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**The Cambourne to Cambridge Order**

Cambridgeshire County Council

**Transport and Works Act 1992**

**Transport and Works (Inquiries Procedure) Rules 2004**

**Inquiry into:**

**THE CAMBOURNE TO CAMBRIDGE ORDER**

**REBUTTALS - APPENDICES**

**of**

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**of WSP**

**On behalf of Cambridgeshire County Council**

**8<sup>th</sup> September 2025**

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**CONTENTS**

| <b>Section</b>                                             | <b>Page</b> |
|------------------------------------------------------------|-------------|
| APPENDIX 1.....                                            | 3           |
| FURTHER ASSESSMENT OF CPPF ALTERNATIVE SCHEME.....         | 4-44        |
| APPENDIX 2.....                                            | 45          |
| CAMCYCLE (CAMBRIDGE CYCLING CAMPAIGN) BRIEFING PAPER ..... | 46-52       |
| APPENDIX 3.....                                            | 53          |
| COMBERTON GREENWAY SCHEME DRAWINGS .....                   | 54-56       |

## **APPENDIX 1**

### **FURTHER ASSESSMENT OF CPPF ALTERNATIVE SCHEME**



Greater Cambridge Partnership

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# **Cambourne to Cambridge (CtoC) Scheme**

Further Assessment of CPPF Alternative Scheme





Greater Cambridge Partnership

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## **Cambourne to Cambridge (CtoC) Scheme**

Further Assessment of CPPF Alternative Scheme

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# Contents

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|            |                                                                                              |           |
|------------|----------------------------------------------------------------------------------------------|-----------|
| <b>1</b>   | <b>Introduction</b>                                                                          | <b>1</b>  |
| <b>1.1</b> | <b>Background</b>                                                                            | <b>1</b>  |
| <b>1.2</b> | <b>Purpose of this report</b>                                                                | <b>2</b>  |
| <b>2</b>   | <b>Existing Conditions</b>                                                                   | <b>3</b>  |
| <b>2.1</b> | <b>Introduction</b>                                                                          | <b>3</b>  |
| <b>3</b>   | <b>Engineering Assessment</b>                                                                | <b>4</b>  |
| <b>3.1</b> | <b>Scope of the Assessment</b>                                                               | <b>4</b>  |
| <b>3.2</b> | <b>Route Context</b>                                                                         | <b>5</b>  |
| <b>3.3</b> | <b>CPPF Design Drawings</b>                                                                  | <b>6</b>  |
| <b>3.4</b> | <b>Departures from Standard, Relaxations and Deviation from Guidance and Recommendations</b> | <b>7</b>  |
| <b>3.5</b> | <b>Road Safety Concerns</b>                                                                  | <b>7</b>  |
| <b>3.6</b> | <b>Proposed Changes to Existing Speed Limits</b>                                             | <b>8</b>  |
| <b>3.7</b> | <b>Potential Engineering Difficulties</b>                                                    | <b>9</b>  |
|            | <b>Drainage</b>                                                                              | <b>9</b>  |
|            | <b>Underground and Overhead Utilities</b>                                                    | <b>10</b> |
|            | <b>Pavement Condition</b>                                                                    | <b>10</b> |
|            | <b>Buildability</b>                                                                          | <b>10</b> |
| <b>3.8</b> | <b>Conclusions</b>                                                                           | <b>10</b> |

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## ***Tables***

**No table of figures entries found.**

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## ***Figures***

|                                                                                          |   |
|------------------------------------------------------------------------------------------|---|
| Figure 3-1 - Extents of Section B                                                        | 4 |
| Figure 3-2 - Extents of Section C                                                        | 4 |
| Figure 3-3 - Extents of Section D                                                        | 5 |
| Figure 3-4 - Typical characteristics for speed limits in rural areas outside settlements | 8 |

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## ***Appendices***

### Appendix A

Response to CPPF Commentary on Previous Scheme Assessment

### Appendix B

Mark Up of CPPF Scheme Drawings

### Appendix C

Schedule of Departures, Relaxations and Deviation from Recommendations

### Appendix D

Cross Sections at Key Locations

### Appendix E

Design Speed Assessment

# 1 Introduction

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## 1.1 Background

- 1.1.1. Cambridgeshire County Council (CCC), on behalf of the Greater Cambridgeshire Partnership (GCP), is seeking a Transport and Works Act Order (TWAO) from the Secretary of State for Transport to authorise the construction, operation, and maintenance of a guided busway between Cambourne and Cambridge City. This is known as the Cambourne to Cambridge Better Public Transport project ('the Scheme').
- 1.1.2. As outlined in the Outline Business Case, the Scheme aims to:
  - To achieve improved accessibility to support the economic growth of Greater Cambridge
  - To deliver a sustainable transport network/system that connects areas between Cambourne and Cambridge along the A428 / A1303
  - Contribute to enhanced quality of life by relieving congestion and improving air quality within the surrounding areas along the A428 / A1303 corridor and within Cambridge City.
- 1.1.3. The Scheme involves building a dedicated guided busway approximately 13.6 km long, running south of the A428 and A1303. It includes a Travel Hub at Scotland Farm and bus stops serving Cambourne, Hardwick, Coton, West Cambridge campus, and the approved Bourn Airfield development. An adjacent emergency and maintenance track will also be accessible to pedestrians and cyclists, with sections designated as bridleway.
- 1.1.4. By offering a compelling alternative to car travel, the Scheme encourages residents of existing and future communities to choose active travel and public transport for various journey types. A high-quality service is key to shifting travel behaviour and supporting inclusive, sustainable economic growth across Cambridge and South Cambridgeshire.
- 1.1.5. Key factors in making public transport attractive include frequent services, reliable and competitive journey times, and consistent performance. To appeal to commuters, journey times must rival those of private vehicles during peak hours. Reliability depends on high levels of segregation from general traffic.
- 1.1.6. Accordingly, the Scheme incorporates significant segregation to ensure operational resilience during peak congestion and incidents such as roadworks or accidents. This segregation, combined with journey time advantages, is central to the Scheme's appeal and effectiveness.

## 1.2 Purpose of this report

- 1.2.1. This report addresses the latest alternative scheme proposed by CPPF, as outlined in Steve P. Johnstone's Proof of Evidence **[CD26-10-W2-1]**. It evaluates the engineering feasibility and includes commentary on the potential environmental impacts of the CPPF proposals and responds to CPPF's rebuttal **[CD26-10-W2-1, Appendix H]** on key points raised in the previous Engineering Assessment (July 2025) **[CD9-31]**, which was based solely on written descriptions due to the lack of detailed drawings.

## 2 Existing Conditions

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### 2.1 Introduction

- 2.1.1. The existing conditions along the Madingley Road corridor, covering the proposed extents of the CPPF alternative scheme, are detailed in the previous report: CPPF Alternative – Engineering Assessment, July 2025 **[CD9-31]**.

## 3 Engineering Assessment

### 3.1 Scope of the Assessment

- 3.1.1. This assessment evaluates the feasibility of implementing the latest alternative scheme proposed by CPPF, as detailed in Steve P. Johnstone's Proof of Evidence [CD26-10-W2-1].
- 3.1.2. The assessment considers the proposed layout through **Section B** (see Figure 3-1) where the CPPF have suggested the existing 50 mph speed limit would be retained.

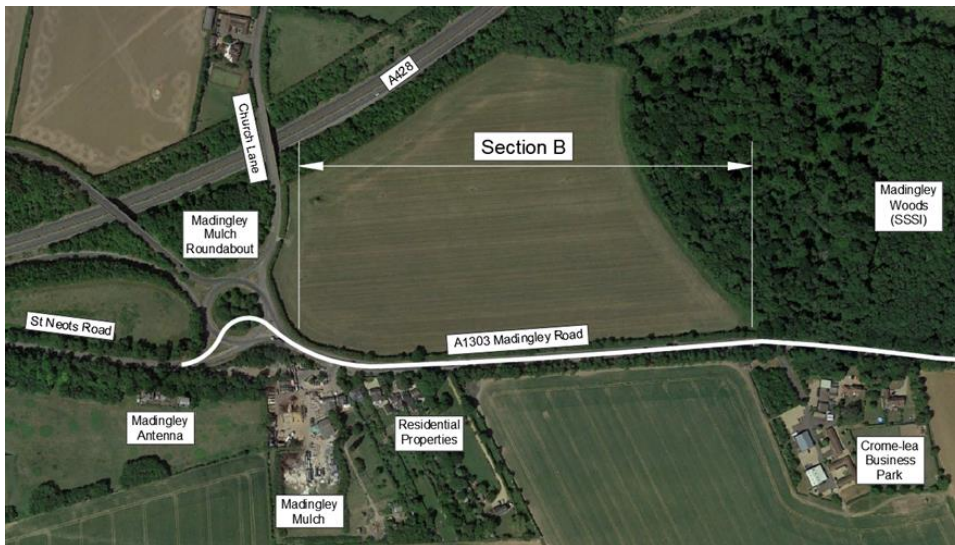


**Figure 3-1 - Extents of Section B**

- 3.1.3. The primary focus is on the proposed inbound bus lane through the most constrained part of the site—**Section C** (see Figure 3-2). This area includes sensitive locations such as **Madingley Woods (SSSI)** and the **American Cemetery and Memorial** to the north, as well as several commercial and residential properties to the south.

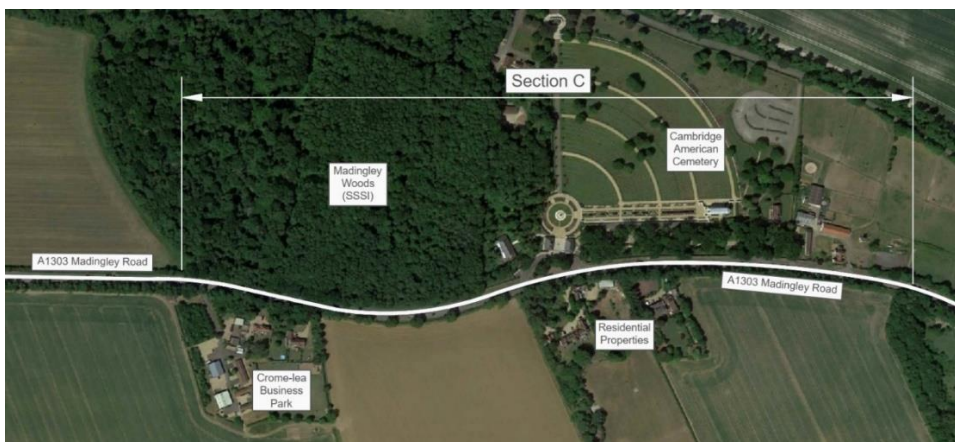


**Figure 3-2 - Extents of Section C**

3.1.4. The assessment also covers **Section D** (Figure 3-3), which presents design and safety challenges due to:

- A reverse curve limiting forward visibility
- Tight radii combined with narrow lanes
- A priority junction with a ghost island serving Madingley Rise
- A steep longitudinal gradient on the main carriageway



**Figure 3-3 - Extents of Section D**

- 3.1.5. The assessment also looks at the constraints at the existing **M11 overbridge** in **Section G**, where the cross-section poses significant design limitations due to the width of the existing structure.
- 3.1.6. This report builds on key issues identified in the previous **CPPF Alternative – Engineering Assessment (July 2025) [CD9-31]**, incorporating more detailed assessment of the plans submitted in Steve P. Johnstone’s Proof of Evidence **[CD26-10-W2-1]**.

## 3.2 Route Context

- 3.2.1. The route context of the A1303 Madingley Road is a critical factor in assessing the feasibility of the CPPF proposals and their likelihood of acceptance by the relevant Highway Authorities, including Cambridgeshire County Council and National Highways. The A1303 Madingley Road is:
- An ‘A’ Road, the classification given to major roads intended to provide large-scale transport links within or between areas.

- Part of the Primary Route Network (PRN), which designates roads between places of traffic importance across the UK, with the aim of providing easily identifiable routes to access the whole of the country.
- Part of the Major Road Network (MRN), the middle tier of the country's busiest and most economically important local authority 'A' roads, sitting between the national Strategic Road Network (SRN) and the rest of the local road network.
- A part of the (SRN) diversion routes which are a set of pre-planned routes used to guide traffic around road closures triggered by unplanned events or planned roadworks on England's motorways and major A-roads.
- A preferred route for use by HGVs as indicated on the Cambridgeshire advisory Freight Map which forms part of Cambridgeshire's HGV policy approved by the Highways and Transport Committee in October 2022.

3.2.2. The **2-way AADT** on Madingley Road is forecast to be **24,075 in 2041**. This figure is based on the Do Minimum baseline transport conditions in the study area as set out in the CtoC Transport Assessment **[CD1-25.01]** i.e. without the CtoC Scheme.

3.2.3. Cambridgeshire's Active Travel Strategy **[CD7-34]** and Local Cycling and Walking Infrastructure Plan (LCWIP) **[CD7-35]** identify priority cycle routes for each district. These are based on census data mapping origin and destination points to highlight where the highest number of utility trips could be shifted from car to cycle. Madingley Road is designated as a Tier 1 route within the LCWIP, marking it as part of Cambridgeshire's core active travel network.

### 3.3 CPPF Design Drawings

3.3.1. CPPF's plans **[CD26-10-W2-1, pages 89 -91]** rely on limited topographical survey data, covering only a narrow corridor. This fails to provide sufficient context for key surrounding features such as **Madingley Woods (SSSI)** and the **American Cemetery and Memorial**. Numerous trees on or near the highway boundary—potentially impacted by the scheme—are also omitted.

3.3.2. The plans do not account for the additional space required beyond the footways and carriageway edge to accommodate verges, berms, or embankment/cutting slopes, creating a misleading impression of the scheme's actual footprint.

3.3.3. The sample of cross sections provided **[CD26-10-W2-1, page 94]** omit many critical pinch points along the route and lack contextual detail, further distorting the scheme's true spatial impact.

3.3.4. To illustrate the practical challenges of implementing CPPF's proposals, additional detailed cross sections have been produced (**see Appendix D**). These highlight key pinch points and clearly demonstrate the difficulties of delivering the scheme within the existing highway boundary, as well as the potential impacts on sensitive sites.

### 3.4 Departures from Standard, Relaxations and Deviation from Guidance and Recommendations

- 3.4.1. The proposed CPPF scheme drawings **[CD26-10-W2-1, pages 89 -91]** were reviewed to identify critical departures from standards, as well as relaxations and deviations from guidance and good practice. Findings are detailed in **Appendices B and C**.
- 3.4.2. Given the route context, limited mitigation options, proposed speed limit changes, and the cumulative effect of overlapping departures and deviations, the likelihood of all critical departures from standard being accepted by the Highway Authority is considered low. This poses a significant risk to the scheme's viability.

### 3.5 Road Safety Concerns

- 3.5.1. The Road Safety Concerns Associated with a Nearside Bus Lane which were raised in the Previous report: CPPF Alternative – Engineering Assessment, July 2025 **[CD9-31]** remain valid and are not repeated here.
- 3.5.2. The CPPF design includes shared-use paths that fall below recommended minimum widths and omit the required separation from the carriageway in several locations. In some cases, these paths run adjacent to superelevated carriageway sections with narrow lanes, where buses will pass at speed in close proximity to path users. The absence of a recommended safety margin increases the risk of air turbulence, debris impact and will affect the perceived safety of the facility.
- 3.5.3. There is an elevated risk of collisions between high-speed buses in the bus lane and pedestrians using the proposed uncontrolled crossing, particularly where visibility is obstructed by queuing vehicles in the adjacent general traffic lane.
- 3.5.4. Vehicles using the private access to the east of the proposed pedestrian crossing point would impair visibility to the east for pedestrians using the facility.
- 3.5.5. Traffic Signs Manual Chapter 8 Part 3 **[CD9-24, page 27, paragraph U2.11.2]**, states that the two primary design factors influencing road maintenance are cross-section (e.g. lane widths, setbacks) and Stopping Sight Distance. On Madingley Road, the required stopping sight distances are not consistently available, and the existing lay-bys play an important role in supporting maintenance operations.
- 3.5.6. The CPPF proposal to reduce lane widths and remove lay-bys—combined with existing visibility constraints—is likely to impair the Highway Authority's ability to maintain the road safely and efficiently. While the proposed nearside bus lane would counter the loss of the lay-bys to some extent by increasing the overall carriageway width available for temporary traffic management during roadworks, layouts that rely on this additional space would compromise journey time reliability for buses using the Madingley Road corridor when the bus lane is out of action.

## 3.6 Proposed Changes to Existing Speed Limits

- 3.6.1. The current speed limits along **Madingley Road** are considered appropriate given the road's characteristics and are consistent with **CCC's Speed Limit Policy**. As shown in **Figure 3-3**, Madingley Road qualifies as a **lower-quality A road** with numerous bends, junctions, and access points—placing it firmly within the **50-mph upper tier** of the policy.

| Speed limit (Mph) | Upper tier<br>(Roads with predominant traffic flow function)                                                                                                                                                                                  | Lower tier<br>(Roads with important access and recreational function)                                                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 60                | Recommended for most high quality strategic A and B roads with few bends, junctions or accesses                                                                                                                                               | Recommended only for the best quality C and Unclassified roads with a mixed (i.e. partial traffic flow) function with few bends, junctions or accesses. In the longer term, these roads should be assessed against upper tier criteria. |
| 50                | Should be considered for lower quality A and B roads, which may have a relatively high number of bends, junctions or accesses. Can also be considered where mean speeds are below 50mph, so lower limit does not interfere with traffic flow. | Should be considered for lower quality C and Unclassified roads with a mixed function where there are a relatively high number of bends, junctions or accesses                                                                          |
| 40                | Should be considered where there is a high number of bends, junctions or accesses, substantial development, where there is a strong environmental or landscape reason, or where there are considerable numbers of vulnerable road users.      | Should be considered for roads with a predominantly local, access or recreational function, or if it forms part of a recommended route for vulnerable road users.                                                                       |

**Figure 3-4 - Typical characteristics for speed limits in rural areas outside settlements**

- 3.6.2. An assessment of Madingley Road's design speed, based on the methodology in CD 109 [CD9-07, page 14, paragraph 2.4] using alignment (Ac) and layout (Lc) constraints, indicates a design speed of approximately **85A kph**. This supports the appropriateness of the existing **50 mph speed limit**, which was introduced between August 2008 and April 2010 (as evidenced by Google Street View imagery).
- 3.6.3. The design speed assessment (**see Appendix E**) is based on several assumptions, making the estimated 85 kph a **conservative figure**. The overall increase in carriageway width proposed by CPPF along Madingley Road resulting from the introduction of the bus lane is likely to reduce layout constraint (Lc), which in turn may lead to higher vehicle speeds due to the diminished influence of the cross-section on driver behaviour.
- 3.6.4. TRL Published Project Report on Rural Road Safety (**PPR 200**) examined the data available on the distribution of rural road casualties and the factors contributing to their occurrence. The reports suggests that increased road width is generally associated with lower accident rates, although the size of the effect varies in different studies. The report goes on to say

that carriageway or lane narrowing potentially leads to lower speeds, but seemingly not enough to balance the increased risk of driving along the narrower roads.

3.6.5. According to the DfT Guidance on Setting Local Speed Limits, speed limits should be evidence-based, self-explaining, and aligned with drivers' perception of a safe speed. They should also promote self-compliance. Introducing an inappropriately low speed limit on a rural all-purpose road can have several negative consequences:

- Reduced likelihood of self-enforcement outside peak hours
- Increased driver frustration and unsafe overtaking
- Greater speed variance between drivers, raising collision risk
- Lower credibility and compliance with posted limits
- Reduced traffic flow, leading to delays and congestion
- Traffic displacement onto less suitable minor roads, increasing risk elsewhere
- Compromised effectiveness of diversion routes during Strategic Road Network (SRN) incidents.

## 3.7 Potential Engineering Difficulties

### Drainage

3.7.1. CPPF have suggested that oversized pipes could be utilised within the existing highway boundary to attenuate surface water flows. Using large-diameter pipes for stormwater attenuation presents significant engineering, environmental, and operational drawbacks:

- **Space and Depth Constraints:** These pipes require wider trenches and deeper inverts, which are impractical in narrow highway verges. Installation often necessitates placement within the carriageway, increasing disruption and requiring traffic management.
- **Access and Maintenance Challenges:** Deeper installations complicate access, making routine maintenance more difficult and costly to complete safely.
- **Health and Safety Risks:** Wider and deeper excavations elevate health and safety risks, large excavations in tree root protection zones also have the potential to negatively impact the stability and long-term viability of trees.
- **Hydraulic Inefficiency:** Oversized pipes operate under low-flow conditions during normal weather, leading to sediment build-up, reduced self-cleansing, and increased risk of blockages.
- **Poor Water Quality Management:** Traditional piped drainage systems often discharge untreated surface runoff directly into water bodies. This runoff can carry pollutants like heavy metals and hydrocarbons, degrading water quality and harming ecosystems.
- **Cost Implications:** Larger pipes incur higher costs for materials, transport, excavation, and installation, with limited long-term benefit.

3.7.2. Cambridgeshire County Council strongly advocates for Sustainable Drainage Systems (SuDS) over traditional oversized pipe solutions. SuDS features—such as swales, ponds, wetlands, permeable surfaces, and soakaways—offer multiple benefits:

- Mimic natural drainage processes.
- Reduce flood risk.
- Improved water quality.
- Enhance biodiversity and amenity value.

3.7.3. The **Cambridgeshire Flood and Water SPD** (adopted 2016, endorsed 2018) prioritises above-ground SuDS and mandates clear arrangements for adoption and maintenance. Oversized pipes may only be considered with robust justification demonstrating maintainability, accessibility.

## Underground and Overhead Utilities

3.7.4. The Concerns regarding engineering difficulties in relation to underground and overhead utilities which were raised in the Previous report CPPF Alternative – Engineering Assessment, July 2025 **[CD9-31]** remain valid and are not repeated here.

## Pavement Condition

- 3.7.5. The engineering concerns previously raised in the report CPPF Alternative – Engineering Assessment, July 2025 **[CD9-31]**—specifically regarding channelised traffic and accelerated deterioration of the existing pavement—remain valid and are not reiterated here.
- 3.7.6. In response, CPPF has proposed full-depth reconstruction of the existing carriageway along Madingley Road. However, if such extensive reconstruction is required to ensure long-term durability, it would entail substantial costs and prolonged traffic disruption.

## Buildability

3.7.7. The buildability concerns which were raised in the Previous report CPPF Alternative – Engineering Assessment, July 2025 **[CD9-31]** remain valid and are not repeated here.

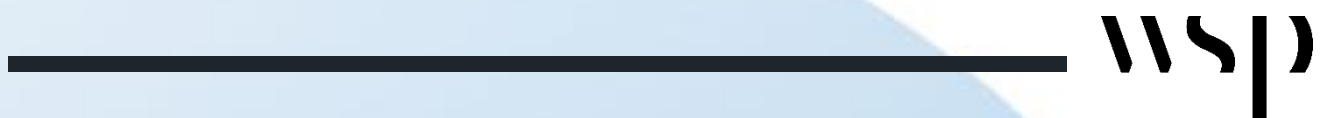
## 3.8 Conclusions

- 3.8.1. The CPPF plans do not accurately represent the spatial requirements of the proposed scheme. Key elements such as verges and the interface between proposed and existing ground levels are omitted.
- 3.8.2. The scheme fails to comply with relevant highway design standards and recommended good practice, resulting in anticipated reductions in safety and service levels.
- 3.8.3. Cross sections indicate that the scheme’s viability hinges on accepting multiple departures from standard. While some may be justifiable with mitigation, full technical approval of all the departures in combination is considered unlikely given the route context.
- 3.8.4. Madingley Road is designated as a Tier 1 route in the LCWIP, forming part of Cambridgeshire’s core active travel network. Given this status and the policies outlined in Cambridgeshire’s Active Travel Strategy **[CD7-34, pp. 29–56]**, it is considered unlikely that technical approval would be granted for a scheme that significantly compromises active travel provision.

- 3.8.5. Delivering a compliant surface water drainage system within the site constraints poses a significant challenge and risk to the viability of CPPF’s alternative scheme.
- 3.8.6. Considering the route context, CCC’s Speed Limit Policy, and the design speed assessment, there is a strong case against the proposed 40 mph limit. If this cannot be justified and secured, the likelihood of associated departures being approved—where the reduced speed limit is the sole mitigation—would be significantly diminished.
- 3.8.7. Cross sections demonstrate that even with all proposed compromises, delivering the scheme within the existing highway boundary remains highly challenging, if not unfeasible. Further development of the design is likely to reveal additional constraints, necessitating more departures and leading to further reductions in safety and service levels.
- 3.8.8. This review confirms that the CPPF design lacks redundancy and relies extensively on departures from standards and recommended dimensions across nearly all corridor components. These deviations are critical, as they define the minimum corridor width. Without formal approval, the design would require a wider cross-section—triggering land acquisition beyond the highway boundary and increasing impacts on sensitive sites to the north and residential or commercial properties to the south.

# **Appendix A**

## **Response to CPPF Commentary on Previous Scheme Assessment**



| WSP Review of CPPF Scheme                                                                                                                                                                                                                                                    | CPPF August 2025 Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WSP September 2025 Response                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Key Findings</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                            |
| The CPPF proposals, particularly the central (offside) bus lane with filter pockets, do not comply with the Design Manual for Roads and Bridges (DMRB) or other relevant standards.                                                                                          | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | This comment also applies to the CPPF proposals for a nearside buslane which is also non-compliant with the relevant design standards.                                                                                                     |
| Proposed lane widths are below the minimum recommended for high- speed rural roads and would require multiple Departures from Standard, especially in constrained sections near sensitive sites.                                                                             | <i>Madingley Road does not fit the description of a High-Speed Rural Road. 40mph operation is proposed from just west of the Crome Lea Business Park junction to help mitigate the removal of the two protected right-turns and the shortened driveways.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Madingley Road is a Rural Road with a 50mph speed limit. Irrespective of the CPPF proposal to extend the existing 40 mph speed limit the DMRB standards would still be applicable.                                                         |
| The Departures from Standard that would be required to implement the CPPF scheme as presented are considered critical as they would impact the land requirements and as such are fundamental to the viability of the scheme                                                  | <i>Maybe so, but these largely relate to a High-Speed Road Rural Road and the Central Bus Lane; neither of which apply.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Madingley Road is a Rural Road with a 50mph speed limit. Irrespective of the CPPF proposal to extend the existing 40 mph speed limit the DMRB standards would still be applicable for a proposed layout incorporating a nearside bus lane. |
| <b>Road Safety Concerns</b>                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                            |
| The central bus lane design proposed by CPPF introduces significant safety risks, including potential conflicts between buses and right- turning vehicles, lack of clear priority at filter pockets, and increased risk to cyclists and pedestrians.                         | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Noted                                                                                                                                                                                                                                      |
| A high-level safety review suggests that these issues would likely be raised in a formal Road Safety Audit and are likely to prevent the scheme from gaining technical approval.                                                                                             | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Noted                                                                                                                                                                                                                                      |
| <b>Environmental and Heritage Impacts</b>                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                            |
| The route passes alongside Madingley Wood Site of Special Scientific Interest (SSSI) and the Cambridge American Cemetery (Grade I Registered Park and Garden, with a Grade II* listed "Memorial and attached walls, steps and pool surround at American Military Cemetery"). | <i>The scheme has been designed to avoid direct or indirect impact on Madingley Wood SSSI. This has involved re-aligning the carriageway within the highway boundary to accommodate the bus lane and shared foot/cycle way without impacting significantly on trees and woodland contiguous with the SSSI. The scheme in this section moves the carriageway kerb south of its existing alignment and places the active travel path to the north, increasing the buffer between road traffic and the SSSI/woodland. The CPPF alternative scheme would be constructed in the highway boundary outside the American Cemetery. However, the scheme does not require any land that is covered by the grade I designation. The cemetery is already impacted by and screened from vehicles using the busy A1303. The screening consists of hedges, mature trees and a wall none of which are impacted by the CPPF alternative. Therefore, there would be no direct harm to the heritage asset and very low harm to the setting of the cemetery. The cemetery is a popular tourist destination that is served by tourist buses and bus services on the A1303. The CPPF alternative would provide a benefit to the cemetery by improving bus services for the cemetery, whereas the Applicant's scheme would divert bus services away from the cemetery, making it less accessible.</i> | The previously stated environmental and heritage concerns regarding the CPPF scheme remain unchanged and are jointly supported by both Historic England and Natural England.                                                               |
| Both central and nearside bus lane options would require land acquisition and removal of mature trees and hedgerows, potentially affecting protected bat habitats and the setting of heritage assets.                                                                        | <i>The scheme has been designed to avoid hedgerow and tree loss. Whilst loss of a number of trees may be unavoidable where the route passes through pinch-points in the highway land, there will be no severance of features likely to be used as bat flight lines and impacts will be contained within the zone of influence of existing noise, spray and lighting effects associated with the extant Madingley Rd, rendering the magnitude of overall change (to both environmental and heritage receptors) negligible and/or in any event less than a route passing through open country, severing hedgerows and directly impacting priority habitat/Local Wildlife Sites.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The previously stated environmental and heritage concerns regarding the CPPF scheme remain unchanged and are jointly supported by both Historic England and Natural England.                                                               |

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| Natural England and Historic England have previously expressed concerns about online options along Madingley Road.                                                                                                                    | <i>The route has been designed in full cognisance and reactive to NE's concerns and with the overarching objective of avoiding any scope for measurable impact on Madingley Wood SSSI and/or barbastelle and other bat species. Tree/hedgerow loss has been kept to an absolute minimum and in any event orders of magnitude less than will arise from the GCP scheme. By modifying an existing A-road, the bus lane and associated active travel provision are delivered within the existing zone of influence of effects from lighting, noise, NOx emissions, salt spray &amp;etc, minimising the net effect and vastly reducing the effects arising from a cross-country scheme. The application site lies 100m north of the northern boundary of the Coton Conservation Area. The Planning Statement recognises that the character of the conservation area is defined by its Grade I listed 12th century parish church, a further 12 designated heritage assets and by the visual and historic relationships of these assets to each other. The CPPF alternative avoids any heritage harm to these designated heritage assets .</i> | The previously stated environmental and heritage concerns regarding the CPPF scheme remain unchanged and are jointly supported by both Historic England and Natural England.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Engineering and Buildability Challenges</b>                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The CPPF scheme lacks general arrangement plans and does not address critical engineering aspects such as drainage, utilities, and pavement condition.                                                                                | <i>These plans are now provided. Drainage is not a key issue and utilities simply require prior diversion into the new cycleway.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The provision of a resilient and accessible drainage system which helps to manage water quality is considered a key issue, see section 3.7 of the main report - Further Assessment of CPPF Alternative Scheme.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Construction would require prolonged lane closures and complex traffic management, with significant disruption expected over a 1 to 2-year period.                                                                                    | <i>This is not an accurate assessment.. Major maintenance such as re-surfacing will result in similar levels of disruption and can be deferred as a result of the works, reducing their overall net impact. Because the scheme involves essentially widening of the existing road to provide an inbound bus lane, the widening can be undertaken first and largely clear of the existing running lanes. Traffic can then be diverted onto the bus lane whilst the existing road is reconstructed in two parallel phases. This work can be undertaken largely at night and over the weekend when traffic flows are much lower. By this means the works can easily be completed within 1 year.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                         | This is an unrealistic assessment limiting working hours to nighttime and weekends would extend the construction programme significantly it would not be possible to provide the working space required clearance zones to undertake the works safely clear of the existing running lanes.                                                                                                                                                                                                                                                                                                                                                   |
| <b>Alternative Concept Design</b>                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| An alternative nearside bus lane concept was developed by the applicant's team to test the feasibility. While safer, it still requires significant land acquisition and impacts on residential properties and environmental features. | <i>This is not correct – see enclosed plans.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Land acquisition and impacts on residential properties and environmental features are considered unavoidable to deliver a nearside inbound bus lane and active travel infrastructure of a standard likely to secure technical approval.                                                                                                                                                                                                                                                                                                                                                                                                      |
| The design confirms that a compliant on-road solution cannot be delivered within the existing highway boundary without unacceptable impacts.                                                                                          | <i>This is also not correct – see enclosed plans and Environmental Assessment.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | The previously stated environmental and heritage concerns regarding the CPPF scheme remain unchanged and are jointly supported by both Historic England and Natural England.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Assessment of Revised (April 2025) CPPF Proposals</b>                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The revised CPPF scheme proposes a nearside bus lane, which is more conventional and mitigates some safety concerns                                                                                                                   | <i>Noted.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| However, it still relies on substandard lane widths and omits key features such as ghost islands and hard strips                                                                                                                      | <i>See SJ PoE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | See, schedule of departures in Appendix C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| The use of the Active Travel England Route Cross-Section Tool to justify lane widths is inappropriate for the context of Madingley Road                                                                                               | <i>See SJ PoE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Recommendations</b>                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The CPPF alternative scheme, in both its original and revised forms, is not a feasible or viable alternative to the proposed CtoC guided busway.                                                                                      | <i>This is not accepted. The scheme is feasible and would represent a significant cost saving over the Applicant's solution. Viability is therefore not in question.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The CPPF plans do not accurately represent the spatial requirements of the proposed scheme. Key elements such as verges and the interface between proposed and existing ground levels are omitted. The scheme fails to comply with relevant highway design standards and recommended good practice, resulting in anticipated reductions in safety and service levels. Cross sections indicate that the scheme's viability hinges on accepting multiple departures from standard. While some may be justifiable with mitigation, full technical approval of all the departures in combination is considered unlikely given the route context. |
| The scheme fails to meet essential design, safety, and environmental standards and would likely not receive technical approval from the Highway Authority.                                                                            | <i>This is again not accepted. Environmental work demonstrates the acceptability of the scheme and Design and Safety considerations are addressed as part of the submission. Technical Approval comments are largely conjecture on the part of WSP and are not accepted by the CPPF team.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Given the route context, limited mitigation options, proposed speed limit changes, and the cumulative effect of overlapping departures and deviations, the likelihood of all critical departures from standard being accepted by the Highway Authority is considered low. This poses a significant risk to the scheme's viability.                                                                                                                                                                                                                                                                                                           |

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| The proposed CtoC scheme remains the preferred option due to its ability to deliver reliable, segregated public transport infrastructure with fewer environmental and safety risks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>The CtoC scheme is very expensive to deliver and a lesser alternative such as the one presented by CPPF has not been properly considered by the Applicant. Its performance should be assessed using an updated post-Covid traffic model and whilst it may be less than the CtoC scheme, its BCR is likely to be much higher due to the reduced costs. It would therefore represent much better value-for-money and a better use of limited public funds at a time of low UK economic performance. It would also not involve CPO and in CPPF's view, less environmental impact and not more.</i> | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Limitations to September 2024 CPPF Alternative</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Bus priority is provided for inbound buses only from the Madingley Mulch roundabout to the Park and Ride site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>See comments above.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Accidents, incidents and roadworks on the road network along with the variability in traffic conditions will lead to periods of increased congestion along Madingley Road that will impact inbound and outbound Cambourne to Cambridge buses, reducing the reliability of the scheme compared to a fully segregated route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <i>This may be so, but it is significantly cheaper to deliver and therefore there is a trade-off between these issues and the costs needed to reduce them. A lower costs scheme may well perform at a lower level, but that level CPPF would argue is still high enough to deliver the objectives of the scheme and at a fraction of the cost. The net benefits in terms of value-for-money would therefore be much higher and this is the key consideration.</i>                                                                                                                                  | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Inbound traffic flow control, using traffic signals to 'hold' the inbound flow of general traffic is applied in some UK urban environments with co-ordinated urban traffic control networks. However, there are a number of challenges with this approach including: <ul style="list-style-type: none"> <li>A substantial investment in new signal control infrastructure along Madingley Road will be required;</li> <li>The increased delays to peak period inbound general traffic could result in reassignment to alternative routes including through Madingley, Comberton and other radial routes into Cambridge, and increased speeding due to driver frustration; and</li> <li>Consistently delivering journey time benefits to inbound buses along Madingley Road at a level that is 'identical to the proposed scheme' is not demonstrated. The ability to consistently hold sufficient inbound traffic during peak times on the exit from Madingley Mulch Roundabout and the M11 off-slip to increase bus journey times has not been demonstrated, with concerns raised with the potential for queuing back onto the M11 and the A428. Therefore, there is a risk that an investment in signal control solution to 'hold' inbound general traffic will not result in the achievement of consistent improvements to bus journey times.</li> </ul> | <i>This is noted but the cost savings accrued by not building the CtoC scheme would outstrip those needed to provide reliable signal control infrastructure many times over. Journey time reliability, queuing and reassignment need to be assessed using an updated post-Covid traffic model, which is currently not available.</i>                                                                                                                                                                                                                                                               | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Limitations of April 2025 CPPF Proposals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| The main limitation of the CPPF document is that it does not provide any general arrangement plans of the proposals to demonstrate that the Alternative Scheme proposals are feasible and will deliver the same scale of benefits as the proposed scheme.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>These plans are now provided as an appendix to the proof of Steve Johnstone</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Chapter 3 – Engineering Assessment – September 2024 Proposals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Interpretation of CPPF Proposals</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3.2.3 The CPPF report provides very little information in relation to how right turn movements into and out of the numerous accesses along the corridor would be provided for. The only mention of this is in item B1 where it suggests that right-turn filter pockets could be incorporated into the central bus lane for the Crome Lea Business Park.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>The removal of protected right-turns or "filter pockets" is partially mitigated by reducing the speed limit and narrowing the lanes to encourage slower and more careful driving.</i>                                                                                                                                                                                                                                                                                                                                                                                                           | It is considered unlikely that the proposed narrowing of the traffic lanes to 3.25m would be acceptable considering the route context. Narrow lanes would also be a safety risk at bends where the lanes would be insufficient to accommodate the dynamic swept paths of longer vehicles. It is also consider unlikely that reduced lane width in isolation would be sufficient to ensure adherence to the proposed 40 mph speed limit. |
| 3.2.4 It is unclear what is meant by right-turn filter pockets but based on the cross sections presented in the report it is presumed that right- turning vehicles would be expected to wait within the central bus lane and that any existing facilities for right turn movements e.g. at Crome- lea Business Park would not be re-provided in the revised layout. This would not be compliant with standards and raises several road safety concerns. These issues are covered in more detail in the subsequent sections of the report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Compliance of CPPF Proposals with Current Design Standards</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3.3.17 The 3.25m general traffic lane widths presented in Figures 4, 5 and 6 of the CPPF report appear to be based on the principles Contained in Manual for Streets 1 & 2 [CD9-02 & CD9-03] which is not considered appropriate for Madingley Road and would be more applicable to a Street setting in a low-speed urban environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>See SJ PoE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| 3.3.18 Traffic lanes narrower than 3.65m are sometimes used for economic or environmental reasons. However, research conducted on two-lane rural roads <sup>4</sup> has shown that for increasing lane widths up to 3.65m there is a corresponding decrease in accident rates for vehicles running off the road, and for head-on and sideswipe accidents between vehicles travelling in opposite directions. A decrease in lane widths below 3.65m would be expected to have the opposite effect.                                                                                                                                   | <i>The cited research is of questionable relevance, being based on driving in the USA in the 1980s. A different conclusion may be found in a more recent (2017) paper on the same subject, but based on research in France, which concluded that the optimally safe arrangement of a 7m wide rural road is to have a 3m lane width and a 0.5m shoulder. <sup>1</sup></i> | The previous comment remains valid. The cited research is also referenced in the TRL report Accidents on Modern Rural Single-Carriageway Trunk Roads by D.A. Walmsley, I. Summersgill, and C. Binch.<br><br>The Highways England Guide to Road Safety Route Treatments (June 2018) states:<br>“Reduced lane widths can negatively impact road safety by forcing vehicles closer to the edge of the carriageway or into adjacent lanes. This is particularly problematic on narrow bends, where it can lead to vehicles straying into opposing lanes and causing head-on collisions.”<br><br>Multiple TRL reports and UK literature reviews (Walmsley & Summersgill 1998; Barker et al. 1998; Hughes & Amis 1996; Hamilton & Kennedy 2005) consistently show that wider paved cross-sections—through wider lanes and/or paved shoulders—are associated with lower crash rates, especially for run-off-road and lane-departure incidents. TRL predictive models explicitly include paved width and shoulder variables, which reduce predicted accident frequency when increased. |
| 3.3.19 The A1303 Madingley Road forms part of the diversion route for the adjacent strategic road network. As such, the lane widths on Madingley Road need to be suitable to accommodate diverted traffic in an emergency or during major maintenance or construction.                                                                                                                                                                                                                                                                                                                                                              | <i>The proposed lane widths would be suitable.</i>                                                                                                                                                                                                                                                                                                                       | The narrow lanes would not be suitable to accommodate the dynamic swept paths of longer vehicles on the bends. Narrower lanes would reduce the resilience of the diversion route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3.3.21 The cross sections presented in the CPPF report include a 3m wide central bus lane. This is the minimum lane width recommended in the TSM. However, assuming that cyclists would be prohibited from using the central bus lane on safety grounds, a central bus lane width of 3.65m <sup>5</sup> is considered to be more appropriate given the high-speed rural road environment.                                                                                                                                                                                                                                           | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                               | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3.3.22 Where an off-side bus lane is provided in a two-way road the TSM Chapter 3 [CD9-17, page 91, paragraph 9.1.3] recommends that it should generally be separated from the opposing flow of traffic by a solid island or hatch markings to diagram 1040 where the boundary line is formed by the marking to diagram 1049A. There is no such provision included in the cross sections contained in the CPPF report.                                                                                                                                                                                                              | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                               | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3.3.26 the cross section and lane widths depicted in Figure 5 of the CPPF report (see <b>Figure 3-4</b> below) does not comply with the relevant design standards and does not include any provision for verges and other key features that would need to be accommodated within the overall cross-section. The total width of 13.5m stated in the CPPF report does not represent the true overall width of the corridor required to deliver an online bus lane                                                                                                                                                                     | <i>See SJ PoE and engineering drawings</i>                                                                                                                                                                                                                                                                                                                               | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3.3.29 The additional width required to deliver the proposed cross section will necessitate acquisition of land outside of the highway boundary and will impact the existing features along Madingley Road including the commercial and residential properties to the south.                                                                                                                                                                                                                                                                                                                                                        | <i>See SJ PoE and engineering drawings</i>                                                                                                                                                                                                                                                                                                                               | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3.3.30 Extensive clearance of the existing trees (including mature specimens) and hedge lines to the south of Madingley Road depicted in <b>Figure 3-7</b> below, would also be required to facilitate the construction of the proposed CPPF scheme                                                                                                                                                                                                                                                                                                                                                                                 | <i>The scheme does not require ‘extensive clearance of trees or hedgerows’. By comparison with the GCP scheme the habitat losses occasioned are substantially less in all respects and deliver an improved performance whether considered via subjective assessment approaches or quantitative (BNG) scores.</i>                                                         | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Junctions and Access</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.3.36 The appropriate central road treatment for Madingley Road is the provision of ghost islands. Ghost islands afford right-turning vehicles some protection and assist free flow of major road through traffic.                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                               | This concern also applies to the CPPF proposals for a nearside bus lane, which do not comply with relevant design standards. Additionally, omitting ghost islands would require a formal departure from standard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3.3.37. The CPPF proposals do not appear to make any provision for any central road treatments i.e. ghost islands and are non-compliant in this regard. If ghost islands were to be added to the CPPF proposals it would increase the area of land required outside of the existing highway to deliver the scheme, resulting in increased costs and environmental impacts. It is also unclear how a ghost island could operate safely in combination with a central bus lane. The omission of central road treatments gives rise to Road Safety Concerns which are covered in more detail in the subsequent sections of the report. | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                               | This concern also applies to the CPPF’s nearside bus lane proposals, which do not comply with relevant design standards. Incorporating ghost islands into the scheme would further increase the overall corridor width required for delivery.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Horizontal Alignment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3.3.38 The CPPF proposals do not contain details of the proposed horizontal alignment for the central bus lane scheme. However, it is assumed that the proposed scheme would closely follow the existing alignment of Madingley Road                                                                                                                                                                                                                                                                                                                                                                                                | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                               | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3.3.40 It would not be possible to design out these non-compliant aspects without significantly deviating from the existing road alignment. As such these inherent departures would need to be taken into account when considering an online solution. This would include assessing the potential cumulative effects on road safety where several relaxations and departures from standard are proposed to be used in combination.                                                                                                                                                                                                  | <i>See SJ PoE and engineering drawings</i>                                                                                                                                                                                                                                                                                                                               | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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| 3.3.41 A double white line system has been introduced along sections of Madingley Road as a mitigation measure for the various departures present. The double white line system prohibits drivers from overtaking where forward visibility levels are below the requisite overtaking sight distances for the design speed. <b>Figure 3-8</b> below shows the tight bend and double white line system present on the section adjacent to Madingley Woods.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i>[Commentary not requiring a response]</i>                                                                                                                           | The previous comment remains valid. This provides additional context on the numerous inherent departures that must be considered alongside any new departures introduced by the CPPF's alternative scheme.                                                                                   |
| 3.3.42 Some of the existing horizontal radii along Madingley Road would make it impossible to meet the same passenger comfort criteria <sup>6</sup> that has been applied to the design of the proposed offline CtoC scheme. This would result in a reduced passenger experience when compared to the proposed off-road scheme.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>This is a complete non-point as the Madingley Road is already used by numerous buses without any reported incidents of discomfort or loss of passenger comfort.</i> | Providing an attractive and comfortable service will play an important part of encouraging modal shift.                                                                                                                                                                                      |
| <b>Summary of Non-Compliant Aspects</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                              |
| 3.3.43 As a preliminary design of the CPPF proposals has not been developed in sufficient detail it is not possible to identify all the potential relaxations and departures from standard (i.e. non-compliant aspects) that may be required. However, some of the key issues identified which are likely to require relaxations or departures include but are not limited to: <ul style="list-style-type: none"> <li>• Non-standard proposed central bus lane incorporating filter pockets;</li> <li>• Sub-standard lane widths;</li> <li>• Sub-standard horizontal radii;</li> <li>• Sub-standard transition curves;</li> <li>• Reduced separation between the shared use path and the edge of the carriageway;</li> <li>• Omission of a physical island or hatch markings between the central (offside) bus lane and opposing flow of traffic;</li> <li>• Omission of hard strips;</li> <li>• Omission of major road central treatment (ghost islands); and</li> <li>• Sub-standard stopping site distances and junction visibility.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>These plans are now provided.</i>                                                                                                                                   | The plans provided confirm that the proposed CPPF scheme does not comply with the relevant design standards.                                                                                                                                                                                 |
| 3.3.44 Many of the identified non-compliant aspects are related to the same locations and are within the immediate approaches to a junction or access. As such, they are likely to result in a significant number of issues being identified in the Road Safety Audit (RSA). The potential impacts of any interacting departures would need to be appraised collectively, as part of the Departure from Standard application process and it is unlikely that technical approval would be granted to implement an online solution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <i>Please refer to the Civilistix drawings (SJ proof Appendix F) to see how departures from standards have been justified.</i>                                         | The previous comment remains valid. Given the route context, the cumulative effect of overlapping departures near junction approaches, the limited justification provided, and the absence of meaningful mitigation measures, it is unlikely that all required departures would be approved. |
| <b>Road Safety Concerns</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                              |
| 3.4.6 The high-level safety review has identified several potential road safety issues associated with the proposed layout described in the CPPF report i.e. a central inbound bus lane and removal of existing right turning facilities. These concerns include: <ul style="list-style-type: none"> <li>• Non-standard layout could potentially lead to driver confusion.</li> <li>• Potential conflicts between buses and right turning vehicles where the proposed "filter pockets" create areas with no clear priority for right turning traffic or buses.</li> <li>• Vehicles turning right from the mainline which choose to wait in the general traffic lanes would impede the progress of general traffic and this could lead to frustrated drivers using the central bus lane to overtake.</li> <li>• Buses heading eastbound in a central bus lane would meet head on with any Westbound vehicles turning right from the mainline that are waiting in a "Filter Pocket" located within the Bus Lane. This could result in a head on collision, or the progress of the inbound bus would be impeded and would also limit visibility of traffic in the nearside general traffic lane for the driver completing the right turn manoeuvre.</li> <li>• Eastbound vehicles turning right from the mainline which choose to wait in the general traffic lanes, resulting in buses approaching from the rear being positioned in their blind spot.</li> <li>• Drivers exiting side roads or private accesses may block the path of active travel users while waiting for an appropriate gap to turn right.</li> <li>• Drivers focused on identifying a gap in the traffic to complete a right turn may pull out in front of or potentially collide with active travel users.</li> <li>• Potential abuse of the bus lane for overtaking or early commencement of right turn manoeuvres by frustrated motorists.</li> <li>• Lack of separation between the central bus lane and opposing traffic lane as recommended in the TSM may result in conflicts and potential head on collisions between buses and opposing traffic that intentionally or mistakenly enters the bus lane.</li> <li>• Potential use of central bus lane by cyclists unless prohibited placing them in a vulnerable position in a high speed road environment.</li> </ul> | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                             | Noted                                                                                                                                                                                                                                                                                        |

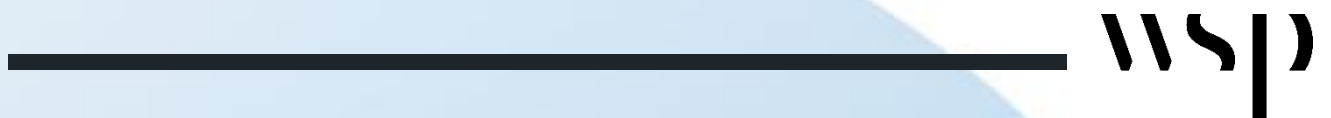
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| 3.4.8 One of the key safety concerns that has been identified in relation to the CPPF proposals is the potential for conflicts between right turning vehicles, buses and active travel users. It is considered highly likely that this would be identified as a potential road safety issue through the RSA process and that recommendations would be made to eliminate or mitigate this issue.                                                                                                                                                                                                                              | <i>This risk would be mitigated by reducing the speed limit and narrowing lanes to encourage compliance. It would also mitigate the existing risk for right-turning vehicles at all the junctions that do not have protected right-turn lanes, most notably at the American Cemetery where buses (including the schedule city tour bus, which calls up to every 20 minutes) and coaches turn right into the entrance off Madingley Road.</i> | There is no guarantee that the proposed speed limit changes can be secured (see Section 3.6 of the main report – Further Assessment of CPPF Alternative Scheme). The current layout's lack of protected right-turns at several junctions presents a road safety risk. Moreover, the absence of such features at some existing accesses does not justify their removal where they currently exist.                                                   |
| 3.4.9 Introducing a road layout which is non-standard and is unfamiliar to the public would come with an increased risk of road traffic collisions. The proposed filter pockets provide no clear indication of priority and would position right turning vehicles in a vulnerable position where they may be at risk of a collision with buses or other vehicles completing right turn movements.                                                                                                                                                                                                                            | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                                                                                                                                                                                                                                                                   | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3.4.11 The roundabout at the western end of Madingley Road would afford drivers an opportunity to make U-turns. However, there are no similar opportunities to the east of the existing accesses and junctions along Madingley Road. As such, the option to prohibit right turns does not appear to be viable as it is likely to result in round trips of over 2km which would not be considered acceptable.                                                                                                                                                                                                                 | <i>We are not proposing to ban right turns.</i>                                                                                                                                                                                                                                                                                                                                                                                              | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3.4.12 The existing speed limits along Madingley Road are appropriate considering the existing characteristics of the road, they also align with CCC's current Speed Limit Policies. An increase in the overall carriageway width along Madingley Road is likely to result in increased speeds as the level of constraint imposed by the cross section would be significantly reduced. As such, any reductions proposed to the existing speed limits are unlikely to be approved by the Highway Authority or supported by the local constabulary.                                                                            | <i>The proposed reduction in the speed limit from just west of the Crome Lea Business Park entrance is paired with a reduction in lane widths to encourage compliance.</i>                                                                                                                                                                                                                                                                   | There is no guarantee that the proposed speed limit changes can be secured (see Section 3.6 of the main report – Further Assessment of CPPF Alternative Scheme). Given the route context, reducing lane widths alone is unlikely to ensure compliance with a 40 mph speed limit.                                                                                                                                                                    |
| <b>Potential Engineering Difficulties - Drainage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3.7.1 The existing drainage infrastructure along Madingley Road is unlikely to have sufficient spare capacity to accommodate the additional runoff generated by the increased impermeable areas created by the CPPF proposed scheme.                                                                                                                                                                                                                                                                                                                                                                                         | <i>The CPPF scheme is indicative and further work would need to be carried out at detailed design stage to determine the need for additional drainage works. However, additional online storage could be provided in the form of oversized pipes fitted with hydro-brakes to ensure the existing discharge rates are retained.</i>                                                                                                           | Lack of a feasible drainage strategy which would be acceptable to the Highway Authority and the Lead Local Flood Authority represents a real risk to the viability of the CPPF scheme (see section 3.7 of the main report - Further Assessment of CPPF Alternative Scheme).                                                                                                                                                                         |
| 3.7.2 The CPPF report makes no mention of a drainage strategy, so it appears that this aspect of the design and the potential land requirements and associated environmental impacts have not been considered.                                                                                                                                                                                                                                                                                                                                                                                                               | <i>See above and the PoE of SJ and DW</i>                                                                                                                                                                                                                                                                                                                                                                                                    | See above.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3.7.3 It is highly likely that additional land will be required to deliver the drainage infrastructure required for the scheme including the provision of attenuation basins, ponds and ditches etc. to mitigate any increase in flood risk.                                                                                                                                                                                                                                                                                                                                                                                 | <i>See above and the PoE of SJ and DW</i>                                                                                                                                                                                                                                                                                                                                                                                                    | See above.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3.7.5 Minimising the number of drainage inlets reduces the time taken to maintain them which brings both health and safety and cost saving benefits. If hard strips were to be omitted from the proposed cross section, this would only result in a width reduction of 1m as the buffer/verge width between the active travel facility would need to be increased by 1m to maintain suitable separation from the running lane.                                                                                                                                                                                               | <i>See above and the PoE of SJ and DW</i>                                                                                                                                                                                                                                                                                                                                                                                                    | Narrow traffic lanes without hard strips are likely to cause surface water to flow into the running lanes, especially in areas with full superelevation. This increases the risk of aquaplaning. Where separation between the running lanes and shared use paths or footways has been omitted, road spray from passing vehicles will more frequently affect pedestrians and cyclists. Reducing gully spacing to mitigate this would be impractical. |
| 3.7.6 There are sections of open drainage ditches located to the back of the existing shared use path on the south side of Madingley Road. It appears that it would be necessary to culvert sections of these existing ditches to re-provide the existing or improved walking and cycling facilities. Culverting the ditches would result in loss of flood storage capacity which may lead to an increased risk of surface water flooding especially when combined with the significant increase in impermeable area. Alternatively, the ditches could be re-provided but this would require additional land to be acquired. | <i>See above and the PoE of SJ</i>                                                                                                                                                                                                                                                                                                                                                                                                           | Previous comment stands.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3.7.7 The Topographic Survey has picked up a section of an existing ditch that would be impacted by any widening to the north in the vicinity of Madingley Wood. If this ditch is lost this will result in loss of flood storage capacity. Re-providing the ditch would require additional land and increase the potential impacts on Madingley Wood.                                                                                                                                                                                                                                                                        | <i>See above and the PoE of SJ and DW</i>                                                                                                                                                                                                                                                                                                                                                                                                    | Previous comment stands.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3.7.9 The indicative cross sections presented in the CPPF proposals do not make any provision for these types of features which play an important part in the SuDS treatment train and help to manage flows and improve the quality of highway surface water runoff.                                                                                                                                                                                                                                                                                                                                                         | <i>See above and the PoE of SJ and DW</i>                                                                                                                                                                                                                                                                                                                                                                                                    | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Potential Engineering Difficulties – Underground and Overhead Utilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3.7.10 It is assumed that no enquiries have been completed to provide an indication of the scale and costs of the potential diversionary works required to enable the proposed online scheme to be implemented.                                                                                                                                                                                                                                                                                                                                                                                                              | <i>This is noted but the cost savings accrued by not building the CtoC scheme would outstrip those needed to divert existing SU's many times over.</i>                                                                                                                                                                                                                                                                                       | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3.7.11 The proposed changes to the corridor cross section may physically impact or affect access to existing utilities for inspection and maintenance purposes, this may necessitate significant and costly diversionary works.                                                                                                                                                                                                                                                                                                                                                                                              | <i>This is again noted but the cost savings accrued by not building the CtoC scheme would outstrip those needed to divert existing SU's many times over.</i>                                                                                                                                                                                                                                                                                 | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Potential Engineering Difficulties – Pavement Condition</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

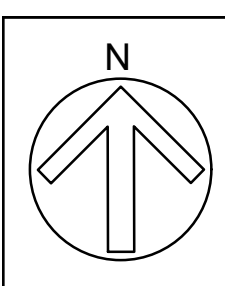
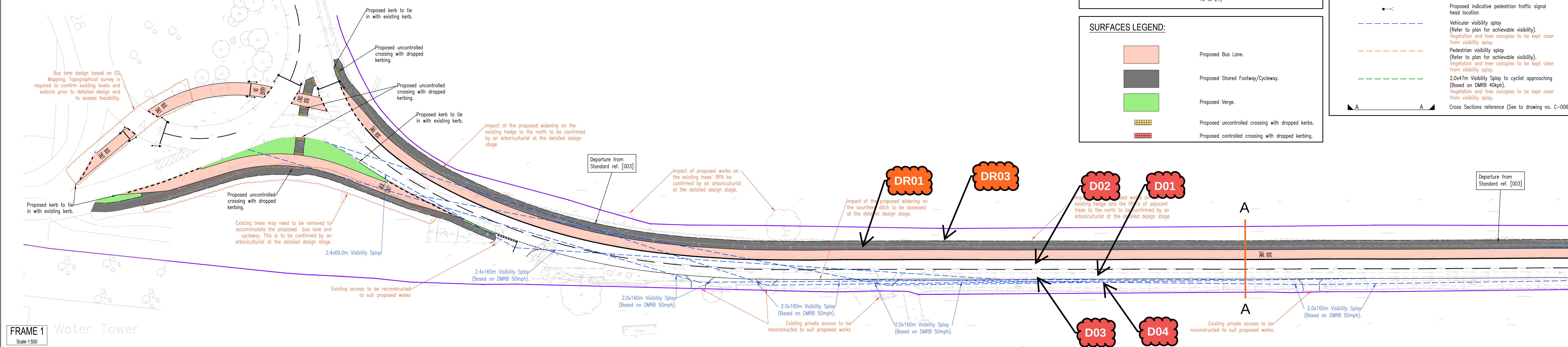
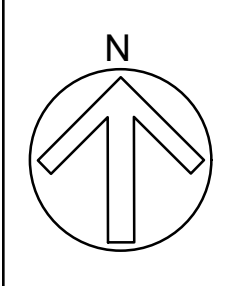
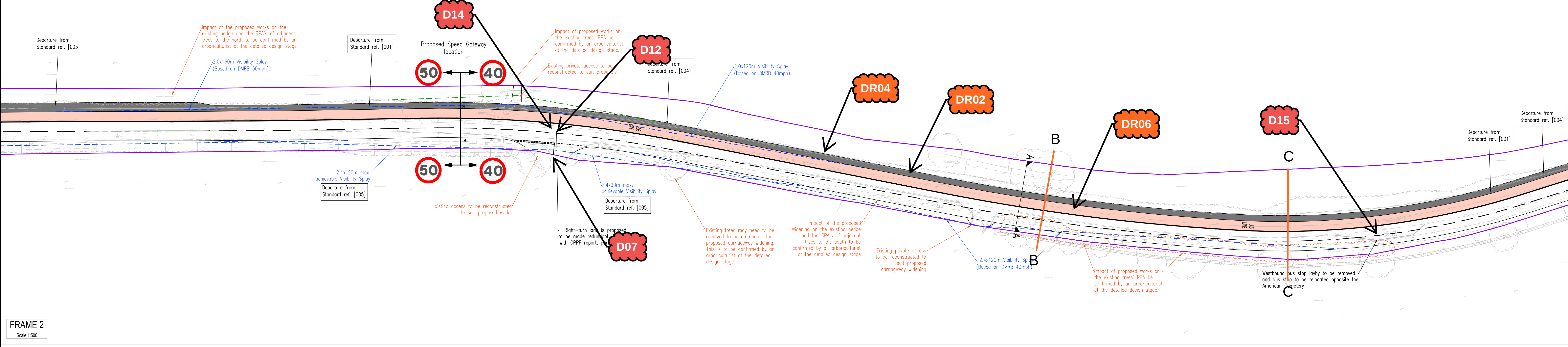
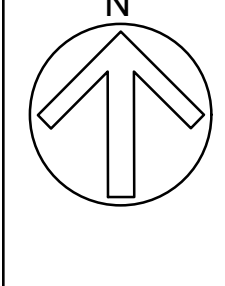
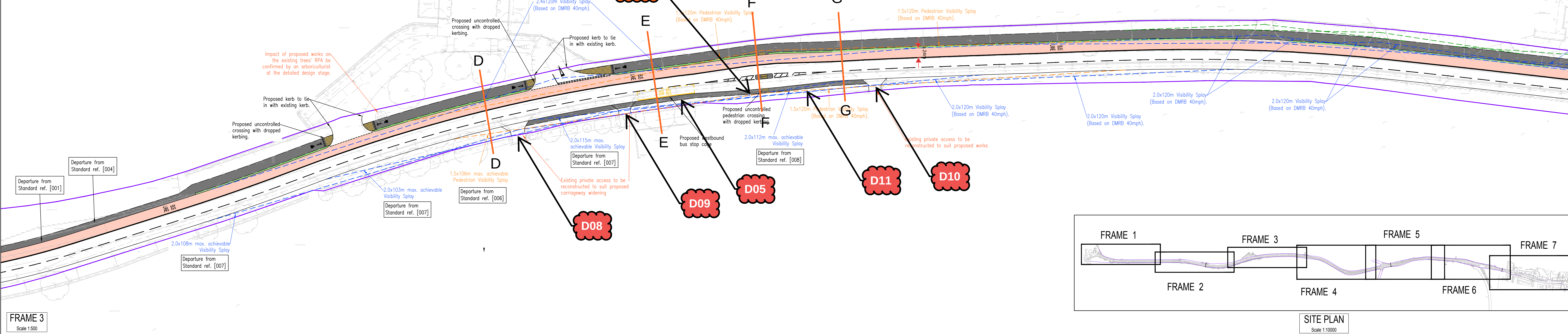
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| 3.7.13 It is assumed that no assessment of existing pavement surface or structural condition have been completed to confirm the level of intervention required to provide an acceptable residual life.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <i>It has been assumed that all of the existing pavement would be reconstructed in order to achieve the new levels and cross-falls so this is a non-point. All areas will be provided with the required residual life.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Previous comment stands. If extensive reconstruction is required to ensure long-term durability, it would entail substantial costs and prolonged traffic disruption.                                                                                                                            |
| 3.7.14 Notwithstanding the potential road safety and other issues associated with providing a narrow lane in a high-speed road environment, intervention measures may be required to ensure that the channelised traffic flows resulting from the proposed narrow traffic lanes proposed by CPPF would not lead to excessive rutting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <i>See SJ PoE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Previous comment stands                                                                                                                                                                                                                                                                         |
| <b>Buildability</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                 |
| 3.8.1 A single lane busway provides very little working space, and either needs an adjacent lane closure, or for the nearside option the verge widened, and trees removed to provide an off-road access.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>Off-road access is not required to maintain a nearside bus lane, as indeed exists already in many parts of Cambridge.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Previous comment stands                                                                                                                                                                                                                                                                         |
| 3.8.4 The construction would need to be carried out after traffic management for utility diversions and works to lay new surface water sewers, this is potentially four to six months of lane closures with traffic lights.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>See SJ PoE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Previous comment stands                                                                                                                                                                                                                                                                         |
| <b>Environmental Appraisal</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                 |
| 3.10.1 The location of the Madingley Wood SSSI makes the route inherently sensitive to potential disturbance impacts to its wildlife communities; with the highly protected barbastelle bats in particular potentially vulnerable to impact. It is assumed that the CPPF scheme could be retained within the existing northern kerbline and that direct landtake to the wood could be avoided. Notwithstanding this, Natural England expressed concerns with regard to the use of an online option along Madingley Road in correspondence to the GCP in January 2018                                                                                                                                                                                                                                                                                                                                                              | <i>This comment displays a lack of understanding of the degree of stand-off between the existing kerbline and the SSSI alongside Madingley Wood. Beyond that, the scheme has in any event been designed to avoid direct or indirect impact on Madingley Wood SSSI. This has involved slightly re-aligning the carriageway within the highway boundary to accommodate the bus lane and shared foot/cycle way without impact on trees and woodland contiguous with the SSSI. Consequently, the scheme in this section does not extend northward beyond the line of the existing northern carriageway kerb through most of this section and where it does only very minor trimming back of vegetation (and no tree loss) is required to accommodate build and sight lines. The insertion of the busway and active travel path actually increases the buffer between existing road traffic and the SSSI/woodland.</i> | The previous comment remains valid. The additional cross sections in Appendix D demonstrate that impacts are more pronounced where the carriageway is superelevated, requiring extra space to accommodate the scheme.                                                                           |
| 3.10.2 The route's passage past the Grade I Registered Park and Garden of the American Cemetery would have potential impacts on the setting of this highly protected heritage designation, as it would also for the Grade II* listed memorial and attached walls, steps and pool surround. It is assumed that direct landtake within the curtilage of these two designated heritage assets could be avoided, although this is not certain, and were it required, it is assumed that Historic England would, based on the advice they provided to the GCP in February 2018 [Appendix D] with respect to options along Madingley Road, also have concerns.                                                                                                                                                                                                                                                                          | <i>See comments above</i><br><br><i>Note: HE's letter to GCP Feb 2018 raises equal concerns about the off-road route.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Previous comment stands                                                                                                                                                                                                                                                                         |
| 3.10.4 To avoid impacts to the cemetery and SSSI, the more southerly alignment would also require the loss of mature trees and hedgerows to the south, east and west of the SSSI that are likely to be important habitat features for commuting and foraging barbastelle and other bat species as they exit the woodland, restricting their ability to move through the landscape. The loss of tall canopy at this location could also reduce the height that bats cross the existing carriageway if they use the canopy to cross at height over the road, which is currently being investigated. This could increase the risk of collision with road traffic. Widening the carriageway at this location could also affect the behaviour of bats crossing the carriageway, increasing the number of traffic lanes and overall width that they need to traverse. This could also increase the risk of collisions with road traffic | <i>The southerly adjustments to avoid impact on Madingley Wood SSSI and related vegetation may occasion the loss of a very small number of (c.5) mature ash trees along the highway boundary hedgerow west and east of the Woodfield Lodge entrance (some of which show signs of Chalara infection), but the low and box trimmed hedgerow on the highway boundary east of Woodfield Lodge and the other trees along this section should be able to be retained. There will be no substantive effect on high canopy or crossing points for bats. Even where there is no current canopy level connection or occluded gap over the highway, the carriageway widening will be de minimis, adding no more than a tiny fraction of a second to the time it would take a commuting bat to cross.</i>                                                                                                                     | The previous comment remains valid. Relocating the shared use path to the north side would significantly affect the American Cemetery, which is unlikely to be acceptable. As a result, additional widening to the south—beyond what is currently shown in the CPPF drawings—would be required. |
| 3.10.6 In relation to Phase 1 only, the assessment has calculated that the CPPF Alternative would produce 3,890 tonnes of carbon dioxide equivalent (tCO <sub>2</sub> e). This is compared with 14,910 tCO <sub>2</sub> e for Phase 1 of the proposed CtoC Scheme, representing a total of 26% of the Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>See Proof of Dr Louise Hirst</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Previous comment stands                                                                                                                                                                                                                                                                         |
| 3.10.7 Once construction of the full CtoC Scheme is considered from Cambourne to Cambridge, the infrastructure greenhouse gas emissions from the CPPF Alternative (incorporating the Phase 2 works and the P&R) is estimated to be 18,110 tCO <sub>2</sub> e compared with the CtoC Scheme (Phase 1, Phase 2 and the P&R) which is estimated to be 29,130 tCO <sub>2</sub> e [see Appendix C of this Note]. When compared to the CtoC Scheme, the potential infrastructure greenhouse gas emissions saving from an equivalent end to end route incorporating the CPPF Alternative is estimated to be 38%.                                                                                                                                                                                                                                                                                                                         | <i>See Proof of Dr Louise Hirst</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Previous comment stands                                                                                                                                                                                                                                                                         |
| <b>Chapter 4 – Assessment of April 2025 CPPF Scheme</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                 |
| <b>Proposed lane widths</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                 |
| 4.3.6 The ATE tool does not include an option in the Street Function drop down box which fits the context of Madingley Road. As such, the traffic lane widths and absolute minimum cross-sections indicated by the tool do not draw upon the relevant standards i.e. DMRB Standard CD 127 Cross-sections and headroom's [CD9-09]. This results in the tool suggesting inappropriate (substandard) traffic lane widths because the tool is not applicable in this context.                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>See main PoE.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Previous comment stands                                                                                                                                                                                                                                                                         |

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| 4.3.7 The ATE Tool also fails to make any provision for level differences introduced at the interfaces with the existing ground levels due to cross falls on the carriageway, verges and active travel path, making the overall desirable and absolute minimum cross-sections generated by the Tool misleading, as a much wider corridor would be required to make them practically feasible.                                                                                                                                                        | <i>See SJ PoE.</i>                                                                                                                                                                        | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4.3.8 Providing narrow lanes and omitting hard strips from any proposed improvements to Madingley Road is likely to result in: <ul style="list-style-type: none"> <li>Increased accident risk</li> <li>Reduction in capacity</li> <li>Reduction in journey time reliability</li> <li>Reduced network resilience</li> </ul>                                                                                                                                                                                                                           | <i>These assertions are disputed</i>                                                                                                                                                      | The DMRB reflects the collective expertise of the Overseeing Organisations, their agents, supply chain partners, and industry bodies. It sets out requirements and guidance based on research, practical experience in constructing and operating motorways and trunk roads, and compliance with legislation. The specified use of 3.65m traffic lanes and 1m hard strips is grounded in this experience, and departing from these standards is likely to compromise all associated design and safety criteria. |
| 4.3.9 Narrow lanes and no hard strips will reduce the carriageway width, limiting safe traffic management for planned and emergency maintenance on the highway or utilities.                                                                                                                                                                                                                                                                                                                                                                         | <i>The comment ignores the existence of a new adjacent bus lane. Compared with now, this would increase the available carriageway width for managing roadworks and traffic incidents.</i> | While this is acknowledged, using the bus lane for planned works would compromise the reliability of bus services. In the event of unplanned incidents—such as a vehicle breakdown in the westbound lane—the bus lane would not offer a viable mitigation without the presence of relevant authorities to implement emergency traffic management measures, potentially causing significant disruption to the Strategic Road Network (SRN).                                                                      |
| 4.3.10 Narrow lanes would make it more difficult for traffic to safely pass a broken-down vehicle potentially leading to lengthy delays.                                                                                                                                                                                                                                                                                                                                                                                                             | <i>See previous comment.</i>                                                                                                                                                              | See previous comment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>Relocating active travel path to the north side of Madingley Road and widening the carriageway to the south</i>                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4.4.4 Several of the mature trees along the south side of Madingley Road have canopies that extend near or over the southern edge of the carriageway. This suggests that the construction of any carriageway widening to the south would impact the root protection areas of the existing trees. The use of no-dig construction methods in this area would not be viable given the need to tie into the existing carriageway levels.                                                                                                                 | <i>See DW PoE</i>                                                                                                                                                                         | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4.4.5 Widening the carriageway to the south would also move the live traffic lanes much closer to the existing large diameter trees. Any of the larger trees that were not impacted by the carriageway widening and that were still deemed to be viable, would be considered a potential hazard and would need to be included in a Road Restraint Risk Assessment Process (RRRAP).                                                                                                                                                                   | <i>See SJ PoE</i>                                                                                                                                                                         | Previous comment stands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4.4.7 Given the proximity of the trees to the edge of the carriageway in the revised layout it is unlikely there would be sufficient space to provide a vehicle restraint system, leaving removal of the trees the only viable option                                                                                                                                                                                                                                                                                                                | <i>A VRS is not required in the locations where trees are in close proximity due to either levels or the proposed 40mph Speed Limit.</i>                                                  | There is no guarantee that the proposed speed limit changes can be secured (see Section 3.6 of the main report – Further Assessment of CPPF Alternative Scheme). Collisions involving trees consistently result in severe outcomes across all routes. The proposed reduction in lane widths, combined with the omission of hard strips and substandard verge widths, increases the likelihood of errant vehicles striking existing trees.                                                                       |
| <i>Potential departures for substandard active travel facilities</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4.5.4 The 3.25m wide lanes proposed by CPPF sit within the range of lane widths not recommended in LTN 1/20 [CD8.23, page 74, paragraph 7.2.5] as they could result in unsafe overtaking of cyclists                                                                                                                                                                                                                                                                                                                                                 | <i>The provision of an adjacent shared-use path, which will be lightly trafficked, means that no-one need cycle in the bus lane.</i>                                                      | The CPPF's proposed scheme significantly compromises the quality of active travel provision, creating a high risk that cyclists may opt to use the bus lane instead.                                                                                                                                                                                                                                                                                                                                            |
| <i>Offside bus lane and filter pockets</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4.6.1 The updated CPPF report lacks specific plans or detailed explanations on the proposed filter pockets for a central bus lane.                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>These plans are now provided.</i>                                                                                                                                                      | Previous comment stands. Latest plans do not accurately represent the spatial requirements of the proposed scheme. Key elements such as verges and the interface between proposed and existing ground levels are omitted.                                                                                                                                                                                                                                                                                       |
| 4.6.3 What CPPF is proposing appears to be very different to a conventional ghost island arrangement. The CPPF report implies that the filter pockets they propose are effectively areas within the live central bus lane which could be used by right turning traffic to wait for a gap in the opposing general traffic lane to complete a right turn manoeuvre. No explanation is provided as to who would have priority within the filter pockets or how this unconventional arrangement could be regulated effectively to ensure safe operation. | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.6.4. The filter pocket arrangement proposed by CPPF has the potential to place right-turning vehicles in direct conflict with other right- turn movements and high-speed buses, which could lead to collisions or hinder the progress of inbound buses.                                                                                                                                                                                                                                                                                            | <i>A central bus lane is no longer part of the scheme.</i>                                                                                                                                | Noted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.6.5 The CPPF report asserts that it is only the Crome Lea Business Park access that is provided with a ghost island and fails to acknowledge the existing ghost island at Madingley Rise. The original CPPF proposals for a central (offside) bus lane suggested that this Ghost Island and the associated hatching in the centre of the carriageway could be utilised to deliver a central bus lane.                                                                                                                                              | <i>See response above.</i>                                                                                                                                                                | The CPPF plans continue to overlook the potential impacts of removing the ghost island junctions serving Madingley Rise and Crome-lea Business Park, which could have significant operational and safety implications.                                                                                                                                                                                                                                                                                          |

# **Appendix B**

## **Mark Up of CPPF Scheme Drawings**





**GENERAL LEGEND:**

Indicative public highway boundary extent.  
(Taken from Alternative in-highway proposal for high quality Combourne-Cambridge public transport scheme report, version 6E, 11 April 2025, Figure 19 to 21)

**SURFACES LEGEND:**

- Proposed Bus Lane.
- Proposed Shared Footway/Cycleway.
- Proposed Verge.
- Proposed uncontrolled crossing with dropped kerbs.
- Proposed controlled crossing with dropped kerbing.

**GEOMETRY LEGEND:**

- Proposed kerbline
- Proposed edging kerb
- Proposed indicative vehicular traffic signal head location
- Proposed indicative pedestrian traffic signal head location
- Vehicular visibility splay  
(Refer to plan for achievable visibility).  
Vegetation and tree canopies to be kept clear from visibility splay.
- Pedestrian visibility splay  
(Refer to plan for achievable visibility).  
Vegetation and tree canopies to be kept clear from visibility splay.
- 2.0x47m Visibility Splay to cyclist approaching  
(Based on DMRB 434ph).  
Vegetation and tree canopies to be kept clear from visibility splay.
- Cross Sections reference (See to drawing no. C-006)

- DO NOT SCALE**
- GENERAL:**
- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
  - All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards
  - Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
  - The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
  - All products used are to be CE marked in accordance with the Construction Products Directive CPO/BS/106/EC.
  - The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
  - Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
  - This drawing should not be used for setting out
  - All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be aply verified prior to any works commencing

**Mark-up Key:**

- A Cross section locations
- A Departure Reference
- R01 Relaxation Reference
- DR01 Deviation from Recommendation (Good practice)

|     |          |    |                                             |     |     |
|-----|----------|----|---------------------------------------------|-----|-----|
| D   | 11/09/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| C   | 01/06/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| B   | 21/07/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| A   | 02/07/25 | FR | FIRST ISSUE                                 | DM  | DM  |
| REV | DATE     | BY | SUMMARY OF CHANGE                           | CHK | APP |

**FOR INFORMATION**

**CIVILISTIX**  
Alfa Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)  
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com  
www.civilistix.com

CLIENT: Cotton Parish Council

ARCHITECT:

PROJECT: CPPF Proposed Madingley Hill Bus Lane, Cambridge

DRAWING TITLE: Proposed General Arrangement Plan Sheet 1 of 3

SCALE @ A0: As shown

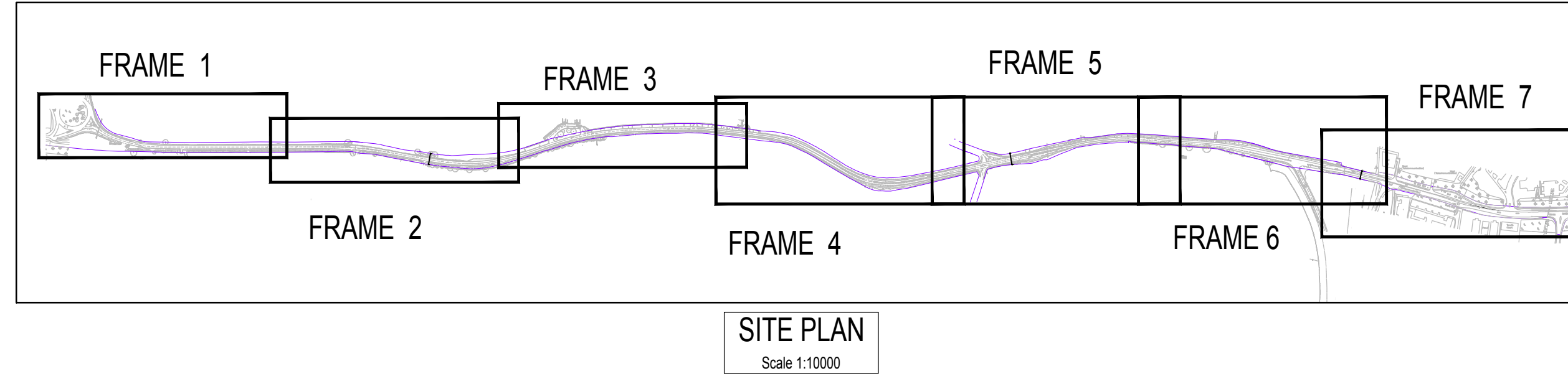
CHECKED/ APPROVED BY: DM

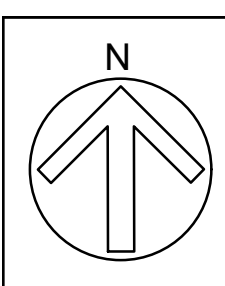
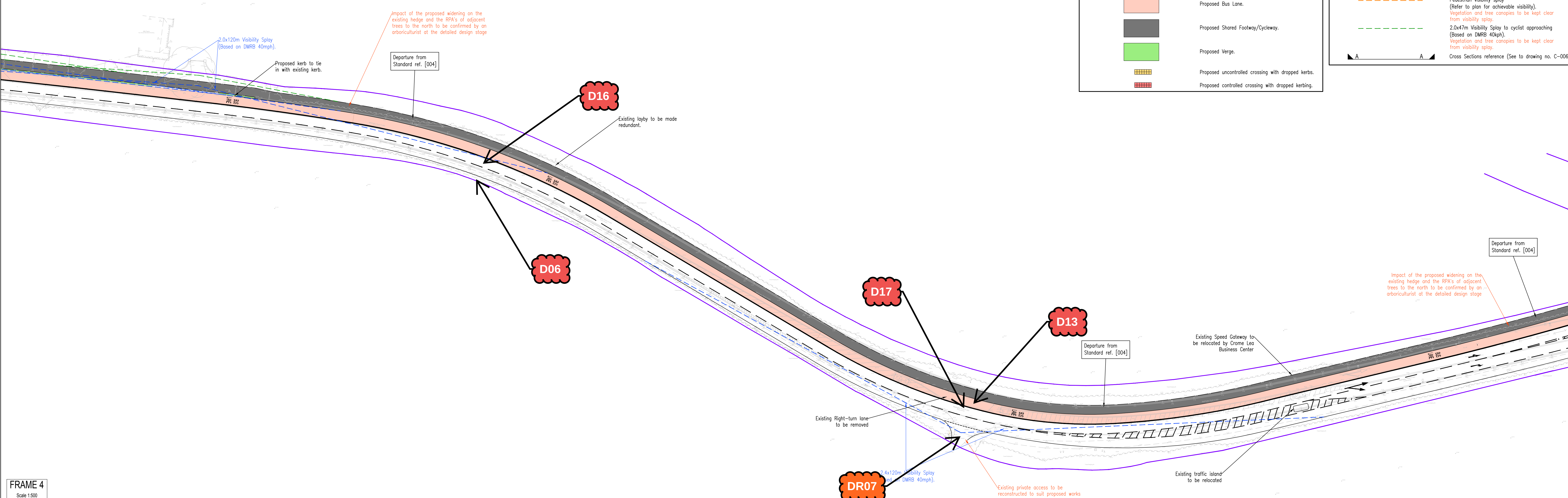
DATE: July 2025

PROJECT NO: 2-234

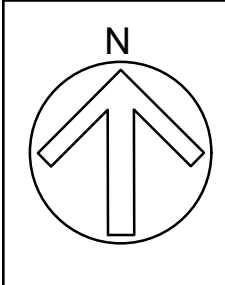
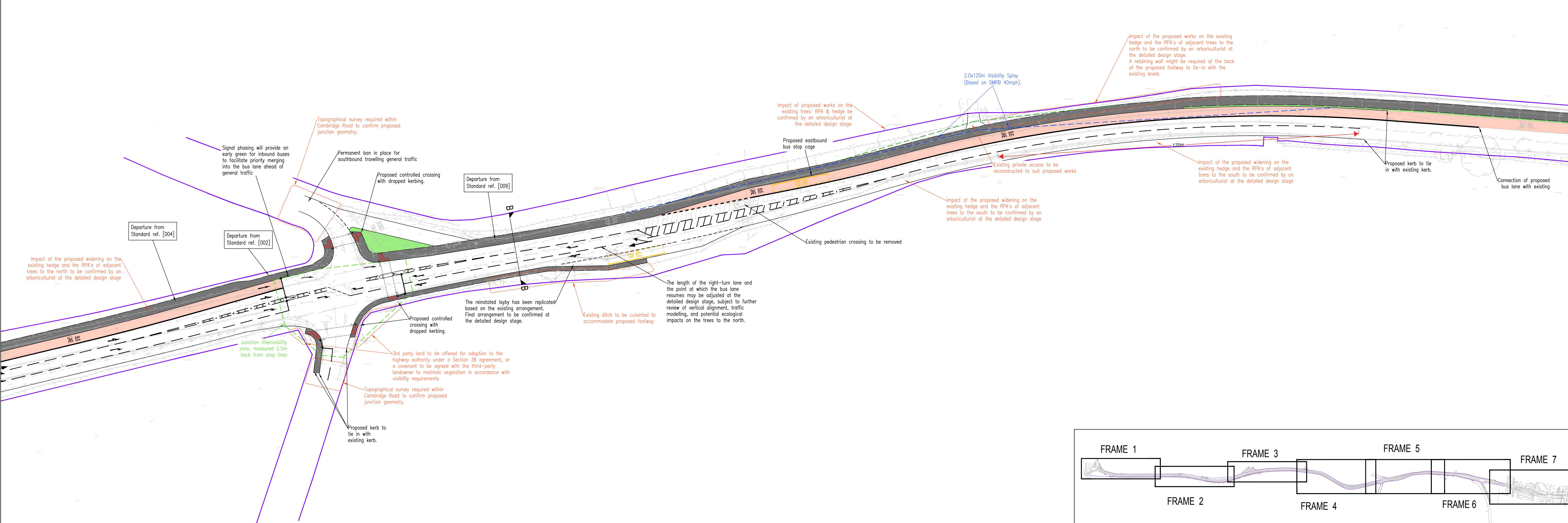
DRAWING NO: C-001

REV: D





FRAME 4  
Scale 1:500



FRAME 5  
Scale 1:500

**GENERAL LEGEND:**

Indicative public highway boundary extent.  
(Taken from Alternative in-highway proposal for high quality Combourne-Cambridge public transport scheme report, version 6E, 11 April 2025, Figure 19 to 21)

**SURFACES LEGEND:**

- Proposed Bus Lane.
- Proposed Shared Footway/Cycleway.
- Proposed Verge.
- Proposed uncontrolled crossing with dropped kerbs.
- Proposed controlled crossing with dropped kerbing.

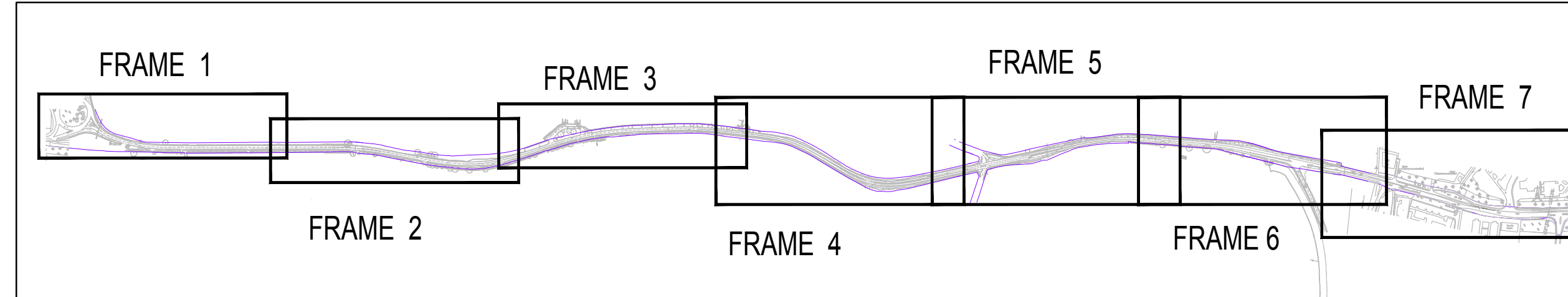
**GEOMETRY LEGEND:**

- Proposed kerbline
- Proposed edging kerb
- Proposed indicative vehicular traffic signal head location
- Proposed indicative pedestrian traffic signal head location
- Vehicular visibility splay  
(Refer to plan for achievable visibility).
- 2.0x120m Visibility Splay to cyclist approaching  
(Based on DMRB 40mph).
- 2.0x47m Visibility Splay to pedestrian approaching  
(Based on DMRB 40mph).
- Cross Sections reference (See to drawing no. C-006)

- DO NOT SCALE**
- GENERAL:**
- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
  - All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards
  - Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
  - The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
  - All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
  - The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
  - Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
  - This drawing should not be used for setting out
  - All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be apply verified prior to any works commencing

**Mark-up Key:**

- A Cross section locations
- D01 Departure Reference
- R01 Relaxation Reference
- DR01 Deviation from Recommendation (Good practice)



SITE PLAN  
Scale 1:10000

| REV | DATE     | BY | SUMMARY OF CHANGE                           | CHK | APP |
|-----|----------|----|---------------------------------------------|-----|-----|
| D   | 11/09/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| C   | 01/09/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| B   | 21/07/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| A   | 02/07/25 | FR | FIRST ISSUE                                 | DM  | DM  |

**FOR INFORMATION**

**CIVILISTIX**

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Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com  
www.civilistix.com

CLIENT: Coton Parish Council

ARCHITECT: -

PROJECT: CPPF Proposed Madingley Hill Bus Lane, Cambridge

DRAWING TITLE: Proposed General Arrangement Plan Sheet 2 of 3

SCALE @ A0: As shown

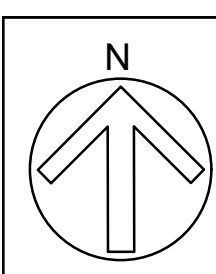
CHECKED / APPROVED BY: DM

DATE: July 2025

PROJECT NO: 2-234

DRAWING NO: C-002

REV: D



#### GENERAL LEGEND:

Indicative public highway boundary extent.  
(Taken from Alternative in-highway proposal for high quality Combourne-Cambridge public transport scheme report, version 6E, 11 April 2025, Figure 19 to 21)

#### SURFACES LEGEND:

Proposed Bus Lane.  
Proposed Shared Footway/Cycleway.  
Proposed Verge.  
Proposed uncontrolled crossing with dropped kerbs.  
Proposed controlled crossing with dropped kerbing.

#### GEOMETRY LEGEND:

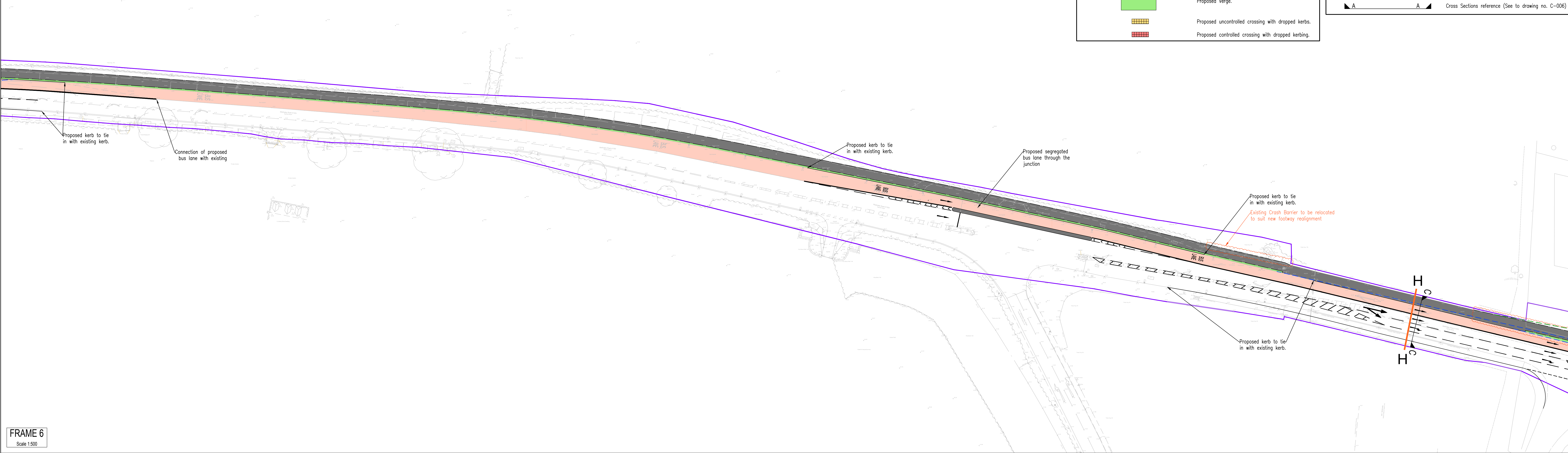
Proposed kerbline  
Proposed edging kerb  
Proposed indicative vehicular traffic signal head location  
Proposed indicative pedestrian traffic signal head location  
Vehicular visibility splay  
(Refer to plan for achievable visibility).  
Vegetation and tree canopies to be kept clear from visibility splay.  
Pedestrian visibility splay  
(Refer to plan for achievable visibility).  
Vegetation and tree canopies to be kept clear from visibility splay.  
2.0x4.7m Visibility Splay to cyclist approaching  
(Based on DMRB 40mph).  
Vegetation and tree canopies to be kept clear from visibility splay.  
Cross Sections reference (See to drawing no. C-006)

#### DO NOT SCALE

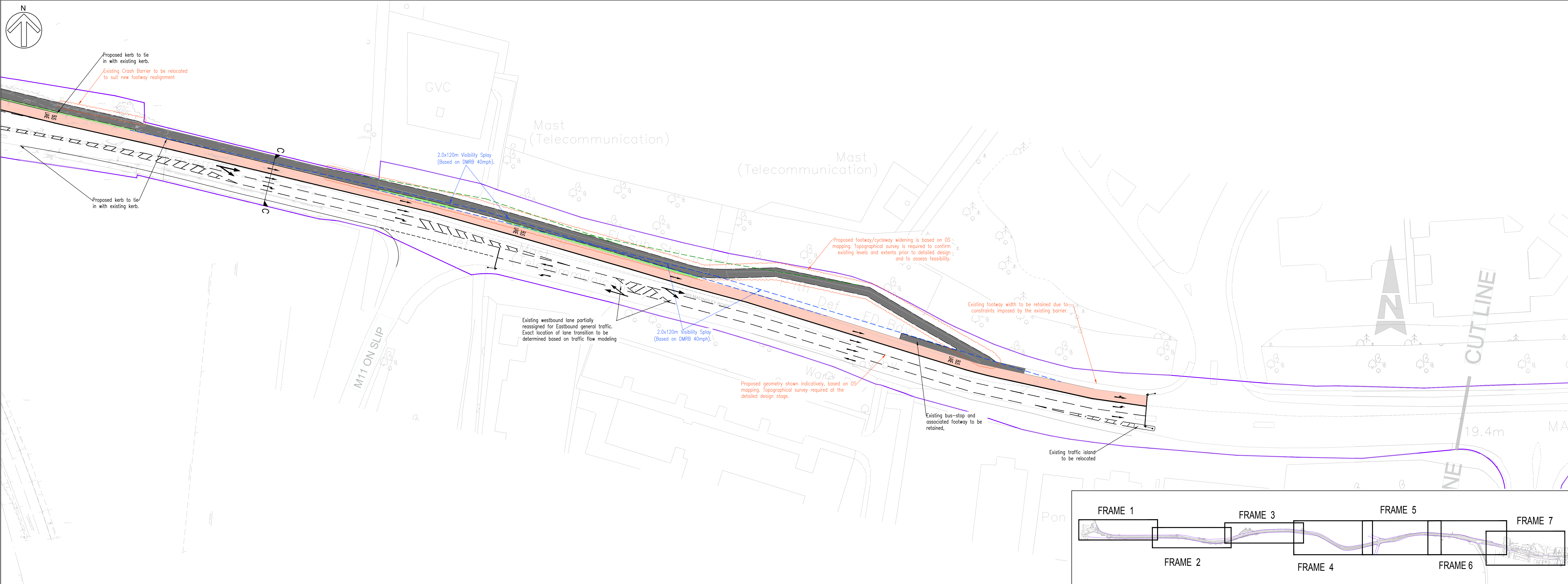
- GENERAL:
- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
  - All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards
  - Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
  - The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
  - All products used are to be CE marked in accordance with the Construction Products Directive CPD/BS/106/ESC.
  - The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
  - Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
  - This drawing should not be used for setting out.
  - All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be apply verified prior to any works commencing

#### Mark-up Key:

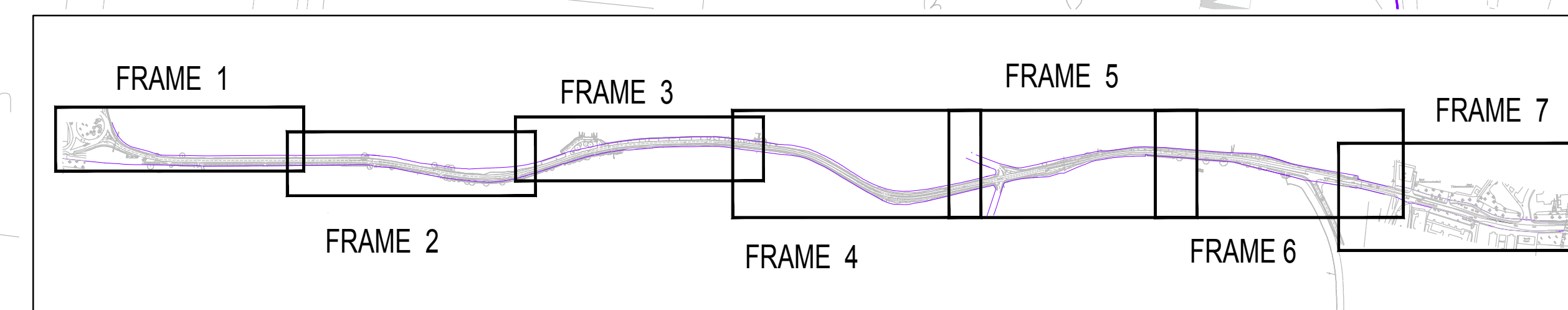
- A  
A  
D01  
R01  
DR01
- Cross section locations  
Departure Reference  
Relaxation Reference  
Deviation from Recommendation (Good practice)



FRAME 6  
Scale 1:500



FRAME 7  
Scale 1:500



SITE PLAN  
Scale 1:10000

| REV | DATE     | BY | SUMMARY OF CHANGE                           | CHK | APP |
|-----|----------|----|---------------------------------------------|-----|-----|
| C   | 11/06/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| B   | 21/07/25 | FR | DESIGN REVISED TO ADDRESS CLIENT'S COMMENTS | DM  | DM  |
| A   | 03/07/25 | FR | FIRST ISSUE                                 | DM  | DM  |

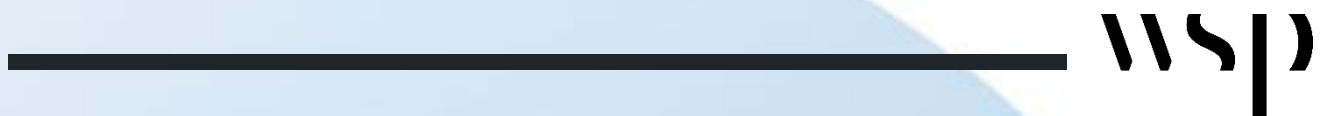
FOR INFORMATION



|                        |                                                   |
|------------------------|---------------------------------------------------|
| CLIENT:                | Coton Parish Council                              |
| ARCHITECT:             |                                                   |
| PROJECT:               | CPPF Proposed Madingley Hill Bus Lane, Cambridge  |
| DRAWING TITLE:         | Proposed General Arrangement Plan<br>Sheet 3 of 3 |
| SCALE @ A4:            | As shown                                          |
| CHECKED / APPROVED BY: | DM                                                |
| DATE:                  | July 2025                                         |
| PROJECT NO:            | 2-234                                             |
| DRAWING NO:            | C-003                                             |
| REV:                   | C                                                 |

# **Appendix C**

## **Schedule of Departures, Relaxations and Deviation from Recommendations**



GEOMETRIC RELAXATIONS & DEPARTURES FROM CAMBRIDGESHIRE COUNTY COUNCILS ADOPTED STANDARDS

**Project Number:** 70086660  
**Project Name:** Cambourne to Cambridge CtoC - CPPF Alternative Scheme - Sections B, C and D Only  
**Project Stage:** Transport and Works Act Order - Feasibility Design  
**General Notes:** Assessment of the Geometric Departures and Relaxations Required for the CPPF Alternative Scheme. Assessment includes identification of non adherence to recommendations (good practice) requiring justification and safety risk assessment.  
**Criticality**  
**Category Key:** 5 - Departures that are fundamental to the viability of the scheme.  
4 - Departures that are fundamental to the selection of options for the scheme.  
3 - Departures that are fundamental to the delivery of commitments made through consultation or statutory procedures.  
2 - Departures that are not fundamental and do not have impact on other disciplines or suppliers and can be managed through value engineering during detailed design.  
1 - Departures that are not fundamental, but have impact on other disciplines or suppliers and can be managed through value engineering during detailed design.  
0 - Departures that relate to non-compliant features incorporated into the works that do not have an approved departure application.

- Note 1**

Critical departures can represent a significant risk to the viability of a scheme. A principal outcome of the departures process is to mitigate the risk of a scheme progressing on the assumption that a critical departure is acceptable without verifying this with stakeholders, especially the Technical Approval Authority.
- Note 2**

Examples of highly critical departures include:

1) Departures that effect the scheme extents ("red line boundary").

2) Use of a more cost effective method or material that upon which a business case or funding allocation is based.

3) Commitments made in a ministerial announcement that rely on approval of a departure.
- | REFERENCE NUMBER: | ASPECT        | DEPARTURE, RELAXATION or DEVIATION FROM RECOMMENDATION | CRITICALITY CATEGORY | COMMENT ON CRITICALITY RATING                                                                                                                                                     | LOCATION AND/OR CHAINAGE                                                                 | REFERENCE STANDARD | CLAUSE OR PARAGRAPH | DEPARTURE / RELAXATION / DEVIATION FROM RECCOMENDATION SUMMARY                                                                                                                                                                                               | POTENTIAL IMPACTS AND SAFETY RISK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|---------------|--------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D01               | Cross Section | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                     | Between the Madingley Mulch Roundabout and the M11                                       | CD 127             | 2.4                 | Non provision 1m of hardstrips                                                                                                                                                                                                                               | Reduced recovery margin: Drivers drifting towards the edge have less space to correct, increasing risk of run-off-road collisions into verges, ditches, poles, or trees. This risk is further increased where sub-standard verge widths are provided.<br><br>Cyclist vulnerability: Where cycles are permitted, absence of strips reduces the usable width and may force closer overtakes at higher speeds, raising risk of sideswipe collisions.<br><br>Kerb shyness and lane utilisation: HGVs and buses typically avoid running close to the edge line. With no hard strip, the effective running width reduces, making 3.25 m lanes feel narrower, which may increase lateral wander and conflicts especially on bends where no curve widening is provided.<br><br>Edge deterioration: Increased wheel loading at the carriageway edge leads to ravelling, cracking, and edge break-up, with higher maintenance needs.<br><br>Hard strips form part of surface water management. Without them, risk of ponding or flooding within the running lanes rises, increasing aquaplaning risk. |
| D02               | Cross Section | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                     | Between the Madingley Mulch Roundabout and the M11                                       | CD 127             | 2.2                 | Sub-standard 3.25m wide traffic lane width Westbound                                                                                                                                                                                                         | Narrow lanes in combination with the omission of hard strips significantly reduces the space available for:<br>• stopped vehicles following emergencies or mechanical failures<br>• snow and water collection<br>• for recovery following driver error or evasive action<br>• facilitate temporary traffic management<br><br>Narrow lanes can reduce lateral wander, leading to channelised traffic flows, which in turn can accelerate pavement wear and rutting. Channelised traffic concentrates wheel loads along narrow bands of the pavement, increasing stress concentration and accelerating rut formation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| D03               | Cross Section | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                     | Between the Madingley Mulch Roundabout and the M11                                       | CD 127             | 2.2                 | Sub-standard 3.25m wide traffic lane width Eastbound                                                                                                                                                                                                         | In addition to the above, if off-road cycling facilities are compromised in quality, cyclists may choose to use the carriageway instead. A 3.25 m lane does not provide sufficient space for safe overtaking, which can lead to delays, driver frustration, and hazardous manoeuvres.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| D04               | Cross Section | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                     | Westbound nearside - Locations as marked on plans                                        | CD 127             | 2.1                 | Sub-standard verge widths <2.5m provided in various locations                                                                                                                                                                                                | Reduced verge widths pose significant safety and operational risks. Narrow verges limit sightlines—especially at junctions and bends—reducing driver visibility and reaction time, and increasing the risk of collisions. They also fail to provide adequate refuge for pedestrians, cyclists, or broken-down vehicles.<br><br>Reduced verge widths result in existing large diameter trees being located closer to the running lane increasing the likelihood of them being hit.<br><br>Verges play a vital role in highway drainage, snow storage, and supporting utility infrastructure and roadside equipment. Insufficient verge space compromises the safe placement of signage, vehicle restraint systems, temporary traffic management layouts, street furniture, and drainage features—creating both safety hazards and engineering challenges.                                                                                                                                                                                                                                    |
| DR01              | Cross Section | Deviation from Recommendation                          | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making deviation from this recommendation fundamental to the scheme's viability. | Madingley Road between the Madingley Mulch Roundabout and the proposed 40mph speed limit | CD 143 & LTN 1/20  | E/3.5.1 & 6.2.11    | Non provision of the recommended 1.5m separation between the shared use route and the carriageway on a road with a speed limit greater than 40mph.                                                                                                           | The sub-standard width of the adjacent bus lane will force buses to travel closer to the shared use path. Combined with the absence of physical separation, this proximity undermines the perceived safety of the proposed facility. The increased likelihood of high-sided vehicles passing near cyclists raises the risk of air turbulence and debris being thrown from the carriageway, potentially endangering path users. This compromised design may lead more experienced cyclists to prefer the adjacent bus lane, especially given the substandard off-road provision. If the Traffic Regulation Order prohibits cyclists from using the bus lane, enforcement is unlikely—raising concerns about compliance and safety.                                                                                                                                                                                                                                                                                                                                                           |
| DR02              | Cross Section | Deviation from Recommendation                          | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making deviation from this recommendation fundamental to the scheme's viability. | Section which runs adjacent to Madingley Woods SSSI                                      | CD 143 & LTN 1/20  | E/3.5.1 & 6.2.11    | Non provision of recommended 0.5m separation between the shared use route and the carriageway on a road with a speed limit of 40mph.                                                                                                                         | As above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| DR03              | Cross Section | Deviation from Recommendation                          | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making deviation from this recommendation fundamental to the scheme's viability. | Madingley Road between the Madingley Mulch Roundabout and the proposed 40mph speed limit | LTN 1/20           | 5.5.4 & 6.5.7       | Non provision of additional width at fixed objects. Additional width of 200mm for kerb shyness and 500mm for vertical feature above 600mm high required as proposed path would be hard up against the highway boundary (fence and or hedge line).            | The effective width of the proposed shared use path is 2.3 m, restricting safe movement. New or relocated traffic signs installed within the path would create hazards and/or further reduce the effective width. This compromised design may lead experienced cyclists to favour the adjacent bus lane, especially given the poor off-road provision. If the Traffic Regulation Order prohibits cyclists from using the bus lane, enforcement is expected to be ineffective—raising serious concerns about safety and compliance. Additionally, cyclists using the narrow bus lane could disrupt bus service reliability during peak hours, as limited space may prevent safe overtaking.                                                                                                                                                                                                                                                                                                                                                                                                  |
| DR04              | Cross Section | Deviation from Recommendation                          | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making deviation from this recommendation fundamental to the scheme's viability. | Section which runs adjacent to Madingley Woods SSSI                                      | LTN 1/20           | 5.5.4 & 6.5.7       | Non provision of additional width at fixed objects. Additional width of 200mm for kerb shyness and 500mm for vertical feature above 600mm high required as proposed path would be hard up against the vegetation on the perimeter of Madingley Woods (SSSI). | The effective width of the proposed shared use path is 1.3 m, significantly restricting safe movement. If vegetation along the perimeter of Madingley Woods (SSSI) is trimmed and regularly maintained, the effective width could increase to 1.8 m—still below the recommended 2 m minimum for two standard cycles to pass safely. Installing new or relocated traffic signs within the path would introduce hazards and/or further reduce the effective width. This compromised design may lead experienced cyclists to opt for the adjacent bus lane, given the inadequate off-road provision. If the Traffic Regulation Order prohibits cyclists from using the bus lane, enforcement is likely to be ineffective—raising concerns about safety and compliance. Moreover, cyclists in the narrow bus lane could disrupt peak-hour bus service reliability, as limited space may prevent safe overtaking.                                                                                                                                                                                |
| D05               | Cross Section | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                     | South side of Madingley Road Opposite the American Cemetery                              | CD 143             | E/1.2               | Proposed Footway width of 1.5m is below the absolute minimum width of 2m.                                                                                                                                                                                    | Increased risk of vehicle encroachment or accidental mounting of the footway resulting in fatal collisions especially in poor visibility or adverse weather. Increased risk of debris or spray from vehicles hitting pedestrians. Narrow footways next to fast-moving traffic discourage walking due to fear and stress. Poor pedestrian infrastructure discourages active travel, impacting public health and sustainability goals. Increased risk of pedestrians or other users of the footway inadvertently stepping out into the carriageway this would be a risk even if small groups are arriving or departing from the proposed bus stop.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
- Page 34 of 56
- \\uk.wspgroup.com\central data\Projects\70086xxx\70086660 - C2C TWAO Stage\03 WIP\HW Highways\05 Reports\CPPF Rebuttal\Departures and Relaxations\CPPF Scheme - Relaxations & Departures from Standard

GEOMETRIC RELAXATIONS & DEPARTURES FROM CAMBRIDGESHIRE COUNTY COUNCILS ADOPTED STANDARDS

**Project Number:** 70086660  
**Project Name:** Cambourne to Cambridge CtoC - CPPF Alternative Scheme - Sections B, C and D Only  
**Project Stage:** Transport and Works Act Order - Feasibility Design  
**General Notes:** Assessment of the Geometric Departures and Relaxations Required for the CPPF Alternative Scheme. Assessment includes identification of non adherence to recommendations (good practice) requiring justification and safety risk assessment.  
**Criticality**  
**Category Key:** 5 - Departures that are fundamental to the viability of the scheme.  
4 - Departures that are fundamental to the selection of options for the scheme.  
3 - Departures that are fundamental to the delivery of commitments made through consultation or statutory procedures.  
2 - Departures that are not fundamental and do not have impact on other disciplines or suppliers and can be managed through value engineering during detailed design.  
1 - Departures that are not fundamental, but have impact on other disciplines or suppliers and can be managed through value engineering during detailed design.  
0 - Departures that relate to non-compliant features incorporated into the works that do not have an approved departure application.

- Note 1**

Critical departures can represent a significant risk to the viability of a scheme. A principal outcome of the departures process is to mitigate the risk of a scheme progressing on the assumption that a critical departure is acceptable without verifying this with stakeholders, especially the Technical Approval Authority.
- Note 2**

Examples of highly critical departures include:

1) Departures that effect the scheme extents ("red line boundary").

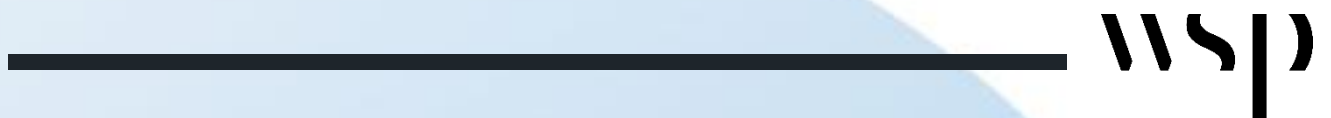
2) Use of a more cost effective method or material that upon which a business case or funding allocation is based.

3) Commitments made in a ministerial announcement that rely on approval of a departure.

| REFERENCE NUMBER: | ASPECT                         | DEPARTURE, RELAXATION or DEVIATION FROM RECOMMENDATION | CRITICALITY CATEGORY | COMMENT ON CRITICALITY RATING                                                                                                                                                                                                                                                                   | LOCATION AND/OR CHAINAGE                                                              | REFERENCE STANDARD      | CLAUSE OR PARAGRAPH | DEPARTURE / RELAXATION / DEVIATION FROM RECCOMENDATION SUMMARY                                                                                                                                                 | POTENTIAL IMPACTS AND SAFETY RISK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|--------------------------------|--------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DR05              | Cross Section                  | Deviation from Recommendation                          | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making deviation from this recommendation fundamental to the scheme's viability.                                                                                                               | South side of Madingley Road Opposite the American Cemetery                           | CD 143                  | E/1.2.1             | Non provision of recommended 0.5m separation on roads with speed limits of 40mph or less in the absence of a 1m hard strip.                                                                                    | Exacerbates the impacts and risks outlined above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| DR06              | Cross Section                  | Deviation from Recommendation                          | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making deviation from this recommendation fundamental to the scheme's viability.                                                                                                               | Throughout                                                                            | CD 127<br>TSM Chapter 3 | 9.3.1               | 3.25m wide bus lane with no widening on curves.                                                                                                                                                                | Increased likelihood of interference from general traffic in the adjacent lane. If cyclists are provided with sub-standard off-road facilities, they may opt to use the bus lane instead. This can delay buses and lead to unsafe overtaking manoeuvres, increasing the risk to cyclists. A narrow bus lane without adequate separation from off-road paths heightens the danger of cyclists being affected by air turbulence from high-sided vehicles and debris from the carriageway. Additionally, the absence of hard strips combined with a narrow lane can cause surface water flooding to extend into wheel tracks more frequently, resulting in spray that affects users of the adjacent shared-use path. |
| D06               | Stopping Sight Distance        | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Eastbound lane left hand bend, opposite existing parking lay-by                       | CD 109                  | 3.2                 | SSD on mainline reduced to 80m on the immediate approach to a junction/access                                                                                                                                  | Sub-standard sightlines—especially at junctions and bends reduce driver visibility and reaction time increasing the risk of collisions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| D07               | Junction Visibility            | Departure                                              | 5                    | The accesses have to move closer to the highway boundary to accommodate the proposed changes to the road layout making this departure fundamental to the scheme's viability.                                                                                                                    | Crome-lea Business Park                                                               | CD 123                  | 3.4                 | Junction Visibility - Visibility to the right reduced to approximately 60m                                                                                                                                     | Increased risk of collisions involving vehicles exiting from the junction/access. If the proposed 40 mph speed limit cannot be secured the 60m sight distance would be more than 3 steps below the desirable minimum SSD for a design speed of 85 kph.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| D08               | Junction Visibility            | Departure                                              | 5                    | The accesses have to move closer to the highway boundary to accommodate the proposed changes to the road layout making this departure fundamental to the scheme's viability.                                                                                                                    | Coton Court                                                                           | CD 123                  | 3.4                 | Junction Visibility - Visibility to the left reduced to approximately 103m, Visibility to the right reduced to approximately 112m.                                                                             | Increased risk of collisions involving vehicles exiting from the junction/access. If the proposed 40 mph speed limit cannot be secured the 103m sight distance would be more than 1 steps below the desirable minimum SSD for a design speed of 85 kph.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| D09               | Junction Visibility            | Departure                                              | 5                    | The accesses have to move closer to the highway boundary to accommodate the proposed changes to the road layout making this departure fundamental to the scheme's viability.                                                                                                                    | Coton Court Lodge                                                                     | CD 123                  | 3.4                 | Junction Visibility - Visibility to the left reduced to approximately 106m                                                                                                                                     | Increased risk of collisions involving vehicles exiting from the junction/access. If the proposed 40 mph speed limit cannot be secured the 106m sight distance would be more than 1 steps below the desirable minimum SSD for a design speed of 85 kph.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| D10               | Junction Visibility            | Departure                                              | 5                    | The accesses have to move closer to the highway boundary to accommodate the proposed changes to the road layout making this departure fundamental to the scheme's viability.                                                                                                                    | Blue Gates                                                                            | CD 123                  | 3.4                 | Junction Visibility - Visibility to the left reduced to approximately 112m                                                                                                                                     | Increased risk of collisions involving vehicles exiting from the junction/access. If the proposed 40 mph speed limit cannot be secured the 112m sight distance would be more than 1 steps below the desirable minimum SSD for a design speed of 85 kph.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| D11               | Pedestrian Crossing Visibility | Departure                                              | 5                    | There is limited scope to relocate the crossing point while keeping it on the desire line. The footway on the south side has to be positioned tight to the highway boundary to accommodate the proposed changes to the road layout making this departure fundamental to the scheme's viability. | Proposed Uncontrolled Pedestrian Crossing Opposite the American Cemetery and Memorial | CD 143                  | E/5.3               | Crossing Visibility - Visibility to the west reduced to approximately 106m. Vehicles using the existing private access to the east would severely restrict visibility for people crossing from the south side. | Increased risk of collisions involving pedestrians using the uncontrolled crossing. If the proposed 40 mph speed limit cannot be secured the 106m sight distance would be more than 1 steps below the desirable minimum SSD for a design speed of 85 kph.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| D12               | Junction Geometry              | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Crome-lea Business Park                                                               | CD 123                  | 2.12                | Non provision of Major Road central treatment                                                                                                                                                                  | Junction is positioned on the inside of a bend which restricts visibility. Unauthorised use of the adjacent bus lane by inbound traffic when the lane is blocked by a vehicle waiting to turn right. Loss of protection for right turning traffic currently afforded by existing ghost island. Increased risk of nose to tail collisions involving right turning traffic which is stationary in the general traffic lane.                                                                                                                                                                                                                                                                                         |
| D13               | Junction Geometry              | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Madingley Rise                                                                        | CD 123                  | 2.12                | Non provision of Major Road central treatment                                                                                                                                                                  | Junction is positioned on a gradient in excess of the recommended 2% maximum and a reverse curve which restricts visibility. Unauthorised use of the adjacent bus lane by inbound traffic when the lane is blocked by a vehicle waiting to turn right. Loss of protection for right turning traffic currently afforded by existing ghost island. Increased risk of nose to tail collisions involving right turning traffic which is stationary in the general traffic lane.                                                                                                                                                                                                                                       |
| DR07              | Junction Location              | Deviation from Recommendation                          | 5                    | Existing Junction/Access which needs to be retained making deviation from this recommendation fundamental to the schemes viability.                                                                                                                                                             | Madingley Rise                                                                        | CD 123                  | 2.1.2               | Existing Priority Junction located where the gradient on a downhill approach exceeds the recommended maximum of 2%                                                                                             | Increased risk of nose to tail collisions involving right turning traffic which is stationary in the general traffic lane.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| D14               | Cross Section                  | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Opposite Crome-lea Business Park                                                      | CD 109                  | 4.11                | Non provision of curve widening on carriageways of less than standard width                                                                                                                                    | Increased risk of sideswipe and head on collisions due to inadequate lane widths. Increased risk of loss of control following sudden avoiding manoeuvres. Increased driver stress and fatigue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| D15               | Cross Section                  | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Opposite Madingley Woods (SSSI)                                                       | CD 109                  | 4.11                | Non provision of curve widening on carriageways of less than standard width                                                                                                                                    | Increased risk of sideswipe and head on collisions due to inadequate lane widths. Increased risk of loss of control following sudden avoiding manoeuvres. Increased driver stress and fatigue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| D16               | Cross Section                  | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Opposite Existing Parking Lay-by                                                      | CD 109                  | 4.11                | Non provision of curve widening on carriageways of less than standard width                                                                                                                                    | Increased risk of sideswipe and head on collisions due to inadequate lane widths. Increased risk of loss of control following sudden avoiding manoeuvres. Increased driver stress and fatigue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| D17               | Cross Section                  | Departure                                              | 5                    | A reduced cross section is essential for the proposed layout to fit within the site constraints, making this departure fundamental to the scheme's viability.                                                                                                                                   | Opposite Madingley Rise Access                                                        | CD 109                  | 4.11                | Non provision of curve widening on carriageways of less than standard width                                                                                                                                    | Increased risk of sideswipe and head on collisions due to inadequate lane widths. Increased risk of loss of control following sudden avoiding manoeuvres. Increased driver stress and fatigue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

# **Appendix D**

## **Cross Sections at Key Locations**



- Key:

Notes:

1. The offset between existing large diameter trees and the edges of the running lanes are substantially reduced.
2. The narrow lane width will result in buses travelling at speed passing in closer proximity to users of the shared use path. This combined with the proposed omission of the recommended safety margin will lead to increased drafts / air turbulence effects and risk from debris thrown up by vehicles.
3. Provision of a standard verge and re-cutting the existing drainage ditch would require additional land outside of the highway boundary and require the existing trees and vegetation to be cleared. If the ditch were to be culverted instead this would result in loss of flood storage.

Existing ditch re-provided - not shown on CPPF Plans

| Level | Chainage | Existing Levels |
|-------|----------|-----------------|
| 65    | 0.000    | 63.980          |
| 64    | 1.000    | 63.146          |
| 63    | 2.000    | 63.212          |
| 62    | 3.000    | 63.279          |
| 61    | 4.000    | 63.345          |
| 60    | 5.000    | 63.411          |
|       | 6.000    | 63.480          |
|       | 7.000    | 63.599          |
|       | 8.000    | 63.772          |
|       | 9.000    | 63.827          |
|       | 10.000   | 63.861          |
|       | 11.000   | 63.894          |
|       | 12.000   | 63.927          |
|       | 13.000   | 63.893          |
|       | 14.000   | 63.859          |
|       | 15.000   | 63.824          |
|       | 16.000   | 63.781          |
|       | 17.000   | 63.711          |
|       | 18.000   | 63.676          |
|       | 19.000   | 63.640          |
|       | 20.000   | 63.602          |
|       | 21.000   | 63.009          |
|       | 22.000   | 62.666          |
|       | 23.000   | 63.238          |
|       | 24.000   | 63.208          |
|       | 25.000   | 63.179          |
|       | 25.471   | 63.165          |

Notes:

- The offset between existing large diameter trees and the edges of the running lanes are substantially reduced.
- The narrow lane width will result in buses travelling at speed passing in closer proximity to users of the shared use path. This combined with the proposed omission of the recommended safety margin will lead to increased drafts / air turbulence effects and risk from debris thrown up by vehicles.

Current Offset from Edge of Carriageway to Tree 6.622m

2.281

1 in 3 slope not shown on CPPF Plans

0.285

0.500

2.000

3.250

3.250

3.250

2.500

No separation between shared use path and narrow running lane

Departure from Standard

Departure from Standard

Departure from Standard

Standard verge not shown on CPPF Plans

1 in 3 slope not shown on CPPF Plans

Level

Chainage

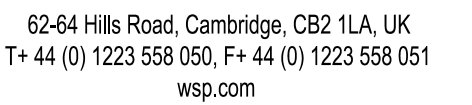
Existing Levels

| Chainage | Existing Levels |
|----------|-----------------|
| 0.000    |                 |
| 1.000    |                 |
| 2.000    |                 |
| 3.000    | 60.141          |
| 4.000    | 60.030          |
| 5.000    | 59.920          |
| 6.000    | 59.810          |
| 7.000    | 59.720          |
| 8.000    | 59.713          |
| 9.000    | 59.706          |
| 10.000   | 59.857          |
| 11.000   | 60.196          |
| 12.000   | 60.515          |
| 13.000   | 60.636          |
| 14.000   | 60.738          |
| 15.000   | 60.814          |
| 16.000   | 60.859          |
| 17.000   | 60.903          |
| 18.000   | 60.948          |
| 19.000   | 60.955          |
| 20.000   | 60.951          |
| 21.000   | 60.945          |
| 22.000   | 60.934          |
| 23.000   | 60.891          |
| 24.000   | 60.863          |
| 25.000   | 60.826          |
| 26.000   | 60.731          |
| 27.000   | 60.605          |
| 28.000   | 60.474          |
| 29.000   | 60.344          |
| 30.000   |                 |
| 31.000   |                 |
| 32.000   |                 |
| 33.000   |                 |
| 33.871   |                 |

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S2 - FOR INFORMATION



CLIENT:

GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

SITE/PROJECT:

### CtoC SCHEME

**TITLE:**

MADINGLEY ROAD CPPF NEARSIDE BUS  
LANE CONCEPT DESIGN CROSS SECTIONS  
(SHEET 1 OF 4)

CALE @ A1:

1:100 @ A1

BN

PROJECT NO:

DESIGNED:

DATE: September 25

DRAWING No:

70086660-WSP-HML-XX-DR-HW-001003

P01

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- Key:

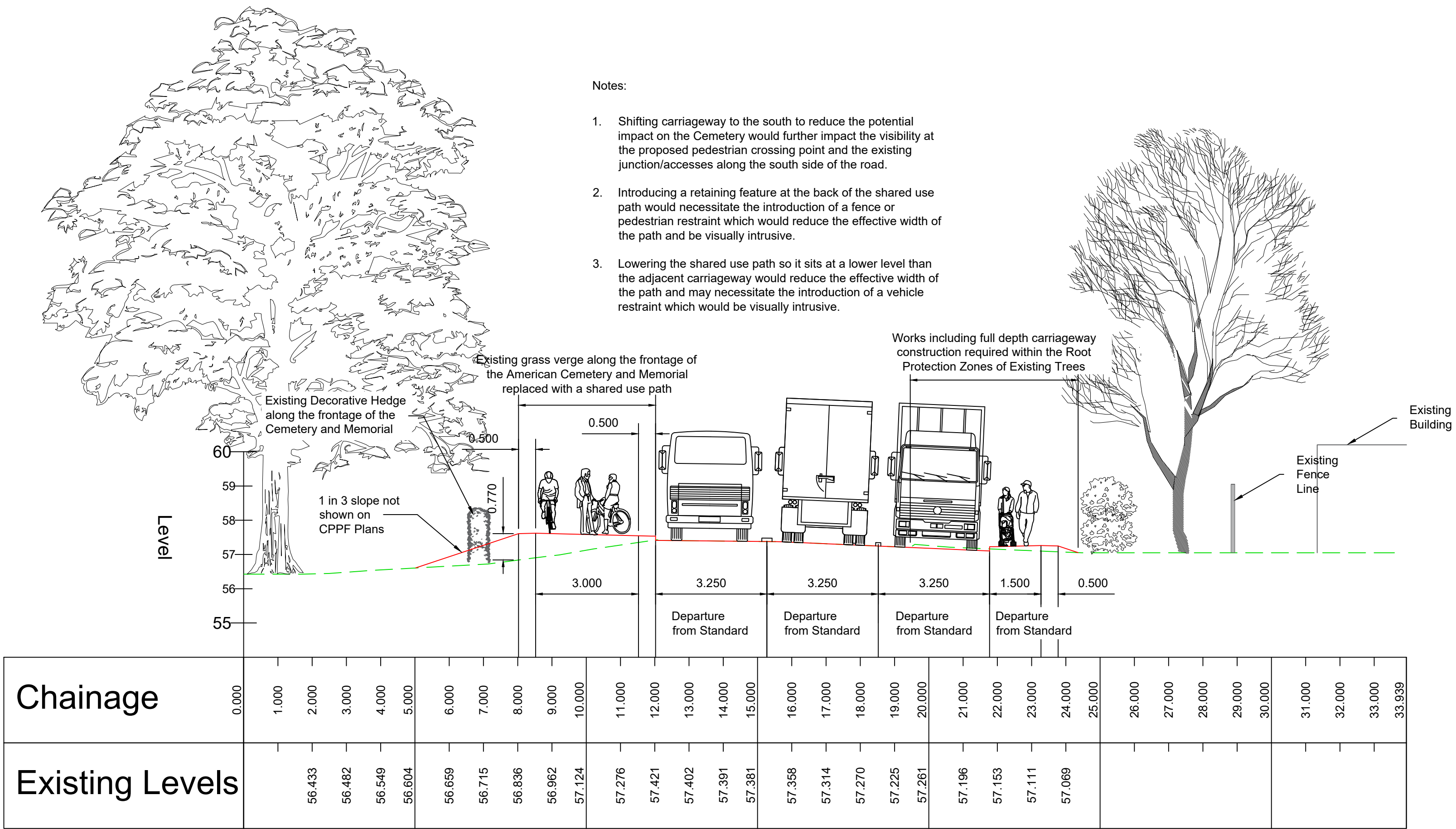
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SCALE: H 1:100,V 1:100. DATUM: 57.000

- Notes:

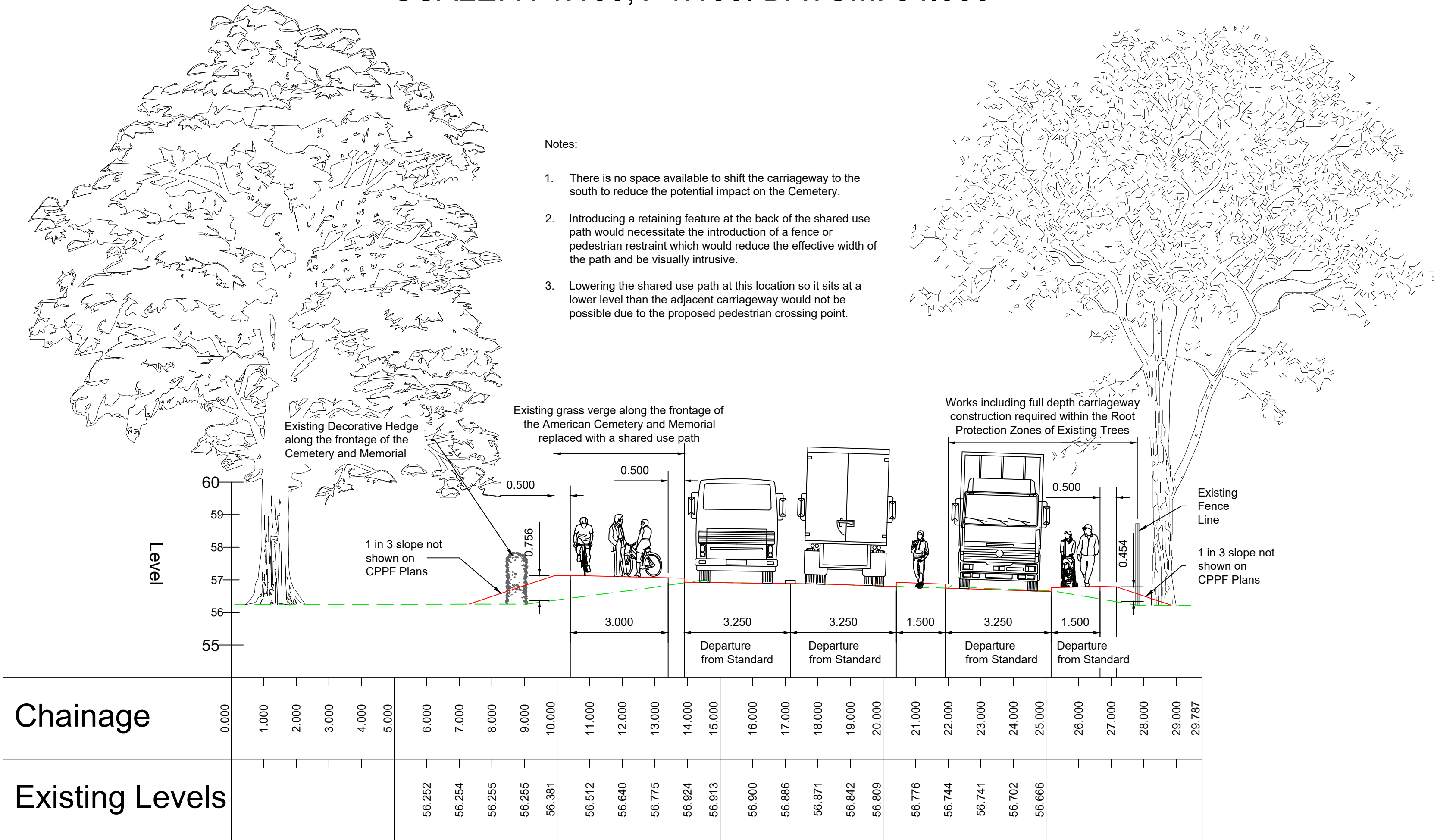
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Cross Section E-E  
SCALE: H 1:100,V 1:100. DATUM: 54.000



Cross Section F-F  
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- This drawing must be printed in colour.
  - All linear dimensions are in metres unless stated otherwise.
  - Design information shown is indicative and for outline purposes only.
  - Cross sections are based on the CPPF Proposed Scheme Layout (Civilistic Drawings C-001, C-002, C-003).
  - A 0.5m verge/berm has been added to the cross sections (not shown on CPPF drawings) to:
    - Extend the sub-base beyond the footway edging, improving structural integrity and reducing the risk of longitudinal slip failure where level differences or differential settlement may occur.
    - Provide a safety buffer between the path edge and any slopes, helping maintain effective path width near vertical features.
  - Where level differences exist, a 1:3 slope has been included to tie into existing ground levels.
  - Existing site features (trees, hedges, fences, etc.) are shown illustratively using topographic survey data, aerial imagery, and Google Street View to highlight constraints and potential impacts.
  - Vehicle outlines are shown to scale, based on typical bus and lorry dimensions from Manual for Streets (Figures 6.16 and 6.18).
  - This drawing is for high-level feasibility review and engineering assessment only.
  - Existing site data is derived from OS MasterMap Topography Layer and topographic surveys where available.

Key:

Existing Ground Profile

Proposed Ground Profile

|     |            |    |             |     |     |
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| ARCHITECT: |  |
|------------|--|

|               |             |
|---------------|-------------|
| SITE/PROJECT: | CtoC SCHEME |
|---------------|-------------|

|        |                                                                                    |
|--------|------------------------------------------------------------------------------------|
| TITLE: | MADINGLEY ROAD CPPF NEARSIDE BUS LANE CONCEPT DESIGN CROSS SECTIONS (SHEET 3 OF 4) |
|--------|------------------------------------------------------------------------------------|

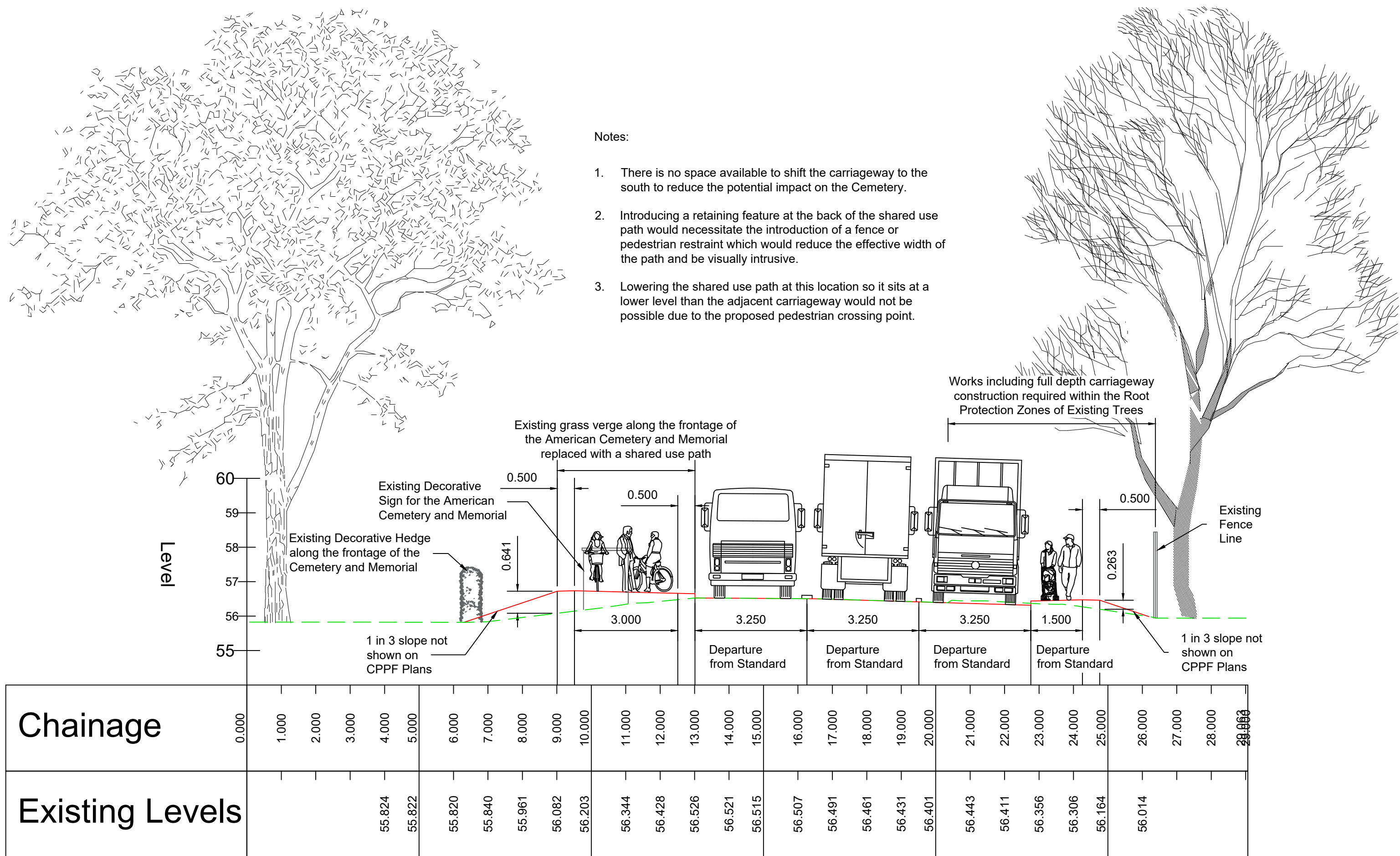
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| PROJECT NO: | 70086660 | DESIGNED: | BN | DRAWN: | BN | DATE: | September 25 |
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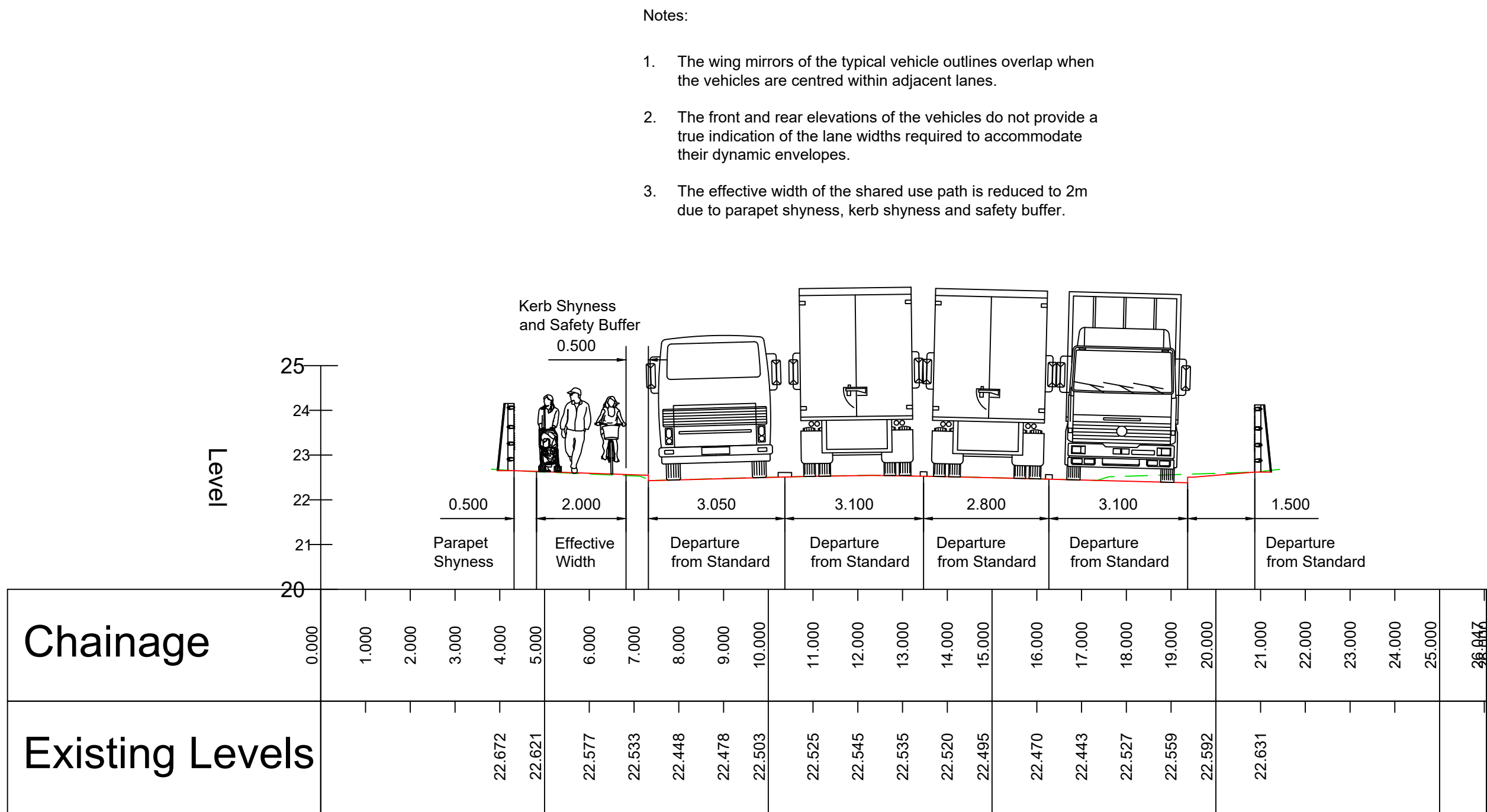
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Cross Section G-G  
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Cross Section H-H (M11 Overbridge)  
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  - Design information shown is indicative and for outline purposes only.
  - Cross sections are based on the CPPF Proposed Scheme Layout (Civilistix Drawings C-001, C-002, C-003).
  - A 0.5m verge/berm has been added to the cross sections (not shown on CPPF drawings) to:
    - Extend the sub-base beyond the footway edging, improving structural integrity and reducing the risk of longitudinal slip failure where level differences or differential settlement may occur.
    - Provide a safety buffer between the path edge and any slopes, helping maintain effective path width near vertical features.
  - Where level differences exist, a 1:3 slope has been included to tie into existing ground levels.
  - Existing site features (trees, hedges, fences, etc.) are shown illustratively using topographic survey data, aerial imagery, and Google Street View to highlight constraints and potential impacts.
  - Vehicle outlines are shown to scale, based on typical bus and lorry dimensions from Manual for Streets (Figures 6.16 and 6.18).
  - This drawing is for high-level feasibility review and engineering assessment only.
  - Existing site data is derived from OS MasterMap Topography Layer and topographic surveys where available.

Key:

Existing Ground Profile

Proposed Ground Profile

|     |            |    |             |     |     |
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| REV | DATE       | BY | DESCRIPTION | CHK | APP |

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CLIENT: GREATER CAMBRIDGE PARTNERSHIP

ARCHITECT:

SITE/PROJECT: CtoC SCHEME

TITLE: MADINGLEY ROAD CPPF NEARSIDE BUS LANE CONCEPT DESIGN CROSS SECTIONS (SHEET 4 OF 4)

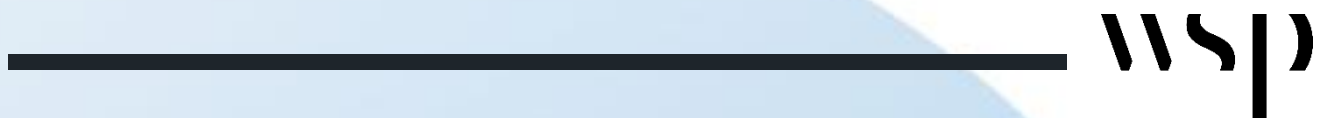
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|                        |              | DATE: September 25 |

|                                              |          |
|----------------------------------------------|----------|
| DRAWING NO: 70086660-WSP-HML-XX-DR-HW-001006 | REV: P01 |
|----------------------------------------------|----------|

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# **Appendix E**

## **Design Speed Assessment**

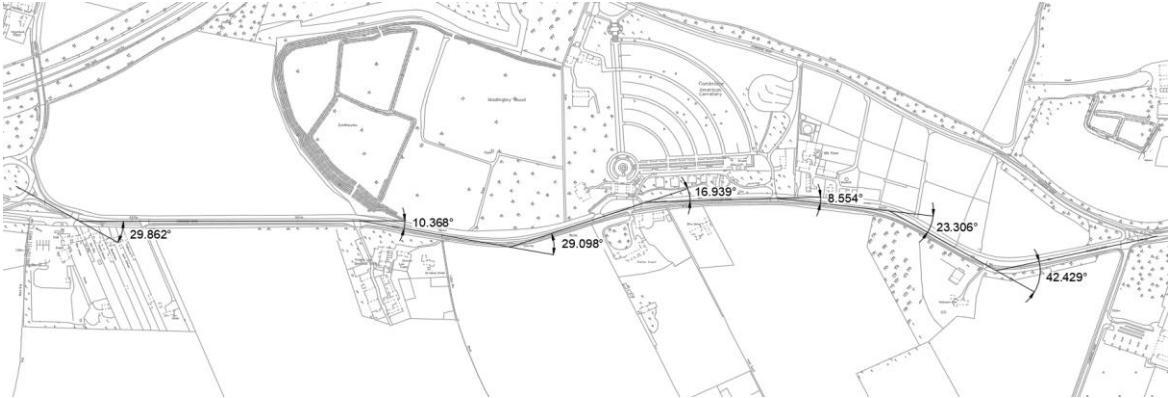


Road Name / Link Reference:     Madingley Road (A1303)

Average Verge Width         =         1.50     m

**Note:**     Average verge width set at 1.5m to take account of proposed omission of 1m hard strips  
              this will result in a return conservative estimate of the design speed.

**Bendiness (B):**



Degrees                         =         160.56   deg  
Length of Link               =         2.00     km  
Bendiness                    =         80.28   degrees per km

**Equation 2.8.2 Empirical relationship**

$$\text{Log}_{10} \text{VISI} = 2.46 + \frac{\text{VW}}{25} - \frac{B}{400}$$

where:  
VW =     Average verge width (averaged for both sides of the road)  
B=       Bendiness (degree per km - minimum length of 2 km)

|                        |   |        |   |                      |   |                        |
|------------------------|---|--------|---|----------------------|---|------------------------|
| Log <sub>10</sub> VISI | = | 2.46   | + | $\frac{1.50}{25.00}$ | - | $\frac{80.28}{400.00}$ |
| Log <sub>10</sub> VISI | = | 2.46   | + | 0.06                 | - | 0.20                   |
| Log <sub>10</sub> VISI | = | 2.32   |   |                      |   |                        |
| VISI                   | = | 208.60 |   |                      |   |                        |

**Equation 2.2b Single carriageways**

$$A_c = 12 - \frac{\text{VISI}}{60} + \frac{2B}{45}$$

where:  
B =       Bendiness degrees / km.  
VISI =    Harmonic mean visibility (metres)

|                |   |       |   |                        |   |                        |
|----------------|---|-------|---|------------------------|---|------------------------|
| A <sub>c</sub> | = | 12.00 | - | $\frac{208.60}{60.00}$ | + | $\frac{160.56}{45.00}$ |
| A <sub>c</sub> | = | 12.00 | - | 3.48                   | + | 3.57                   |
| A <sub>c</sub> | = | 12.09 |   |                        |   |                        |

Proposed Cross Section: Rural All-Purpose - Single (S2)

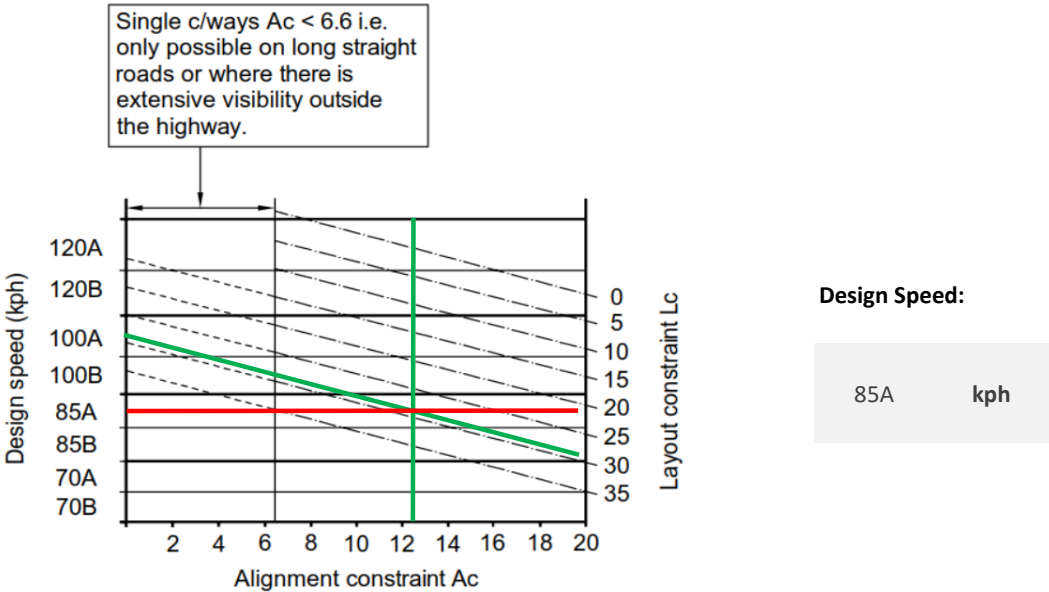
Number of commercial accesses, lay-bys and junctions: Medium

Table 2.3 Layout constraint (Lc):

| Road type                                                                                        | S2       |    |            |    | WS2       |    | WS2+1       |    | D2AP            |   | D3AP           | D2M                             | D3M                            | D4M                              |
|--------------------------------------------------------------------------------------------------|----------|----|------------|----|-----------|----|-------------|----|-----------------|---|----------------|---------------------------------|--------------------------------|----------------------------------|
| Carriageway width (excluding hard strips and hard shoulder)                                      | 6 metres |    | 7.3 metres |    | 10 metres |    | 11.5 metres |    | Dual 7.3 metres |   | Dual 11 metres | Dual 7.3 metres & hard shoulder | Dual 11 metres & hard shoulder | Dual 14.7 metres & hard shoulder |
| Frequency of commercial accesses, lay-bys and junctions                                          | H        | M  | M          | L  | M         | L  | M           | L  | M               | L | L              | L                               | L                              | L                                |
| Standard verge width                                                                             | 29       | 26 | 23         | 21 | 19        | 17 | 19          | 17 | 10              | 9 | 6              | 4                               | 0                              | 0                                |
| 1.5 metre verge                                                                                  | 31       | 28 | 25         | 23 | -         | -  | -           | -  | -               | - | -              | -                               | -                              | -                                |
| 0.5 metre verge                                                                                  | 33       | 30 | -          | -  | -         | -  | -           | -  | -               | - | -              | -                               | -                              | -                                |
| L = Low number of commercial accesses, lay-bys and junctions, less than or equal to 5 per km     |          |    |            |    |           |    |             |    |                 |   |                |                                 |                                |                                  |
| M = Medium number of commercial accesses, lay-bys and junctions, between 6 to 8 per km           |          |    |            |    |           |    |             |    |                 |   |                |                                 |                                |                                  |
| H = High number of commercial accesses, lay-bys and junctions, greater than or equal to 9 per km |          |    |            |    |           |    |             |    |                 |   |                |                                 |                                |                                  |

**Note:** The Layout Constraint (Lc) has been taken as 28 which assumes a 6m carriageway and a 1.5m verge width to account for the absence of 1m wide hard strips in the CPPF proposed cross section. The LC experienced by vehicles travelling along Madingley Road with the CPPF proposed cross section implemented is likely to be much lower than this due to the presence of the proposed nearside bus lane and wider verges which have not been taken into account as part of this assessment.

Figure 2.1 Selection of design speed (rural roads):





62-64 Hills Road  
Cambridge  
CB2 1LA

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## **APPENDIX 2**

### **CAMCYCLE (CAMBRIDGE CYCLING CAMPAIGN) BRIEFING PAPER**



## Briefing Paper: Adams Road and the Cambourne to Cambridge Busway



*Adams Road*

### Executive Summary

Adams Road is part of one of the busiest cycle routes in Cambridge, with over 800 people per hour cycling at peak times, and that usage is expected to grow significantly. The Cambourne to Cambridge busway project team has recently proposed to use Adams Road as part of the busway route, introducing at least 30 buses per hour onto Adams Road, and likely to increase over time. We support all forms of sustainable transport such as walking, cycling and public transport being deployed coherently. However, the mixing of so many buses with such strong flows of people cycling is bound to lead to conflict between buses and cyclists, raising intense risks that experience tells us will not be adequately mitigated. In particular, the volume of heavy motor traffic on Adams Road would be incompatible with safe cycle route design on such a narrow road, even when street parking is removed. The junction of Adams Road and Grange Road poses a particular risk where there would be frequent bus turning movements in conflict with very heavy cycle flows. We have learned from Dutch guidance and case studies that such a high volume of bus traffic cannot safely coexist with the strong existing and expected flows of cycling. Therefore we must oppose the routing of the Cambourne to Cambridge busway on Adams Road.

### Background

- Adams Road is part of an important cycle route between the city centre, West Cambridge site, Eddington, and the villages to the west of Cambridge.

- Counts conducted by volunteers have shown a peak of 841 cyclists per hour, making it the busiest peak-time cycle route in Cambridge, and it is easy to observe strong flows of people cycling at many times throughout the day.
- This route is heavily used by students cycling to and from the West Cambridge site and going to lectures elsewhere in bursts throughout the day. There are also many cargo cycles and trailers used for carrying young children. Furthermore, we expect to see more and more usage of a wide variety of cycles adapted for disability as the Cambridge cycle network becomes more accessible to people of all abilities.
- The demand for cycling is expected to sharply increase from today's rates, because: (a) the University has plans and ongoing construction that will double the daytime population of the West Cambridge site, and is committed to channelling that increase into sustainable transport modes, (b) residents of the growing Eddington site in Northwest Cambridge are increasingly using Adams Road as a cycle route, (c) the Greater Cambridge Partnership is expected to build improvements to the cycling infrastructure connecting villages to the west of Cambridge, and (d) the Bourn Airfield development, less than six miles away, has been approved in principle and will add thousands of houses connected via the aforementioned proposed cycling infrastructure to Adams Road.
- At the same time, the Greater Cambridge Partnership is proposing a new busway between Cambourne, Bourn and Cambridge. Camcycle does not have any opinion on the principle of this busway, although we are generally supportive of sustainable transport, which includes public transport. However, Camcycle does take an interest wherever the proposed busway may offer opportunities or pose dangers for people cycling. We believe sustainable transport modes should not be forced into conflict, they should be deployed harmoniously to improve transport opportunities for everyone, support people-friendly urban design, and reduce the problems caused by private motor traffic.
- The Cambourne to Cambridge (C2C) busway offers some opportunities to overcome barriers such as the provision of a new and improved bridge over the M11, and the busway is expected to have a companion cycle route alongside it, similar in principle to the cycle routes alongside the existing Guided Busway, but with improved details including: a buffer between fast-moving vehicles and people, a cross-section that is appropriate in width and layout to the expected level of usage, and junction/crossing designs that are much easier and friendlier to navigate for people of all abilities.
- The C2C busway poses a risk to people cycling wherever buses are expected to mix or cross paths with people cycling; those risks require mitigation through design choices. Prior to summer 2019, the preferred path of the busway appeared to follow the so-called 'Rifle Range route' that passes behind Clare Hall, and would be completely separate from people cycling all the way to Grange Road. Since the summer, however, Adams Road has been seriously considered as a portion of the busway route instead, with the Rifle Range route becoming a proposed cycleway. The initial service proposal shows 30 buses per hour using Adams Road, counting both directions, which greatly increases the exposure to buses of people cycling, and that service level is expected to increase over time.
- Some people cycling may be able to take advantage of the newly proposed cycleway along the 'Rifle Range route' alignment, however it is unclear whether this alternative route can be delivered, and it is unlikely to reduce the numbers of people cycling on Adams Road by much because Adams Road is the shortest and most obvious direct route for cyclists travelling between the city centre and the West Cambridge Site. It could provide a useful route for some journeys especially those to the south, but it would be largely unlit, and suffers from unavoidable lack of natural surveillance, which would reduce its utility on dark winter evenings for half the year.
- The following risks have been identified in relation to Adams Road:

- (A) Sharing of the 8m-wide carriageway by people cycling and motor traffic including buses, lorries and private cars. Similar situations, such as Station Place, have proven problematic with reports of bus drivers making dangerous passing manoeuvres.
- (B) The junction of the Coton Path, Adams Road, Wilberforce Road and the sports ground access road, where the proposed busway would meet the busy cycling flows along Adams Road.
- (C) The junction of Sylvester Road and Adams Road, where a significant number of people cycling turn to access colleges and places south of Adams Road.
- (D) The junction of Adams Road, Burrell's Walk and Grange Road where the buses turn right onto Grange Road or left onto Adams Road. There are strong flows of people cycling in every direction, however the most popular and well-known route is straight between Adams Road and Burrell's Walk.
- (E) Car parking and lorry loading along Adams Road creates obstructions and blind spots.
- (F) People walking have dedicated footways along Adams Road, however they will need to cross the path of buses in some places. It is also important to ensure that the footways are fully accessible and not blocked by parked or loading vehicles.
- (G) Heavy bus traffic will probably cause much more rapid degradation of the carriageway, resulting in potholes and related dangers for people cycling.

## Discussion

### Risk (A)

Without the busway, the Dutch approach here would probably be the designation of Adams Road as a Cycle Street (fietsstraat). There are several possible layouts for a Cycle Street, however the most important feature is at the network level: the reduction of motor traffic on the Cycle Street. Dutch guidance broadly suggests that (1) the amount of cycle traffic has to be double the amount of motor traffic, and (2) for two-way roads, the intensity of motor traffic must be reduced to less than 2,500 'passenger car units' (PCU) per day (a private car counts as 1 PCU, a bus or lorry counts as 3 PCUs). However, it must be kept in mind that the quality of the Cycle Street degrades rapidly and unpredictably as motorised traffic intensity approaches the threshold, and the nature of the motor traffic makes a big difference too; larger vehicles pose a disproportionate threat to safety. Other requirements include: (3) the speed limit must be 20mph or lower, and (4) drivers are asked to stay behind cyclists and pass only if they can do so in the most careful way, if it is completely clear. If there is any (5) car parking on the street then it is expected to be kept off the carriageway or arranged such that there is a safe 'door zone' that protects people cycling from crashes caused by car occupants opening doors without due care. (CROW 2006)



*Platolaan, a Cycle Street in Utrecht*

The overall goal of a Cycle Street is to create a street where people feel safe to cycle without (6) intimidation from motor traffic. Cycle Streets are often designated where the number of people cycling would overwhelm a cycle lane, and are meant to encourage sociable side-by-side cycling for people travelling together in groups. Cycle Streets should have dedicated footways for people walking along the street, especially wherever there are properties or significant flows of people walking.

The UK does not have an official road designation for Cycle Street, although most of the features can be replicated, but it is unclear to what extent that can successfully occur on Adams Road.

- (1) OK. The amount of cycle traffic is easily more than double the amount of motor traffic, and will be in the foreseeable future.
- (2) Questionable. Adams Road benefits from some nearby traffic filters that reduce the number of motor vehicles using it. However, Adams Road is currently used as a car park for commuters and college visitors, which brings a lot of motor traffic into the street hunting for parking spaces. The sports ground is very large and instigates significant regional car traffic flows before and after events. Several of the college buildings are serviced by heavy lorries at times during the day. Thirty buses per hour translates to 90 PCUs per hour, ie. at least 1,100 PCUs over the 12 busy service hours from 7am to 7pm; already close to half the maximum motor traffic intensity without accounting for other cars or lorries. Furthermore, the Dutch guidance for routes like this proposal with high bus frequency and strong cycling flows is always to separate the bus traffic from the cycle traffic, because buses are much heavier and wider than people cycling (CROW 2006, SWOV 2018). The following quote is from a research paper that has informed recent Dutch guidance on Cycle Streets (more quotes can be found in the appendix below):

*Public transport should not be present on a bicycle street, since the mass difference with cyclists is rather high. The presence of large vehicles such as buses does not contribute to the comfort and feeling of traffic safety on the bicycle street. (Delbressine 2013)*

- (3) OK. The speed limit is already 20mph.
- (4) Questionable. We lack precedents for this, but it is conceivable albeit questionable that a Traffic Regulation Order could be constructed along these lines, and it is possible that bus driver behaviour can be monitored for compliance, although that has not occurred in other places where buses are supposed to share space with people cycling.
- (5) Probably OK. The street must be designated as a no-parking zone as soon as possible. Some of the reclaimed space may be used for trees and planting, interspersed with loading bays for deliveries or blue-badge holders, provided the design does not pose a hazard to people cycling or walking.
- (6) Questionable. Bus drivers are under considerable pressure to keep to schedule. The nature of busy cycling traffic on Adams Road, though, would lead to extreme uncertainty in traversal time for buses. When cycle traffic levels are low, it is possible for a bus to transit Adams Road in about 1 minute at 20mph. When cycle traffic levels are elevated, it is likely that buses would have to follow behind people cycling and that may easily cause the transit time to increase by 100%, to 2 minutes or more. Managers would face a conflict of interest: the profit and good service motives require them to achieve reliable trip times down Adams Road, however the interest of other people's safety requires them to accept considerable variability in trip time. The Cycle Street treatment weakens considerably with high levels of motor traffic. For example, Prins Hendriklaan, a Cycle Street in Utrecht, has over 14,000 people cycling per day, but also about 3,000 motorised PCUs, and is therefore considerably less comfortable and safe than it should be. (Treasure 2014)



*Prins Hendriklaan, Utrecht (Photo: Mark Treasure)*

## **Risk (B)**

Prior to the 5th November workshop, all the junction designs shown involved disruption of the cycle route between the Coton Path and Adams Road, in some cases involving very severe sharp turns and multiple losses of priority. At the workshop, the first option shown had priority for cycling over most motor traffic, and avoided the conflict of forcing cyclists to cross the path of buses by proposing a new Coton Path design with one-way cycle tracks on either side of the busway. This pushed the problem of designing a crossing away from this junction and further to the west, where there is more space to provide a safe treatment. Importantly, the cycle tracks tapered onto Adams Road with protection, reducing the risk of multiple conflicts at the same point. The trade-off was that the busway would pinch to a single lane, however, this is acceptable because it also marks the point where the busway speed limit decreases to 20mph. Details such as cycle track width and the design of the crossing to the west remain to be refined, however in principle it could work.

## **Risk (C)**

This is largely the standard risk posed by junctions where people make permissive right turns. Bus drivers may find themselves stuck behind cyclists who are waiting to make a right turn. Bus drivers would have to be very careful if attempting to pass cyclists near this junction. For both drivers and cyclists who are attempting to join Adams Road from Sylvester Road, there is currently very poor visibility. This may be improved by the removal of car parking along Adams Road, and perhaps with the addition of careful landscaping at the corners to open up better lines of sight.

## **Risk (D)**

Buses coming from Adams Road will probably be making a right turn onto Grange Road, although we have also been told that some may make left turns in the future. People cycling and attempting to access the Advance Stop Line on Adams Road may have difficulty safely navigating around the bus in the confined space. Buses coming from Grange Road (heading north) will be making a left turn onto Adams Road. The corner there has already been increased in radius at some time in the past, perhaps to enable lorry turning movements. Nonetheless, people cycling north on Grange Road, and east on Adams Road, will potentially be put in a position of danger as buses swing around to turn left. Grange Road is also a very busy cycling route and suffers from higher motor traffic flows. Buses turning onto and off Grange Road pose a risk to people cycling, especially if the new three-axle buses are used, because they have a much larger kick-out of their rear end (with rear-axle steer their swept path may be 'unexpected').

## **Risk (E)**

As mentioned earlier, car parking along Adams Road must be removed for safety, with cycling-friendly traffic calming measures put in place to keep motor traffic speeds in check. However, lorry deliveries are unavoidable. Therefore we propose landscaping and planting along Adams Road with interspersed loading bays. Where there is off-road loading, such as at Robinson College, steps should be taken to ensure that the road design improves the safety of the driveway.

## **Risk (F)**

The dedicated footways on either side of Adams Road must continue to be provided or even improved. Steps to prevent pavement parking should be given strong consideration. At the junctions, there should be fully accessible crossings and steps taken to increase the priority of pedestrians.

## **Risk (G)**

If buses operate frequently along Adams Road then steps must be taken to reinforce the carriageway and ensure a smooth and safe surface. We note that in other places in Cambridge where there are frequent buses, the carriageway is often in battered or very poor condition within a relatively short timespan, which causes considerable hazard for people cycling. Therefore it is likely that the same would happen to Adams Road, especially at junctions, if it were not properly reinforced. This may require a wholesale rebuild of the road layers from the subbase upwards, which is a cost that has to be factored into the overall project. The same issue applies to Grange Road and Charles Babbage Road.

## **Conclusion**

On Adams Road, there are numerous unaddressed risks to people cycling as a result of heavy bus traffic being introduced. There are several steps that can be taken now to improve safety, such as the removal of car parking along the street. However, it remains unclear how such a high volume of bus traffic could safely coexist with the strong existing and expected flows of cycling. Cycling provision on the Rifle Range route would be useful for some journeys but it does not adequately replace Adams Road as a direct link between the city centre (via Burrell's Walk) and the West Cambridge Site. Adams Road will remain a very busy cycling route, and therefore on safety grounds we must oppose the routing of the C2C busway on Adams Road.

## **Bibliography**

- Delbressine, Rick. The traffic safety of bicycle streets in the Netherlands, 2013.
- CROW. The Design Manual for Bicycle Traffic, 2006.
- SWOV. Sustainable Safety 3rd edition — The advanced vision for 2018-2030.
- Treasure, Mark. Blog post: Not everything the Dutch do is transferable. 2014.  
[aseasyasridingabike.wordpress.com/2014/04/15/not-everything-the-dutch-do-is-transferable/](http://aseasyasridingabike.wordpress.com/2014/04/15/not-everything-the-dutch-do-is-transferable/)

## Appendix

Rick Delbressine surveyed road authorities in Alkmaar regarding Frieseweg, a fietsstraat (Cycle Street) that also carries eight buses per hour (answers were machine-translated from the original Dutch):

*Q: Does the [combination of buses and bikes] lead to bottlenecks and, if so, which ones?*

*A: Yes, buses have a tendency to get stuck on the Cycle Street. There are conflicts due to the difference in mass and speed with the main cycle routes. Buses cause a feeling of insecurity.*

*Q: Do you have any further experiences with the bicycle street that you want to share?*

*A: The use of the Cycle Street by buses is by no means desirable, but sometimes unavoidable from a political point of view. Furthermore, the layout as a Cycle Street alone seems to deter motorists and car intensities reduce. The replacement of the block paving with an [artistically patterned] asphalt surface does not seem to have any effects on the speed driven, the V85 [85th percentile speed] has remained the same.*

**APPENDIX 3**  
**COMBERTON GREENWAY SCHEME DRAWINGS**

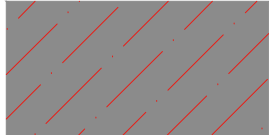
KEY



HIGHWAY BOUNDARY



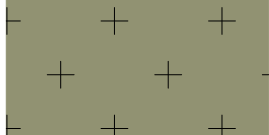
PROPOSED 50mm THICK CAMBRIDGESHIRE ASPHALT SURFACE COURSE (CLAUSE 12.02) ON 65mm AC 20 DENSE BINDER



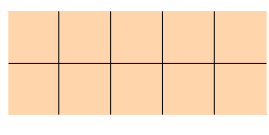
PROPOSED 50 mm THICK SMA 6mm SURF TO BSEN13108-5 (CLAUSE 12.03 OR 12.04) ON 65mm AC 20 DENSE BINDER



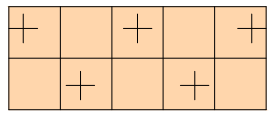
PROPOSED 25mm THICK AC6 DENSE SURF (CLAUSE18.05) LAID ON 60mm THICK AC14 CLOSE SURF DENSE ASPHALT CONCRETE (CLAUSE18.04). EXISTING TYPE 1 SUB BASE TO BE RECOMPACTED TO SHW CLAUSE 803



PROPOSED 25mm THICK AC6 DENSE SURF (CLAUSE18.05) LAID ON 60mm THICK AC14 CLOSE SURF DENSE ASPHALT CONCRETE (CLAUSE18.04) ON 365mm TYPE 1 SUB BASE TO SHW CLAUSE 803



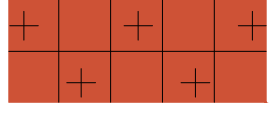
PROPOSED BUFF CW SURFACING 65mm THICK TACTILE PAVING ON 25mm SAND CEMENT MORTAR BED LAID ON 60mm BINDER COURSE. EXISTING TYPE 1 SUB BASE TO BE RECOMPACTED TO SHW CLAUSE 803



PROPOSED BUFF CW SURFACING 65mm THICK TACTILE PAVING ON 25mm SAND CEMENT MORTAR BED LAID ON 60mm BINDER COURSE ON 365mm TYPE 1 SUB BASE TO SHW CLAUSE 803



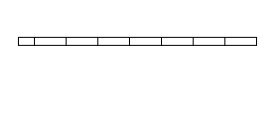
PROPOSED RED 65mm THICK TACTILE PAVING ON 25mm SAND CEMENT MORTAR BED LAID ON 60mm BINDER COURSE. EXISTING TYPE 1 SUB BASE TO BE RECOMPACTED TO SHW CLAUSE 803



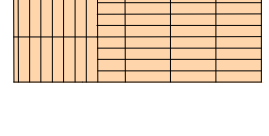
PROPOSED RED 65mm THICK TACTILE PAVING ON 25mm SAND CEMENT MORTAR BED LAID ON 60mm BINDER COURSE AND 365mm TYPE 1 SUB BASE TO SHW CLAUSE 803



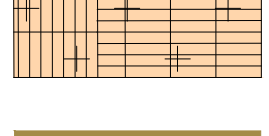
PROPOSED RUMBLE STRIPS: 500mm LONG RED COLOURED STONE MASTIC ASPHALT 6mm SURF (CLAUSE 18.05), 60mm THICK AC14 CLOSE SURF DENSE ASPHALT CONCRETE ON 365mm TYPE 1 SUB BASE SHW CLAUSE 803. REFER TO STANDARD DETAILS REFER TO DWG 7376-WSP-CT-XX-DR-HW-004000



PROPOSED 100 x 200 x 80mm PRE-CAST CONCRETE BLOCK WITH APPLIED BALLONTINI TO BE INSTALLED AS PART OF THE TACTILE ARRANGEMENT



PROPOSED 65mm THICK CORDUROY PAVING ON 25mm SAND CEMENT MORTAR BED LAID ON 60mm BINDER COURSE. EXISTING TYPE 1 SUB BASE TO BE RECOMPACTED TO SHW CLAUSE 803



PROPOSED 65mm THICK CORDUROY PAVING ON 25mm SAND CEMENT MORTAR BED LAID ON 60mm BINDER COURSE AND 365mm TYPE 1 SUB BASE TO SHW CLAUSE 803



PROPOSED MULTI-USER PATH: PROPOSED GOLDEN GRAVEL STONE MASTIC ASPHALT 6mm SURF (CLAUSE 18.07) 25mm THICK LAID ON 60mm THICK AC14 CLOSE SURF DENSE ASPHALT CONCRETE ON 365mm TYPE 1 SUB BASE TO SHW CLAUSE 803



RED COLOURED STONE MASTIC ASPHALT 6mm SURF (CLAUSE 12.03) 50mm THICK, ON 65mm AC 20 DENSE BIN



RED COLOURED STONE MASTIC ASPHALT 6mm SURF (CLAUSE 18.05), 25mm THICK LAID ON 60mm THICK AC14 CLOSE SURF DENSE ASPHALT CONCRETE TO BS EN 13108-1 (CLAUSE 18.04) ON EXISTING TYPE 1 SUB BASE TO BE RECOMPACTED TO SHW CLAUSE 803



PROPOSED 200mm x 100mm x 80mm RED PRECAST CONCRETE RECTANGULAR BLOCKS LAID ON 30mm CATEGORY II LAYING COURSE SAND TO BS7533 ON 190mm AC20 DENSE BIN 40-60 PEN. EXISTING TYPE 1 SUB BASE TO BE RECOMPACTED TO SHW CLAUSE 803



PROPOSED 3mm BUFF ANTI SKID RESISTANT SURFACE TREATMENT ON 40mm THICK CAMBRIDESHIRE ASPHALT SURFACE COURSE (CLAUSE 12.03 OR 12.04) ON 65mm AC 20 DENSE BIN



PROPOSED INFILTRATION BED. FOR DETAILS REFER TO LANDSCAPE DRAWINGS 7376-WSP-CT-XX-DR-LA-03004 TO 03012



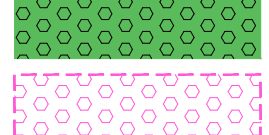
PROPOSED FLOWERING AMENITY GRASSLAND. FOR DETAILS REFER TO LANDSCAPE DRAWINGS 7376-WSP-CT-XX-DR-LA-03004 TO 03012



EXISTING VEGETATION TO BE TRIMMED



PROPOSED GRASS VERGE BRIDLEWAY LAID ON 300mm OF TOPSOIL OR SIMILAR APPROVED



PROPOSED REINFORCED GRASSGUARD LAID ON 25mm SHARP SAND REGULATING LAYER. REFER TO STANDARD DETAIL FOR FULL INFORMATION. BUILDUP CONFIRMED FOLLOWING RECEIPT OF GROUND INVESTIGATON.



PROPOSED SEASONAL BULB MIX (WITHIN GRASSLAND AREAS). FOR DETAILS REFER TO LANDSCAPE DRAWINGS 7376-WSP-CT-XX-DR-LA-03004 TO 03012

KEY



PROPOSED WILDFLOWER GRASSLAND. FOR DETAILS REFER TO LANDSCAPE DRAWINGS 7376-WSP-CT-XX-DR-LA-03004 TO 03012



PROPOSED YELLOW LINE MARKING



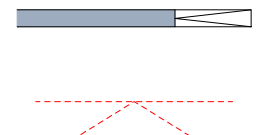
PROPOSED WHITE LINE MARKING



PROPOSED 125mm x 255mm PRE-CAST CONCRETE BULLNOSE KERB LAID ON 150mm ST1 CONCRETE AS PER THE HERCS STANDARDS (CLAUSE 13.02)



PROPOSED 50mm x 150mm PRE-CAST CONCRETE EDGING LAID ON 100mm ST1 CONCRETE AS PER THE HERCS STANDARDS (CLAUSE 18.11)



PROPOSED 125mm x 150mm PRE-CAST CONCRETE FLUSH KERB WITH DROPPER LAID ON 150mm ST1 CONCRETE AS PER THE HERCS STANDARDS (25mm UPSTAND)



PROPOSED RAMP



PROPOSED TIMBER KNEE RAIL FENCING 0.9m HIGH POSTS FOR DETAILS REFER TO STANDARD DETAILS 7376-WSP-CT-XX-DR-HW-004000



PROPOSED SIGN AND POST



PROPOSED BOLLARD



PROPOSED LIGHTING COLUMN



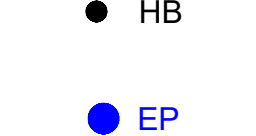
PROPOSED SIGN MOUNTED ON EXISTING POST



PROPOSED WAYFINDING SIGN (SHOWN INDICATIVELY)



PROPOSED SIGN MOUNTED ON EXISTING LIGHTING COLUMN



PROPOSED HALF HEIGHT BOLLARD WITH REFLECTIVE BAND TO BE FIXED ACCORDING TO MANUFACTURERS SPECIFICATION



RELOCATED ELECTRIC POLE (LOCATION TO BE CONFIRMED)



RELOCATED TRAFFIC SIGNAL



RELOCATED LIGHTING COLUMN



CYCLE STAND TO BE REINSTALLED



RELOCATED FENCE (LOCATION TO BE CONFIRMED)



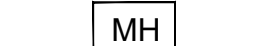
EXISTING GULLY FRAME AND COVER TO BE REMOVED AND REPLACED WITH CLASS D400 CYCLE FRIENDLY GULLY FRAME AND COVER



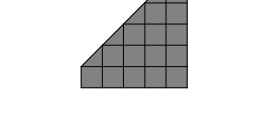
PROPOSED TRAPPED PRECAST CONCRETE GULLY (450mm DIAMETER, 900mm DEPTH) WITH CLASS D400 CYCLE FRIENDLY GULLY FRAME AND COVER UTILISING EXISTING CONNECTION TO MAIN SEWER



PROPOSED TRAPPED PRECAST CONCRETE GULLY (375mm DIAMETER, 750mm DEPTH) WITH CLASS C250 PEDESTRIAN FRIENDLY GULLY FRAME AND COVER UTILISING EXISTING CONNECTION TO MAIN SEWER



PROPOSED SFA7 TYPE 2 MANHOLE



PROPOSED DRAINAGE. 100mm x 100mm SILVER GREY SETTS LAID ON 150mm WET LEAN CONCRETE WITH VARIABLE UPSTAND. REFER TO 7376-WSP-CT-XX-DR-HW-004000 FOR DETAILS



PROPOSED CYCLE STAND TYPE-1



PROPOSED CYCLE STAND TYPE-2



EXISTING LINE MARKING



EXISTING FENCE TO BE RETAINED



EXISTING TREE TO BE RETAINED REFER TO ARBORICULTURAL SURVEY REPORT FOR FURTHER INFORMATION



EXISTING GULLY TO BE RETAINED



EXISTING SIGN AND POST TO BE RETAINED



EXISTING LIGHTING COLUMN TO BE RETAINED



EXISTING BOLLARD TO BE RETAINED



EXISTING BENCH TO BE RETAINED



EXISTING UTILITY CABINET

KEY



EXISTING STANDARD SERVICE COVER TO BE RAISED/LOWERED TO SUIT NEW LEVELS



EXISTING STANDARD SERVICE COVER TO BE FITTED WITH RECESSED COVER AND RAISED/LOWERED TO SUIT NEW LEVEL



EXISTING STANDARD SERVICE COVER TO BE RELOCATED



WARNING RISK:  
INDICATES A RESIDUAL RISK AS A WARNING



INFORMATION RISK:  
INDICATES A RESIDUAL RISK FOR INFORMATION

| Measured CBR Values | Required depth of Type 1 or HER sub-base |
|---------------------|------------------------------------------|
| CBR > 5%            | 260mm ± 10mm (minimum thickness)         |
| CBR 5%              | 280mm ± 10mm                             |
| CBR 4%              | 315mm ± 10mm                             |
| CBR 3%              | 375mm ± 10mm                             |
| CBR 2%              | 450mm ± 10mm                             |
| CBR less than 2%    | 520mm ± 10mm                             |

|        |            |    |                 |     |     |
|--------|------------|----|-----------------|-----|-----|
| S3-P02 | 15.11.2024 | RK | POST RSK UPDATE | AOS | JAH |
| S3-P01 | 26.07.2024 | RK | FIRST ISSUE     | AOS | JAH |
| REV    | DATE       | BY | DESCRIPTION     | CHK | APD |

DRAWING STATUS

DETAILED DESIGN



70 Chancery Lane, London WC2A 1AF  
www.fmcconway.co.uk www.wsp.com

CLIENT



PROJECT

COMBERTON GREENWAY

TITLE

GENERAL ARRANGEMENT  
ADAMS ROAD AND COTON VILLAGE

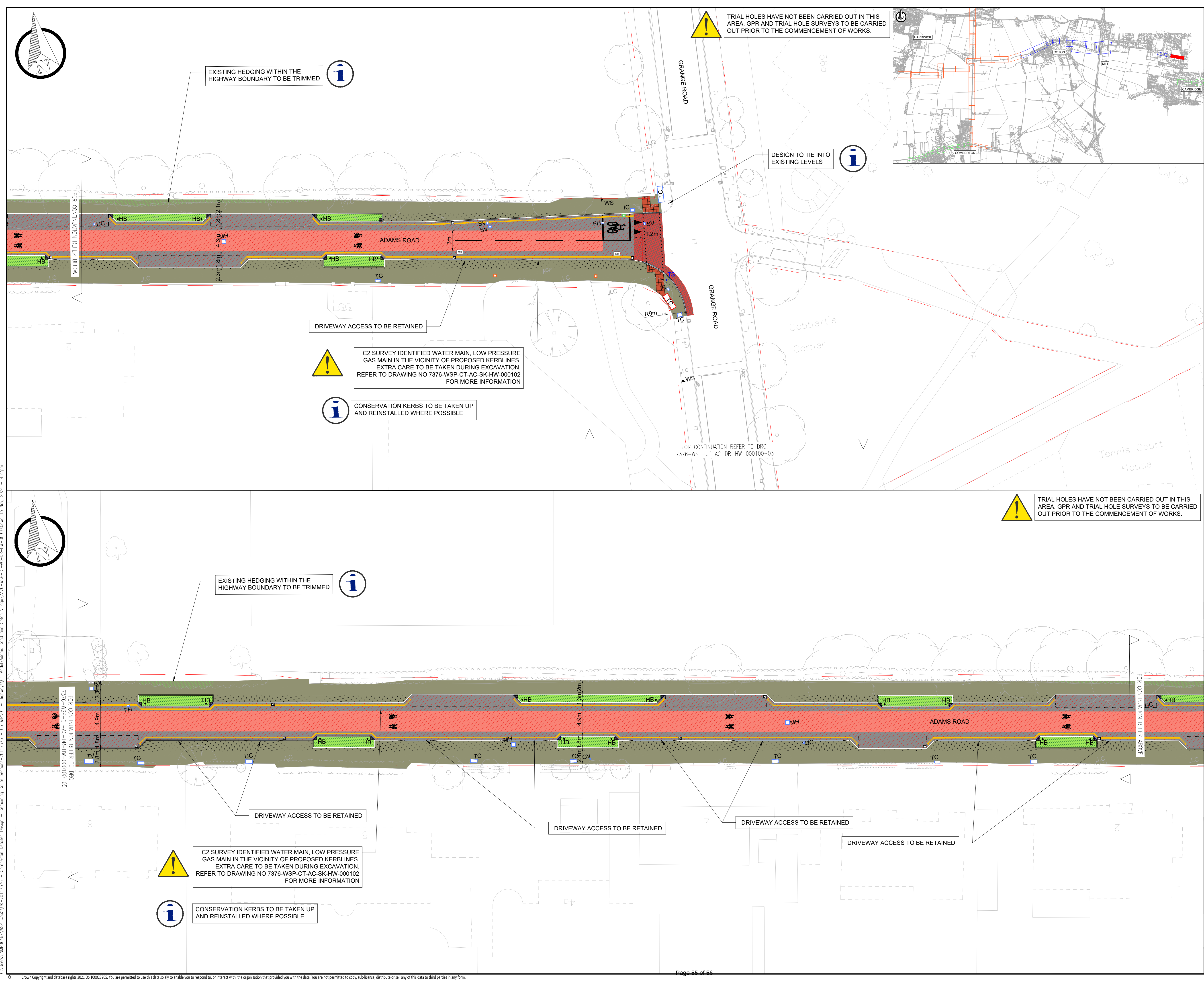
KEY

|            |          |              |         |          |       |
|------------|----------|--------------|---------|----------|-------|
| SCALE @ A1 | DATE     | DESIGN/DRAWN | CHECKED | APPROVED | SHEET |
| 1:250      | Nov 2024 | RK           | AOS     | JAH      | A1    |

WSP PROJECT NO.

70117376

|                                |        |
|--------------------------------|--------|
| DRAWING No.                    | REV    |
| 7376-WSP-CT-AC-DR-HW-000100-00 | S3-P01 |



NOTES:

- WHERE FLUSH KERBS ARE PROPOSED AT RAISED TABLES A MINIMUM OF 25mm KERB UPSTAND IS TO BE MAINTAINED.
- REFER TO DRAWING 7376-WSP-CT-XX-M2-LA-03004-03012 FOR FURTHER PLANTING DETAILS.
- FOR KEY REFER TO 7376-WSP-CT-AC-DR-HW-000100-00.
- PLEASE REFER TO THE LIGHTING DESIGN PACK, WHEN AVAILABLE, FOR FULL DETAILS OF THE LIGHTING WORKS TO BE UNDERTAKEN.

|        |            |    |                 |     |     |
|--------|------------|----|-----------------|-----|-----|
| S3-P02 | 15.11.2024 | RK | POST RSK UPDATE | AOS | JAH |
| S3-P01 | 26.07.2024 | RK | FIRST ISSUE     | AOS | JAH |
| REV    | DATE       | BY | DESCRIPTION     | CHK | APD |

DRAWING STATUS

DETAILED DESIGN

70 Chancery Lane, London WC2A 1AF  
www.fmcconway.co.uk www.wsp.com

CLIENT

GREATER CAMBRIDGE PARTNERSHIP

PROJECT

COMBERTON GREENWAY

TITLE

GENERAL ARRANGEMENT  
ADAMS ROAD AND COTON VILLAGE  
SHEET 04 OF 31

|            |            |              |         |          |       |
|------------|------------|--------------|---------|----------|-------|
| SCALE @ A1 | DATE       | DESIGN/DRAWN | CHECKED | APPROVED | SHEET |
| 1:250      | 15.11.2024 | RK           | AOS     | JAH      | A1    |

WSP PROJECT NO.

70117376

|                                |        |
|--------------------------------|--------|
| DRAWING NO.                    | REV    |
| 7376-WSP-CT-AC-DR-HW-000100-04 | S3-P01 |

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**NOTES:**

- WHERE FLUSH KERBS ARE PROPOSED AT RAISED TABLES A MINIMUM OF 25mm KERB UPSTAND IS TO BE MAINTAINED.
- REFER TO DRAWING 7376-WSP-CT-XX-M2-LA-03004-03012 FOR FURTHER PLANTING DETAILS.
- FOR KEY REFER TO 7376-WSP-CT-AC-DR-HW-000100-00.
- PLEASE REFER TO THE LIGHTING DESIGN PACK, WHEN AVAILABLE, FOR FULL DETAILS OF THE LIGHTING WORKS TO BE UNDERTAKEN.

|        |            |    |                 |     |     |
|--------|------------|----|-----------------|-----|-----|
| S3-P02 | 15.11.2024 | RK | POST RSK UPDATE | AOS | JAH |
| S3-P01 | 26.07.2024 | RK | FIRST ISSUE     | AOS | JAH |
| REV    | DATE       | BY | DESCRIPTION     | CHK | APD |

DRAWING STATUS

**DETAILED DESIGN**

**wsp**

70 Chancery Lane, London WC2A 1AF  
www.fmcconway.co.uk www.wsp.com

CLIENT

**GREATER CAMBRIDGE PARTNERSHIP**

PROJECT

**COMBERTON GREENWAY**

TITLE

**GENERAL ARRANGEMENT  
ADAMS ROAD AND COTON VILLAGE  
SHEET 05 OF 31**

|            |            |              |         |          |       |
|------------|------------|--------------|---------|----------|-------|
| SCALE @ A1 | DATE       | DESIGN/DRAWN | CHECKED | APPROVED | SHEET |
| 1:250      | 15.11.2024 | RK           | AOS     | JAH      | A1    |

WSP PROJECT NO.

**70117376**

|                                       |               |
|---------------------------------------|---------------|
| DRAWING NO.                           | REV           |
| <b>7376-WSP-CT-AC-DR-HW-000100-05</b> | <b>S3-P01</b> |

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