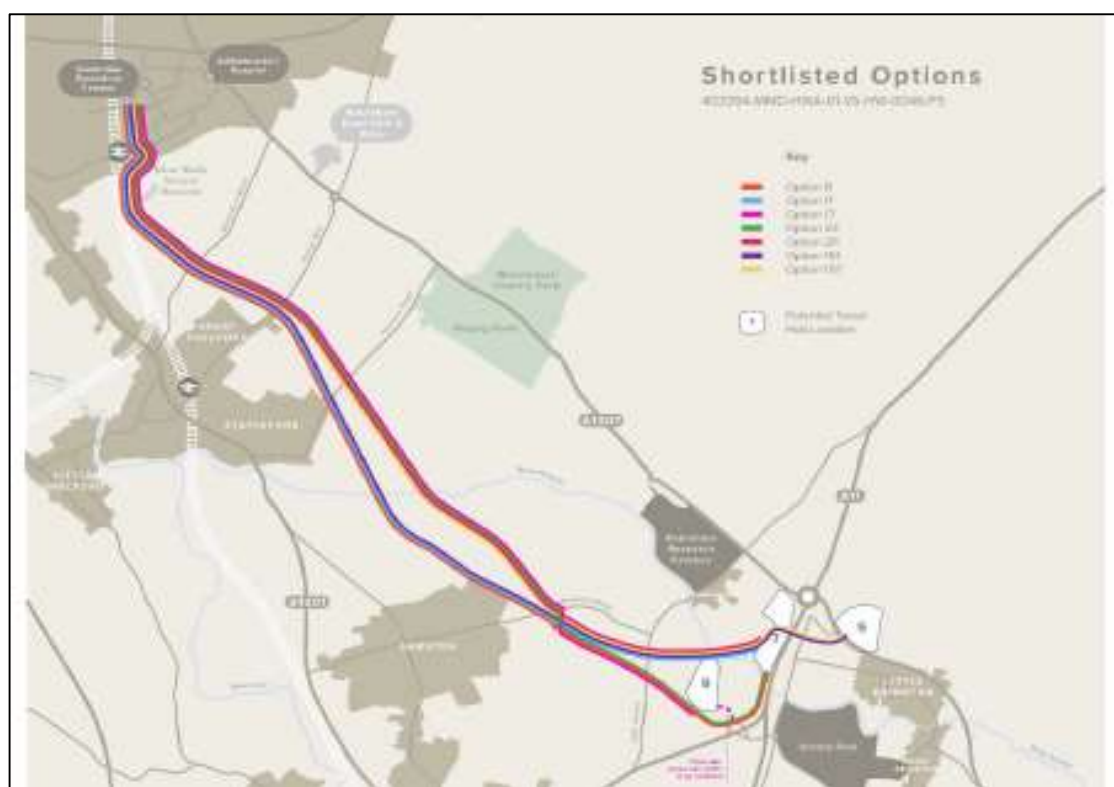
4.3.4 Arguably, the first one should have been applied at an earlier stage of the process when options were being developed. Indeed, paragraph 5.31 of the OAR notes that Travel Hub sites were chosen against a number of criteria including capacity which should meet a requirement of 2,000-3,000 spaces.

- 4.3.5 The remaining two criteria are matters which are necessarily considered in subsequent sifting exercises and, indeed, are effectively covered in the INSET appraisal.
- 4.3.6 The result of the Gateway application is to exclude options which require demolition of property or loss of high value land. Essentially, they give undue weight in the process to these costs. TAG recommends clear reporting of sifting criteria. In the absence of such explanation the sifting is unjustified and should be reviewed.

Stage 2 Shortlist

- 4.3.7 A further INSET appraisal reduced the number of options to a shortlist of seven. These are illustrated on Figure 47 of the OAR (Figure 4.3 below provides an extract).

Figure 4.3 – Extract of Shortlisted Options



- 4.3.8 The OAR notes that the seven options shown above were then reduced to four following stakeholder engagement. There is no record or details of the stakeholder engagement. It is explained the reason was that the alignments were not sufficiently different to present at public consultation. This undermines the previous appraisal process as three preferred option are effectively 'lost' without proper appraisal. It also casts doubt on the credibility of the subsequent appraisal to identify the best performing route.

- 4.3.9 This unusual and unjustified approach is largely a consequence of the narrow nature of the options developed and limited corridor used in the appraisal. This highlights the restricted scope of the study area, which as previously noted is a significant limitation of the appraisal.

Preferred Option Consultation 2019

- 4.3.10 As noted in the OAR the final assessment of the shortlisted options will take into account the value of the BCR calculations and responses to public consultation. It is noted that:

‘Stakeholder and public consultation feedback are also considered to be crucial to the confirmation of the preferred option’ (OAR 2020, Section 7.6)

- 4.3.11 The final consultation, it is understood, took place in Autumn 2019. The consultation report notes that there were considerable comments made about the following matters:

- The negative impact the proposals would have on the environment, due to the use of Green Belt land;
- The negative impact the Travel Hub access routes and proposed stop locations would have on congestion of connected roads and villages;
- The accessibility of the stop locations; and
- The suggested possibility of using existing infrastructure (A1307 or railway lines) in place of proposed route.

- 4.3.12 There does not appear to be any consideration of these comments in the OBC documentation. In the context of the importance placed on stakeholder and public consultation the lack of any documented review of how these key themes were responded to is a weakness of the appraisal process. The scheme should be reappraised for each of these key themes.

- 4.3.13 The OBC Management Case provides key findings for the 2019 consultation at section 10.7. It is noted there was general support for the scheme proposals from 55% of respondents. However, support of the complete option packages was considerably lower varying between 24% and 35%. It is concluded that the Brown route package with 35% public support is the preferred option. However, there is no comment or response to the very low level of support for all options. This is another weakness of the appraisal and in particular the response to public consultation.

4.3.14 It is particularly interesting to note the lack of importance placed on the level of support with reference to the Gateway Assessment – one of the criteria being loss of property/land on the basis that such options would have adverse public reaction i.e. lack support. With between 65% and 76% of respondents not supportive of the options a review/reappraisal of the option development process is appropriate.

SECTION 5 Economic Case Considerations

5.1.1 The calculation of costs and benefits associated with the proposed scheme have not been reviewed as part of this report. However, the following paragraphs provide an overview of the costs and benefits and how they have changed during development of the scheme, to those now presented in the OBC Economic Case (May 2020).

A1307 Study Options Report Addendum (2017)

5.1.2 The concept of Strategy 1 from which the preferred option has been developed was first reported in A1307 Study Options Report Addendum (2017). At that stage a high-level appraisal of the relative costs and benefits of the three strategies was identified. The benefits for Strategy 1 were estimated to total £280m. This was based on the journey time savings and passenger numbers predicted at the time. It is noted that the estimates assumed all predicted development growth by 2031 (beyond known commitments), increased bus service frequency and no estimate of the expected NMU benefits.

5.1.3 The estimated cost of the Strategy 1 scheme was £130m. This resulted in a BCR of circa 2.2.

2018 Consultation Leaflet

5.1.4 The 2018 consultation on the three 'strategies' included information on the expected costs and benefits. For Strategy 1 the estimated costs were noted as £130-£145m, which was a slight uplift from the estimate in the A1307 Study Options Report Addendum (2017) but broadly comparable and most likely reflected an improved understanding of the scheme.

5.1.5 The benefits were stated to range between £280m and £320m. Again, this was an uplift and likely reflected the level of uncertainty present in high level estimates at this stage of scheme appraisal. This gave a BCR for the Strategy of between 1.9 and 2.2.

5.1.6 There is no published information on any further cost or benefit analysis between the consultation in 2018 and the publication of the OBC Economic Case in May 2020. As noted above, the scheme options were developed during this time and consulted on during 2019, although there doesn't appear to be any available consultation documents. The OBC Management Case provides a summary of the consultation material (Section 10.6) although this is simply the plans presented at the public exhibitions. It is not clear if any supporting reports or leaflets were provided.

- 5.1.7 Prior to this public consultation it would seem appropriate to have undertaken some updated appraisal of the costs and benefits of the proposal. At this stage the options were subject to a quantitative INSET appraisal, a key part of which is transport user benefits and the effect on journey times and patronage. The apparent lack of such an assessment at this stage would appear to be a weakness of the overall appraisal process.

OBC Economic Case

- 5.1.8 The OBC Economic Case provides a more comprehensive assessment of the costs and benefits of the shortlisted options. It is not clear on the timing of this appraisal, although it is dated after the 2019 consultation. Nonetheless, the outcome of the assessment is telling.
- 5.1.9 The costs of the shortlisted options vary between £95m and £130m, with the preferred options costed at £109m. These cost estimates are broadly in line with those estimated in 2017/18 and indicate that the original estimates were accurate and that the scheme has not materially changed.
- 5.1.10 The Present Value Costs provide the costs discounted to reflect the period over which the scheme is assessed. This enables an equitable comparison with benefits which are also discounted to present value. The Present Value Costs are noted as £86m at Table 12.3 (OBC Economic Case), with the Present Value Benefits noted as £70m. The Present Value Costs exceed the Present Value Benefit. In other words a BCR of less than 1 (further comment on value for money is made below).
- 5.1.11 Whilst the costs seem to have remained broadly comparable there appears to have been a substantial reduction in the benefits which would accrue. There is no explanation of the difference although it is noted that the 2018 estimates are provided by WSP whilst the OBC was prepared by MM. This may suggest a different appraisal of benefits but nothing has been documented to that effect. Also, as the main benefit is journey time savings which are estimated from the CRTM used by both consultants the estimates should be comparable.

Journey Time Benefits

- 5.1.12 One of the key appraisal criteria in the INSET process is transport user benefits and specifically journey time savings which are the principal component of the benefits. With reference to the OBC Economic Case journey time savings account for 76% of the calculated benefits (Table 12.1).

5.1.13 The INSET appraisal of the shortlist options (consulted on in 2019) is set out in the OAR. Table 22 provides the journey time savings estimate and INSET score. The journey time savings are taken from the transport modelling with the INSET score based on a predetermined ranking. The preferred option would result in a 14% reduction in journey times compared to the current situation which returns a score +2 on INSET (in a range -3 to +3).

Figure 5.1 – Extract of INSET Journey Time Transport User Benefits Scoring

Table 22: Option Assessment Results: Journey Time (User Benefits) Criteria				
Option	INSET Scores			
	Frequency of public transport stops		Directness of route and extent of dedicated infrastructure	
	Number of public transport stops	Assigned INSET Score	% Change in Bus Journey Time relative to existing service 13B	Assigned INSET Score
Brown	4	0	-14%	+2
Blue	4	0	-11%	+2
Black	4	0	-11%	+2
Pink	4	0	-13%	+2
Purple	4	0	-19%	+3

Source: Mott MacDonald

5.1.14 Clearly, the INSET scoring was determined based on a realistic expectation of the transport user benefits that would accrue. The +2 score was set as a 10-15% saving in journey time with more than 15% a +3 score the highest achievable. Therefore, MM appraisal allocated a high score to the journey time savings which they felt were considerable. However, the savings do not appear to translate into monetised benefits which indicates the INSET scoring does not represent the actual benefits accurately. Another limitation or failing in the appraisal process.

Value for Money

5.1.15 The Department for Transport Value for Money Framework sets out different categories of VfM based on the expected BCR. The OBC Economic Case notes that the BCR of 0.81 for the preferred Brown option is categorised as offering Poor value for money. Even sensitivity testing with higher levels of employment and housing growth do not improve the BCR sufficiently for the value for money rating to rise above Poor. There is no explanation as to why the scheme with poor VfM should receive public funding.

5.1.16 It is understood the GCP have requested further work to improve the scheme benefits to provide a BCR of 1.5-2.0. This work should be completed and properly audited before progressing any further with the scheme.

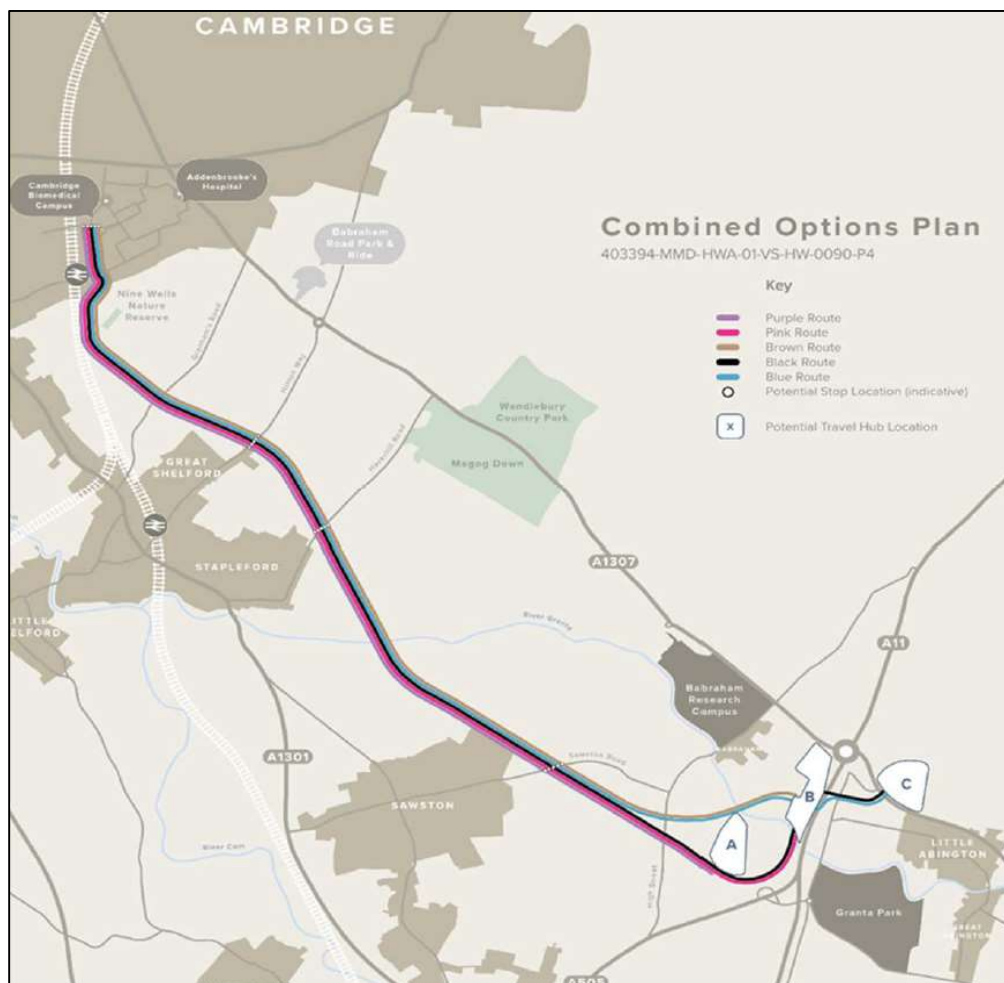
STAGE 2 – TECHNICAL APPRAISAL

SECTION 6 Alignment Options

6.1 Preferred Route Alignment

- 6.1.1 The current CSET Phase 2 preferred route being progressed by GCP is an off-road route that in part follows the former railway line route to Haverhill, with a deviation across Green Belt land below the Gog Magog Hills to skirt east of the villages of Stapleford and Great Shelford before realigning with the mainline railway south of Cambridge South station. The route currently preferred by the GCP, confirmed by the GCP Executive Board in June 2020, is the Brown Route identified at Figure 4: Options Shortlist of the GCP report to the GCP Joint Assembly dated 4 June 2020. An extract is provided at Figure 6.1. Note, all routes following the same alignment except where they diverge to serve the three park and ride options.

Figure 6.1: GCP Preferred Route Options (June 2020)

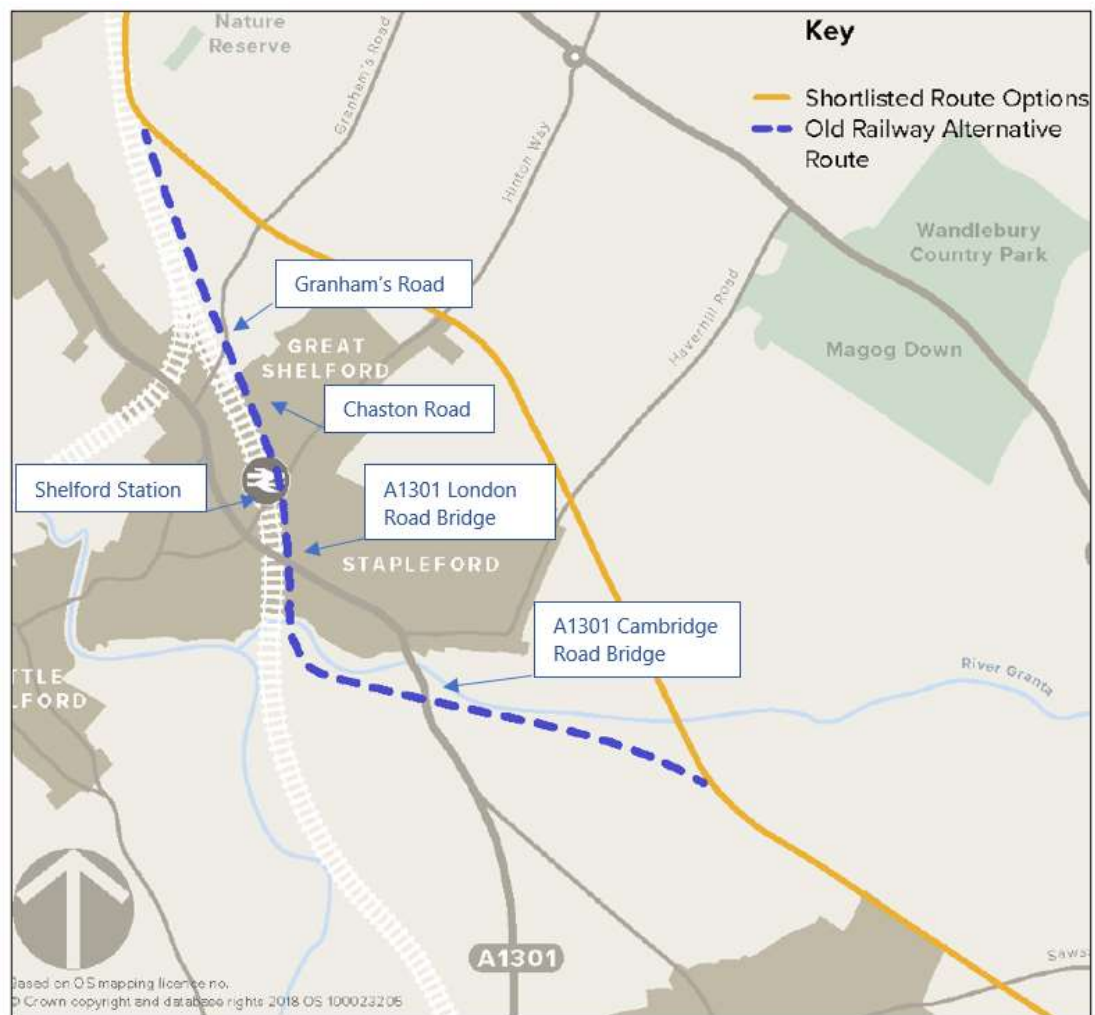


Source: GCP

6.2 Alternative Shelford Railway Alignment

6.2.1 The alternative SRA would see a new busway route proceed south along the mainline railway corridor from Cambridge Biomedical Campus, routing through the settlements of Great Shelford and Stapleford alongside the mainline railway corridor, before routing south east of Stapleford village along the former railway alignment. The alternative SRA is identified at Figure 11: Old Railway Alternative Route of the GCP report to the GCP Joint Assembly dated 4 June 2020. An annotated extract is provided at Figure 6.2.

Figure 6.2: Alternative Shelford Railway Alignment (GCP, June 2020)



Source: GCP

(i-Transport edits to add location labelling)

SECTION 7 Technical Review

7.1 Introduction

7.1.1 The MM Report 2020 provides an appraisal of the SRA using a preliminary design based on a number of working assumptions. It also provides a comparison with the GCP preferred (Brown) route alignment for the CSET Phase 2 public transport route.

7.1.2 The MM Report 2020 concludes that the Shelford Railway Alignment:

- would have been excluded at the longlisting stage as a result of gateway criteria relating to the loss of residential dwellings and private property (***Demolition***);
- when compared with the shortlisted options indicates that the former railway alignment would be less desirable because:
 - A number of residential and commercial properties would need to be acquired (***Demolition***);
 - The alignment would not provide full segregation meaning reliability and compatibility with CAM requirements is reduced (***Segregation***);
 - Journey times from the Travel Hub would be expected to increase and overall patronage of the route would be forecast to decrease (***Passenger Demand***);
 - Greater noise impacts would be expected (***Environmental***);
 - It presents a number of practical challenges which would be expected to seriously impact on the deliverability (***Deliverability***); and
 - The scheme costs are expected to be approximately £29.1m greater (***Cost***).

7.1.3 It is important to note that the MM Report 2020 provides a high-level design for the SRA which demonstrates that the route is technically feasible.

7.1.4 Through scrutiny of the appraisal undertaken in the MM Report 2020 the validity of their conclusions has been tested. The ***bold italics*** identified at paragraph 7.1.1. above represent the broad subject headings which form the structure of the review contained in the remainder of this section, with the focus on the following key topics:

- Demolition;
- Segregation;
- Deliverability; and
- Passenger Demand.

7.1.5 Commentary is provided on Cost although there has been no review of Environmental matters at this stage. However, it is worth noting that the majority of the SRA route lies immediately adjacent to the existing railway line, which generates noise throughout the day and evening. The greater noise impacts are difficult to comprehend. Indeed, the MM Report 2020 notes in relation to noise that ***“significant impacts are unlikely to result”***.

7.1.6 As referenced earlier at Section 4.3 of this report, the final assessment of the shortlisted options for CSET Phase 2 will take into account the value of the BCR calculations and responses to public consultation which the OAR states is crucial to the confirmation of the preferred option. Yet, despite consultation feedback from 2019 suggesting the possibility of using existing infrastructure (A1307 or railway lines) in place of the proposed route, no consideration is given within the MM June 2020 of public consultation feedback at all.

7.1.7 Understandably, the MM Report 2020 appraisal is based on design criteria and assumptions and the first step in this technical review is to consider the appropriateness of those criteria and assumptions.

7.2 Design Parameters & Assumptions

Bus Road Width

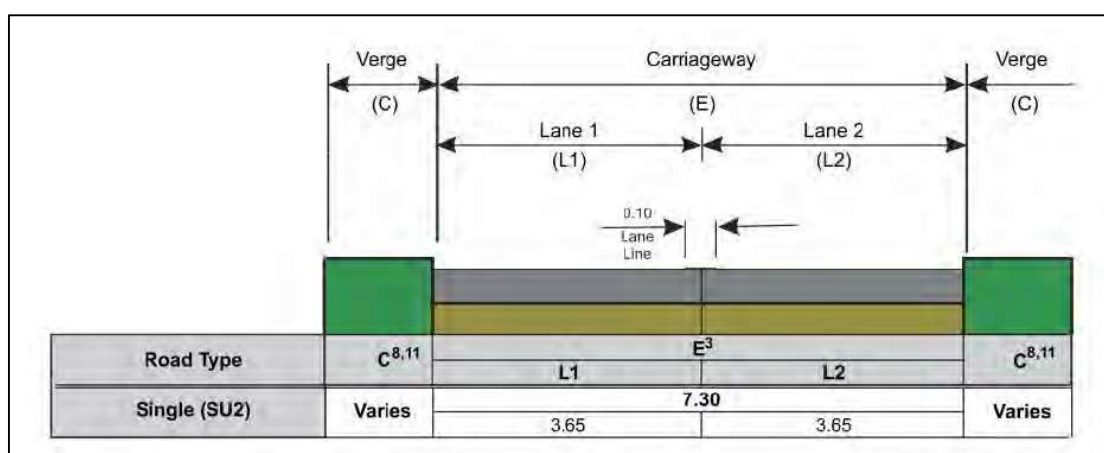
7.2.1 Our understanding is that the proposed CSET Phase 2 scheme is required to incorporate a form of vehicle guidance system. The OBC refers to both technological guidance and possible optical guidance as well as more physical guidance such as kerb-guidance or bus track within the identification of risks set out at Table 1.24 of that report. Our understanding is that the guidance system is yet to be defined but is thought to include either optical tracking of road markings or physical guidance like that used by the Cambridge Guided Busway.

7.2.2 The proposed CSET Phase 2 scheme defined within the MM Report 2020 is not a bus track, as is the case with the existing Cambridge Guided Busway, and instead will operate as a new bus road carrying vehicles which incorporate a form of non-physically constrained guidance, which can

later be converted to form part of the CAM scheme. To date, no such system exists within the UK and so it is a critical assumption that such a guidance system is deliverable.

- 7.2.3 WSP, in their Technical Note: Strategy 1 Route Study (2018), referred to Design Manual for Roads and Bridges (DMRB), an extract of which is included at Figure 7.1, to determine appropriate dimensions for the proposed CSET Phase 2 scheme noting that a more traditional carriageway width of 7.3m is required for two-way road-based working which is greater than that required for a kerb or track physically guided busway.

Figure 7.1 – Carriageway Cross Section (DMRB TD 27/95 Extract)



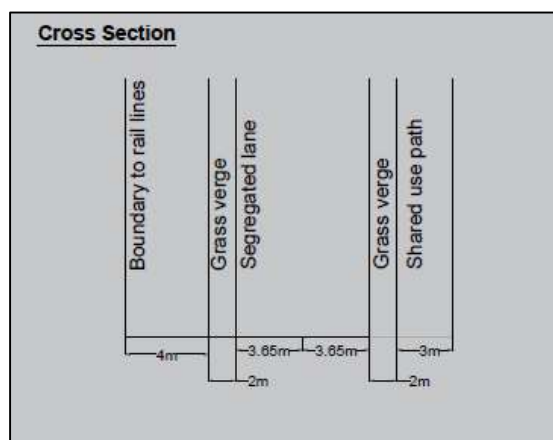
- 7.2.4 The approach adopted within DMRB TD 27/95 has been carried forward through the more recent consultant studies and the route option detailed in the MM Report 2020 sets out a broadly consistent specification to that identified at Figure 7.1, comprising a 7.3m two-way carriageway (two running lanes of 3.65m each).
- 7.2.5 The Chartered Institution of Highways and Transportation (CIHT) guidance document '*Buses in Urban Developments*' (2018) notes that a carriageway width of 6.5m is sufficient to enable safe and efficient two-way bus operation and a width of 6.5m will avoid buses having to slow to pass one another. It should be noted that the CSET Phase 2 route is intended to connect with the existing Cambridge Guided Busway (CGB) to become part of the CAM. The CGB route is generally 6.0m wide made up of two 2.6m wide vehicle tracks, totalling 5.2m, plus a central reservation of 0.8m. Thus, any vehicles chosen to run on the entire CAM network would need to be able to operate safely and efficiently on the fixed running tracks of the 6m wide CGB route, unless changes were also made to the CGB.

- 7.2.6 Having regard to the above a 7.3m wide bus road width is an appropriate working assumption for high level appraisal. However, this requirement can reasonably be relaxed to 6.5m without adversely affecting the overall performance of the route.

NMU & Verge Width

- 7.2.7 Alongside a 2.0m wide verge on either side of the bus road a 3.0m wide NMU route is identified in the image shown in Figure 7.2, extracted from the MM Report 2020.

Figure 7.2 –CSET Design Specification (MM Report 2020)



MM Report 2020, Appendix A: Initial Alignment Footprint Drawings
(403394-MMD-HWA-00-DR-HW-0242 to 0245)

- 7.2.8 There is a discrepancy in the verge and NMU widths between Figure 3.2 and the MM Report 2020 text which states at Section 2.1 that the cross-section design criteria is:
- a 7.3m wide carriageway;
 - Two 1.5m wide verges (shown as 2m at Figure 7.2); and
 - a 3.5m wide NMU route (shown as 3m at Figure 7.2).
- 7.2.9 The latest guidance on cycling provision (*Local Transport Note (LTN) 1/20 Cycle Infrastructure Design, Department for Transport, July 2020*) recommends a 3m wide cycle route for two-way operation, with up to a further 0.5m allowance for fixed objects. Therefore, a 3.5m wide NMU for high level design purposes is appropriate. Verge widths can vary depending on their purpose, which in this instance is to provide a safe separation between the bus road and NMU route and an appropriate maintenance strip. As a working assumption, verge widths of 1.5m are appropriate.
- 7.2.10 Thus, the total width which should be allowed for the NMU and verges is 6.5m.

Overall Route Width

- 7.2.11 The MM Report 2020 provides drawings which, from examination, appear to indicate that the total width used for the appraisal (excluding the railway line offset) is 14.3m (although the scale of the plans makes it difficult to confirm this). However, this could reasonably be reduced to 13.8m (excluding the railway line off-set).
- 7.2.12 In particularly constrained locations, it is considered at this high-level appraisal stage that the overall corridor width could reasonably be reduced to 13m (i.e. with the bus road reduced to 6.5m and provision of an additional 6.5m for NMU and verges) without affecting the overall performance of the route.

Railway Constraints

- 7.2.13 The MM Report 2020 provides a high-level review on rail interface constraints and concludes that a 3.5m offset from overhead cabling structures on the railway should be maintained along the whole route. This is a sensible working assumption noting (as MM do) that this may be reduced in selected constrained locations subject to Network Rail approval.

Structures

- 7.2.14 There are two existing bridges which provide challenges to the delivery of the alternative SRA route:
- A1301 Cambridge Road overbridge crossing disused railway line (Image 1); and
 - A1301 London Road overbridge crossing Cambridge mainline railway (Image 2).



Image 1 – A1301 Cambridge Road overbridge structure

7.2.15 The MM Report 2020 assumes the A1301 Cambridge Road overbridge would, if necessary, have the ground level beneath the bridge lowered to accommodate vehicles passing under the bridge. Further, due to the limited width of the existing structure the MM Report 2020 indicates that the NMU would not route alongside the bus road where it passes through the bridge arch. Instead, the MM Report 2020 proposes that the NMU would make use of the existing cycleway route alongside the western side of the A1301 to route south of A1301 Cambridge Road overbridge, cross at grade and return to the bus road alignment to the east, as shown in the extract at Figure 7.3, from MM Report 2020 (Appendix B).

Figure 7.3 – Extract of MM Report 2020 showing NMU deviating from Busway



Source: MM Report 2020

7.2.16 If necessary, the A1301 London Road bridge would similarly have the ground level lowered beneath the bridge. It is noted that the existing bridge structure has a structural pier between the two abutments (indicated on Image 2). The existing railway lines are entirely accommodated between the western abutment and central pier (right of the pier on Image 2). Thus, works should be largely limited to the area to the east of the central pier (left of the pier on Image 2) which is direct extract from Figure 2.8 of the MM Report 2020 obtained, by MM, from Rail View).



Source: MM Report 2020

Image 2 – A1301 London Road overbridge structure

- 7.2.17 The working assumptions in relation to both these structures are reasonable at the high-level appraisal stage.

Segregation

- 7.2.18 One of the design criteria to meet the objectives of the CSET scheme is to provide a fully segregated route to comply with CAM design principles. The Strategic OBC for CAM notes that:

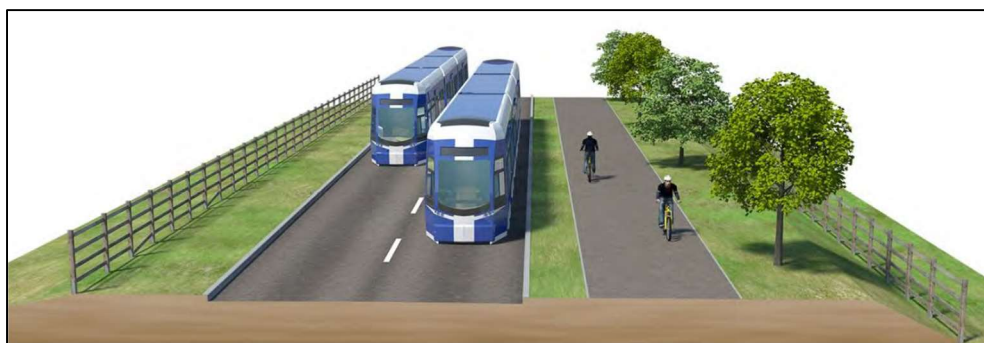
The vision for the CAM network includes regional connections to St Neots, Haverhill, Alconbury and Mildenhall, serving locations with significant planned or potential growth. These regional connections will only be viable if they directly connect into new segregated infrastructure serving the city centre, and are fully or largely segregated on the 'regional' sections of route.

- 7.2.19 Thus, whilst a fully segregated route should be the target, a route which is largely segregated would also be compliant with CAM design principles and minor deviations from/relaxations in the design principles for small sections of the route would be a standard approach to overcoming constraints particularly those with substantial costs or involving acquisition/demolition of existing properties.

NMU Provision

- 7.2.20 The requirement to provide an NMU route alongside the bus route provides a design constraint which has substantial implications in respect of the land required for the route. The requirement directly contributes to the principal concern of MM in respect of demolition.
- 7.2.21 The WSP *Strategy 1 Route Assessment* report (2018) specified that a NMU route would be provided alongside the new road-based busway, separated by a verge. The below cross-section at Figure 7.4, is an extract of the WSP 2018 report (Figure 3 of the WSP *Strategy 1 Route Assessment* report (2018)).

Figure 7.4: Extract of WSP Cross-Section



- 7.2.22 The provision of a NMU route alongside the bus road is a rational extension of the route alongside the existing CGB. As a principle, it is therefore accepted that appropriate provision for NMU's should be provided, where possible alongside the route of the bus road. However, as a design requirement to provide that route alongside the bus road without consideration of alternative options for NMU's needs is unnecessarily restrictive.
- 7.2.23 Thus, it is reasonable to adopt alternative provision for NMU's where there are particular constraints. For example, as noted at paragraph 7.2.15 herein, the MM Report 2020 proposes that the NMU runs separately to the bus road in the vicinity of the A1301 Cambridge Road.
- 7.2.24 Further, as noted at Section 2.8 the Sawston Greenway is intended to provide improved and dedicated connections for pedestrian and cyclists along the same corridor as the preferred route of the CSET Phase 2 Scheme. The Sawston Greenway should therefore be included as an integrated component of the CSET Phase 2 Scheme and not advanced separately. This would enable more design flexibility along the route which could deliver a scheme with greater overall benefits and overcome one of the principal concerns identified in the MM Report 2020.

Deviation from Design Criteria

- 7.2.25 It is well documented that the existing Cambridge Guided Busway (CGB) deviated from its key design principles in order to mitigate certain design constraints along its route.
- 7.2.26 In the most part the CGB is 6.0m wide made up of two 2.6m wide vehicle tracks, totalling 5.2m, plus a central reservation of 0.8m. In addition, the route between Cambridge and St Ives also offers a 4m wide (maximum) bridleway/maintenance track to one side and a 0.7m evacuation strip to the other creating a total width of 10.7m along this section. The bridleway/ maintenance track is designed for use by pedestrians, cyclists and horse riders (i.e. an NMU route).

Image 3: Cambridge Guided Busway



Source: New Civil Engineer (via Google images)

- 7.2.27 However, in order to link the main CGB route to the Trumpington Park & Ride site via the old Cambridge to Bedford rail line, the route needed to pass through the narrow Trumpington cutting (Image 4). The cutting presented a considerable constraint to the typical cross section due to the residential properties which run along the route (more than 30 residential properties back on to the old railway line), the topography, dense vegetation and the presence of existing bridge structures. The solution was to provide a considerably narrower section of guided busway in this section which offers single track working only. This narrow section is made up of a single busway with a narrower maintenance-only track (as identified at Image 4) giving a total width of approximately 6.3m (some 4.4m narrower than the route from St Ives to Cambridge).

Image 4: Trumpington Cutting



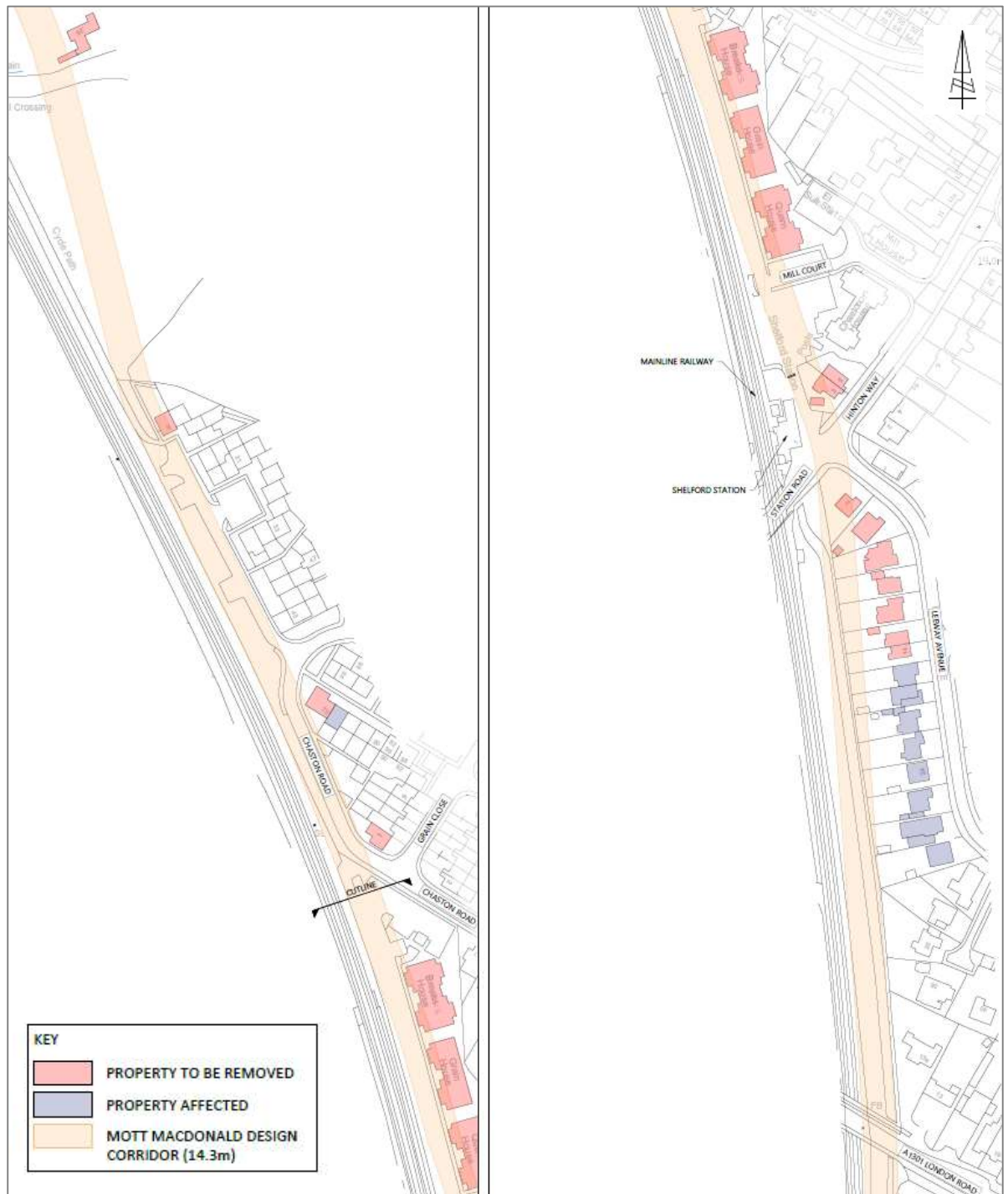
Source: Trumpington Local History Group (via Google images)

7.2.28 Thus, there is a clear local example of a deviation from design principles being used as a tool to overcome constraints, particularly where the alternative has an impact on residential property. At a high-level appraisal stage it is therefore reasonable and appropriate to deviate from design principles.

SECTION 8 Impact to Property

- 8.1.1 As a principle it is accepted that the impact on existing buildings and the acquisition, and potential demolition, of existing residential and commercial premises should be minimised. However, where it is necessary to acquire third party land/property the acceptability of doing this needs to be assessed, weighing all the costs against the benefits, as is the case with any new infrastructure scheme. Therefore, the effect on property and the acquisition/demolition thereof does not affect the technical feasibility of the alternative SRA route, but rather its performance against alternative route options.
- 8.1.2 The MM Report 2020 concludes that one reason the SRA is not technically feasible is because of the need to partially, or fully, demolish several properties along the route. It did not quantify how many properties might be affected in this way, but we have reviewed MM's suggested design corridor and assessed that it would impact upon 22 residential and four commercial properties. However, relatively minor alterations to design criteria and assumptions along the route (as have been done on other sections of the Cambridge Guided Busway) and as we suggest herein, would significantly reduce or even remove the need for demolition. Section 11 provides an appraisal of the alternative SRA and its impact upon property.
- 8.1.3 Our appraisal of MM Report 2020 impact on properties is shown on Drawing ITL16234-GA-001 which accompanies this report, and an extract of which is provided at Figure 8.5. The key to this drawing identifies properties where boundaries/buildings are significantly affected as a result of MM's proposals, and which may in turn be at greater risk of demolition in red, and properties where boundaries are less significantly affected and thus are unlikely to require any demolition, in blue.
- 8.1.4 This work does not appear to have been undertaken by MM within their assessment of the alternative SRA, yet the report concludes that the alignment is not technically feasible in part due to the impact it would have on residential and commercial property.

Figure 8.5 – Mott MacDonald Alignment (MM 2020 Report) Impact on Properties (extracted from Drawing ITL16234-GA-001)



Not to Scale

- 8.1.5 The ability to mitigate the effect of the alternative SRA on properties has not been thoroughly investigated in the MM Report 2020. Only in one location, along Chaston Road/Grain Close, has the design criteria been reviewed to reduce the effect on properties; the refined design still affects 4 residential properties on Chaston Road/Grain Close. If minimising or removing the need for demolition is such a high priority, then it is appropriate to fully explore mitigation through a review of the design criteria and assumptions along the entire route. Further assessment of an alternative SRA is made at Section 11 of this report.
- 8.1.6 The effect on properties, both property boundaries and buildings, and potential acquisition/demolition thereof does not mean the alternative SRA via the railway is not a viable alternative to the preferred route.

SECTION 9 Segregation

9.1.1 The design of an alternative SRA route is provided at Appendix A of the MM Report 2020. It demonstrates that an alignment comprising a 7.3m wide bus road is achievable broadly following the alignment of the former railway. The design is shown to be fully segregated except where it routes along Chaston Road, which is a residential street running parallel to the mainline railway south of Granham's Road and north of Shelford railway station.

9.1.2 The images below show Chaston Road looking north towards the existing cycleway which leads on north to Granham's Road (Image 5) and the cycleway itself north of Chaston Road (Image 6).

Image 5: View from Chaston Road looking north towards the existing cycleway

Image 6: View along the cycleway north of Chaston Road



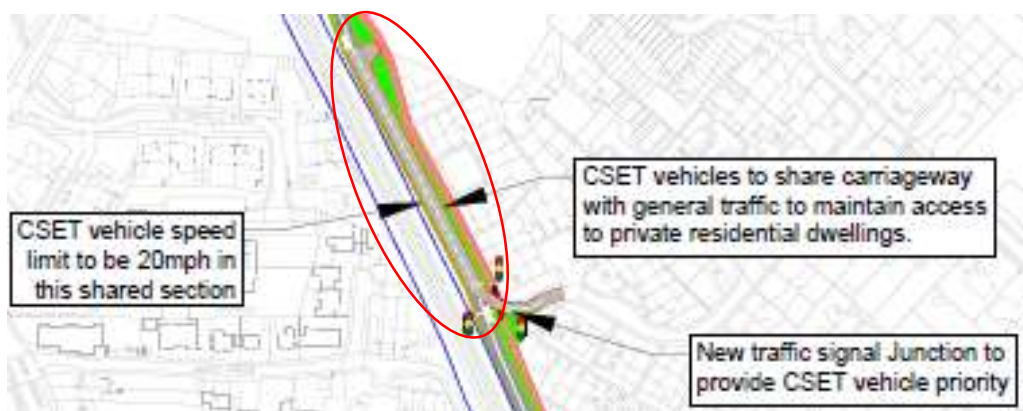
9.1.3 Image 5 shows the section of Chaston Road where the MM Report 2020 identified the need for a shared carriageway between the CSET buses and general traffic. There is a wide verge of approximately 8m to the western side of the existing road (which itself is some 5.5m wide). As MM note, the existing road is lightly trafficked and, being a short cul-de-sac serving only a small number of residential properties, has low vehicle speeds. Chaston Road is already an accepted and well used route for cyclists (part of National Cycle Network route 11) from Shelford and Stapleford travelling to and from Cambridge.

9.1.4 Subject to geometric design checks it is considered at this high-level stage it would be feasible to maintain Chaston Road along this section and to provide a fully segregated bus road (7.3m

wide) to the west of the existing carriageway. In this scenario, Chaston Road would continue to provide a suitable route for cyclists with the footways maintained for pedestrian use. Thus, there would be no need to provide a separate NMU route alongside the bus road in this section, since an appropriate route would already exist.

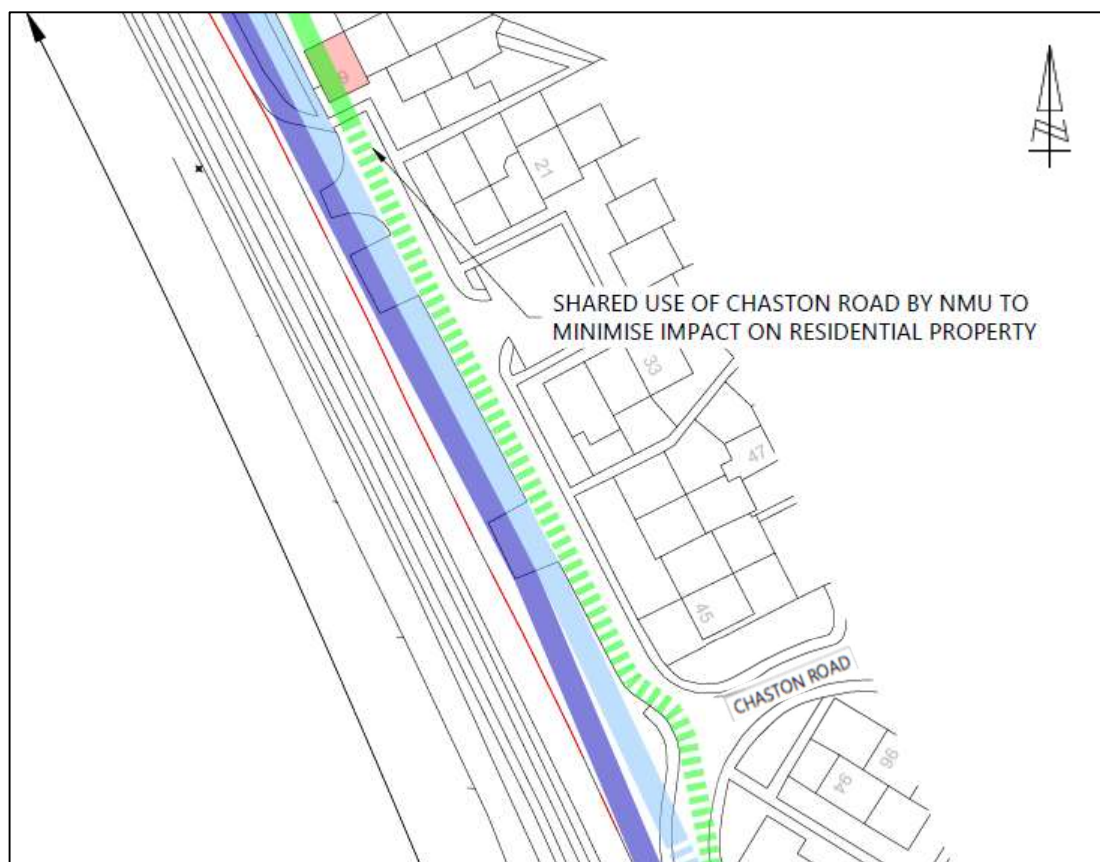
- 9.1.5 Thus, shared use of the carriageway would not be necessary along the section of Chaston Road as circled in red in the extract from the MM Report 2020 design included at Figure 9.1, below.

Figure 9.1 – Mott MacDonald Design Extract – Chaston Road



- 9.1.6 Figure 9.2 shows a scaled version of how the scheme could be accommodated on Chaston Road, together with an NMU (shown in green) and a bus road shown in blue (extracted from scaled Drawing ITL16234-GA-002 accompanying this report).

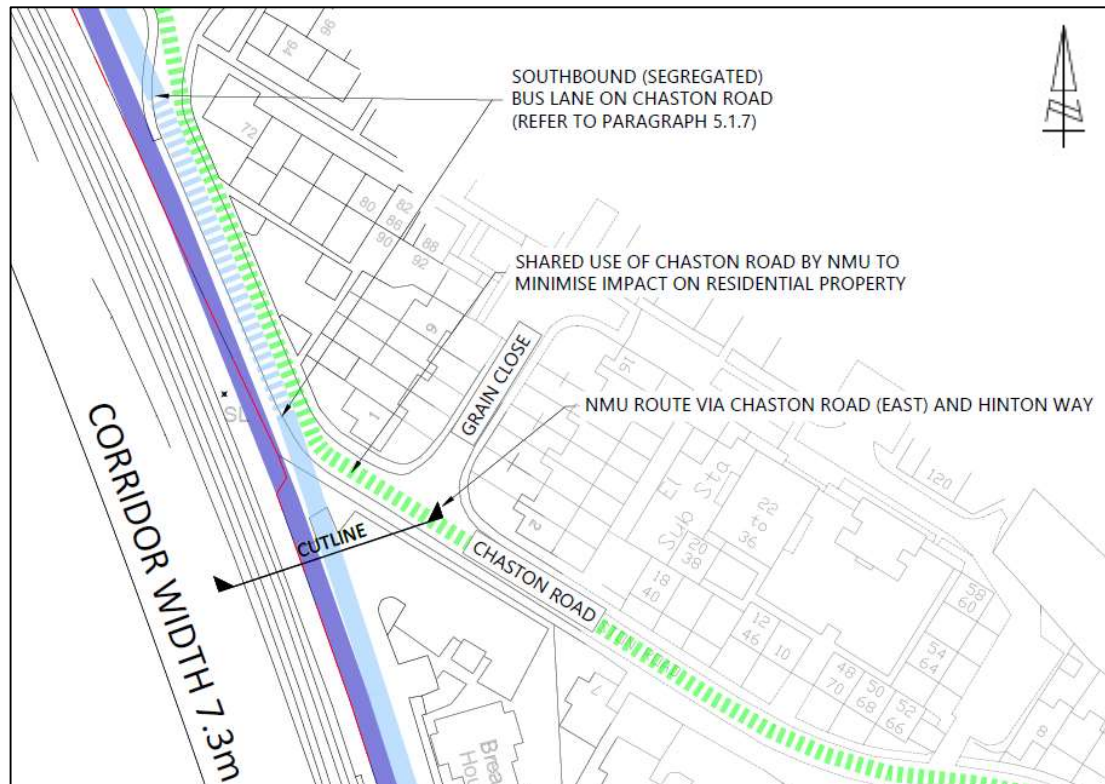
Figure 9.2 – Graphical Representation of Chaston Road Option



Not to scale

- 9.1.7 Continuing south along Chaston Road it would be possible to maintain appropriate NMU provision using part of the existing carriageway and footway (appropriately modified). This would enable southbound buses to use the Chaston Road carriageway (as a segregated bus lane) with northbound buses catered for on a new segregated lane. Subject to further design, Chaston Road could either be closed to general traffic, or remain open one way southbound. Figure 9.3 shows a schematic version of this arrangement (extracted from scaled Drawing ITL16234-GA-002 accompanying this report).

Figure 9.3 – Graphical Representation of Chaston Road Option



Not to scale

- 9.1.8 The above approach would enable the alternative SRA to be fully segregated. This approach has benefits to the alignment further south (through Mill Court) as explained in Section 11.

SECTION 10 Deliverability

- 10.1.1** Deliverability is a matter which requires consideration when judging the overall merits of a scheme. It does not directly affect technical feasibility of a route. As noted, the MM Report 2020 identifies a feasible route which MM consider would have practical challenges adversely affecting its deliverability. The MM Report 2020 refers to disruption to the railway operation and the requirement for Network Rail (NR) approvals. However, there are thorough and well-established methods of safely carrying out works on, or in the vicinity of, railways and this happens up and down the country in respect of new infrastructure and development schemes. These methods are prepared and managed by NR and overseen by regulatory bodies including ORR and HSE.
- 10.1.2** There is no evidence provided by MM in their MM Report 2020, to suggest that the requirement to engage with NR and follow appropriate working practices would result in the alternative alignment becoming an unviable alternative to the preferred route. Indeed, it is noted the preferred route does align closely with the railway line at its northern end and, whilst it does not encroach onto NR land, it is sufficiently close to NR infrastructure that consultation with NR will be required in any event. Furthermore, there is no evidence that MM or GCP has sought to discuss potential interaction with NR infrastructure. To discount a scheme on this basis is not evidenced.
- 10.1.3** The MM Report 2020 does not demonstrate that deliverability of the Alternative SRA is less desirable and hence is not a viable alternative to the preferred route.

SECTION 11 Design Alternative

- 11.1 This section reviews some of the design constraints referred to in the MM Report 2020 to determine the extent to which they could be mitigated by applying a flexible approach to the design requirements as identified in Section 8.2.

Granham's Road Pumping Station

- 11.1.1 There is an existing pumping station at Granham's Road, located to the east of the mainline railway and to the north of Granham's Road adjacent to the level crossing, this is shown in Images 7 and 8.

Image 7: View looking south across Granham's Road to Pumping Station



Image 8: Aerial view showing position of Granham's Road to Pumping Station



11.1.2 The route designed by MM avoids this pumping station, by routing to the east around it. This necessitates a fairly lengthy realignment and impacts on the residential property to the southeast on Granham's Road and complicates the interaction with the level crossing. There is an opportunity to investigate the ability to relocate the pumping station. Inevitably this would attract a cost. However, this cost could be balanced against the benefits of a straighter, shorter alignment, simplified interaction with the level crossing at Granham's Road and avoiding the existing property to the south.

NMU Route

11.1.3 As explained in Section 2.8 of this report the Sawston Greenway would deliver pedestrian and cycling connections along the same corridor as the Phase 2 CSET scheme and should become integrated component of the scheme. The SRA provides an opportunity to integrate the two schemes with consequent cost savings.

11.1.4 The integrated approach would enable a more cohesive and flexible approach to the design. As noted at Section 7 of this report, the requirement for the NMU to route alongside the bus road should not be an inflexible design constraint since, in some locations, better connections may be achieved if the route deviated from the alignment. The MM Report 2020 does consider a number of general alternative routes for the NMU throughout Shelford, although concludes that overall, these alternatives are not as desirable³. However, the appraisal of the alternative NMU routes has been undertaken in isolation i.e. there is no consideration of the benefits alternative NMU routes would bring to the bus alignment such as cost, deliverability or impact on property.

11.1.5 There are more specific locations along the Shelford Rail Alignment where the inclusion of a NMU route alongside the bus road is a design constraint which has notable implications. The MM Report 2020 acknowledges that the available width beneath the A1301 Cambridge Road bridge is insufficient to provide for a NMU route alongside the bus road. Thus, the NMU deviates

³ The alternatives include the existing NCN route which forms part of the Sawston Greenway scheme which is being advanced by GCP who clearly feel it is sufficiently desirable to justify investment.

from the bus road to cross at grade over the A1301 Cambridge Road (as discussed earlier at Section 7.2).

11.1.6 Having reviewed the constraint of the A1301 Cambridge Road bridge we agree this is an example of where flexible application of a design requirement provides a sensible option to include at the initial appraisal stage. However, this does not rule out other options at this location including modifying the bridge structure to maintain a NMU route alongside the bus road or wider use of Cambridge Road. Further detailed appraisal of the bridge constraint would be necessary to develop the design options.

11.1.7 A further location where the inclusion of a NMU route alongside the bus road has notable implication is South of Chaston Road where the alignment would route through the Mill Court commercial development principally along an existing internal access road. There are two principal constraints to providing the full width of the alignment throughout this section:

- Proximity to commercial properties in Mill Court to the north of the station; and
- the former station building which is located to the east of the tracks.

Image 9: Mill Court

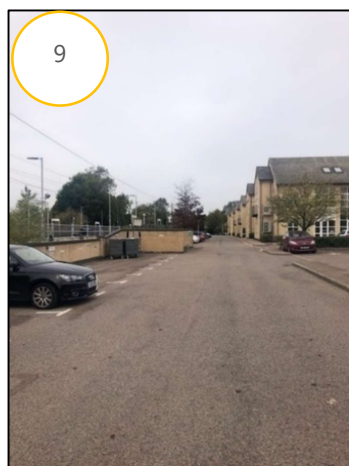


Image 10: Great Shelford station building



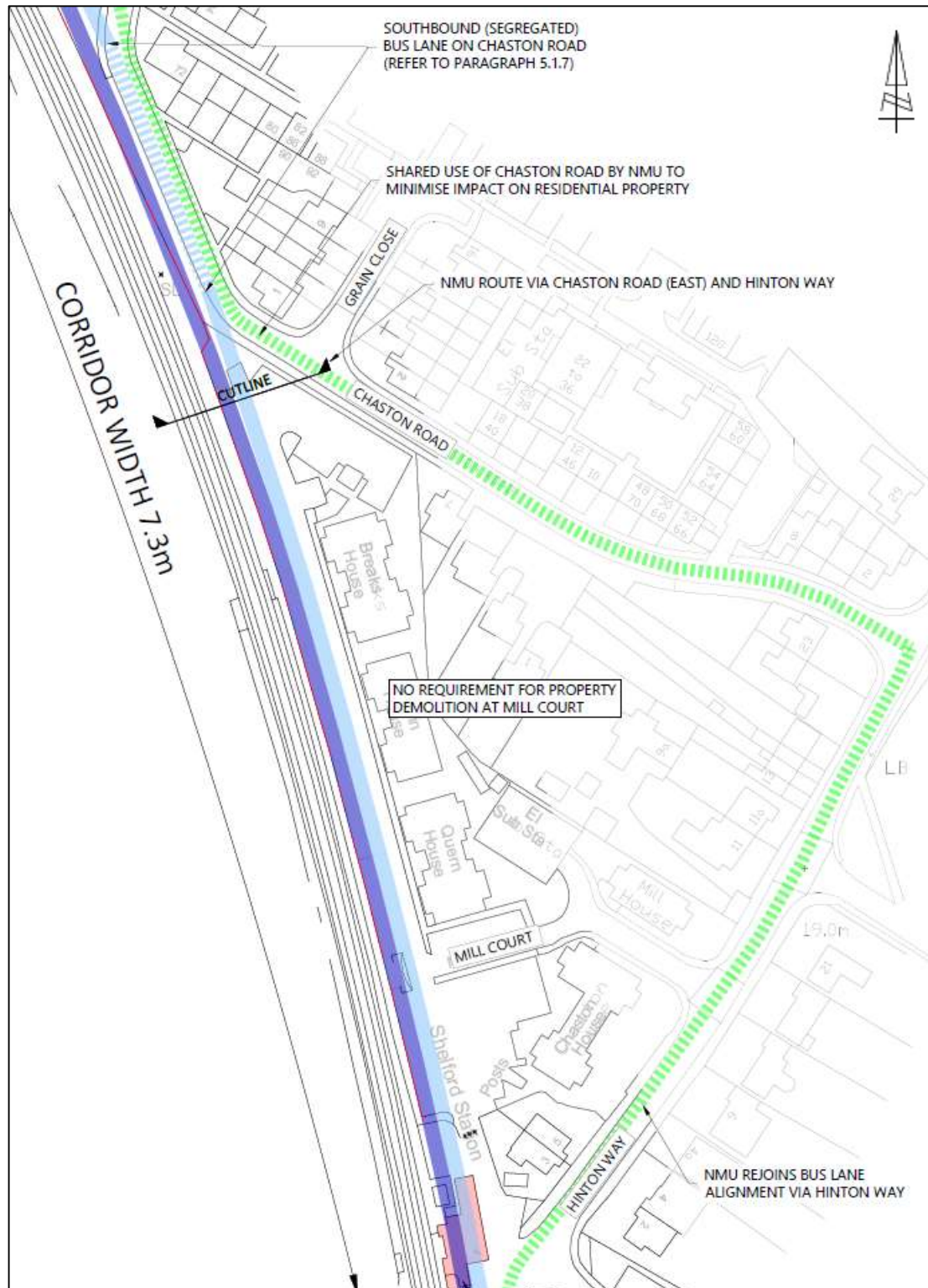
11.1.8 The route design included within the MM Report 2020 avoids the former Shelford Station building which is an understandable approach. However, it is noted that much of the building is occupied by commercial tenants (it is currently a restaurant) and that the small station office is only manned for short periods of the day. Therefore, there is an opportunity to consider the extent of the facilities required at Shelford station as part of the overall scheme design. The stop on the new bus road at this location could combine with the station facilities providing the

opportunity for an 'interchange'. In the longer term, should South Cambridge Station come forward there would also be opportunity for an integrated operation with the bus route.

11.1.9 Having reviewed the constraints in the vicinity of Mill Court and Great Shelford station it is clear there is a trade-off between the extent of land and demolition required and the design criteria of the alignment. MM have shown a full width alignment (14.3m) in their MM Report 2020 and concluded that this would adversely impact on existing properties. However, this assumes the NMU must run alongside the bus route through Mill Court and no deviation from the design criteria for this part of the route has been considered.

11.1.10 Chaston Road alongside Mill Court is already an identified cycle route which is in regular use. Thus, there is a clear opportunity to maintain this route which continues to Hinton Way. Enhanced provision along Hinton Way between Chaston Road and Shelford Station would provide a suitable short deviation of the NMU route separate from the bus road alignment. This would have substantial benefits to demolition of property as can be seen in the schematic design of this option included at Figure 11.1 (extracted from scaled Drawing ITL16234-GA-002 accompanying this report). None of the Mill Court buildings would require demolition, neither would two residential properties on Hinton Way. Only the Shelford Station building would be affected.

Figure 11.1 – Schematic Design Showing Short Diversion of NMU around Mill Court



Not to scale.

11.1.11 Further, this would provide an improvement to the MM Report 2020 scheme with the ability to provide a simplified level crossing arrangement and an interchange for rail and bus passengers at Shelford Station.

Design Relaxations

11.1.12 To the south of Shelford Station, the railway corridor is in a cutting and routes beneath the A1301 London Road bridge and subsequently to the edge of the settlement of Stapleford. The MM Report 2020 highlighted the following constraints:

- width of the existing railway cutting and proximity to residential properties in Leeway Avenue; and
- the construction of the existing bridge carrying the A1301 London Road.

11.1.13 Based on our high-level appraisal of the physical constraints it is considered that delivery of the full width alignment along this section of the route will be difficult to achieve and that a reduced width alignment would overcome many of the concerns identified by MM. Our appraisal identifies that at its narrowest the available width alongside the railway is 13m along this corridor. Thus, allowing design relaxations (as referred to at Section 7.2 of this report) along this section would enable a fully compliant route with substantially less effect on properties and hence demolition. For short sections of route this relaxation would not render the proposal incompatible with the design principles of the scheme.

11.1.14 This approach would also reduce the impact on the A1301 London Road bridge structure. On site observations indicate that the bridge spans the mainline railway with a supporting pier providing a second span to the eastern embankment. This second span could, subject to detailed measurements, accommodate a reduced width alignment which would limit the extent of amendments required to the bridge and have the benefit of structural separation between the bus and rail route.

Revised Appraisal of Properties Affected

11.1.15 An alternative design of the SRA has been prepared incorporating the following changes:

- Relocation of Granham's Road pumping Station;
- Use of Chaston Road for NMU's;
- Separate alignment of NMU's along Chaston Road/Hinton Way;
- Demolition of Shelford Railway booking office (and restaurant); and
- Design relaxations between Shelford Station and A1301 London Road.

11.1.16 Taking the above changes an assessment of the properties likely to be affected by an alternative SRA which still meets the same objectives has been undertaken and is shown on Drawing ITL16234-GA-002 which accompanies this report. It can be seen that the revised assessment would substantially reduce the number of properties affected with only 4 properties directly affected by this alternative option.

11.1.17 The proximity of these premises to the route means it is prudent at this concept design stage to highlight them as 'affected properties' to allow the option to be appraised on a robust 'worst case' basis. The residential properties have been identified as 'affected properties' principally having regard to construction operations when the boundaries may be impacted. Future design development would necessarily seek to reduce the possibility of any impact on even the boundaries of these residential properties.

SECTION 12 Demand & Journey Time Review

12.1 Passenger Demand

12.1.1 A reduction in passenger demand is noted by the MM Report 2020 as one of the reasons the alternative SRA is less viable. The MM Report 2020 provides a summary of the demand appraisal of the Preferred Brown Option at Table 4.1. This assessment shows that during a typical day the demand along the Phase 2 CSET route is expected to total some 6,625 passengers. The majority (81%) of these passengers would be travelling to/from the new Travel Hub Site, with the remainder (19%) having origin/destinations in Sawston, Stapleford and Great Shelford. Those trips originating in these settlements are broadly split as follows:

- Great Shelford - 55%
- Stapleford - 5%
- Sawston - 40%

12.1.2 Very few passengers are expected to be attracted to the new route from Stapleford with some 30 return trips per day. It is unclear why so few passengers are attracted from Stapleford particularly as according to the MM Report 2020 (Table 4.3) the Stapleford stop is located closer its centre (0.98km) than the stops for Sawston (1.65km) or Great Shelford (1.23km). However, with so few passengers there would be merit in reviewing the matter in more detail to ensure the maximum benefit is being derived from the cost of the infrastructure associated with a new stop.

12.1.3 As noted earlier in this report (Section 3.3) earlier studies (WSP 2017) indicated that Stapleford would attract around 20% of passengers on the Phase 2 CSET route. There have clearly been some changes in the input assumptions to demand modelling and these could be examined as part of a review.

12.1.4 The peak estimated demand along the Phase 2 CSET corridor is expected to be circa 600 passengers per hour in the peak direction. The OBC appraisal has assumed that there would be 8 services per hour along the route which at peak times would need to cater for an average of 75 passengers per vehicle. The appraisal assumes vehicle capacity of 76 passengers (although this assumes 30 standing). It is a concern that in the opening year 2026 of the scheme it will be at capacity and that the 'high quality' public transport route will not be realised with a large proportion of users expected to stand. There does not appear to be any account of this in the

modelling but surely the perceived benefit of the faster route will be diminished by the quality of the journey experience. This should be factored in to the appraisal.

12.2 Journey Time Savings

12.2.1 The key benefit of the scheme is the journey time savings it would deliver in comparison to the existing service provision. The journey time savings are shown on Table 5.2 of the OBC Economic Case reproduced below.

Figure 12.1 Extract from OBC Economic Case Table 5.2

Table 5.2: Example Journey Time Saving per Route Brown Option (2026)						
Time Saving (mm:ss)	AM (07-10)		IP (10-16)		PM (16-19)	
	In	Out	In	Out	In	Out
CSET Phase 2	06:01	07:28	08:09	08:09	12:06	08:10
On-route (PT)	29:08	26:52	15:00	15:00	25:16	24:11

Source: OBC Economic Case

12.2.2 The journey time savings vary between 6 and 8 minutes when considering those passengers using the whole route i.e. from the Travel Hub Site to/from Cambridge. However, when considering those in the settlements along the route the journey time savings are considerably greater ranging from 15 minutes in the inter-peak to 25-29 minutes in the peak periods. This is attributed in the OBC Economic Case to **reduction in wait time due to the enhanced service frequency relative to the existing Citi 7 route**. Whilst this may account for some of the difference this is countered by the increase walk times to the stops on the edge of the settlements which range from 13 to 22 minutes compared with the assumed walk time at the Travel Hub Site of 0 minutes (Table 4.6).

12.2.3 The journey time savings are used to calculate the benefits that the scheme would deliver. These are set in the OBC Economic Case (Table 5.5). It is notable that around 50% of the calculated benefit of the scheme is attributable to the passengers to/from Sawston, Stapleford and Great Shelford. This is greater than the benefits delivered by those travelling to/from the Travel Hub Site (43%) with remainder coming from the wider route benefits (services to/from Haverhill). This is particularly notable when you consider that only 19% of the journeys would originate within the settlements of Sawston, Stapleford and Great Shelford. In other words 19% of passengers deliver 50% of the benefits. Thus, passengers of these settlements are essential to the viability of the scheme.

- 12.2.4 It should be noted that no new passengers are attracted to the route from these settlements. Whereas new users are expected to account for 57% of all users to/from the Travel Hub Site (Table 5.1, Economic Case). It is not clear why there are no new users although it may be in part the consequence of the distance of the route stops from each settlement. Nonetheless, there is the potential for greater benefit to arise from passengers in these settlements and this should be properly assessed. This is pertinent in light of the poor BCR the current scheme returns and the recommendation of the GCP Joint Assembly to improve it.

12.3 Shelford Rail Alignment Comparison

Perceived Journey Time

- 12.3.1 Section 4 of the MM Report 2020 provides an assessment of the likely change in passenger demand arising from the SRA when compared with the preferred Brown option. The assessment is based on changes in Perceived Journey Time (PJT). The PJT is a calculated time based on in vehicle time, waiting time and walking time. Estimated waiting time and walking time are factored by 1.5 to reflect the perceived inconvenience of this time to passengers.
- 12.3.2 The PJT of the Brown Option is compared to that of the SRA to determine differences. The differences are then used to estimate the expected change in demand. This provides a useful approximation of the relative difference. However, it does not provide a robust comparison as the demand arising from the SRA has not been properly modelled, but rather benchmarked against the Brown Option.
- 12.3.3 It is worth noting that the demand analysis in the MM Report 2020 (Table 4.7) shows that there is only a 2% reduction in passenger demand between the preferred Brown Option and the alternative SRA (using the above method). This equates to 113 passengers per day. Given the concern in section 13.1 with the model outputs and underlying assumptions required to prepare the Brown Option estimates and the high-level nature of the appraisal method, the difference is too small to be considered significant. Little weight should be attributed to this difference and further assessment (using the same methods contained in the OAR) is recommended.

Cost & Benefits

- 12.3.4 The additional cost of the alternative SRA is estimated by MM at around £29m. Cost is noted as one of the reasons the SRA is less viable. These figures have not been audited although it is worth noting that half of the cost uplift is attributed to land costs. As noted in Section 11 of this

report the land requirements could be substantially reduced through minor amendments to the proposed alignment design.

- 12.3.5 As noted in Section 2.8 the Sawston Greenway should be incorporated into the CSET Phase 2 scheme. This would deliver a combined scheme which delivered on the overall objectives of both. Accordingly, the funds available for the Sawston Greenway (c£9m) could justifiably be allocated to the CSET Phase 2 scheme.
- 12.3.6 Whilst cost is an important consideration, without quantification of the associated benefits it does not alone represent a reason that the alternative SRA is not considered viable.
- 12.3.7 As noted, the benefits of the preferred scheme are heavily reliant on the journey time savings of passengers using the route to/from Stapleford, Great Shelford and Sawston. There would appear to be considerable potential to capture more of these benefits with a route which is closer to the centre of these settlements. The benefits of passengers from these settlements compared with those accessing the route at the Travel Hub Site broadly equate to a ratio of 5:1. In other words for every additional passenger from these settlements you could lose 5 passengers from the Travel Hub Site and maintain the benefits.
- 12.3.8 Notwithstanding the above concerns, MM appraisal of changes in demand from the settlements and the Travel Hub (Table 4.7, MM Report 2020) indicates the SRA would attract 47 new passengers from the settlements with the number for the Travel Hub reducing by 160 (the net change being 113 passengers as noted above). Theoretically the number of passengers at the Travel Hub could reduce by 235 with the benefits unchanged. Hence, there should be a net increase in benefits. Clearly, this is a simplistic and high-level assessment but indicates that a more thorough appraisal is warranted.

SECTION 13 INSET Appraisal/Review

13.1 This chapter summarises use of MM's Investment Sifting and Evaluation Tool (INSET) and presents an assessment of the alternative SRA, following MM's own methodology.

13.2 INSET Tool

13.2.1 MM's INSET Tool is, by their description, an enhancement of the Department for Transport (DfT) Early Assessment Sifting Tool (EAST) to quickly summarise and present evidence on options. The MM OBC (May 2020) states that the tool follows the same broad principles and approach.

13.2.2 The MM approach described within the OBC (May 2020) identifies seven themes against which potential route options are scored, as follows:

- Transport User Benefits;
- Environment;
- Deliverability;
- Social Impact (Quality of Life);
- Wider Economic Benefits;
- Alignment with Objectives; and
- Policy Alignment.

13.2.3 Against these themes, the MM OBC adopted a seven-point scoring system to assess how well options met the established thematic criteria, using a scale of -3 to +3, with -3 representing a very poor fit with criteria and +3 a very good fit.

13.3 Mott MacDonald Assessment

13.3.1 Chapter 6 of the MM Report 2020 provides a summary of their INSET scoring for the SRA and the preferred scheme options reviewed. The MM Report 2020 report states that in previous studies the SRA had not been assessed with INSET as a comparison, since it had been dismissed as a viable option earlier in the process i.e. the SRA was dismissed before getting to the INSET assessment stage (as noted at Section 4).

13.3.2 However, the report does go on to include an assessment of the SRA alongside each of the preferred option routes, concluding in all cases that the preferred routes score better. Figure 13.1 provides an extract of the INSET scoring summary for the preferred Brown route and for the SRA route (as assessed by MM).

Figure 13.1 – Mott MacDonald INSET Scoring Summary

Rank	Scheme	Transport Benefits	Environment	Deliverability	Social Impacts (Quality of Life)	Wider Economic Benefits	Alignment with Objectives	Policy Alignment	Total Score
1	Brown route from Travel Hub Site B	1.52	-1.25	-0.57	0.88	3.00	1.75	2.20	1.08
3	Brown route from Travel Hub Site B (Shelford Rail)	1.05	-1.38	-0.93	0.76	3.00	1.70	2.20	0.92

13.3.3 The MM INSET scoring awarded equal (or very close) scores to the SRA and the preferred Brown route in respect of:

- Wider Economic Benefits;
- Alignment with Objectives; and
- Policy Alignment.

13.3.4 However, the SRA was shown to perform marginally worse than the preferred Brown route in terms of:

- Transport User Benefits (a difference of 0.47);
- Environment (a difference of 0.13);
- Deliverability (a difference of 0.36); and
- Social Impact (Quality of Life) (a difference of 0.12).

13.3.5 The scores achieved within the INSET analysis for the SRA are very similar to those identified for the preferred Brown route with a difference of no greater than 0.5 (the greatest difference in score calculated was for Transport User Benefits which was a difference of 0.47 between the two schemes).

13.3.6 Revisiting the information in Section 6 of the MM Report 2020 and the information set out within Appendix A to the OBC (May 2020), allows for a comparative INSET analysis to be undertaken for the alternative SRA as considered within this report.

- 13.3.7 This report has demonstrated that aspects such as segregation, inclusion of NMU routes and impact on property have all been identified more positively based on a more balanced investigation of the alternative SRA.
- 13.3.8 The accuracy of the environmental INSET assessment is also questioned given that the preferred Brown route, which passes through sections of wide-open green belt, scores just 0.13 different to a route which utilises an existing railway corridor and maximises use of previously developed land. The context of NPPF paragraph 146 which seeks to protect the character of the Green Belt through maximising use of previously developed land is key here.
- 13.3.9 The following paragraphs consider the four themes where the preferred Brown route and the SRA score differently in MM's study and reconsiders how the alternative SRA might be scored now based on the findings of this report.
- 13.3.10 The scoring serves as a demonstration that MM should revisit the INSET assessment as part of a wider review of the entire scheme assessment process.

Transport User Benefits

- 13.3.11 A review of Appendix A OBC identified all of the criteria used to inform the Transport User Benefits INSET analysis.
- 13.3.12 A number of criteria make up the Transport User Benefit theme. The criteria that stand out as most likely to change as a result of the findings of this report are:
- Journey Time Benefits
 - Opportunities for benefits for users of existing public transport; and
 - Catchment of NMU.
- 13.3.13 Intuitively, if the route were to utilise the existing railway corridor and travel through the settlements of Great Shelford and Stapleford the NMU catchment would improve, the opportunities for benefits from existing public transport users would improve and more passengers should benefit from improved journey times.
- 13.3.14 The MM Report 2020 noted that as full segregation of the SRA was not possible it scored lower on CAM compatibility. Following the earlier appraisal it is considered the SRA would score the same as the Brown Option.

13.3.15 Table 13.2 provides a high-level comparative assessment of the alternative SRA with the preferred Brown route. It should be noted the scores identified at Table 13.2 are derived from the average score of the 15 criteria presented and that the assessment excludes the 6 Travel Hub criteria which it is assumed would be the same for both (the overall score therefore differs from that in Table 13.1).

Table 13.2 – Transport User Benefits Comparative INSET Assessment Brown Route vs Alternative Shelford Railway Alignment

Transport User Benefit	Dedicated PT Routes	Degree of priority at junctions	Frequency of PT Stops	Directness of Route and Extent of Dedicated Infrastructure	Ability to be used by CAM vehicles	Compatibility with CAM alignments	Opportunities for benefits for users of existing public transport	Loss of general traffic capacity along main alignment	Loss of capacity/ priority at junctions	Impact of delay caused by additional junctions	Route segregation at junctions	Route segregation - general alignment	Quality and Directness of NMU	Catchment of NMU	Number of walking and cycling routes crossed	SCORE
Brown Route	2	2	0	2	2	3	2	0	0	0	2	3	2	2	-2	1.33
alternative SRA	2	2	0	3	2	3	3	0	0	0	2	3	2	3	-2	1.53

13.3.16 It can be seen that the alternative SRA route actually scores higher with small changes to the scoring for just three (noted at paragraph 13.3.12) of 15 criteria.

13.3.17 Thus, the review of INSET for the transport user benefit theme demonstrates that reassessment would potentially find the alternative Shelford Railway Alignment a comparable option to the preferred Brown route as a minimum.

Environmental

13.3.18 The environmental theme covers a broad range of factors that must be considered. Within the MM Report 2020 report the weighting of commentary was around the impact that a SRA would have on noise due to proximity to residential properties. This appears counter intuitive as the route follows an existing railway line.

13.3.19 The variety of environmental criteria within this theme includes aspects such as visual impact, biodiversity and Green Belt.

13.3.20 Table 13.3 demonstrates how small changes in the scoring (for Noise and impact on Green Belt) between the preferred Brown route and the alternative SRA considered in this report lead to a notable overall difference.

Table 13.3 – Environmental Comparative INSET Assessment Brown Route vs Alternative Shelford Railway Alignment

Environmental	Visual Impact	Noise	Air Quality	Water	Biodiversity	Heritage	Impact on Greenbelt	Greenhouse Gases	SCORE
Brown Route	-2	-1	0	0	-2	-3	-2	0	1.25
alternative SRA	-1	-2	0	0	-1	-3	-1	0	-1.0

13.3.21 Intuitively, a route that follows an existing railway corridor and that does not route across open Green Belt land will have a lesser impact in terms of visual impact, impact on biodiversity and on the Green Belt.

13.3.22 Reassessment would likely find the alternative SRA a comparable option to the preferred Brown route, and perhaps a more preferable options in environmental terms.

Deliverability

13.3.23 The deliverability theme similarly covers a broad range of criteria some of which are considered to be quite different for a scheme that follows an existing railway alignment versus a scheme which routes across open countryside.

13.3.24 The preferred Brown route scored negatively in terms of loss of environmentally sensitive areas, whereas the alternative SRA would be likely to score less negatively in this respect.

13.3.25 The findings of this report also conclude that the alternative SRA would score neutrally in respect of impact on NMUs, division of field boundaries, quantity of land required and complexity of junctions. There would be greater impact on the rail network of the alternative SRA.

Table 13.4 – Deliverability Comparative INSET Assessment Brown Route vs Alternative Shelford Railway Alignment

Deliverability	Loss of environmentally sensitive areas	Impact on existing residential dwellings	Impact on general traffic	Capital Costs	Annual Operating Costs	Potential Annual Subsidy	Accessibility to site during construction	Complexity of Junctions	Structural Complexity	Quantity of Land Required	Division of Field Boundaries	Impact on road network	Impact on rail network	Impact on NMUs	Range of Vehicle Usability	Extension to Haverhill	Consents	Complexity	SCORE
Brown Route	-2	-1	0	-3	-1	0	-2	-1	-2	1	-1	-2	0	-1	2	3	-2	-1	0.57
alternative SRA	-1	-1	0	-3	-1	0	-2	0	-2	0	0	-2	-1	0	2	3	-2	-2	0.55

13.3.26 A review of scores within the deliverability theme in Table 13.4 demonstrates that the alternative Shelford Railway Alignment could score well comparatively with the preferred Brown route and potentially more positively.

Social Impact (Quality of Life)

13.3.27 Lastly, the social impact/ quality of life theme has been explored. This theme includes a variety of criteria including how the proposals fit with and provide connections to a number of locations including the Cambridge Biomedical Campus, Babraham Institute and Granta Park. Those criteria would likely remain unchanged from the MM scoring applied.

13.3.28 However, other criteria including increase in cycling and walking and loss of commercial and residential property would most likely change if a reassessment were to be undertaken for the alternative SRA considered within this report.

13.3.29 This report has already considered within Section 4 that early public consultation of the CSET proposals showed that over 20% of the patronage of the new CSET Phase 2 Scheme would be from Stapleford, with 30% from Sawston so it is reasonable to consider that a proposal that routes directly through Great Shelford and Stapleford would attract reasonable uptake of walking and cycling in connection with CSET nodes in this vicinity.

13.3.30 It is expected there may be some difference between the two routes, although it is unlikely to translate into a material difference in scoring.

13.4 Summary

- 13.4.1 There remains a concern that the MM assessment dismissed the option of a SRA too early in the process and that no thorough and detailed assessment has been undertaken. Retrospectively, the alternative SRA has been assessed using the INSET methodology. However, the route that was assessed was not the most robust option for an alternative SRA that could have been assessed even at this high-level stage. Thus, the scoring awarded does not provide a suitable assessment and should be revisited.
- 13.4.2 The current report has shown that reappraisal of the alternative SRA, using the INSET methodology with full segregation and CAM compliance is likely to show higher scores than was previously the case across some of the themes, in particular in terms of Transport User Benefits.
- 13.4.3 It is recognised there may be some additional challenges in terms of Deliverability, for example in costs, although the evidence suggests that the alternative SRA would see an uplift in benefits overall and perform as well, and perhaps better, than the GCP preferred alignment. Moreover, the alternative SRA may additionally attract a higher level of public support and hence represent a more deliverable option than the current preferred alignment.

SECTION 14 Summary and Recommendations

14.1 This report has been prepared for the Parish Councils of Great Shelford and Stapleford, to provide an independent and objective review of:

- The **strategy and process** adopted by MM in their assessment of options for CSET Phase 2 and the appraisal and methodology adopted in the OBC. It also provides an overview of the development of the CSET proposals and the associated policy context; and
- The **technical feasibility** of an alternative SRA with specific reference to the MM's assessment of the Alternative SRA (June 2020).

Strategy & Process

14.2 Several clear and consistent themes of transport policy across Cambridge and South Cambridgeshire translate into the key transport objectives for the area. These themes are generally echoed by the GCP in their aims and objectives for the area and to some extent they translate into the objectives and aims for CSET. However, there are some differences, notably those relating to:

- Road safety for users of the A1307 corridor; and
- Improving connectivity to employment sites in south east Cambridge.

14.3 Improving road safety along the A1307 is understandably specific to the area, this being the main radial route, and is consistent with policy and general GCP objectives. The development of scheme options was guided by the stated objectives and therefore the focus of connectivity on employment locations would have influenced the range and choice of options subsequently considered.

14.4 It is notable that there does not appear to be an appraisal of the use of the former railway line against the strategic policy objectives as it was dismissed early on in the scheme development process.

14.5 The CSET Phase 2 scheme is being advanced separately to the Sawston Greenway, which is counter intuitive as they are located along the same corridor and the CSET Phase 1 scheme includes the Linton Greenway. This disconnect between what should be two complementary schemes risks failing to capture the full benefit of infrastructure investment.

- 14.6 WSP, on behalf of the GCP, concluded early on in their study that the re-opening of the disused Haverhill to Cambridge railway line would not be viable for either heavy rail or Bus Rapid Transit (i.e. a busway). Numerous options were considered as a combination of both BRT and conventional bus including part use of the former Haverhill to Cambridge railway line. However, all options with any use of the former railway line were discounted.
- 14.7 This is a flaw in the appraisal and the consequence of this approach was that no conceptual public transport options were included that proposed partial re-opening of the disused railway line.
- 14.8 There were also clear weaknesses in the initial appraisal process during the option appraisal workshops in 2017 including:
- Discounting of the use of the former railway. between Haverhill and Cambridge clearly influenced the judgement of those hosting and participating;
 - A lack of transparency in decision making, with no details of the 210 comments received at the Local Liaison Forum (LLF) workshops available in the public domain; and
 - The rationale behind why the CSET Phase 2 Scheme route is located remote from the centre of Stapleford and Shelford and away from the former railway.
- 14.9 This 'blind spot' to the use of the railway line west of Sawston is highlighted in the minutes of the LLF meeting on 7 February 2018 when it was queried whether it would be better to route Strategy 1 through the villages. The response on behalf of GCP was "there is no route through the villages available without using existing roads...". Clearly, the remainder of the disused rail line and alongside the existing rail line was not considered.
- 14.10 Our review of the Outline Business Case (OBC) (May 2020) demonstrates that there are a number of omissions and weaknesses in the appraisal:
- The study area is not properly defined and therefore does not align with the requirements of the Government's Transport Analysis Guidance (TAG);
 - The appraisal discounts a large part of the A1307 transport corridor with no recorded justification, narrowing the subsequent option appraisal unfairly;
 - No evidence of assessment of the former railway is provided or how it was considered in the Stage 1 appraisal;

- The use of the former railway is discounted along with any option involving demolition with insufficient reasoning; and
- A retrospective review discounts the railway option without clear assessment and justification.

14.11 Subsequent sifting and Stage 2 appraisal similarly includes a number of weaknesses including:

- An initial 'gateway' assessment (the purpose of which is to define the 'make or break' criteria for the scheme) excludes options which require demolition of property or loss of high value land. Essentially, they give undue weight in the process to these costs; and
- The reduction in the number of options with no objective appraisal and no documenting of the decision-making process.

14.12 Another concern with the process is that public consultation in 2019 clearly identified, and reported, numerous comments made about CSET (and the preferred route options identified) notably:

- The negative impact the proposals would have on the environment, due to the use of Green Belt land;
- The negative impact that travel hub access routes and proposed stop locations would have on congestion along connected roads and in villages;
- The poor accessibility of the stop locations which were not well-located to settlements; and
- The possibility of using existing infrastructure (A1307 or former railway lines) in place of the proposed route.

14.13 In the context of the importance placed on stakeholder and public consultation in the Transport and Works Act Order process, the lack of any documented review of how these key themes were subsequently responded to is a further weakness of the appraisal process. The scheme should be reappraised for each of these key themes.

Technical Appraisal

14.14 In terms of the technical feasibility of a SRA, the "CSET Phase 2: Shelford Railway Alignment - Design Development and Feasibility Assessment (18 May 2020)" (referred to as "MM Report 2020") stated that "a number of significant barriers would need to be overcome to construct the route" at an additional cost of £29.1m. While acknowledging that this "questions its viability" the MM Report 2020 does not explicitly state that the alternative alignment is not feasible. Indeed, it actually demonstrates that a SRA is feasible (albeit defining a different, and inferior alignment to that which is considered within this report).

14.15 The MM Report 2020 concludes that the SRA:

- Would have been excluded at the longlisting stage as a result of gateway criteria relating to the loss of residential dwellings and private property (Demolition);
- When compared with the shortlisted options the former railway alignment would be less desirable as:
 - A number of residential and commercial properties would need to be acquired (Demolition);
 - The alignment would not provide full segregation meaning reliability and compatibility with CAM requirements would be reduced (Segregation);
 - Journey times from the travel hub would be expected to increase, and overall patronage of the route would be forecast to decrease (Passenger Demand);
 - Greater noise impacts would be expected (Environmental);
 - It presents a number of practical challenges which would be expected to seriously impact deliverability; and
 - The scheme costs are expected to be approximately £29.1m greater (Cost).

14.16 The SRA was not considered by MM to be a viable alternative to the GCP preferred Brown route (identified within the GCP report to the GCP Joint Assembly dated 4 June 2020), with the principal issues relating to Demolition, Segregation, Deliverability and Cost.

- 14.17 Our report has reviewed the appraisal contained in the MM Report 2020 focusing on these principal issues. The working assumptions used for determining the alignment and width of the route corridor assessed in the MM Report 2020 are generally acceptable. However, at this high-level stage it is appropriate to allow for some flexibility in these assumptions without compromising the design objectives. In addition, flexibility on the location of the NMU provision (as the MM Report 2020 notes at A1301 Cambridge Road bridge) is a reasonable approach which would not compromise the scheme.
- 14.18 This report demonstrates that the application of flexible working assumptions and NMU routing would enable substantial reductions in property Demolition. Our analysis shows that, according to the MM Report 2020, a total of 22 residential and 4 commercial premises would be affected by the alternative SRA under MM's own assessment. Our report shows that minor modifications to the high-level design would reduce the impact to just 4 premises being affected (refer to paragraph 11.1.17 for details). This is a significant difference to the MM study.
- 14.19 In respect of Segregation, contrary to the MM Report 2020's conclusions, it would be possible to create a fully segregated design along the entire alternative SRA. Small amendments to the assumed layout design alongside Chaston Road, coupled with re-aligned NMU provision, would enable this section to be fully segregated.
- 14.20 The assertion in the MM Report 2020 that Deliverability would be seriously impacted is unsubstantiated. Further, it should be reviewed in light of the revised alignment appraisal presented herein, which demonstrates that a route is feasible and would only directly affect four residential properties. Thus, even at initial feasibility stage flexible design can reduce the risks associated with deliverability. Subsequent design phases would seek to reduce risk even further.
- 14.21 Thus, this independent report confirms that the alternative SRA is a technically feasible alternative to the preferred route option. It has shown that the MM Report 2020:
- Substantially overestimates the extent of Demolition required;
 - Omits to identify that there is a feasible route which achieves full Segregation; and
 - Over-states concerns in respect of Deliverability.
- 14.22 Therefore, the alternative SRA is likely to be a viable alternative to the GCP's preferred Brown route.

14.23 The passenger demand assessment presented in the MM Report 2020 along with the assessment in the OBC raises a number of concerns:

- It assumes very low demand arising in Stapleford;
- The low vehicle capacity of the route could undermine its quality and hence benefits; and
- The assessment of perceived journey time should not be relied upon to differentiate between the preferred option and the SRA.

14.24 Whilst cost is an important consideration, without quantification of the associated benefits it is not on its own a reason to consider the alternative SRA unviable. It is clear from the OBC that the benefits of the preferred scheme are heavily reliant on the journey time savings of passengers using the route to/from Stapleford, Great Shelford and Sawston. There would appear to be considerable potential to capture more of these benefits with a route which is closer to the centre of these settlements. This is pertinent in light of the poor BCR the currently proposed scheme returns and the recommendation of the GCP Joint Assembly to improve it.

14.25 There remains a concern that the MM assessment dismissed the option of an alternative SRA too early in the process and that no thorough and detailed assessment has been undertaken. Even when the Alternative SRA was retrospectively assessed using the INSET methodology, the route that was assessed by MM was not the most robust option for an alternative SRA that could have been assessed, as has been demonstrated by the findings of this report. Thus, the scoring awarded was negatively skewed and should be revisited. Indeed, once revisited it is likely that the alternative Shelford Railway Alignment would, as a minimum, be comparable to the preferred Brown route in which case BCR, analysis of Value for Money and need for further consultation must also be revisited.

Key Findings:

14.26 The key findings of this study are:

- A ***fully segregated CAM compliant route can be provided*** via a technically feasible alternative SRA;
- The MM assessment of a SRA:
 - Substantially overestimates the extent of ***Demolition*** required;

- Omits to identify that there is a feasible route which achieves full **Segregation**; and
- Over-states concerns in respect of **Deliverability**.
- The **alternative SRA is a viable route option** compared to the GCP's preferred Brown route through Green Belt land;
- There are **weaknesses in the appraisal process** of the preferred CSET Phase 2 scheme which undermine the selection of the preferred Brown route option. These include:
 - The re-use of the **former railway line was discounted** without proper appraisal against objectives;
 - There is a **lack of transparency** in the assessment process with key decisions unsubstantiated;
 - The **SRA route was excluded from the study area** agreed with GCP without justification or assessment; and
 - The **feedback from public consultation has been overlooked** and not properly taken into account.
- The costs of the scheme relative to the benefits demonstrate that **the GCP's preferred Brown route provides poor Value for Money** (a calculated BCR of just of 0.81 compared to 1.5-2.0 sought by the GCP Executive Board);
- The GCP's proposals **would not offer a high-quality service** with the assumed level of bus services operating at capacity upon opening;
- Over **half the travel time benefits accrue from 20% of passengers** for the preferred scheme with those passengers originating in Stapleford and Great Shelford despite the location of the route on the periphery of these settlements; and
- The **Sawston Greenway and CSET Phase 2 schemes are not integrated** with the potential for a duplication of infrastructure and a poor return on investment.

Recommendations

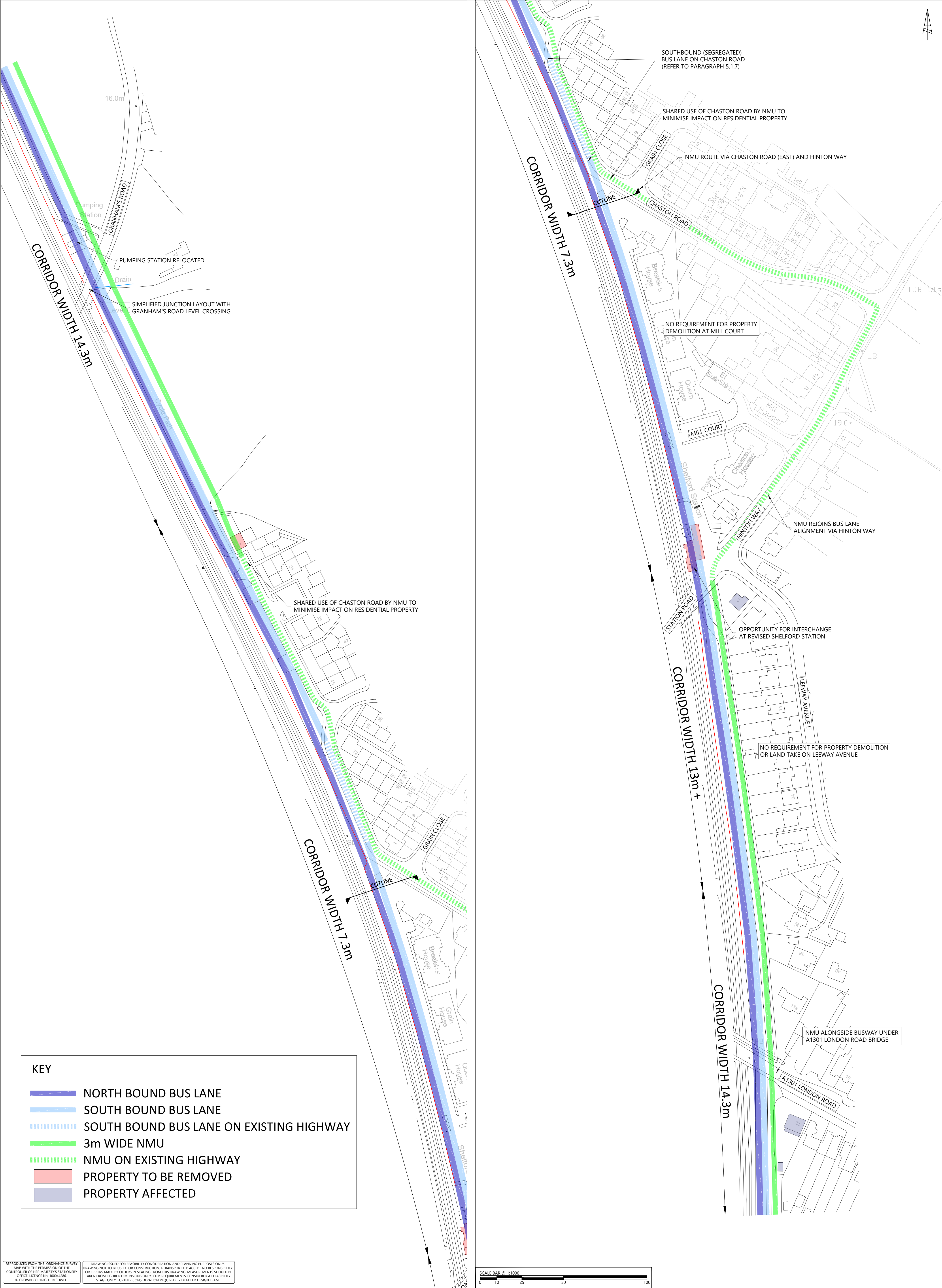
14.27 Based on the findings presented within this report we recommend:

- Weaknesses with the appraisal process should be addressed with additional appraisal or documentation provided;

- INSET analysis should be updated for the alternative Shelford Railway Alignment to provide an equitable comparison;
- Benefits of the alternative SRA should be properly assessed and the Benefit to Cost Ratio (BCR) calculation and Value for Money should be revisited; and
- New consultation should be undertaken to determine feedback on a technically feasible SRA.


To enable these recommendations to progress in the most effective and efficient manner it is considered that a workshop should be convened between relevant stakeholders and their consultants. The purpose of the workshop will be to determine terms of reference for future assessment and ongoing collaboration to deliver a scheme which maximises benefits and minimises all costs.

Drawings



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FOR INFORMATION				CAMBRIDGE SOUTH EAST TRANSPORT PROPOSALS		CLIENT: GREAT SHELFORD AND STAPLEFORD PARISH COUNCILS		REV: 8			

Appendices

APPENDIX A – CSET Phase 2 Route Options (Cambridge Connect 2020)

Addenbrookes /
Cambridge Biomedical
Campus (CBC)

Trumpington

"CAMBRIDGE SOUTH"
(Proposed)

Babraham
Park & Ride

Granham's Road

Hinton Way

'ONLINE ALIGNMENT' - REJECTED

Gog Magogs

Roman Road

Wandlebury

Magog Down

Haverhill Road

A1307

EAST-WEST RAIL
OPTION E CORRIDOR
ROUTE TBD

Great
Shelford

SHELFORD

Stapleford

Granta River

Granta River

Granta River

Babraham
Research
Campus

Babraham

High Street

Linton (5km)
Haverhill (15km)

Proposed GCP
Park & Ride
Variants area

A11

Sawston Road

Sawston

A1301

M11

A505

GRANTA PARK

