



PULSAR

Proof of Evidence – Traffic and Transport (Mr Kamran Haider) - APPENDICES

The Cambourne to Cambridge Order Inquiry Reference (TWA/24/APP/03)

Transport and Works Act 1992:

**Transport And Works (Applications and Objections
Procedure) (England and Wales) Rules 2006**

Objector Number (OBJ213)

August 2025

www.pulsartransport.co.uk

REGISTERED OFFICE: Pulsar Transport Limited, Gilmoora House, 57-61 Mortimer Street, London W1W 8HS.

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APPENDIX A – CAM Public Consultation Leaflet

PROPOSALS FOR THE CAMBRIDGESHIRE AUTONOMOUS METRO (CAM)

21 February to 3 April 2020



Vehicle shown for illustrative purposes only

Welcome

“ I am delighted to invite you to our public consultation for the Cambridgeshire Autonomous Metro - a new high-quality ‘metro-style’ transport network for the region.

CAM will create a platform for growth across the region, by seamlessly connecting new and existing households and businesses with key employment areas, railway stations and the city centre.

The creation of this world-class public transport will transform the day-to-day lives of local people across Cambridgeshire by introducing a new fast and reliable travel option, designed to sustain the growth of the region in the long-term.

By reducing reliance on private cars, CAM will also help cut congestion and tackle air quality issues, improving the quality of the local environment for generations to come.

I hope you will be able to attend one of our upcoming consultation events, to discover more and speak with members of the CAM project team.

Feedback from the consultation will help to influence the evolution of the proposals.



Mayor James Palmer
Cambridgeshire and Peterborough
Combined Authority

About Us

The Cambridgeshire and Peterborough Combined Authority (CPCA) is the Transport Authority responsible for transport planning and public transport in our area. It brings together the councils of the area and is led by the elected mayor.



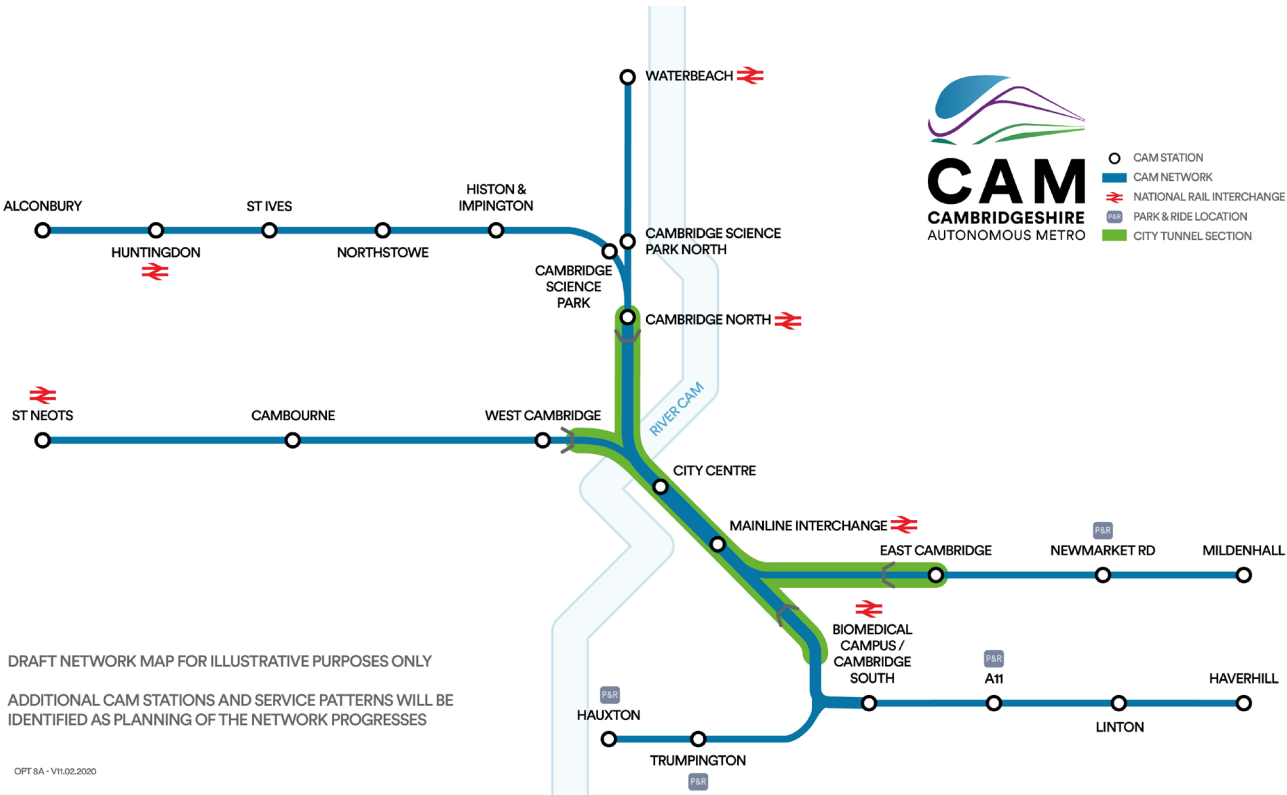
What is CAM?

The vision is for an expansive metro-style network that seamlessly connects regional settlements, major city fringe employment sites and key satellite growth areas across the region with key railway stations and Cambridge city centre, helping to nurture and sustain long-term regional economic growth. CAM is currently expected to use a technologically advanced, sustainable, highly flexible trackless electric vehicle.

The CAM network will comprise both tunnelled and surface elements and will be delivered over the next decade:

- The City Tunnel Section, which is the subject of this consultation, will include new underground tunnels and stations under the city of Cambridge, with planned major interchange hubs at the city centre and at Cambridge railway station;
- Four regional routes will connect St Neots, Alconbury, Mildenhall and Haverhill with the city of Cambridge and, through the central tunnelled section, with each other.

An indicative map of how the CAM network would look is shown below.



Scope of the Consultation

As part of this consultation, we are seeking your views on:

1. The need for and benefits of CAM;
2. The potential route alignments for the City Tunnel Section of CAM, further details of which are available in this leaflet.

Your feedback to this consultation will influence the evolution of the proposals and support the preparation of the Outline Business Case (OBC) for the City Tunnel Section, further information on which is available in this leaflet.

How to Participate in the Consultation

Public exhibitions are being held as set out in the table below. The exhibitions will provide an opportunity to view the proposals and discuss them with members of the CAM project team.

Date	Venue	Time
29 Feb 2020	Lion Yard Shopping Centre, St Tibb's Row, Cambridge, CB2 3ET	10am – 4pm
2 Mar 2020	Cambridge United Football Club, Abbey Stadium, Newmarket Road, Cambridge, CB5 8LN	1pm – 7pm
5 Mar 2020	Royal Papworth Hospital, Papworth Road, Trumpington, Cambridge, CB2 0AY	10am – 4pm
7 Mar 2020	Grafton Shopping Centre, Cambridge, CB1 1PS	10am – 4pm
11 Mar 2020	Cambridge Science Park, St Johns Innovation Centre, Cowley Road, Cambridge, CB4 0WS	12pm – 3:30pm
20 Mar 2020	The Hauser Forum, 3 Charles Babbage Road, Cambridge, CB3 0GT	1pm - 7pm

The consultation materials, including the consultation leaflet and feedback form, will also be available to view at information points between **Thursday 27 February and Friday 3 April 2020**, which are set out in the table below. Please note that opening times may be subject to change. Copies of the consultation materials are also available online at www.cam.consultationonline.co.uk.

Venue	Opening Hours
Sainsbury's, St Germain Walk, Huntingdon, PE29 3FG	Mon-Weds: 8am-8pm, Thurs-Fri: 8am-9pm Sat: 7:30am-8pm, Sun: 10am-4pm
Linton Health Centre, Coles Lane, Linton, Cam-bridge, CB21 4JS	Mon-Fri: 8am-6pm Sat & Sun: Closed
Love's Farm House, 17 Kester Way, St Neots, PE19 6SL	Mon-Fri: 9am-3pm Sat & Sun: Open for private functions only
Co-op Mildenhall, King Street, Mildenhall, Bury St Edmunds, IP28 7ES	Mon-Sun: 7am-10pm
Leiston Community Centre, Leiston Road, Haverhill, CB9 8JJ	Mon-Fri: 10am-5pm & 6:15pm-8pm Sat: 10am-4pm & 6:15pm-8pm, Sun: Closed
The Club, Enterprise Campus, The Boulevard, Alconbury Weald, Huntingdon, PE28 4XA	Mon - Fri: 9am - 5:30pm, Sat & Sun: Closed

The Need for CAM

To date, economic growth in the region has not been matched by infrastructure, particularly transport. To nurture and sustain this growth, new infrastructure is needed to support the delivery of new jobs and new homes.

CAM will connect key regional centres of employment, existing settlements, key railway stations, new homes and planned growth, to create a platform for sustainable and inclusive growth across the region.

Introducing a rapid transit solution in the form of CAM will transform people’s day-to-day lives, by connecting communities and creating new jobs and widening access to opportunities across the region.

Benefits of CAM



Improving Your Travel Experience

CAM will provide a reliable and regular service using modern vehicles, significantly reducing journey times between the wider region and the city of Cambridge through the utilisation of autonomous technology (where practicable) with dedicated routes which reduce congestion, improving the travel experience for all.



Expanding Your Range of Opportunities

By connecting existing and planned settlements with key regional centres of employment, CAM will greatly expand the opportunities available to residents of the region, including access to a greater number and variety of jobs. Students will also benefit from greater access to a wider range of training opportunities, apprenticeships, colleges and sixth form places. Access will also be improved to health care facilities and other essential services for all residents.



Improving Air Quality and Reducing Congestion

By providing a passenger transport system that offers a genuine alternative to using the car, CAM would help to reduce congestion and improve air quality within the city of Cambridge through the use of electric vehicles, improving the local environment for all.



Supporting Sustainable Regional Growth

CAM will connect key regional centres of employment, with existing settlements, railway stations and planned growth, to create a platform for sustainable and inclusive growth across the region, in addition to the opportunity to provide more new and affordable homes.



Encouraging New Investment

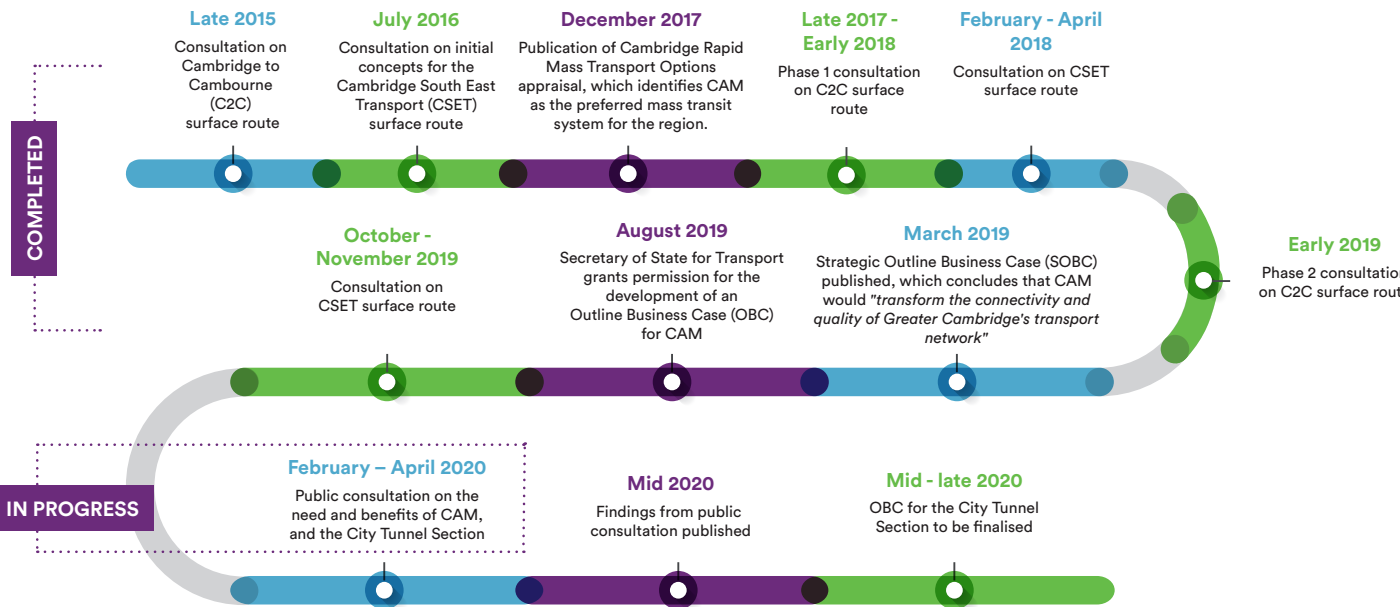
By decreasing the relative distance between key ‘clusters’ around the city and across the region, CAM will link key growth areas, encouraging additional jobs by making the region a more attractive place to locate, expand and invest.

Let us know your thoughts

We would like to know your view on the need and benefits of CAM outlined above. Please answer question 7 on the feedback form to share your view.

Story so far

The diagram below illustrates the work that has previously been undertaken on CAM, and indicative timescales for the project’s next steps.



About the Outline Business Case (OBC)

The Outline Business Case (OBC) is the second phase in the development of a business case compliant with HM Treasury guidance.

The business case is a multi-stage decision-making tool designed to ensure that public money is spent in the best way possible to improve public services.

A business case is developed over three phases:

- 1. The Strategic Outline Business Case (SOBC):** Was published in 2019 and explains the case for change and suggests an indication of the potential solution to stakeholders;
- 2. The Outline Business Case (OBC):** Will revisit the SOBC in more detail and identify a preferred option that optimises Value for Money;
- 3. The Full Business Case (FBC):** Will revisit the OBC and recommend detailed arrangements for the successful delivery of the project.

Each phase addresses the following five key aspects, with an increasing level of detail:

Strategic Case: Demonstrating the strategic rationale for the CAM network, including how it will meet the region’s interconnected transport, economic, and environmental objectives;

Economic Case: Ensuring that the project will deliver the greatest possible value from this investment, not only to CAM’s users, but to wider society by driving economic growth, enabling a more sustainable transport network, and improving quality of life across the region;

Commercial Case: Ensuring the commercial viability of the project and determining the delivery framework, including a robust and transparent procurement strategy;

Financial Case: Verifying whether the project is affordable and fundable over time; and

Management Case: Determining whether the project can be delivered successfully by the organisation and its partners.

The City Tunnel Section

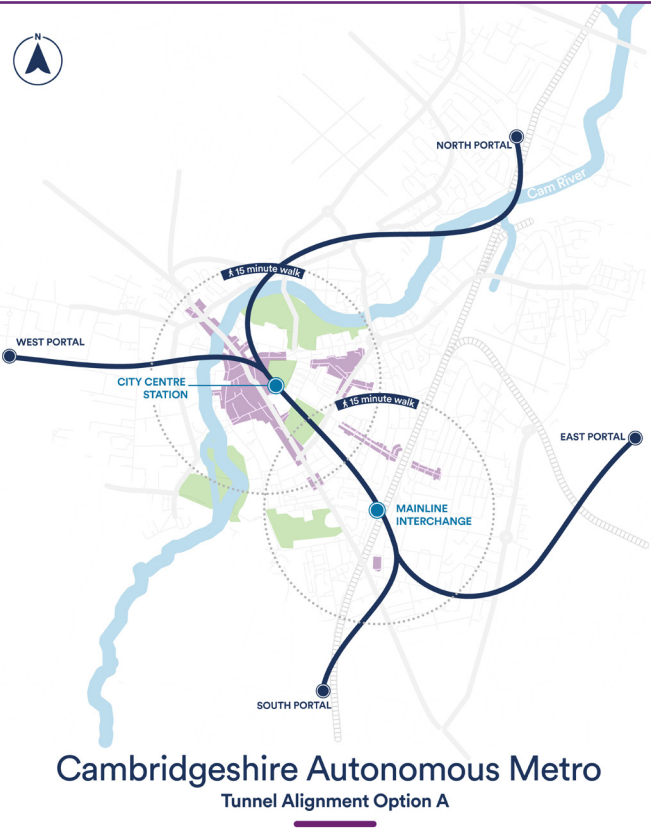
The City Tunnel Section comprises underground tunnels, planned major interchange hubs at the city centre and at Cambridge railway station, under the city of Cambridge, and portals where CAM links to the surface routes. Further detail regarding portals is available on page 8 of this leaflet.

Both Route Alignment Options set out here have been arrived at following a detailed optioneering process that has taken into consideration various planning, engineering and environmental factors, further details of which will be published as part of the planning process.

Why tunnels?

The city of Cambridge's historic streetscape means that it is not possible to deliver a surface-level segregated route through the city centre. If services were to run on-street, they would be significantly slower and frequently delayed by other traffic. Tunnelling under the city centre is therefore the best way to ensure fast, frequent and reliable CAM services, which meet the objectives of the scheme.

Route Alignment Option A



Option A would see the four surface routes connect to the City Tunnel Section via four portals to the north, south, east and west of the city, where CAM would transition from above ground to below ground operation.

Once underground, the north and west routes would converge at a new City Centre station.

The south and east tunnels would converge at a Mainline Interchange station at Cambridge railway station that would enable users to transfer between CAM and the existing National Rail network.

The Mainline Interchange station and City Centre station would be connected by tunnels which would be used by vehicles travelling to/from the surface routes.

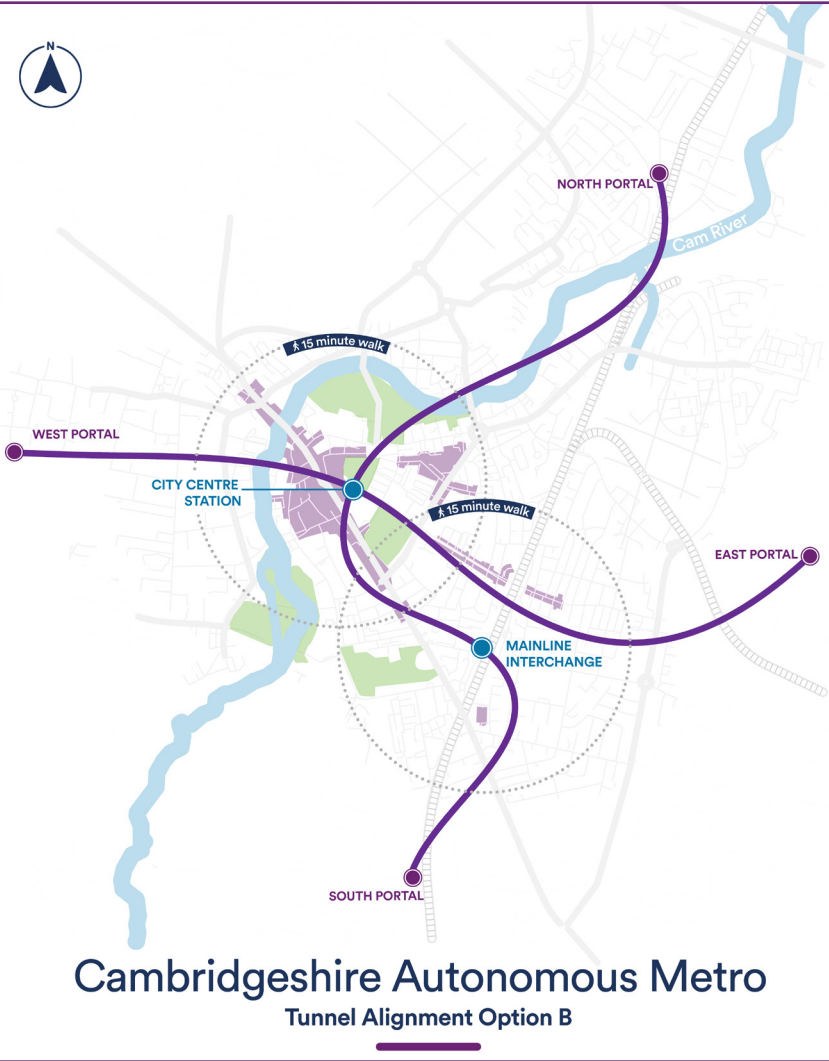
This would provide passengers with easy access to both stations in the city centre and facilitate swift and efficient transfers between different routes.

Further details regarding the proposed City Centre and Mainline Interchange stations can be found on pages 9 and 10 of this leaflet.

Key Benefits and Drawbacks Associated with Option A

Benefits	Drawbacks
+ More direct connections than Option B, especially to/from the east and Cambridge railway station, and to/from the west and south	- Combined tunnels could constrain capacity
+ Easier to interchange between lines than Option B through the provision of cross-platform interchanges	- Any operational issue within the central section may impact all lines
+ Provides more flexibility than Option B to change the distribution of vehicles and service patterns to match any changes in the level of demand	

Route Alignment Option B



Option B would also see the four surface routes connect to the City Tunnel Section via four portals to the north, south, east and west of the city, where CAM would transition from above ground to below ground operation.

Once underground, all four tunnels would converge at a new City Centre station only, with the new Mainline Interchange station served solely by the services running to/from the southern surface routes.

Passengers from the east and west would be required to change at the City Centre station to reach the Mainline Interchange station.

Key Benefits and Drawbacks Associated with Option B

Benefits	Drawbacks
+ Provides a simpler services pattern where lines have dedicated platforms	- No direct link between the east/west and Mainline Interchange station
+ Separation of lines enables services to continue running if operational issues arise on one line	- Larger double-level station required at the City Centre station
	- Provides less flexibility than Option A to change the distribution of vehicles and service patterns to match any changes in demand

Let us know your thoughts

We would like to know your view on the potential route alignments outlined above. Please answer questions 9 and 10 on the feedback form to share your view.

The Portals

Portals are the locations at which CAM transitions from above ground to below ground operation and will be similar in appearance to the entry/exits of road and railway tunnels.

Four portals will be required to link the surface routes with the City Tunnel Section, and are proposed to be located to the north, south, east and west of the city.

At present, we anticipate the portals will be located in the following approximate areas:

- **North:** Near Cambridge North Railway station
- **South:** Near Cambridge Biomedical Campus
- **East:** Near Cambridge Airport
- **West:** Near University of Cambridge west site

Precise locations for the portals have yet to be confirmed as further technical work is required to refine potential locations. Once this work has been carried out, precise portal locations will be presented as part of a future consultation.

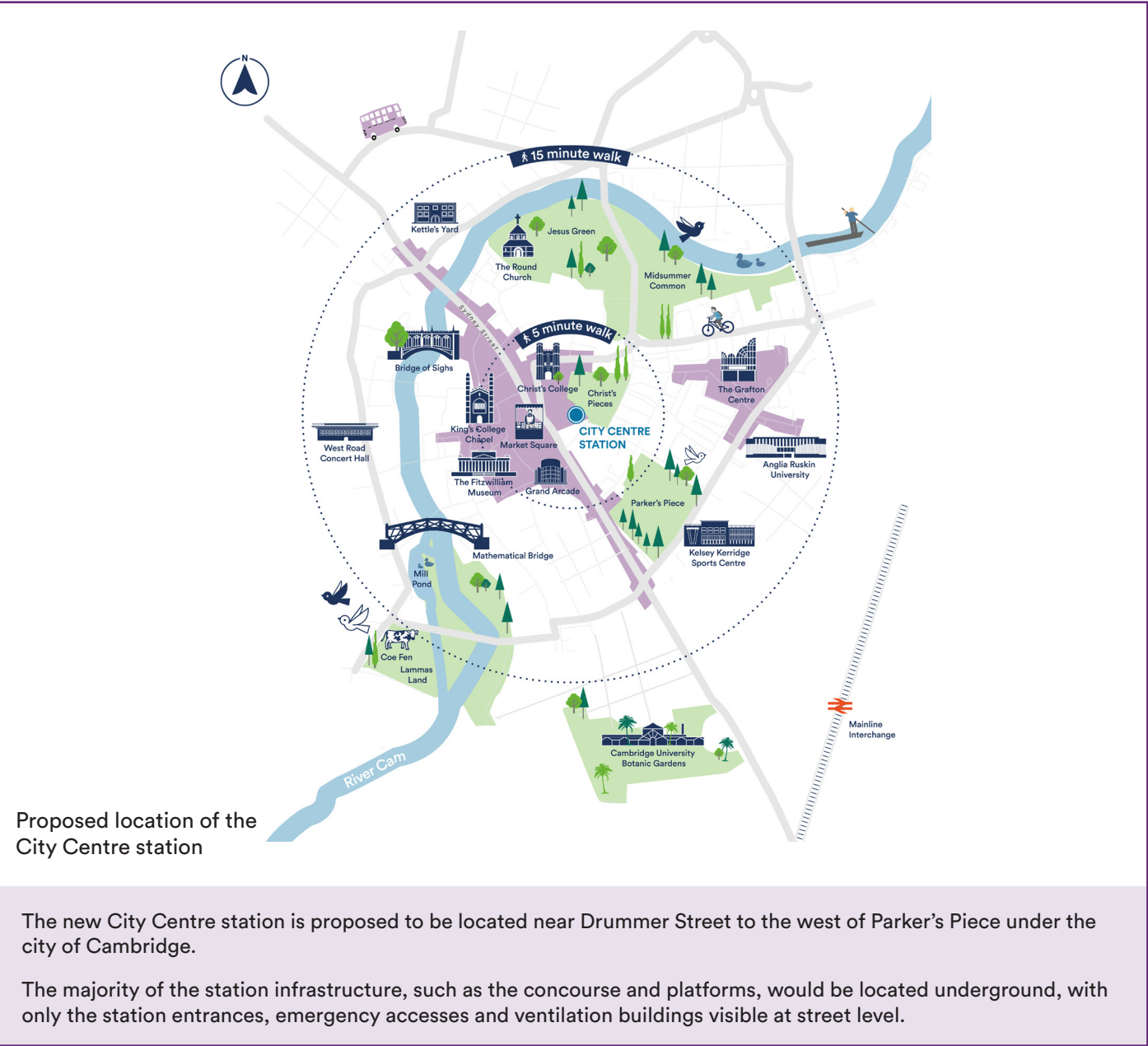
Stations will be located above ground in close vicinity to all four portals, with the exception of the north portal, where the station may be located partially underground due to engineering constraints.



Let us know your thoughts

We would like to know your view on the potential portal locations outlined above. Please answer question 13 on the feedback form to share your view.

Proposed City Centre station location



The new City Centre station is proposed to be located near Drummer Street to the west of Parker's Piece under the city of Cambridge.

The majority of the station infrastructure, such as the concourse and platforms, would be located underground, with only the station entrances, emergency accesses and ventilation buildings visible at street level.

Alternatives Considered

As part of the initial optioneering work, a number of potential station locations were identified and investigated, with a large number of these being discounted as they would have required the demolition of a significant number of buildings.

Following this process, three options remained:

1. Near Drummer Street
2. Near Parker's Piece
3. Near Market Square

Parker's Piece was not chosen as a preferred location due to the impact a station would have on both the visual environment and the heritage. Similarly, it was felt that the Market Square location was not a viable option due to its sensitive location, impacts and complexity of construction, access, and loss of public space in the centre of Cambridge.

Let us know your thoughts

We would like to know your view on the potential station locations outlined above. Please answer question 11 on the feedback form to share your view.

Proposed Mainline Interchange station location



The new Mainline Interchange is proposed to be located in close proximity to the existing Cambridge railway station, allowing passengers to quickly change between the CAM and National Rail networks.

Like the new City Centre station, the majority of the station infrastructure, such as the concourse and platforms, would be located underground, with only the station entrances, emergency accesses and ventilation buildings visible at street level.



Indicative CGI of a station entrance

Have your say

Thank you for taking the time to view our proposals for CAM. There are a range of ways to respond to the consultation, including:

- **At public exhibitions and information points** – Feedback forms, together with freepost envelopes, will be available to complete at all public exhibitions and information points;
- **Online** – An online feedback form will be available at cam.consultationonline.co.uk. An electronic copy of the feedback form will also be available to download via the website and can be returned via email or Freepost (see below);
- **By post** – Comments will be accepted in writing via post to 'FREEPOST CAM CONSULTATION'. Completed hard copy feedback forms can also be returned via this address;
- **By email** – Comments can be submitted via email to cam@consultation-online.co.uk. Electronic or scanned copies of completed feedback forms can also be returned via email;
- **By phone** – The project team will be contactable via freephone on 01223 608001 with any queries (9:00–17:30 Mon-Fri).

Responses to the consultation must be submitted by no later than 23:59 on Friday 3 April 2020 (postal responses will be accepted up to three working days after this deadline) and responses received after this date may not be taken into consideration.

All comments submitted during the consultation will be recorded and carefully considered by CPCA and will be taken into account when further developing the proposal.

Next steps

Following the end of the consultation, CPCA will review all feedback submitted and publish the findings as part of the planning process.

In addition, the OBC will be prepared and submitted to the Department for Transport.

We remain at an early stage in the development of CAM and there will be further public consultation ongoing in the future as we continue to refine our proposals to provide additional detail.



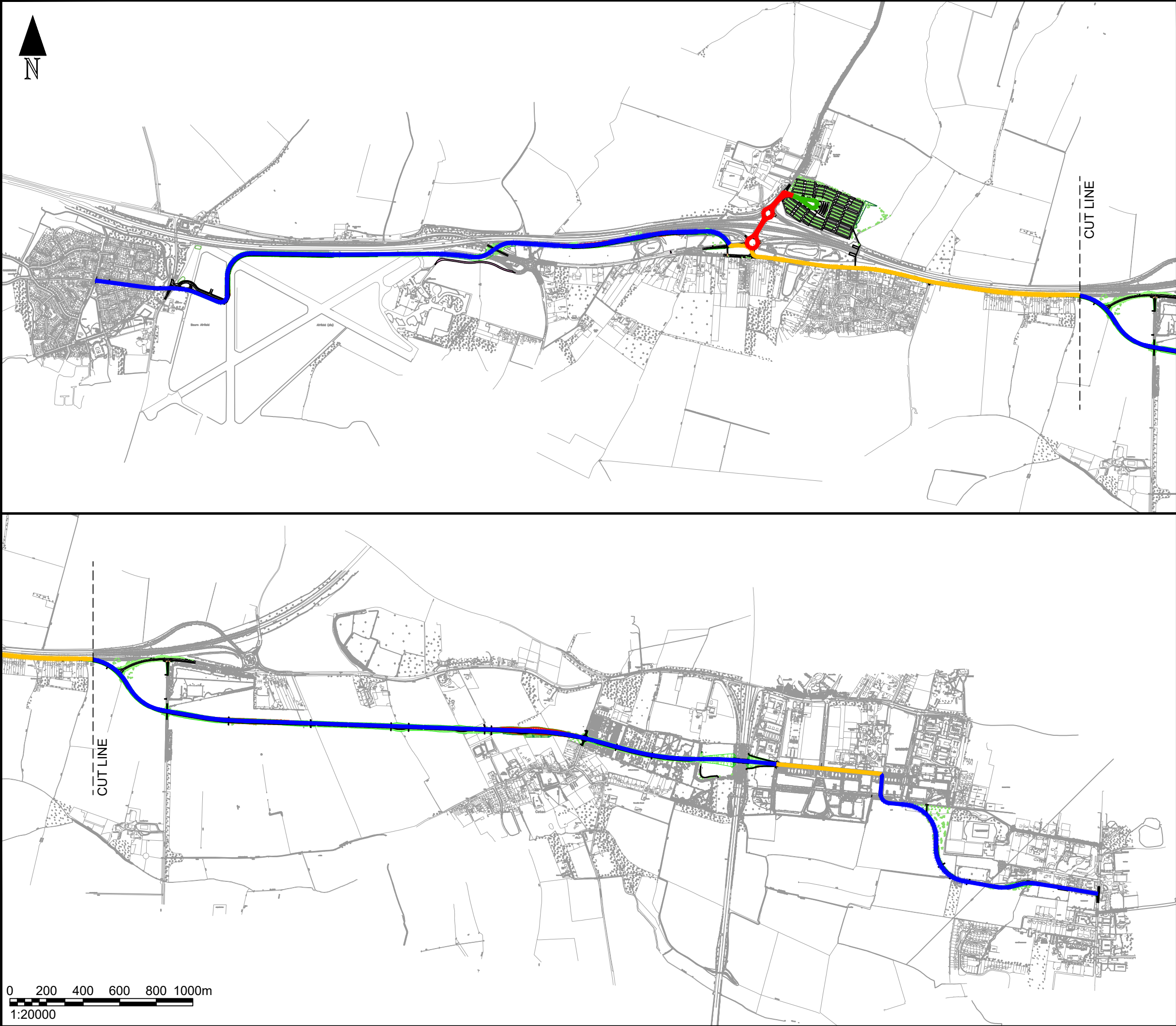
Contact Us

If you have any questions, please contact us via:

- Website: www.cam.consultationonline.co.uk
- Freephone: **01223 608001** (09:00 - 17:30, Mon to Fri)
- Email: cam@consultation-online.co.uk
- Freepost: **FREEPOST CAM CONSULTATION** (no stamp required)

Please leave your notes here

APPENDIX B – CTOC Bus Route Lengths



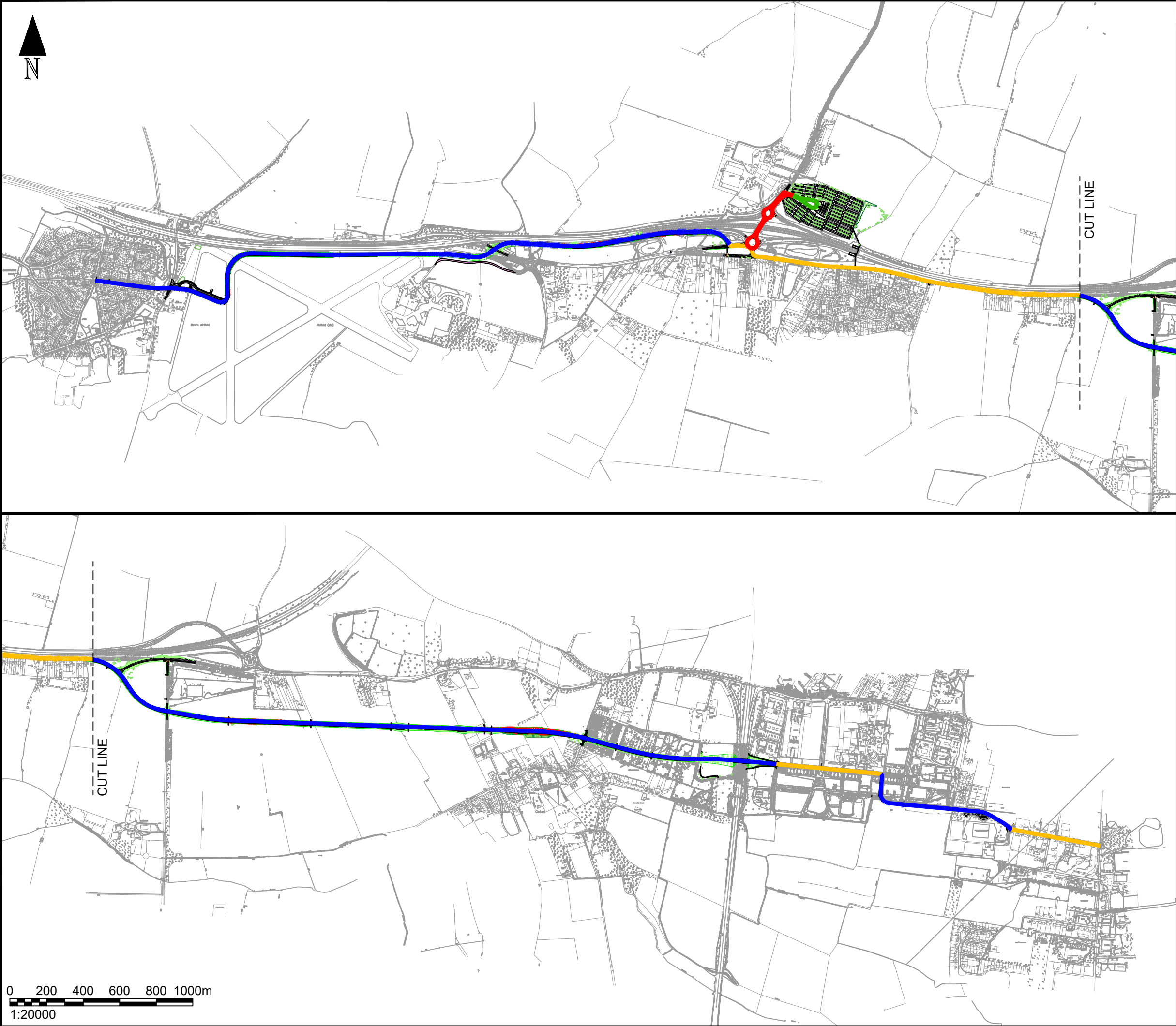
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1. Do not scale from this drawing.
 2. This drawing to be read & printed in colour.
 3. This drawing is for illustrative purposes only, and not for construction.

KEY :

	BUSES ONLY = 9,204m
	SHARED USE = 2,545m
	PARK & RIDE LOOP (SHARED USE) = 871m
	PARK & RIDE LOOP (BUSES ONLY) = 314m
	TOTAL LENGTH = 12,934m

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REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT	
Clare Hall	
PROJECT	
Cambridge Busway Route Appraisal	
DRAWING TITLE	
Busway Length	
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DRAWN BY	CHECKED BY
DW	KH
DATE	
31.07.2025	
Gilmoor House, 57-61 Mortimer Street, London, W1W 8HS www.pulsartransport.co.uk	
PROJECT REF	DWG NO
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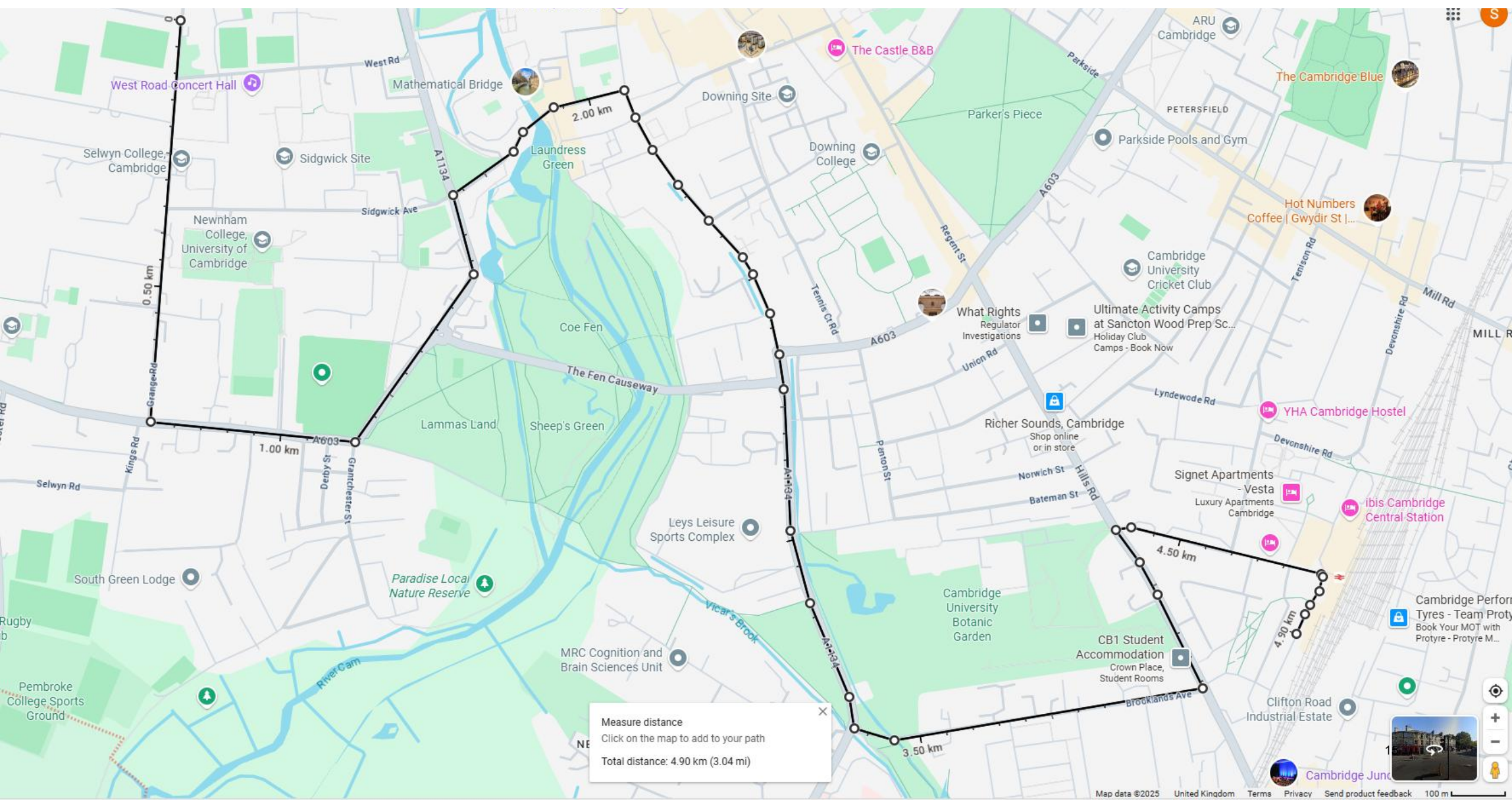
- NOTES :**
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 3. This drawing is for illustrative purposes only, and not for construction.

KEY :	
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<div></div>	PARK & RIDE LOOP (BUSES ONLY) = 314m
<div></div>	TOTAL LENGTH = 12,707m

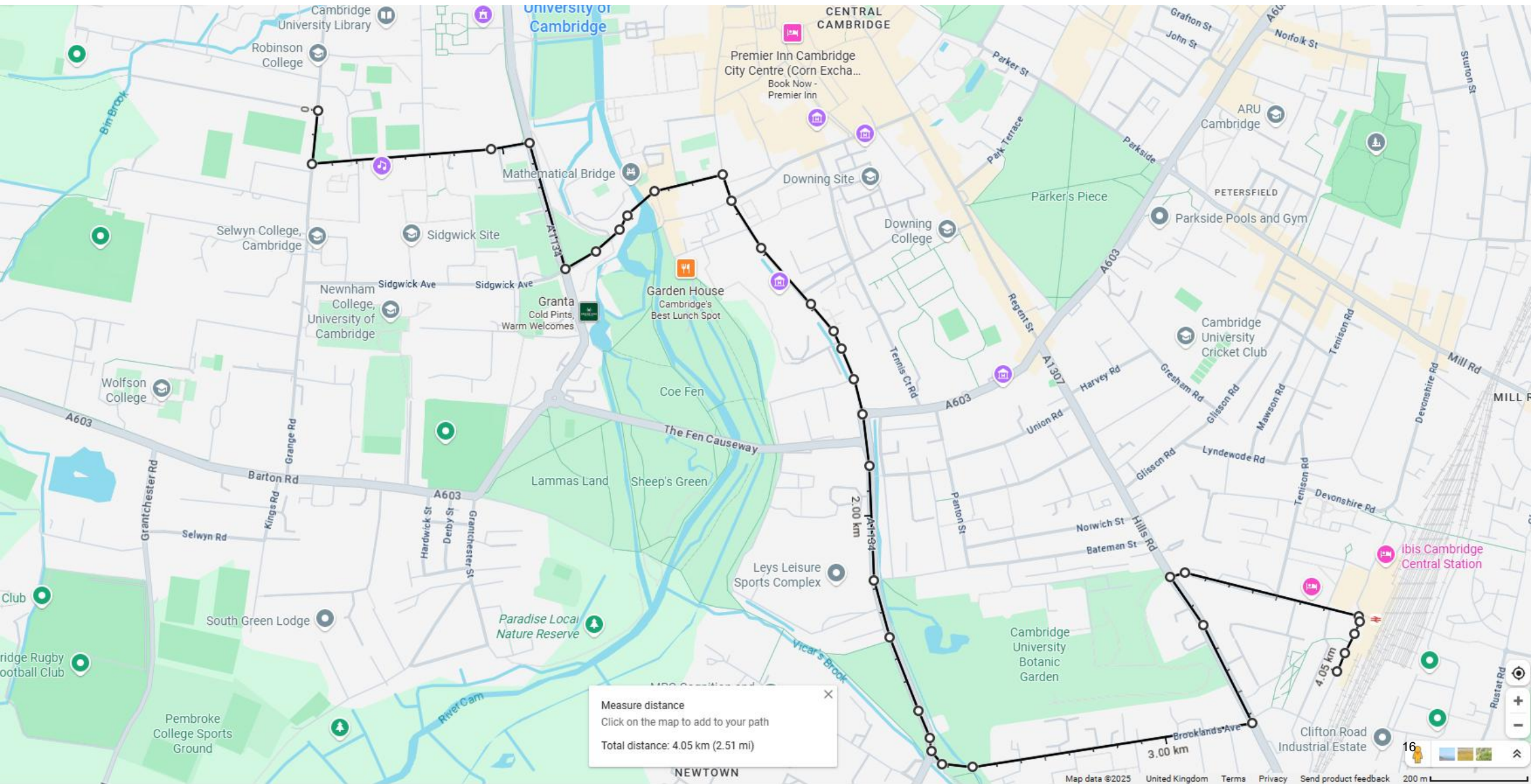
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Cambridge Busway Route Appraisal				
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SCALE		1:20,000		SIZE A3
DRAWN BY	DW	CHECKED BY	KH	DATE 05.08.2025
				
Gilmoor House, 57-61 Mortimer Street, London, W1W 8HS www.pulsartransport.co.uk				
PROJECT REF		DWG NO		REV
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APPENDIX C – U1 and U2 Bus Service Route Lengths

U1 Bus Route Distance from Rifle Range Road/Grange Road to Rail Station bus stop = 4.9km

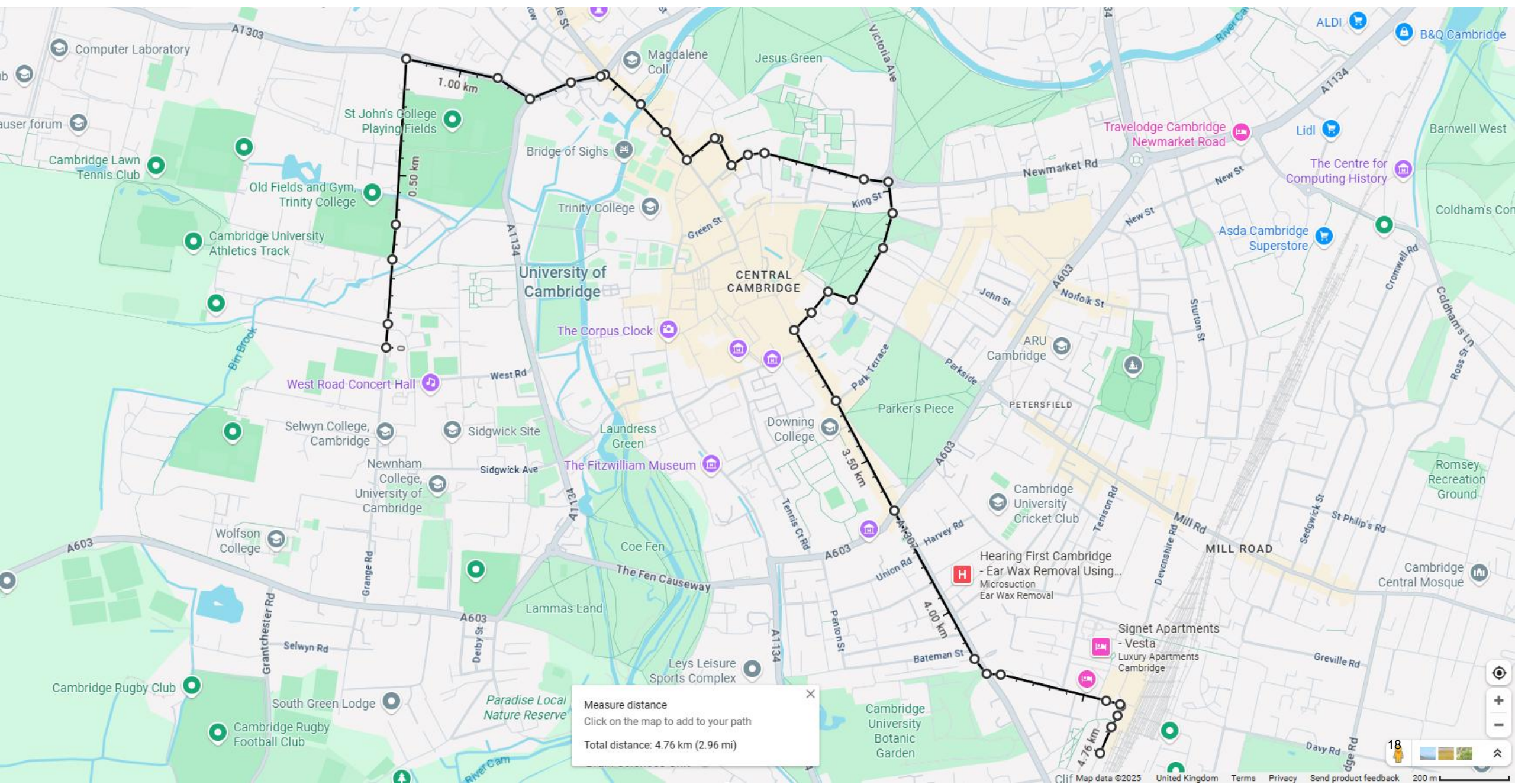


U2 Bus Route Distance from Rifle Range Road/Grange Road to Rail Station bus stop = 4.05km



APPENDIX D – X3 Bus Service Route Lengths

X3 Bus Route Distance from Rifle Range Road/Grange Road to Rail Station bus stop = 4.76km



APPENDIX E – Skip Lorry Vehicle Swept Path Analysis



NOTES :

1. Do not scale from this drawing.
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7.1m SKIP VEHICLE

Overall Length	7.100m
Overall Width	2.500m
Overall Body Height	3.706m
Min Body Ground Clearance	0.396m
Track Width	2.435m
Lock to Lock Time	6.00s
Kerb to Kerb Turning Radius	7.200m

	FORWARD MOVEMENTS (design speed - 5kph)
	REVERSE MOVEMENTS (design speed - 2.5kph)

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

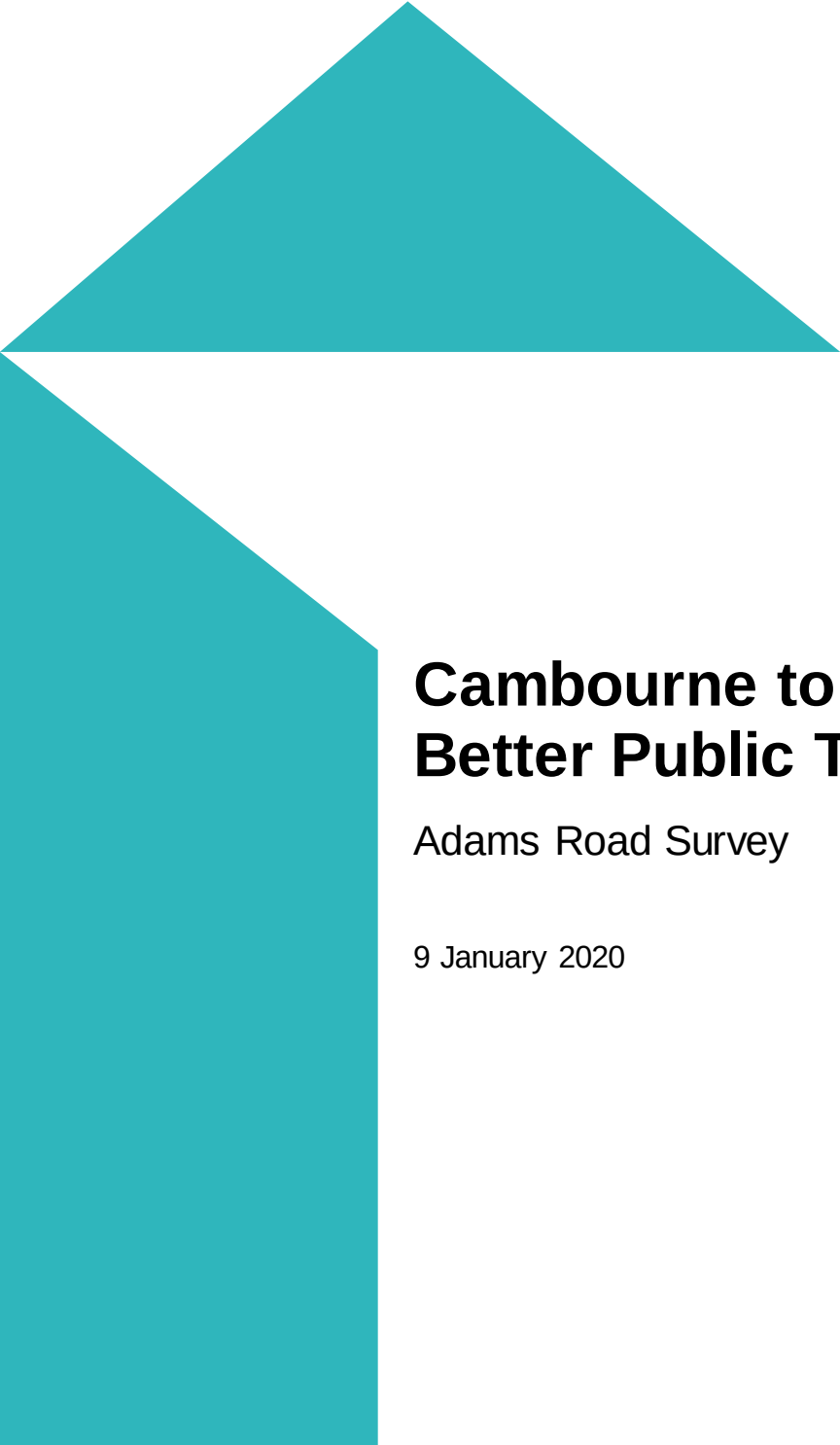
Skip Lorry Vehicular Swept Paths at the Proposed Busway Junction

SCALE	1:200	SIZE	A3		
DRAWN BY	DW	CHECKED BY	KH	DATE	07.08.2025

Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS
www.pulsartransport.co.uk

PROJECT REF	21086(A)	DWG NO	107	REV	20
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APPENDIX F – Adams Road Traffic Survey



Cambourne to Cambridge Better Public Transport

Adams Road Survey

9 January 2020

Mott MacDonald
22 Station Road
Cambridge CB1 2JD
United Kingdom

T +44 (0)1223 463500
mottmac.com

Cambourne to Cambridge Better Public Transport

Adams Road Survey

9 January 2020

Issue and Revision Record

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1	09/01/2020	AN	CS	JB	

Document reference: 392438-MMD-HWA-XX-RP-CV-0054 | 01 | A

Information class: Standard

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1 Road Traffic Surveys

To better understand traffic conditions along Adams Road and to inform the design process, a series of traffic surveys were conducted in October / November 2019 to supplement the regular collection of cycle flow data and older traffic data.

All vehicles including cycles were surveyed. No pedestrian surveys were undertaken as is conventional in a location such as Adams Road where pedestrian volumes are low.

1.1 Automatic Traffic Counts – User Class Splits

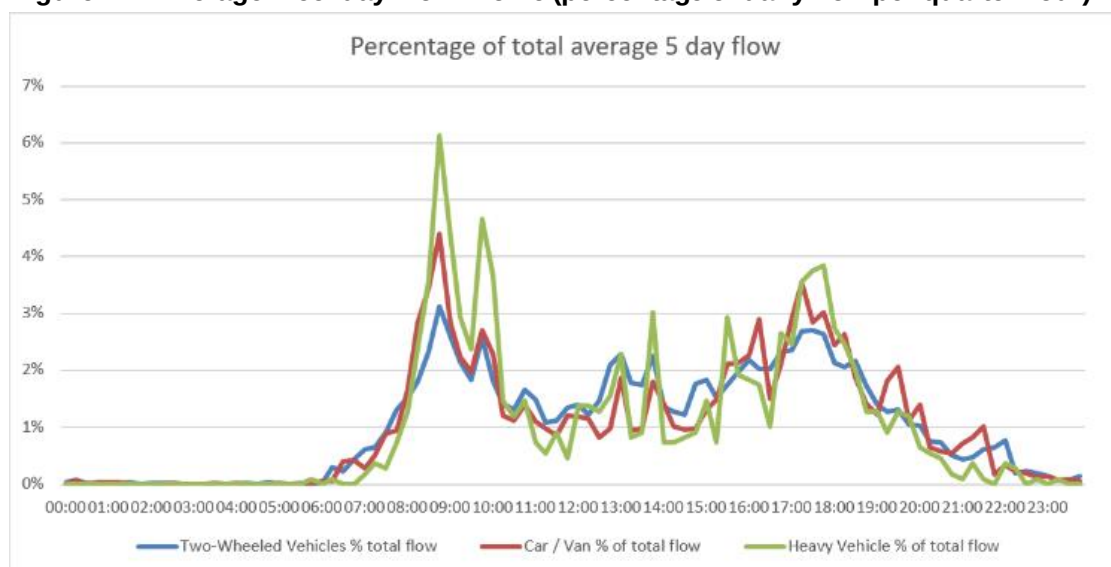
An Automatic Traffic Count (ATC) was undertaken on Adams Road, to the west of the junction with Sylvester Road over a three-week period, from 28 October until 14 November 2019 by Intelligent Data. The ATC recorded vehicle type based on the number of wheels/ axles, traffic volumes and speeds of vehicles for 24 hours per day during the survey period. This data has been used to provide profiles of average flows by vehicle type for a 5-day weekday and 7-day weekend day period, between Tuesday 5 November to Monday 11 November.

The user class was split into three categories:

- Two-wheeled vehicles
- Car or van
- Heavy vehicles

The five-day average analysis used the standard days of the working week to show the proportion of vehicle types using the road across an average weekday. The two-way flow results are shown below in Figure 1.1 below. The line for each vehicle type shows the percentage of daily traffic in any one 15 minute period. The peaks for heavy vehicles and cars are most steep because the total flows are so low and a small number of vehicles constitutes a significant percentage. The highest percentage of daily two-wheeled vehicle movements in a 15 minute period is around 3% just before 0900.

Figure 1.1: Average Weekday Flow Profile (percentage of daily flow per quarter hour)

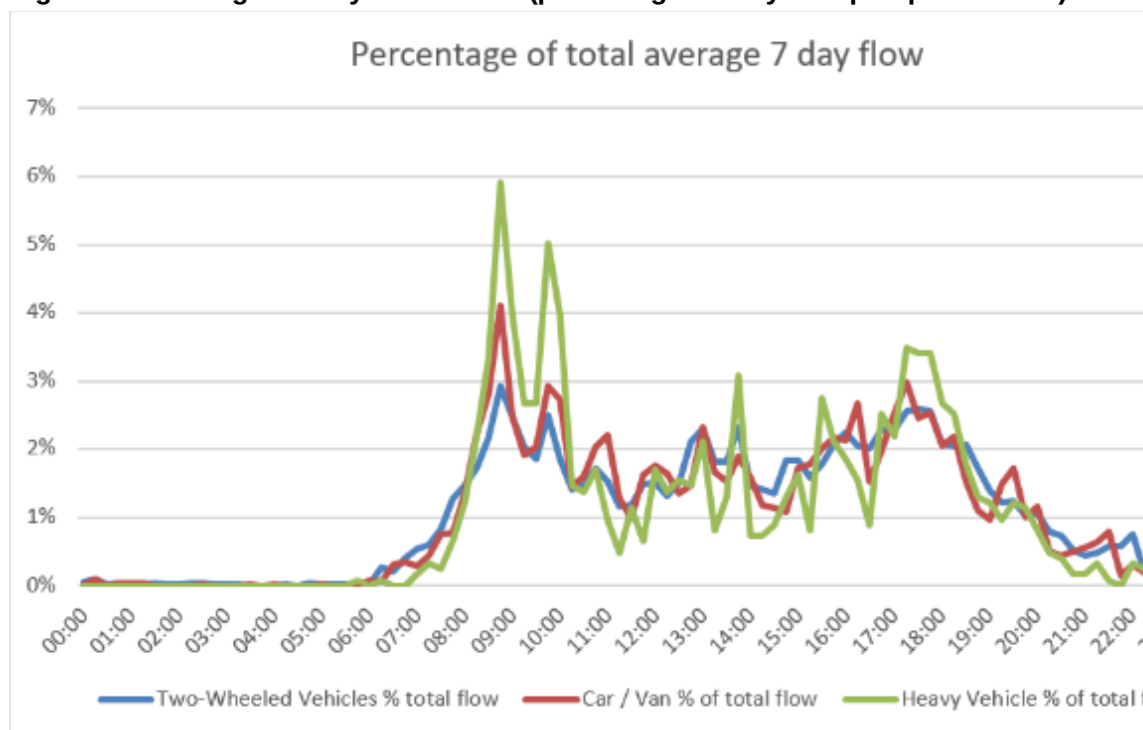


Source: Mott MacDonald

Throughout the day all modes show two distinct peaks between 08:30 to 09:30, and 17:00 to 18:00 for the AM and PM peaks respectively. A third lower peak is apparent for two-wheeled vehicles also around lunchtime.

The seven-day average analysis demonstrates very similar results as shown below in Figure 1.2.

Figure 1.2: Average Weekly Flow Profile (percentage of daily flow per quarter hour)



Source: <Insert Notes or Source>

The ATC data also provides a comparison of 12 hour data (as collected by Manual surveys) and 24 hour data. This enables us to expand the 12 hour junction turning count data to estimated 24 hour data.

	Two-Wheeled Vehicles 12 hour as % of total flow	Car / Van 12 hour as % of total flow	Heavy Vehicle 12 hour as % of total flow
5 day	86.63%	85.43%	91.95%
7 day	86.73%	87.96%	92.05%

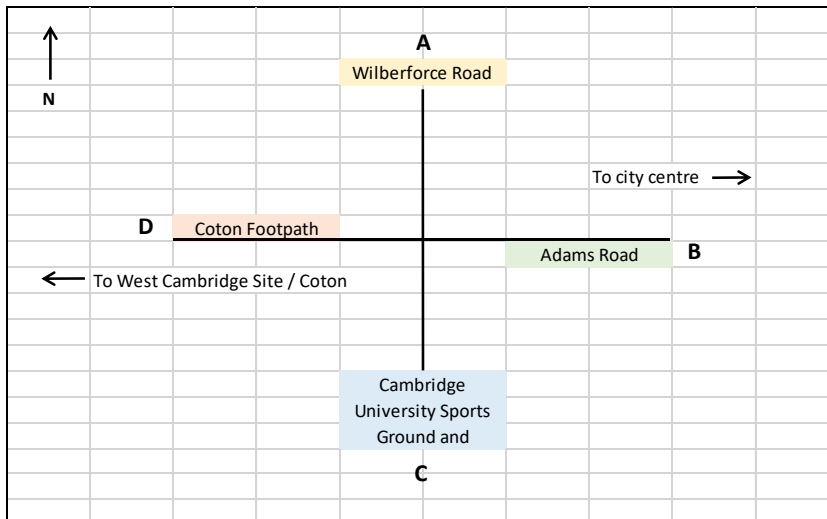
1.2 Manual Classified Counts (MCC's)

Manual classified counts (MCC's) were undertaken over a two-day period on the 29th October and 30th October by Intelligent Data at the two key junctions located at either end of Adams Road.

Site 1 was located to the west of Adams Road where it meets Wilberforce Road to the north, the athletics track entrance to the south and the Coton footpath to the west. See Figure 1.3

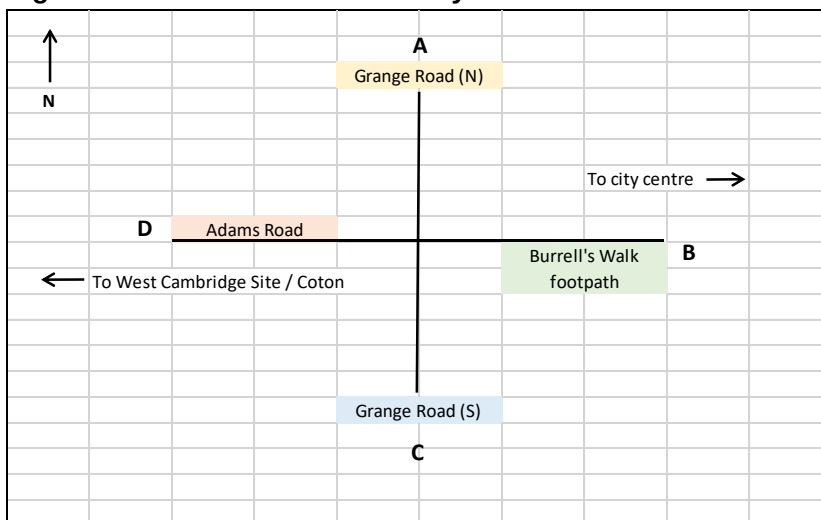
Site 2 was located to the east of Adams Road at its junction with Burrell's Walk footpath to the east and Grange Road to the north and south. This junction is signalised and has controlled pedestrian crossings at all four arms of the junction. See Figure 1.4.

Figure 1.3: MCC Site 1 Junction Layout



Source: Mott MacDonald

Figure 1.4: MCC Site 2 Junction Layout



Source: Mott MacDonald

The MCC's recorded the volume and turning movements of each vehicle type during the 12-hour survey period from 07:00 to 19:00 on the two survey days.

The user classes were split into four categories:

- Car or van
- Heavy vehicles/ public service vehicles
- Motorcycles
- Cycles

The results of the turning count analysis for each user class are shown below for MCC Site 1 (Figure 1.5) and MCC Site 2 (Figure 1.6).

The MCCs for Site 1 indicate that there are very few heavy goods, public service vehicles and motorcycles that travelled through the Adams Road/ Wilberforce Road junction on the days surveyed. The surveys show on average a total of 441 cars and vans travelled through the junction daily during the survey period. The highest flows were experienced by cycles. The dominant movement for cycles at this junction was travelling between the Coton footpath and Adams Road, with approximately 2350 cycle trips travelling in each direction across an average 12 hour day

Figure 1.5: MCC Site 1 Average Total Turning Movements per User Class between 07:00 to 19:00

Cars/LGV	A	B	C	D	Total		HGV/PSV	A	B	C	D	Total
A	0	151	24	0	175		A	0	2	0	0	2
B	166	0	58	0	224		B	2	0	1	0	3
C	13	31	0	0	44		C	0	1	0	0	1
D	0	0	0	0	0		D	0	0	0	0	0
Total	179	182	82	0	443		Total	2	3	1	0	6
M/C	A	B	C	D	Total		Cycle	A	B	C	D	Total
A	0	4	0	0	4		A	0	76	18	144	238
B	3	0	1	1	5		B	92	0	85	2487	2664
C	0	0	0	0	0		C	10	38	0	8	56
D	0	0	0	0	0		D	144	2345	16	0	2505
Total	3	4	1	1	9		Total	246	2459	119	2639	5463

Source: Mott MacDonald

The Site 2 surveys show that as might be expected the principal flows are on Grange Road itself. Heavy goods and public service vehicle movements to and from Adams Road are shown to be at similar levels to those captured for Adams Road in the Site 1 survey results – around 6 vehicles each way daily.

The Site 2 survey (Figure 1.6) shows approximately 650 two-way car and van movements travelling on Adams Road during the day. When compared to the Site 1 surveys, (Figure 1.5) this indicates that approximately 100 vehicles are travelling to destinations on Adams Road, Sylvester Road, or parking on-street, as these vehicles do not travel through the Site 1 MCC surveys.

The highest level of flow at this junction, as expected, is cycles. The dominant movement for cyclists through the junction is between Adams Road and Burrell's Walk, with 1500 cycles travelling in each direction daily. Around 600 cycles each day turn from Adams Road to Grange Road (south). Across the day Adams Road and Burrell's walk experience similar levels of flow with approximately 2000 cycles travelling in each direction, while Grange Road also shows high levels of cycle use with an average of approximately 1450 cycles travel in each direction daily. See Figure 1.6.

Figure 1.6: MCC Site 2 Average Total Turning Movements per User Class between 07:00 to 19:00

Cars/LGV	A	B	C	D	Total		HGV/PSV	A	B	C	D	Total
A	0	0	1255	154	1409		A	0	0	71	4	75
B	0	0	0	0	0		B	0	0	0	0	0
C	1301	0	0	164	1465		C	71	0	0	3	74
D	172	0	185	0	357		D	3	0	3	0	6
Total	1473	0	1440	318	3231		Total	74	0	74	7	155
M/C	A	B	C	D	Total		Cycle	A	B	C	D	Total
A	0	0	6	1	7		A	0	516	861	72	1449
B	1	0	0	1	2		B	472	0	4	1418	1894
C	11	0	0	0	11		C	797	14	0	641	1452
D	1	0	3	0	4		D	64	1481	619	0	2164
Total	13	0	9	2	24		Total	1333	2011	1484	2131	6959

Source: <Insert Notes or Source>

1.3 Summary

Automatic Traffic Count and Manual Classified Counts surveys were undertaken on Adams Road in October / November 2019 to establish the volume and modes of traffic travelling on Adams Road currently. The survey results confirm the data already held by the Project team and as anticipated show the following:

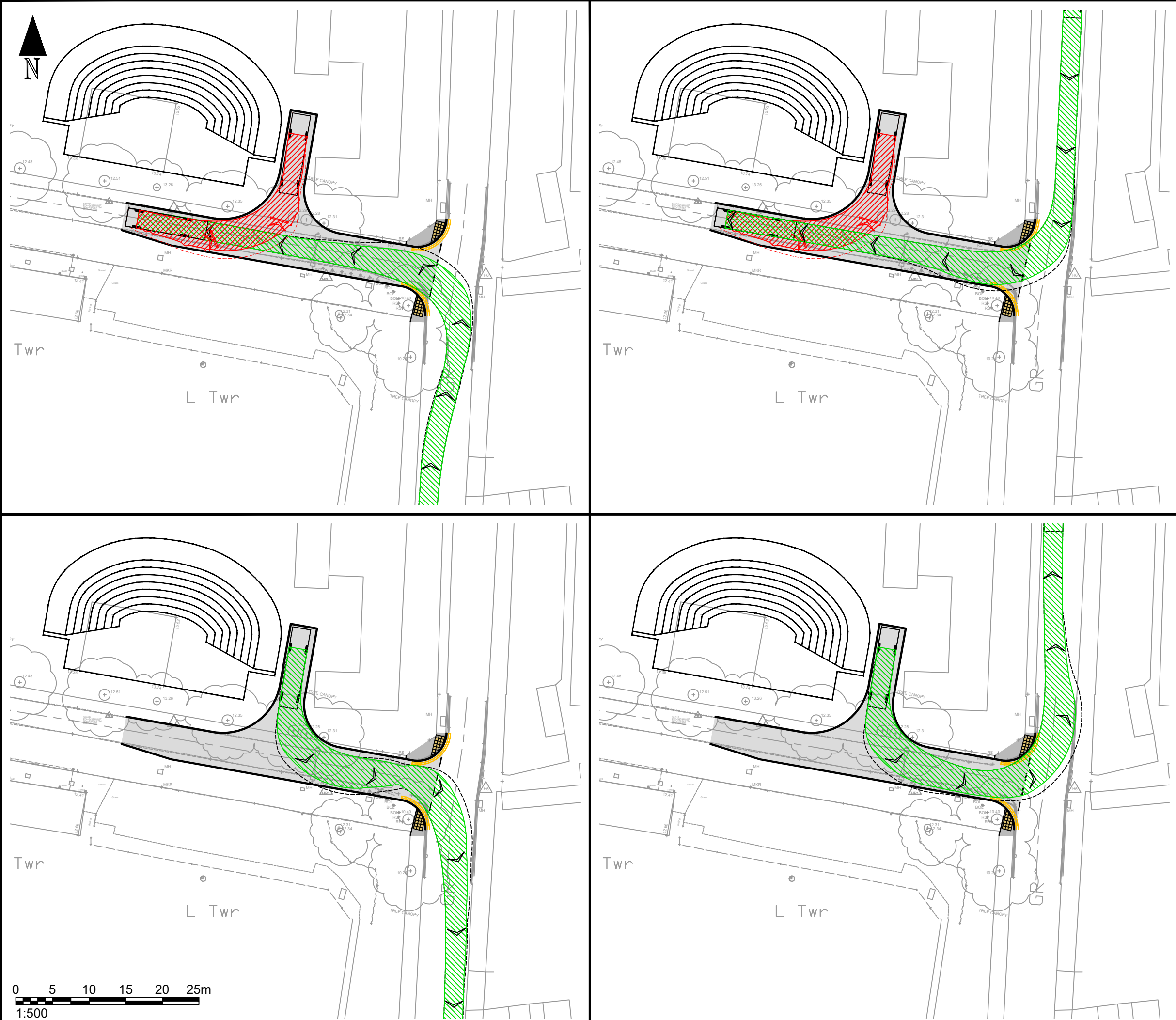
Cycle flows are the dominant flows on Adams Road compared to other modes across the surveyed days.

Around 2500 cycles each way travel to/from Adams Road from West Cambridge. Of these, less than 10% turn into Wilberforce Road or the University Sports ground, around 10-15% turn off on Adams Road, presumably via Sylvester Road, and around 25% turn south onto Grange Road with the remainder proceeding down Burrell's walk.

The surveyed 12 hour flows are around 87% of daily cycle flow so we anticipate that daily two-way cycle movements on Adams Road are approximately 5,900.

Motorised traffic remains low in line with existing survey data with around 300-350 car movements each way daily, and less than 10 HGV or bus/coach movements each way daily.

APPENDIX G – Auditorium Vehicle Swept Path Analysis



- NOTES:**
1. Do not scale from this drawing.
 2. This drawing to be read & printed in colour.
 3. This drawing is for illustrative purposes only, and not for construction.

PANTECHNICON

Overall Length 11.000m
Overall Width 2.500m
Overall Body Height 4.730m
Min Body Ground Clearance 0.541m
Track Width 2.500m
Lock to Lock Time 6.00s
Kerb to Kerb Turning Radius 12.200m

FORWARD MOVEMENTS
(design speed - 5kph)

REVERSE MOVEMENTS
(design speed - 2.5kph)

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT
Clare Hall

PROJECT
Clare Hall Auditorium

DRAWING TITLE
Vehicular Swept Paths Analysis

SCALE
1:500

SIZE
A3

DRAWN BY
DW

CHECKED BY
KH

DATE
29.07.2025

PULSAR

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www.pulsartransport.co.uk

PROJECT REF
21086(A)

DWG NO
101

REV
36

APPENDIX H– Brian Pippard Building Construction

→ file.

NICHOLAS RAY ASSOCIATES
CHARTERED ARCHITECTS



13-15 Covent Garden Cambridge CB1 2HS

Telephone: 01223 464455 Facsimile: 01223 464404

Tony Rogers Esq
Estate Management
University of Cambridge
74 Trumpington Street
Cambridge CB2 1RW

DATE RECEIVED	2/7/96
FILE NO.	A1/14
ACTIONED BY	<i>[Signature]</i>
DATE	2/7.

Thursday, 27 June, 1996

Dear Tony,

Clare Hall - Site Compound

Further to our meeting on site yesterday, I enclose a copy of drawing no. 2154/SK194 showing the revised location of the compound as agreed.

At the start of the contract the top soil will be stripped from the agreed area and a bed of hardcore set down, a 1.8m high painted plywood fence will be erected between the compound and the training ground.

On completion the hardcore will be removed, the topsoil will be replaced to existing levels and seeded, and the existing fence will be reinstated.

In our discussion we were unable to resolve the problem of topsoil storage during the contract and I would be glad of any further thoughts you may have on the matter.

The anticipated contract start is mid-August and it will have a duration of about one year. I will notify you in due course of the precise start date and will advise the contractor that he must liaise with you before entering the training ground.

Please let me know whether you require any further information.

Yours sincerely,

[Signature]

K. Caldwell

c.c. E. Jarron, Clare Hall

Ed, Has Simon Wright, the com supervisor, been notified of these arrangements?

Director

Nicholas Ray MA (Cantab) DipI (UCL) ARIBA

Associates

Kenneth Caldwell DipArch (Oxford) RIBA

Jorge Moreira DipArch (de Montfort)

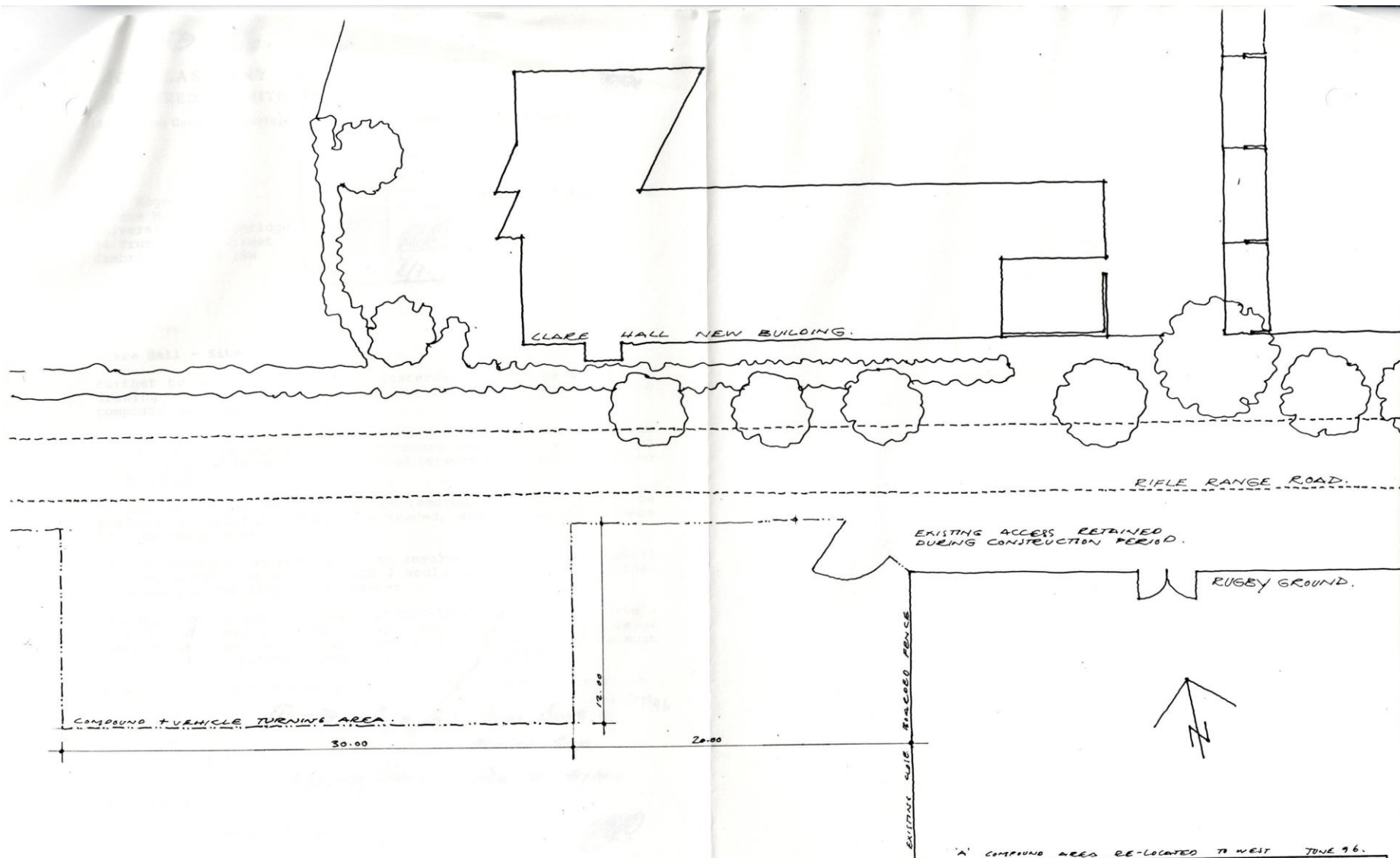
Penny Hatfield Company Secretary

Nicholas Ray Associates Limited - Proprietors

Registration Number: 2636929 in England and Wales

Registered Office: 13-15 Covent Garden Cambridge CB1 2HS

Confirmed. Telecon KCaldwell. 7/7.



NICHOLAS RAY ASSOCIATES		ARCHITECTS	
13-15 Covent Garden Cambridge CB1 2HS		Telephone: (01223) 464455 Facsimile: (01223) 464404	
CLARE HALL CAMBRIDGE			
PROPOSED COMPOUND AREA		1:200	2154/SK 19 A

Do not scale

NICHOLAS RAY ASSOCIATES
CHARTERED ARCHITECTS

13-15 Covent Garden Cambridge CB1 2HS Tel: 01223 464455 Fax: 01223 464404 e-mail: nra.arch@zoo.co.uk



T.E.L. Jarron Esq
 Bursar
 Clare Hall
 Cambridge
 CB3 9AL

Dr	11/7/96
R.	<i>[Signature]</i>
	11/14
	12/7

Wednesday, July 10, 1996

2154

← ① Copy on file.

Dear Ed,

New Graduate Accommodation

Yesterday I met the City arboriculturist on site to discuss the removal of the additional trees to allow construction access to the site (Tree 37 on the landscape plan). They have agreed to do this but have suggested additional protection to tree 38 (the large lime in Rifle Range Road). This will involve a 2.4m high plywood fence supported on scaffold poles rather than the 1.2m chain link which we have specified. In addition they have suggested that the crown is raised and thinned before construction starts. This does not seem unreasonable and will lessen the risk to the tree during the construction period.

I have advised Sherriff Tiplady to include the extra protection in the contract but I think the thinning could more readily be carried out as a separate exercise, perhaps directly by the college.

If you decide to do this work you are required to notify the local authority since the tree is within a Conservation Area.

Yours sincerely,

Penny Hatfield (2) → Maintenance Supervisor.
Alan

V.S.
K. Caldwell

1. How are we getting on with the tree surgeons.
2. Please add the requirement above * to the list of requirements.

c.c. Alan Tate - Tate & Hopkins

Director Nicholas Ray MA (Cantab) Dipl (UCL) ARIBA

12/7.

[Signature]

Associates Kenneth Caldwell DipArch (Oxford) RIBA

Jorge Moreira DipArch (de Montfort)

Penny Hatfield Company Secretary

Nicholas Ray Associates Limited - Proprietors

Registration Number: 2636929 in England and Wales

Registered Office: 13-15 Covent Garden Cambridge CB1 2HS

Clerk of Works

Andy Blatchford

2 Drakes Court

High Street

Longstanton

Cambridge

CB4 5EP

tel:-07771 628858

.00 Site

.01 The nature of the site was discussed and E.J. pointed out that Jesus College owned the road, and as such it was very important that the contractor should clean up thoroughly every evening to avoid problems.

Clare Hall had deposited a sum of money to Jesus as a guarantee that the road would be kept in order. He mentioned that the rugby ground has a permanent right to access during the rugby matches. KC mentioned the fixture list in the back of the Bill that the contractor had to adhere to with regard to the constraints imposed by the matches being held.

.02 EJ confirmed that absolutely no parking is allowed on the site, this privilege is for the sole right of the rugby ground, and has been tied up legally with Bidwells. Contractors parking is therefore limited to the street.

.03 RB queried the possibility of using a small strip of the verge on Rifle Range Road for plant/huts.

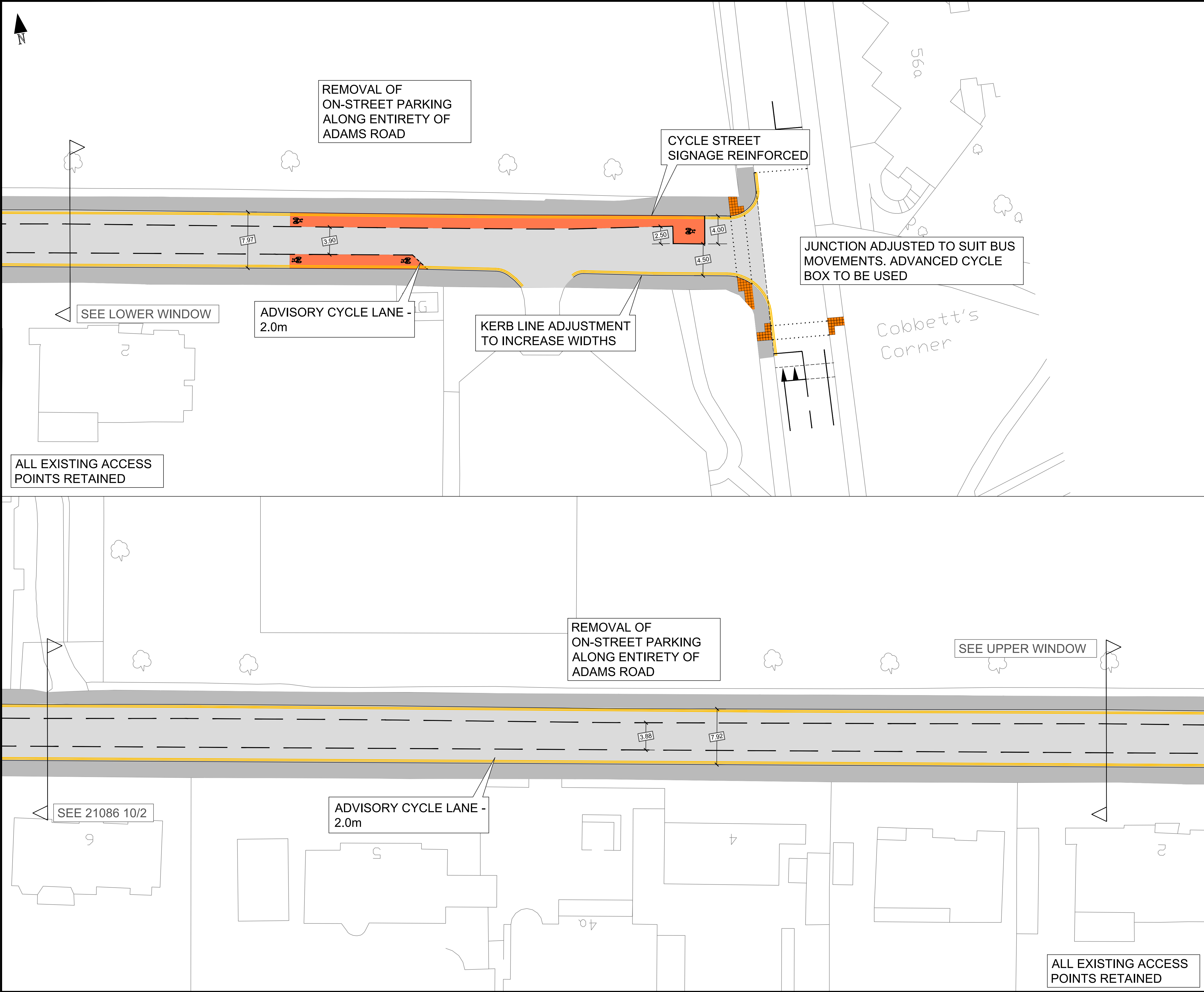
EJ confirmed that he had asked Jesus college about this and that they had said no, but if the contractor intended to pursue this he should negotiate with Charles Commins of Bidwells to assess whether any leeway is possible. (details within the Bill)

.04 KC mentioned that all tree, root protection and fencing is to be carried out in accordance with planning requirement documents, before any work is carried out on site. The final contractors boundary would be agreed between R&B & EJ after assessment on site.

R & B**.00 Programme**

With regard to the project programme EJ stipulated that the job was to be finished on time, the contract had already been delayed by 1 week and there are college events that take place the following month after completion, and as such it was critical to adhere to the dates

APPENDIX I – Option 3 Adams Road Drawing



NOTES:

- 1. Do not scale from this drawing.
- 2. This drawing to be read & printed in colour.
- 3. This drawing is for illustrative purposes only, and not for construction.

	FOOTWAY, MINIMUM OF 2.0m
	RED CYCLE SURFACE TREATMENT
	ASPHALT SURFACE, NO TREATMENT
	GRASS / LANDSCAPE AREA
	EXISTING TRACK RE-ROUTED
	RAMP TO RAISED CARRIAGEWAY
	CONTROLLED PEDESTRIAN CROSSING
	PEDESTRIAN CROSSING

C	Internal discussions	PR	KH	AUG 2025
B	RSA Stage 1	PR	KH	AUG 2025
A.	Internal discussions	PR	KH	JULY 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

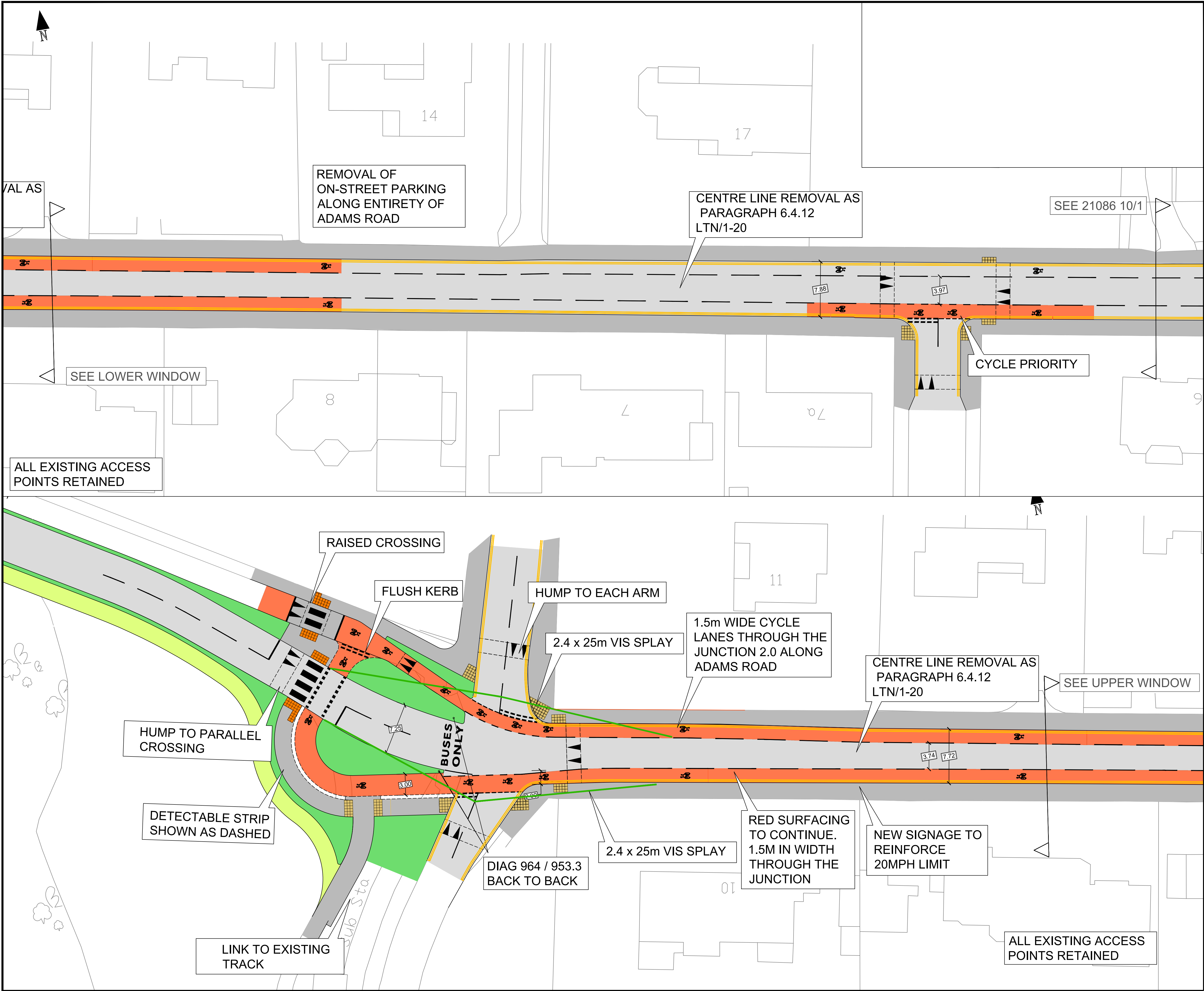
Proposed Alt. Bus Route via Adams Rd.
Option 3: Segregated Corridor

SCALE	1:250	SIZE	A1		
DRAWN BY	PR	CHECKED BY	KH	DATE	July 25

PULSAR

Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS
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21086	10/1	C



NOTES:

- Do not scale from this drawing.
- This drawing to be read & printed in colour.
- This drawing is for illustrative purposes only, and not for construction.

	FOOTWAY, MINIMUM OF 2.0m
	RED CYCLE SURFACE TREATMENT
	ASPHALT SURFACE, NO TREATMENT
	GRASS / LANDSCAPE AREA
	EXISTING TRACK RE-ROUTED
	RAMP TO RAISED CARRIAGEWAY
	CONTROLLED PEDESTRIAN CROSSING
	PEDESTRIAN CROSSING

C	Internal discussions	PR	KH	AUG 2025
B	RSA Stage 1	PR	KH	AUG 2025
A	Internal discussions	PR	KH	JULY 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

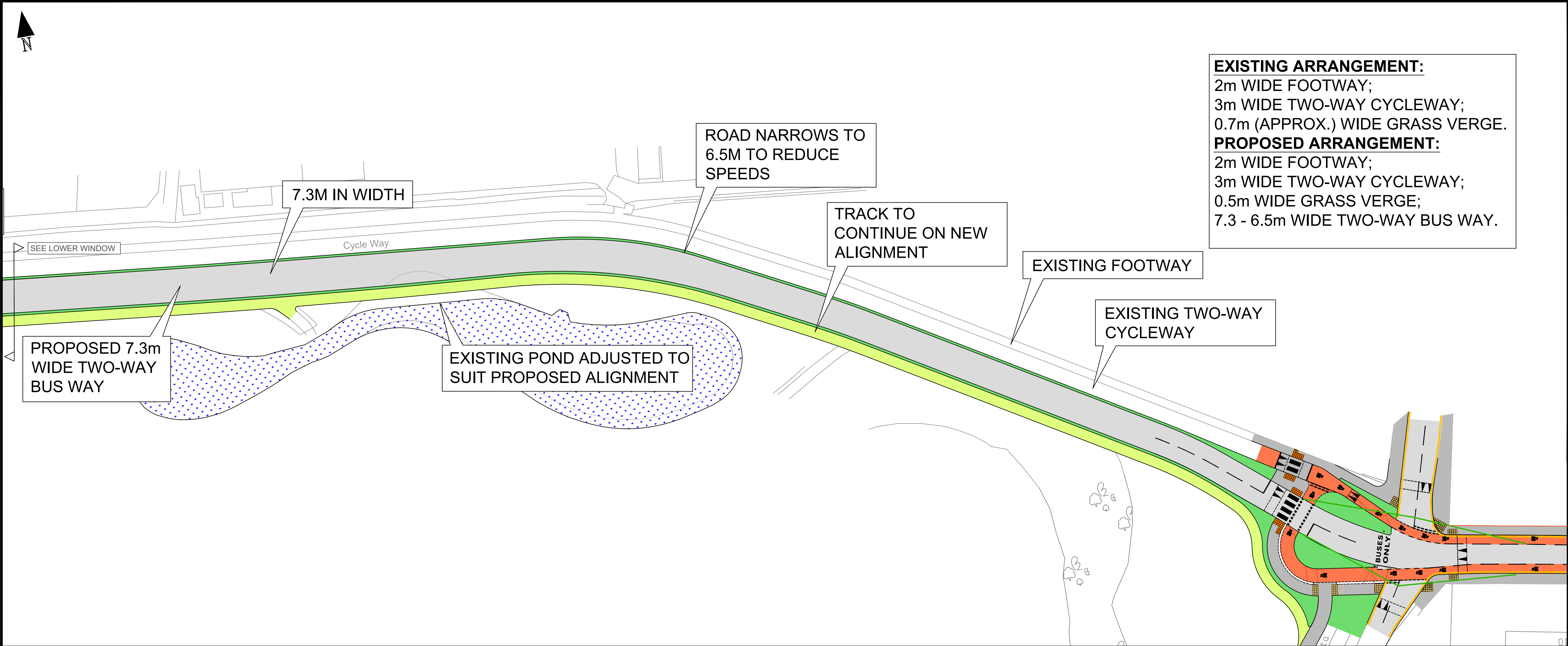
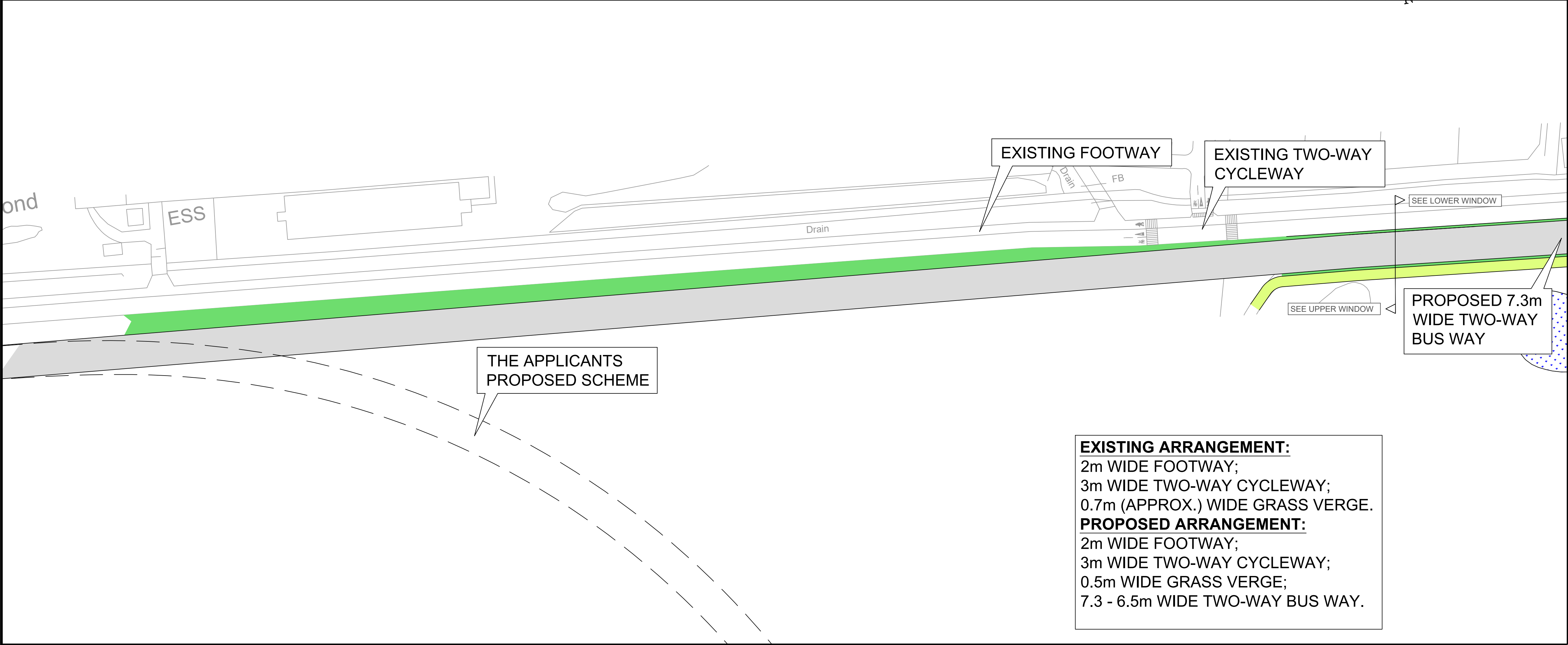
Proposed Alt. Bus Route via Adams Rd.
Option 3: Segregated Corridor

SCALE	1:250	SIZE	A1		
DRAWN BY	PR	CHECKED BY	KH	DATE	July 25

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PROJECT REF	DWG NO	REV
21086	10/2	C



EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.

EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.

- NOTES:**
1. Do not scale from this drawing.
 2. This drawing is to be read & printed in colour.
 3. This drawing is for illustrative purposes only, and not for construction.
- FOOTWAY, MINIMUM OF 2.0m
 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING

B	RSA Stage 1	PR	KH	AUG 2025
A.	Internal discussions	PR	KH	JULY 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via Adams Rd.
Option 3: Segregated Corridor

SCALE

1:500

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25



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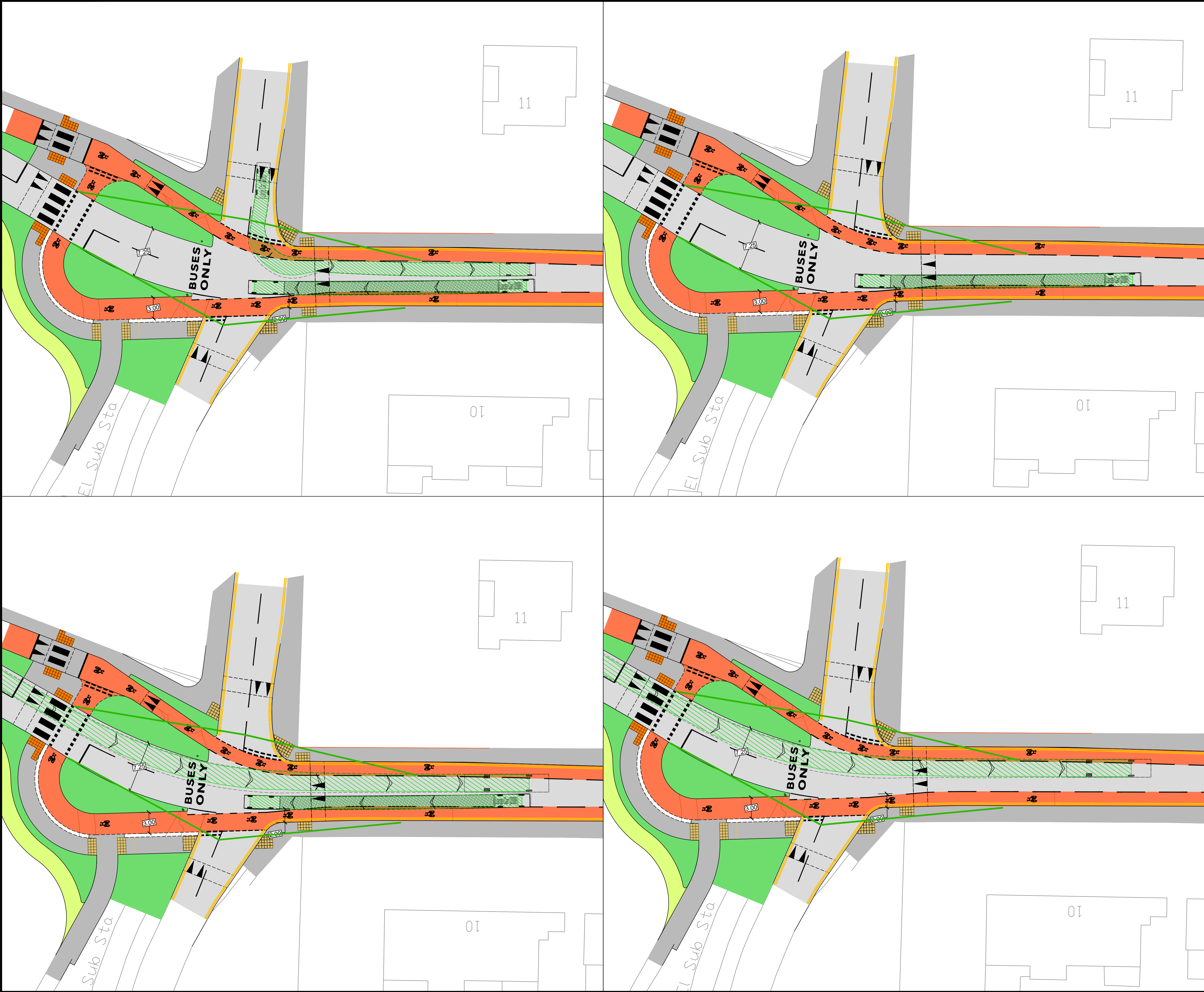
21086

DWG NO

10/3

REV

B



NOTES:

1. Do not scale from this drawing.
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3. This drawing is for illustrative purposes only, and not for construction.

FOOTWAY, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

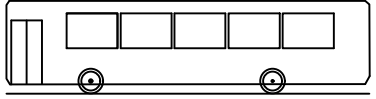
GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via Adams Rd.
Option 3: Segregated Corridor
Swept path sheet 1 of 2

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25



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21086	10/4	A



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	FOOTWAY, MINIMUM OF 2.0m
	RED CYCLE SURFACE TREATMENT
	ASPHALT SURFACE, NO TREATMENT
	GRASS / LANDSCAPE AREA
	EXISTING TRACK RE-ROUTED
	RAMP TO RAISED CARRIAGEWAY
	CONTROLLED PEDESTRIAN CROSSING
	PEDESTRIAN CROSSING

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

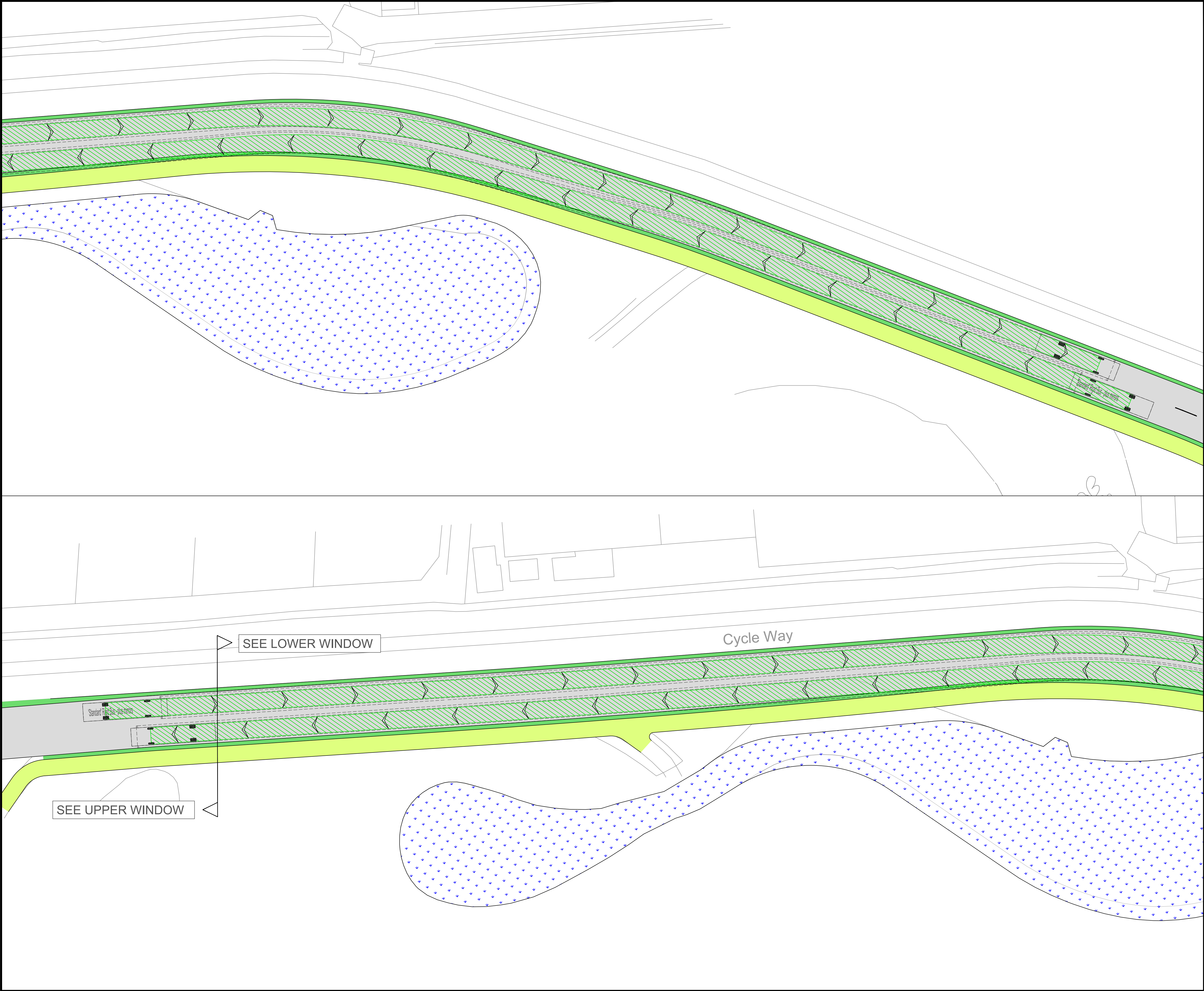
Proposed Alt. Bus Route via
Adams Rd.
Option 3: Segregated Corridor
Swept path sheet 2 of 2

SCALE	1:250	SIZE	A1		
DRAWN BY	PR	CHECKED BY	KH	DATE	July 25

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PROJECT REF	21086	DWG NO	10/5	REV	A
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NOTES:

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3. This drawing is for illustrative purposes only, and not for construction.

FOOTWAY, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Option 3: Segregated Corridor
Swept path sheet 2 of 2

SCALE

1:250

SIZE

A1

DRAWN BY

PR

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KH

DATE

July 25



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PROJECT REF	DWG NO	REV
21086	10/6	A

APPENDIX J – Option 3 RSA and Designers Response



Pulsar Transport Planning

CAMBRIDGE BUSWAY ALTERNATIVE ROUTE - OPTION 3

STAGE 1 – ROAD SAFETY AUDIT AUGUST 2025

Transport Planning /Traffic Surveys/ Road Safety Audits

Tel: +44 (0)2920 667663 Email: admin@go-surveys.co.uk Web: www.go-surveys.co.uk
go-surveys Ltd Registered in England and Wales No:5841452
Registered office: go-surveys Ltd, 72 Plasturton Avenue, Cardiff, CF11 9HJ

REPORT CONTROL

Document:	GS1568-2025 - Cambridge Busway Alternative Route Option 3 - Stage 1 RSA - Final.docx
Client:	Pulsar Transport Planning
Job Number:	gs-1568-2025
File Origin:	/Users/go-surveys/Road Safety Audits/GS1568 - Cambridge Busway Alternative Route Options (July 2025 Layout) - Stage 1 RSA/GS1568-2025 - Cambridge Busway Alternative Route Option 3 - Stage 1 RSA - Final.docx

Document Checking:			
Primary Author:	T Brooks	Initialled:	TB
Contributor:	R Lister	Initialled:	RL
Reviewed By:		Initialled:	

Document Reference and Revision			
Issue	Date	Status	Checked for Issue
1	25/07/2025	Draft	R Lister
2	03/08/2025	Final	T Brooks
3			
4			

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	PROBLEM 5	6
	PROBLEM 6	7
3	AUDIT STATEMENT	8

Appendices

Appendix A – List of drawings and documents supplied for audit.

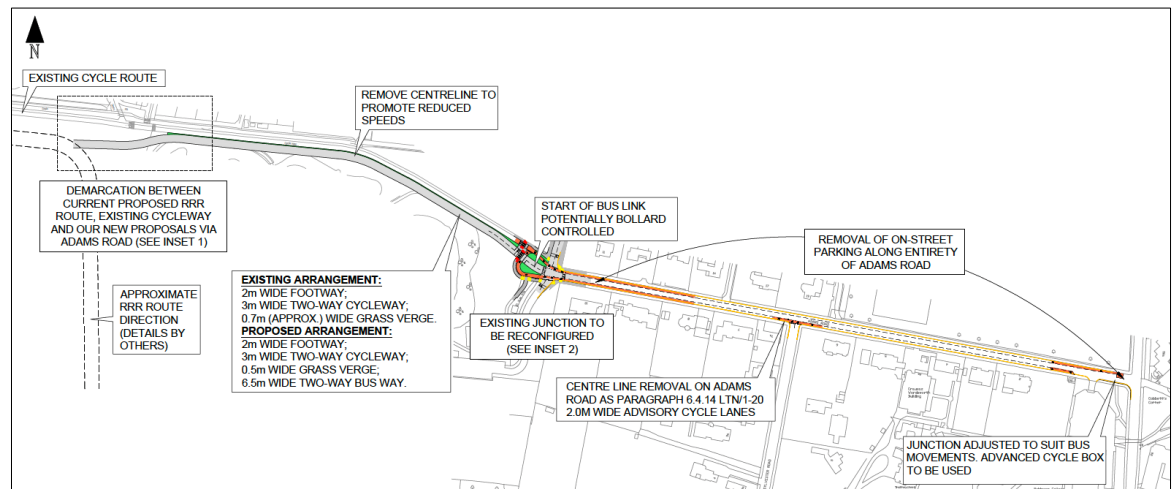
Appendix B – Location plan of identified problems.

1 INTRODUCTION

- 1.1 This report presents the findings from a Stage 1 Road Safety Audit (RSA) undertaken on the proposed bus corridor scheme (Option 3) at and in the vicinity of Adams Road and Wilberforce Road, Cambridge.
- 1.2 The audit was carried out by the following:
- | | |
|--|-------------------------------------|
| Tristan Brooks | - Road Safety Audit Team Leader |
| BSc (Hons), MBA, CMILT, MCIHT, MSoRSA, | |
| HE RSA Cert. of Competency | |
|
R Lister |
- Road Safety Audit Team Member |
| BSc (Hons), MSc, MRTPI, MCIHT, MSoRSA | |
- 1.3 The RSA was commissioned by Pulsar Transport Planning (the designers of the scheme) who provided the audit information and although there was no formal 'audit brief' the RSA team has accepted that sufficient information has been provided to undertake the Stage 1 RSA. The audit team have been approved by Pulsar Transport Planning acting as effective project sponsor. The overseeing organisation is Cambridgeshire County Council.
- 1.4 The site visit was undertaken on Friday 11th April 2025 between 14:30 - 15:45 and comprised a walk, cycle and drive through of the scheme (where available). During the site visit both the weather and carriageway surface were dry. Traffic in the vicinity of the scheme was very light throughout. A small number of pedestrians were observed during the site visit, a moderate number of cyclists were observed.
- 1.5 The highway network in the vicinity of the scheme(s) is subject to a 30mph speed limit and has street lighting throughout.
- 1.6 A review of the Personal Injury Collision (PIC) data in the vicinity of the scheme(s) between 01/01/2019 and 31/12/2023 (based on information in the Crashmap database) has indicated that during this period there has been 1 PIC recorded, that resulted in an injury that was slight in severity. A review of the collision data has indicated the following:
- The PIC occurred on Monday 18th November 2019 at 18:30;
 - The collision occurred at Adams Road during the hours of darkness when the carriageway surface was dry; and
 - The collision involved a car and a pedal cyclist (aged between 46-55) and was attributed to a car pulling off colliding with a cyclist.

- 1.7 The drawings and documents supplied for audit are listed in **Appendix A**. An annotated drawing showing the locations of the problems identified is provided in **Appendix B**.
- 1.8 The terms of reference of the audit are as that described in DMRB GG/119 Guidelines on Road Safety Audits. This standard has been used for guidance only. The exception to GG/119 is the inclusion (if applicable) of a notes/observation section at the end of the report and inclusion of an illustration of the proposed scheme(s) instead of a written description. The audit team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.
- 1.9 The scope of the RSA is limited to the proposed bus corridor scheme (Option 3) as illustrated in **Figure 1**, which in summary will include:
- Removal of on-street parking along the entirety of Adams Road;
 - Speed limit reduced from 30mph to 20mph on Adams Road;
 - Centreline removal along the entirety of Adams Road;
 - Provision of 2 metre wide advisory on-carriageway cycle lanes along the entirety of Adams Road, with coloured surface treatment (in part);
 - Raised table type arrangement at the Adams Road/ Wilberforce Road/ University of Cambridge sports centre access;
 - Jug handle type layout for cyclists travelling westbound on Adams Road to join the existing off carriageway cycleway;
 - Provision of a parallel type pedestrian/cyclist crossing where the proposed cycle route joins the existing cycle route;
 - New uncontrolled pedestrian crossings to the west of Wilberforce Road; and
 - Revisions to the advanced cycle stop line at the eastern extent of the scheme to accommodate bus swept paths.

Figure 1: Scope of scheme subject to RSA – Option 3.



- 1.10 The audit team have not been made aware of any previous RSAs undertaken on this scheme (noting that alternative schemes have been subject to RSA) nor any departures from standard within the design of the scheme.
- 1.11 The recommendations included within this report should not be regarded as being prescriptive design solutions to the problems raised. They are intended only to indicate a proportionate and viable means of eliminating or mitigating the identified problem, in accordance with GG/119. There may be alternative methods of addressing a problem which would be equally acceptable in achieving the desired elimination or mitigation and these should be considered when responding to this report.

2 ROAD SAFETY AUDIT FINDINGS FROM RSA 1

PROBLEM 1

LOCATION: Adams Road.

SUMMARY: Omission of traffic calming may increase the risk and severity of vehicle/cyclist collisions.

- 2.1 No traffic calming features are indicated as being provided for the majority of Adams Road which may result in poor compliance with the proposed speed limit i.e. 20mph. Excessive vehicle speeds could result in an increased risk of vehicle/cyclist collisions and the severity of a collision should it occur.

RECOMMENDATION

- 2.2 It is recommended that traffic calming features be introduced to reduce vehicle speeds.

PROBLEM 2

LOCATION: North-east of proposed Parallel crossing.

SUMMARY: Proposed cycle route alignment could increase the risk of loss of control type collisions for cyclists or collisions between cyclists

- 2.3 The alignment of the cycle route to the north-east of the parallel crossing (where the proposed route will join the exiting route) will incorporate a 90 degree bend, which can result in loss of control type collisions or collisions between cyclists due to the relative difficulty in negotiating tight radii when on a cycle route.

RECOMMENDATION

- 2.4 It is recommended that the scheme be revised to address this problem.

PROBLEM 3

LOCATION: Wilberforce Road – Uncontrolled pedestrian crossing.

SUMMARY: Use of diagonal crossing could result in an increased risk of pedestrian/vehicle collisions.

- 2.5 The scheme drawings indicate that the uncontrolled pedestrian crossing on Wilberforce Road will have a diagonal alignment. Diagonal crossings are considered to be atypical and could result in pedestrians with visual impairments having difficulty orientating or establishing the direction of the crossings, potentially resulting in them not being able to locate the opposite crossing point, which could increase the risk of vehicle/pedestrian collisions due to the

potentially increased time they could be in the carriageway or pedestrian trip hazards should they have to navigate a full height kerb if they cannot locate the opposite dropped kerb.

RECOMMENDATION

- 2.6 It is recommended that uncontrolled pedestrian crossing points be aligned so that they are perpendicular to the edge of the carriageway.

PROBLEM 4

LOCATION: Wilberforce Road.

SUMMARY: Potentially insufficient junction intervisibility splays could increase the risk of side impact type collisions.

- 2.7 The scheme drawings provided for review, do not indicate the achievable junction intervisibility splays. It is therefore unclear if sufficient junction intervisibility can be achieved to the east for drivers entering Adams Road from Wilberforce Road. Insufficient junction intervisibility splays could increase the risk of side impact type collisions of vehicles egressing the site access.

RECOMMENDATION

- 2.8 It is recommended that the appropriate junction inter-visibility splays be provided at the Wilberforce Road/ Adams Road junction.

PROBLEM 5

LOCATION: Sports Centre Access.

SUMMARY: Potentially insufficient junction intervisibility splays could increase the risk of side impact type collisions.

- 2.9 The scheme drawings provided for review, do not indicate the achievable junction intervisibility splays. It is therefore unclear if sufficient junction intervisibility can be achieved to the east for drivers egressing the sports centre access. Insufficient junction intervisibility splays could increase the risk of side impact type collisions of vehicles egressing the site access.

RECOMMENDATION

- 2.10 It is recommended that the appropriate junction inter-visibility splays be provided at the sports centre/ Adams Road junction.

PROBLEM 6

LOCATION: Western extent of the scheme – Two-way bus way section..

SUMMARY: Vehicle encroachment into opposing lanes may increase the risk of head-on or side swipe type collisions.

- 2.11 No vehicle swept path information has been provided in regard to buses passing each other at the western extent of the scheme where carriageway widths of 6.5 metres are proposed. It is unclear therefore if the proposed lane widths/carriageway alignment are sufficient to accommodate opposing bus movements without encroachment into opposing lanes. Vehicle encroachment into opposing lanes could result in an increased risk of head-on or side swipe type collisions.

RECOMMENDATION

- 2.12 It is recommended that vehicle swept paths (including wing mirrors and tolerance from the edge of the carriageway) be undertaken to ensure that the proposed lane widths/carriageway alignment are sufficient to accommodate two buses passing each other in opposing directions, and if insufficient, the width of the carriageway be increased.

3 AUDIT STATEMENT

3.1 We certify that this audit has been carried out in accordance with GG/119 unless otherwise noted.

Signed:



Date: 03 August 2025

T Brooks – BSc (Hons), MBA, CMILT, MCIHT, MSoRSA,
HE RSA Cert of Competency
Audit Team Leader
go-surveys Ltd
72 Plasturton Avenue
Cardiff
CF11 9HJ

Signed:



Date: 03 August 2025

R Lister - BSc (Hons), MSc, MRTPI, MCIHT, MSoRSA
Audit Team Member
go-surveys Ltd
72 Plasturton Avenue
Cardiff
CF11 9HJ



APPENDIX A

List of Drawings and Documents Provided for Audit

PTP_21086_010

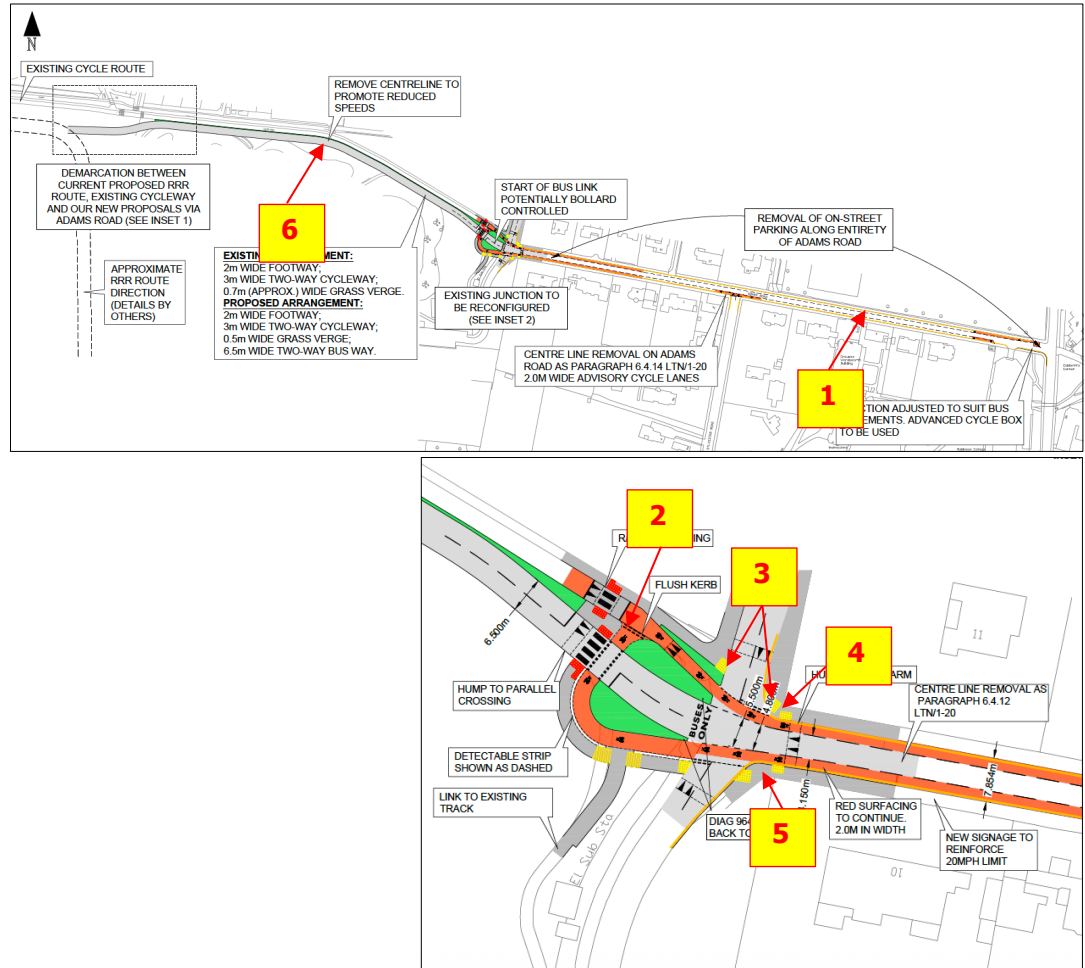
Proposed Alt. Bus Route via Adams Rd (Option 3, Segregated Corridor)

PIC Data

1st January 2019 – 31st December 2023

APPENDIX B

Location of Identified Problems





Client:

Clare Hall

Project:

**Cambridge Busway – Option 3
(Drawing 10)**

Designer Response – Stage 1

August 2025

www.pulsartransport.co.uk

REGISTERED OFFICE: Pulsar Transport Limited, Gilmoora House, 57-61 Mortimer Street, London W1W 8HS.

Road Safety Audit Response Report

Project details

Report title:	Cambridge busway alternative route - option 3
Date:	12 th August 2025
Document reference and revision:	N0-PR-RSA1 Designers Response
Prepared by:	Pulsar Transport Planning

Authorisation sheet

Project:	Cambridge busway alternative route
Report title:	Designers Response
Prepared by:	
Name:	Pete Rushton
Position:	Engineer
Initialled:	PR
Organisation:	Pulsar Transport Planning
Date:	12 th August 2025
Approved by:	
Name:	Kamran Haider
Position:	Director
Initialled:	KH
Organisation:	Pulsar Transport Planning
Date:	12 th August 2025

Introduction

This Designer's Response has been prepared by Pulsar Transport Planning in response to a Stage 2 Road Safety Audit (RSA) undertaken by Go Surveys. The RSA relates to highway works in relation to Alternative options for the proposed bus corridor scheme at and in the vicinity of Adams Road and Wilberforce Road, Cambridge.

Proposals were designed by Pulsar to incorporate the following:

- Removal of on-street parking along the entirety of Adams Road;
- Provision of 2 metre wide advisory on-carriageway cycle lanes along the entirety of Adams Road, with coloured surface treatment (in part);
- Raised table type arrangement at the Adams Road/ Wilberforce Road/ University of

Cambridge sports centre access;

- Jug handle type layout for cyclists travelling westbound on Adams Road to join the existing off carriageway cycleway;
- Provision of a parallel type pedestrian/cyclist crossing where the proposed cycle route joins the existing cycle route;
- New uncontrolled pedestrian crossings to the west of Wilberforce Road; and
- Revisions to the advanced cycle stop line at the eastern extent of the scheme to accommodate bus swept paths.

The RSA was prepared based on the proposals above, for which this Designer's Response has been prepared.

Key personnel

Overseeing Organisation:	
RSA team:	T Brooks and R Lister
Design organisation:	Pulsar Transport Planning

Road safety audit decision log

RSA problem	RSA recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
Omission of traffic calming may increase the risk and severity of vehicle/cyclist collisions.	It is recommended that additional traffic calming features be introduced to reduce vehicle speeds.	Agree. Additional raised crossing at Sylvester Road with pedestrian facilities. Further raised tables could be considered. Appended to this report.		
Proposed cycle route alignment could increase the risk of loss of control type collisions for cyclists or collisions between cyclists.	It is recommended that the scheme be revised to address this problem.	Disagree. The proposed junction will act as a conventional priority junction where a cycle route joins another route. Similar to figure 6.4 of LTN 1/20 (Below).		
Use of diagonal crossing could result in an increased risk of pedestrian/vehicle collisions.	It is recommended that uncontrolled pedestrian crossing points be aligned so that they are perpendicular to the edge of the carriageway.	Disagree. The crossing has been located on the likely desire line to encourage use. The tactile paving would be aligned to ensure that partial sighted users can align themselves correctly. It wouldn't however have a design impact should they be re-aligned as the recommendation.		
Potentially insufficient junction intervisibility splays could increase the risk of side impact type collisions.	It is recommended that the appropriate junction inter-visibility splays be provided at the Wilberforce Road/ Adams Road junction.	Point noted, drawings updated to suit showing suitable visibility splays. Appended to this report.		
Potentially insufficient junction intervisibility splays could increase the risk of side	It is recommended that the appropriate junction inter-visibility splays be provided at the sports centre/ Adams Road junction.	Point noted, drawings updated to suit showing suitable visibility splays. Appended to this report.		

RSA problem	RSA recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
impact type collisions				
Vehicle encroachment into opposing lanes may increase the risk of head-on or side swipe type collisions.	It is recommended that vehicle swept paths (including wing mirrors and tolerance from the edge of the carriageway) be undertaken	Point noted, swept paths undertaken and suitable changes made to the design. Appended to this report.		

Figure 6.4 LTN 1/20



Design organisation and Overseeing Organisation statements

Include the following statements to be signed by the design organisation and the Overseeing Organisation.

Design organisation statement

Name:	Pete Rushton
Signed	
Position:	Engineer
Organisation:	Pulsar Transport Planning
Date:	



www.pulsartransport.co.uk

REGISTERED OFFICE: Gilmoora House, 57-61 Mortimer Street, London W1W 8HS.

APPENDIX K – Adams Road GCP Cycle Street

KEY

	HIGHWAY BOUNDARY
	PROPOSED 50mm THICK CAMBRIDGESHIRE ASPHALT SURFACE COURSE (CLAUSE 12,02) ON 65mm AC 20 DENSE BINDER
	PROPOSED 40 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 CAMBRIDGESHIRE ASPHALT SURFACE COURSE (CLAUSE 12,03 OR 12,04) ON 65mm AC 20 DENSE BIN
	PROPOSED INFILTRATION BED, FOR DETAILS REFER TO LANDSCAPE DRAWINGS 6791-WSP-CT-XX-DR-LA-03000 TO 03011
	PROPOSED FLOWERING AMENITY GRASSLAND, FOR DETAILS REFER TO LANDSCAPE DRAWINGS 6791-WSP-CT-XX-DR-LA-03000 TO 03011
	EXISTING VEGETATION TO BE TRIMMED
	PROPOSED GRASS VERGE BRIDLEWAY LAID ON 300mm OF TOPSOIL OR SIMILAR APPROVED
	PROPOSED PLANTING AREA, FOR PLANTING, SOIL AND MAINTENANCE INFORMATION REFER TO LANDSCAPE DRAWINGS 6791-WSP-CT-XX-DR-LA-03000 TO 03011
	PROPOSED REINFORCED GRASSGUARD LAID ON 25mm SHARP SAND REGULATING LAYER, REFER TO STANDARD DETAIL FOR FULL INFORMATION, BUILDUP CONFIRMED FOLLOWING RECEIPT OF GROUND INVESTIGATION.

KEY

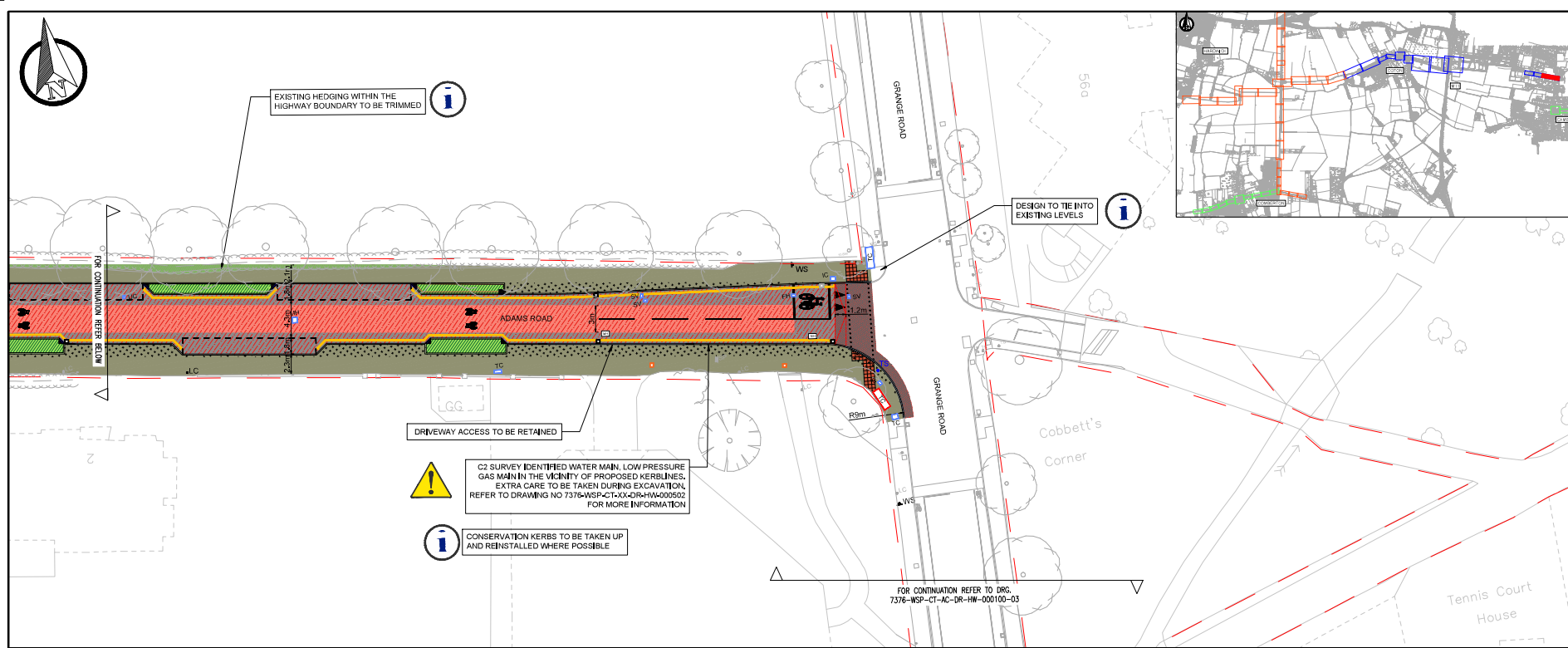
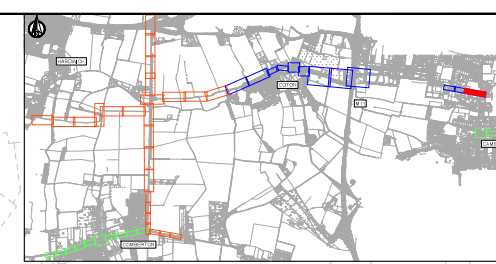
	PROPOSED SEASONAL BULB MIX (WITHIN GRASSLAND AREAS), FOR DETAILS REFER TO LANDSCAPE DRAWINGS 6791-WSP-CT-XX-DR-LA-03000 TO 03011
	PROPOSED WILDFLOWER GRASSLAND, FOR DETAILS REFER TO LANDSCAPE DRAWINGS 6791-WSP-CT-XX-DR-LA-03000 TO 03011
	PROPOSED STRUCTURE, FOR FURTHER DETAILS AND SPECIFICATION REFER TO STRUCTURAL DRAWINGS
	PROPOSED YELLOW LINE MARKING
	PROPOSED WHITE LINE MARKING
	PROPOSED SINUSOIDAL HUMP WITH 75mm THICK HRA 35/14 F SURFACE 4060 WTR 1, TO BE RESURFACED IN LAYERS AND LAID OVER EXISTING ROAD TACK COATED WITH BITUMEN EMULSION, REFER TO 7376-WSP-CT-XX-DR-HW-004000 FOR FURTHER INFORMATION
	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 LIGHTING COLUMN
	PROPOSED SIGN MOUNTED ON EXISTING POST
	PROPOSED WAYFINDING SIGN
	PROPOSED SIGN MOUNTED ON EXISTING LIGHTING COLUMN
	RELOCATED ELECTRIC POLE (LOCATION TO BE CONFIRMED)
	RELOCATED TRAFFIC SIGNAL
	RELOCATED LIGHTING COLUMN
	CYCLE STAND TO BE REINSTALLED
	RELOCATED FENCE (LOCATION TO BE CONFIRMED)
	RELOCATED BENCH
	RELOCATED BIN
	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 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 GULLY FRAME AND COVER TO BE REMOVED AND REPLACED WITH CLASS D400 CYCLE FRIENDLY GULLY FRAME AND COVER
	EXISTING LINE MARKING
	EXISTING FENCE TO BE RETAINED
	EXISTING TREE TO BE RETAINED
	EXISTING GULLY TO BE RETAINED
	EXISTING SIGN AND POST TO BE RETAINED
	EXISTING LIGHTING COLUMN TO BE RETAINED
	EXISTING BOLLARD TO BE RETAINED

KEY

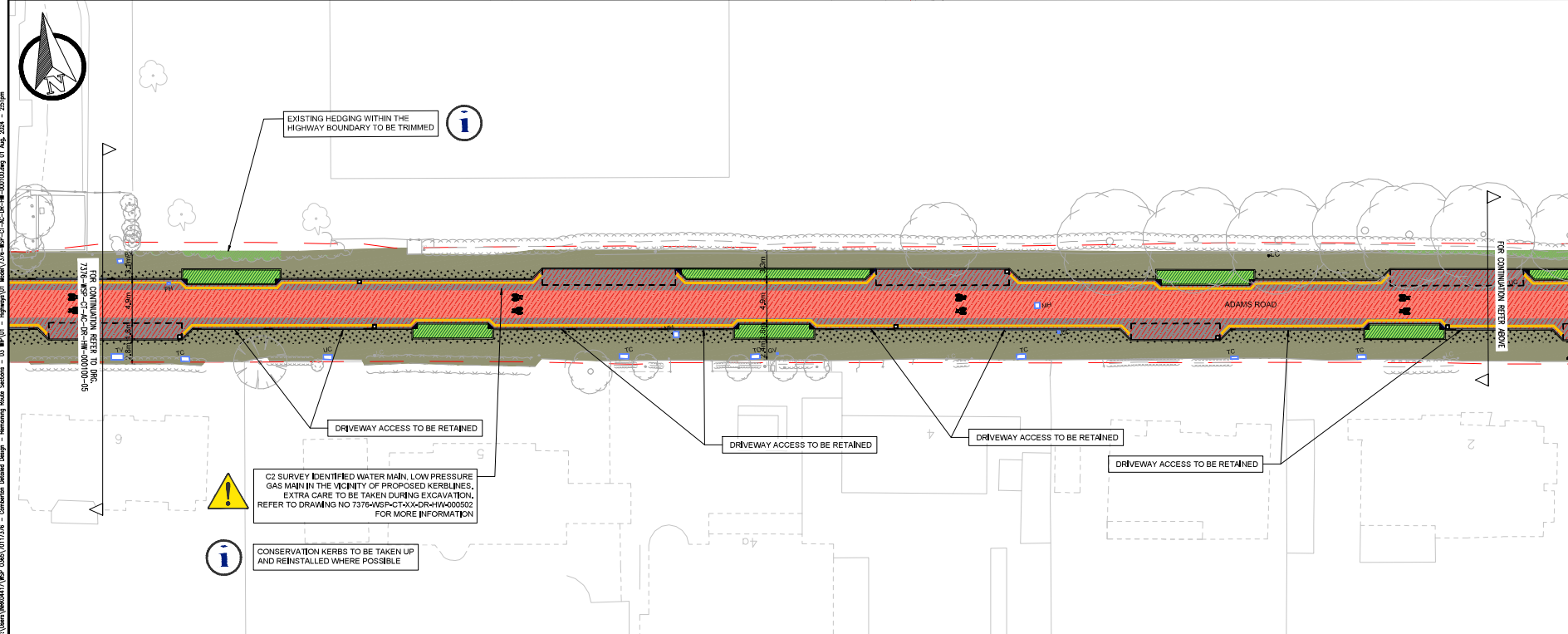
	EXISTING BENCH TO BE RETAINED
	EXISTING UTILITY CABINET
	EXISTING STANDARD SERVICE COVER TO BE RAISED/LOWERED TO SUIT NEW LEVELS
	EXISTING STANDARD SERVICE COVER TO BE FITTED WITH RECESSED COVER AND RAISED/LOWERED TO SUIT NEW LEVEL
	EXISTING STANDARD SERVICE COVER TO BE RELOCATED
	WARNING RISK: INDICATES 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

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 70 Chancery Lane, London WC2A 1AF www.frostmoss.co.uk www.wsp.com					
GREATER CAMBRIDGE PARTNERSHIP					
PROJECT: COMBERTON GREENWAY					
TITLE: GENERAL ARRANGEMENT ADAMS ROAD AND COTON VILLAGE KEY					
SCALE AT: 1:250	DATE: 26.07.2024	DRAWN BY: RK	CHECKED BY: AOS	APPROVED BY: JAH	SHEET: A1
PROJECT NO: 69117376					
DRAWING NO: 7376-WSP-CT-AC-DR-HW-000100-00					REV: S3-P01



- NOTES:
- 1) WHERE FLUSH KERBS ARE PROPOSED AT RAISED TABLES A MINIMUM OF 25mm KERB UPSTAND IS TO BE MAINTAINED.
 - 2) REFER TO DRAWING 6791-WSP-CT-XX-M24-A-03004-03012 FOR FURTHER PLANTING DETAILS.
 - 3) FOR KEY REFER TO 7376-WSP-CT-AC-DR-HW-000100-00.
 - 4) PLEASE REFER TO THE LIGHTING DESIGN PACK, WHEN AVAILABLE, FOR FULL DETAILS OF THE LIGHTING WORKS TO BE UNDERTAKEN.



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REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: DETAILED DESIGN

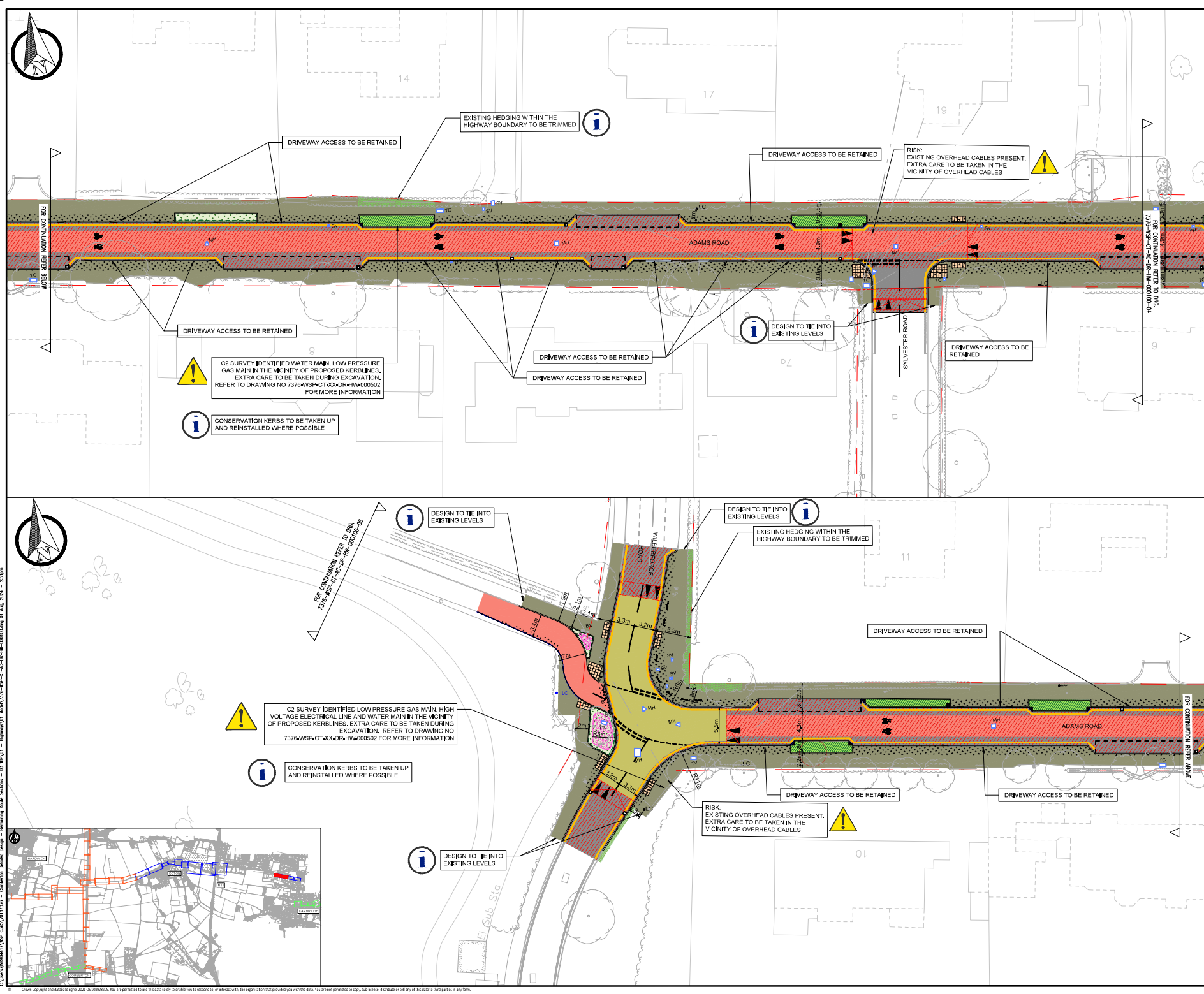
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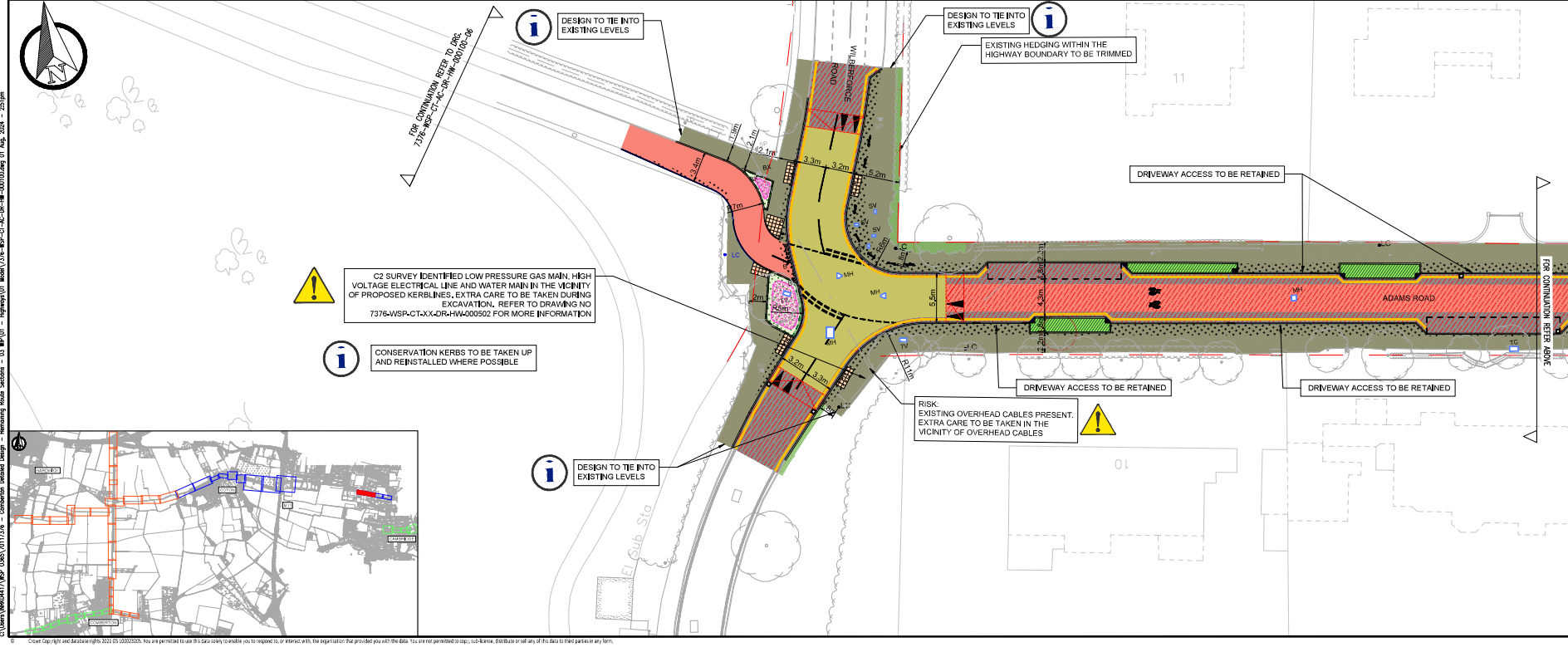


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DATE	26.07.2024
DESIGNED BY	RK
CHECKED BY	AOS
APPROVED BY	JAH
SHEET	A1
PROJECT NO.	70117376
DRAWING NO.	7376-WSP-CT-AC-DR-HW-000100-04
REV.	

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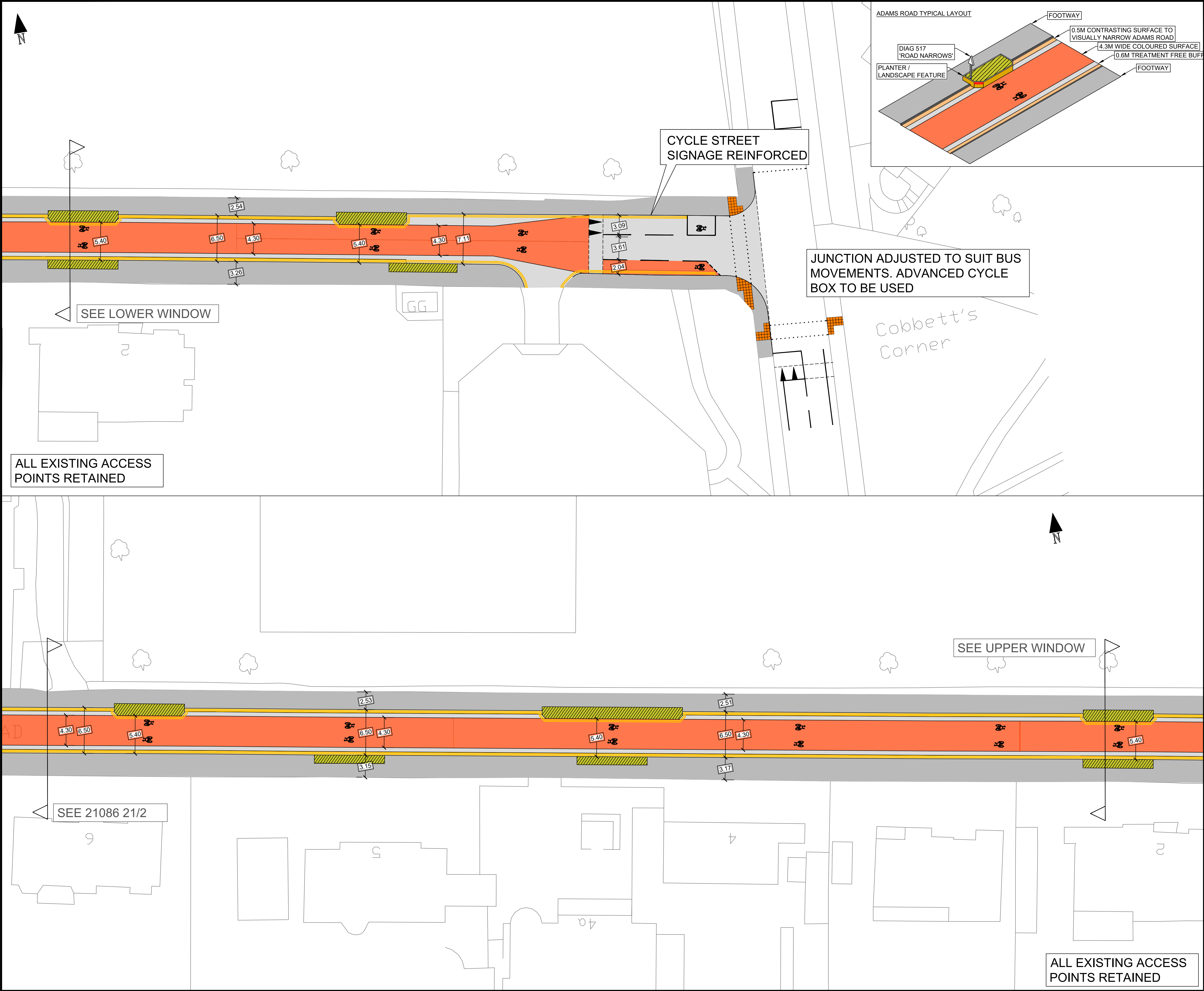
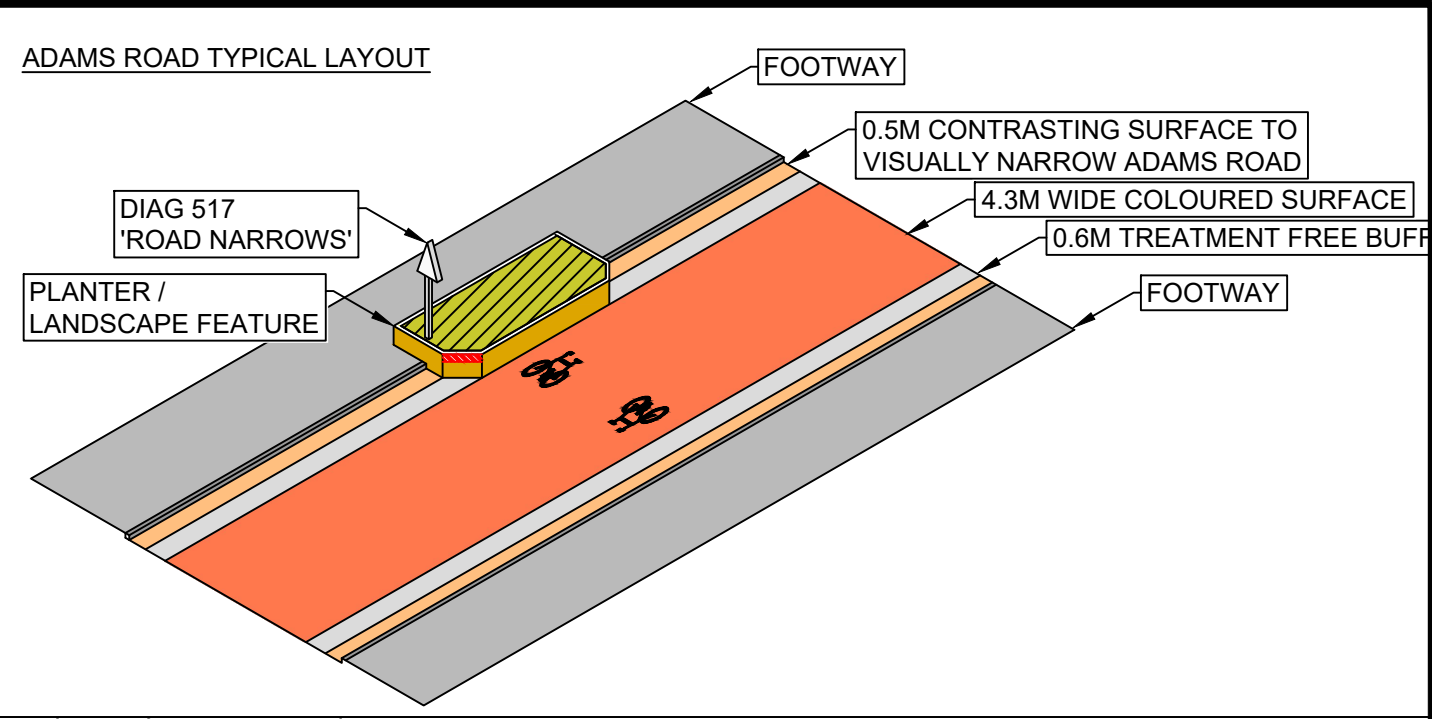
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- 1) WHERE FLUSH KERBS ARE PROPOSED AT RAISED TABLES A MINIMUM OF 25mm KERB UPSTAND IS TO BE MAINTAINED.
 - 2) REFER TO DRAWING 6791-WSP-CT-XX-M24A-03004-03012 FOR FURTHER PLANTING DETAILS.
 - 3) FOR KEY REFER TO 7376-WSP-CT-AC-DR-HW-000100-00.
 - 4) PLEASE REFER TO THE LIGHTING DESIGN PACK, WHEN AVAILABLE, FOR FULL DETAILS OF THE LIGHTING WORKS TO BE UNDERTAKEN.



S3-P01	26.07.2024	RK	FIRST ISSUE	AOS	JAH
REV	DATE	BY	DESCRIPTION	CHK	APP
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DETAILED DESIGN					
					
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TITLE					
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SHEET NO.					
S3-P01					

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APPENDIX L – Options 4 Adams Road Drawing



- NOTES:**
- 1. Do not scale from this drawing.
 - 2. This drawing to be read & printed in colour.
 - 3. This drawing is for illustrative purposes only, and not for construction.
- FOOTWAY WIDENED, MINIMUM OF 2.0m
 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
 - PLANTING FEATURE
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT
Clare Hall

PROJECT
Cambridge Busway Route Appraisal

DRAWING TITLE
**Proposed Alt. Bus Route via Adams Rd.
Option 4 Adams Road, Cycle Street**

SCALE
1:250

SIZE
A1

DRAWN BY
PR

CHECKED BY
KH

DATE
July 25

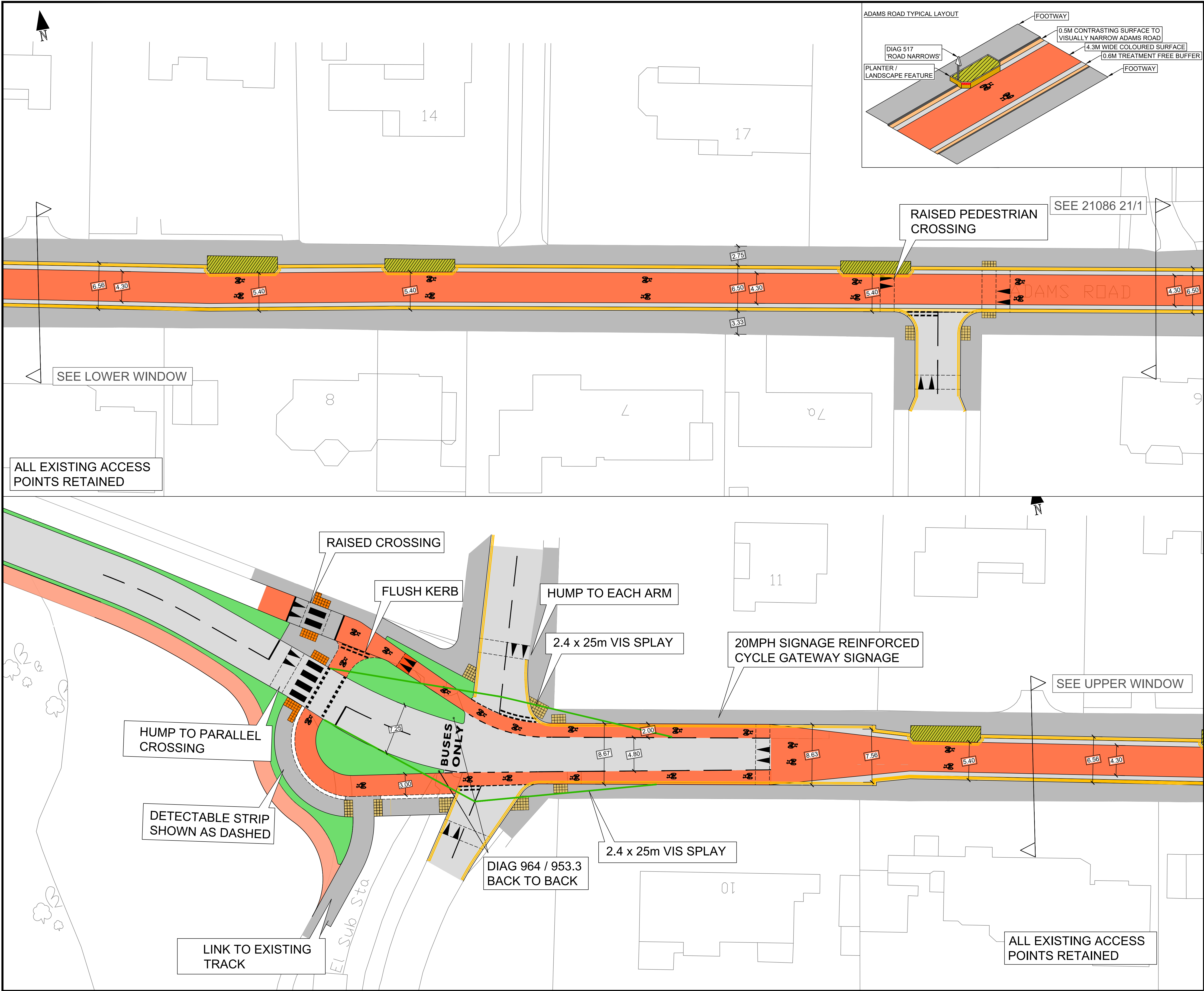
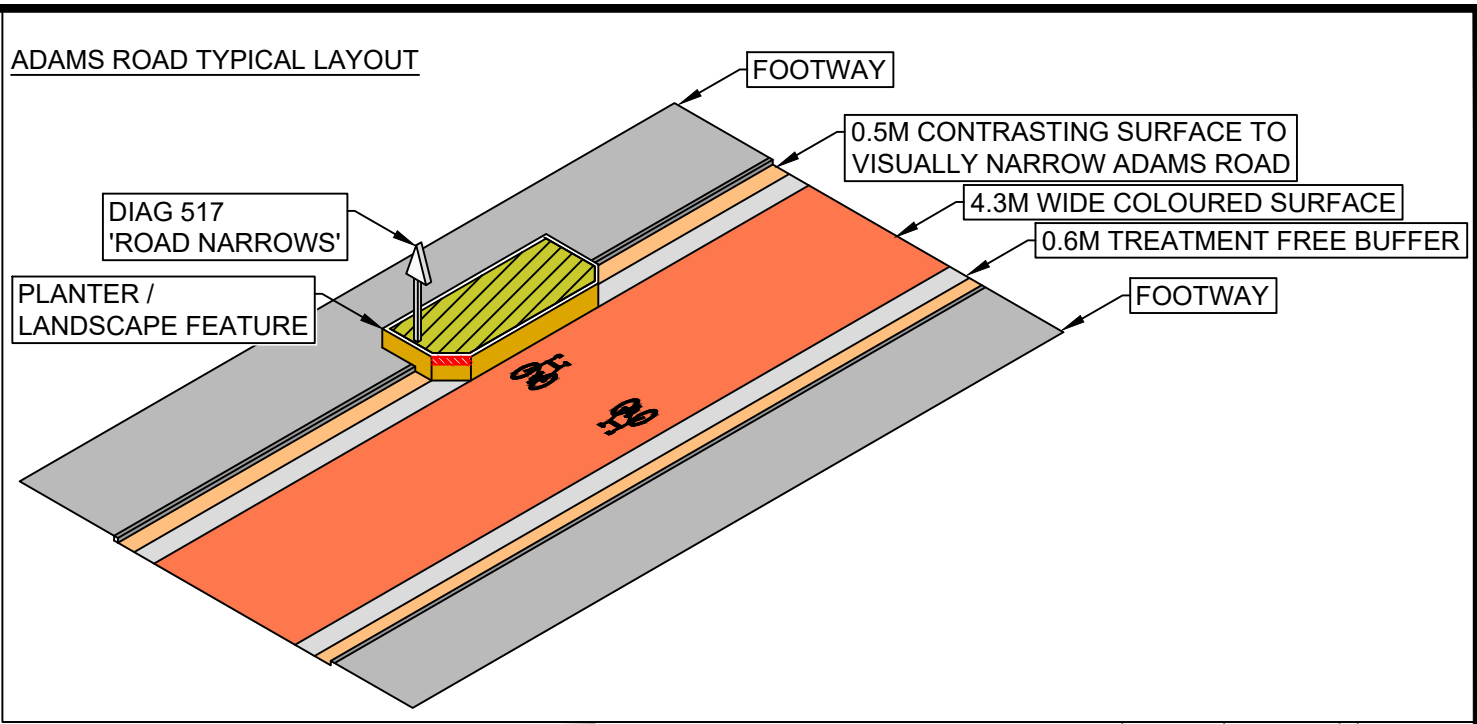
**PULSAR**

Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS
www.pulsartransport.co.uk

PROJECT REF
21086

DWG NO
21/1

REV
A



- NOTES:**
1. Do not scale from this drawing.
 2. This drawing is to be read & printed in colour.
 3. This drawing is for illustrative purposes only, and not for construction.
- FOOTWAY WIDENED, MINIMUM OF 2.0m
 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
 - PLANTING FEATURE
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT
Clare Hall

PROJECT
Cambridge Busway Route Appraisal

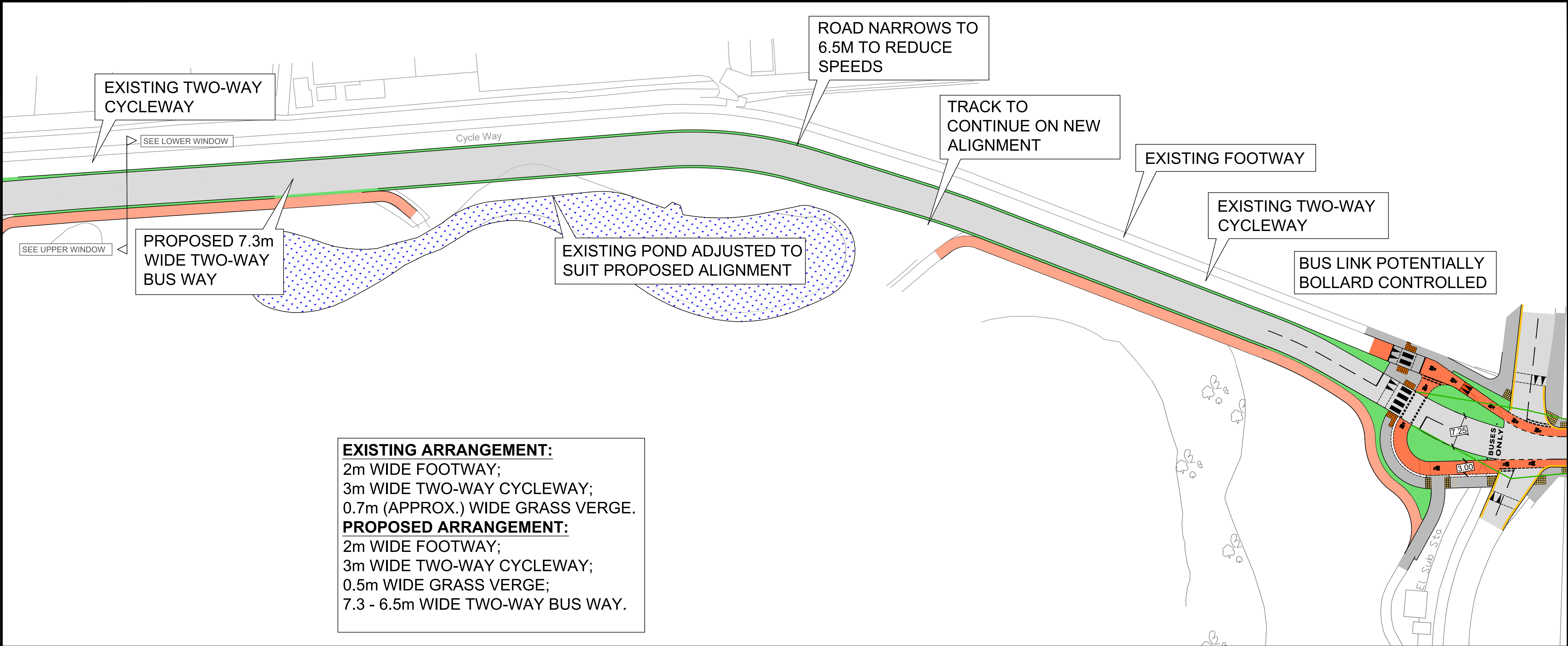
DRAWING TITLE
**Proposed Alt. Bus Route via Adams Rd.
Option 4 Adams Road, Cycle Street**

SCALE	1:250	SIZE	A1		
DRAWN BY	PR	CHECKED BY	KH	DATE	July 25

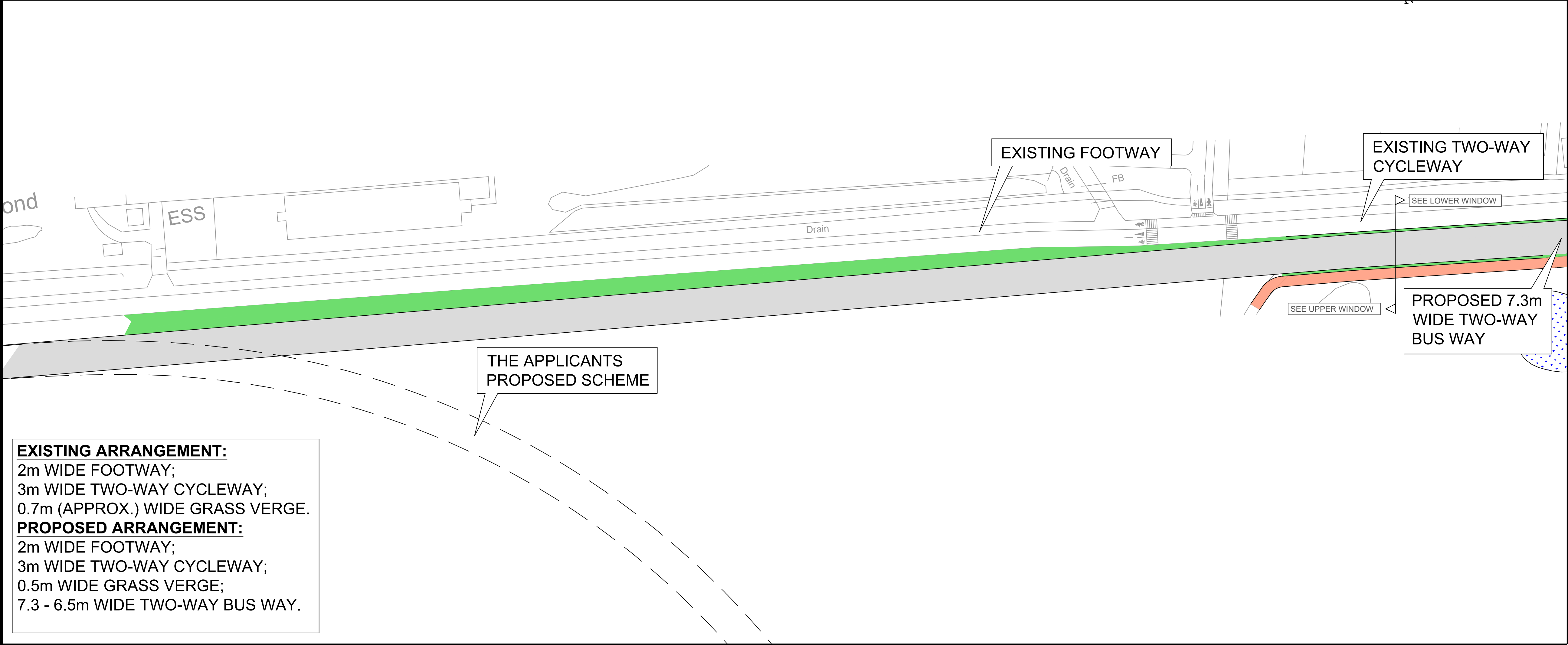
 **PULSAR**

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PROJECT REF	21086	DWG NO	21/2	REV	A
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EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.

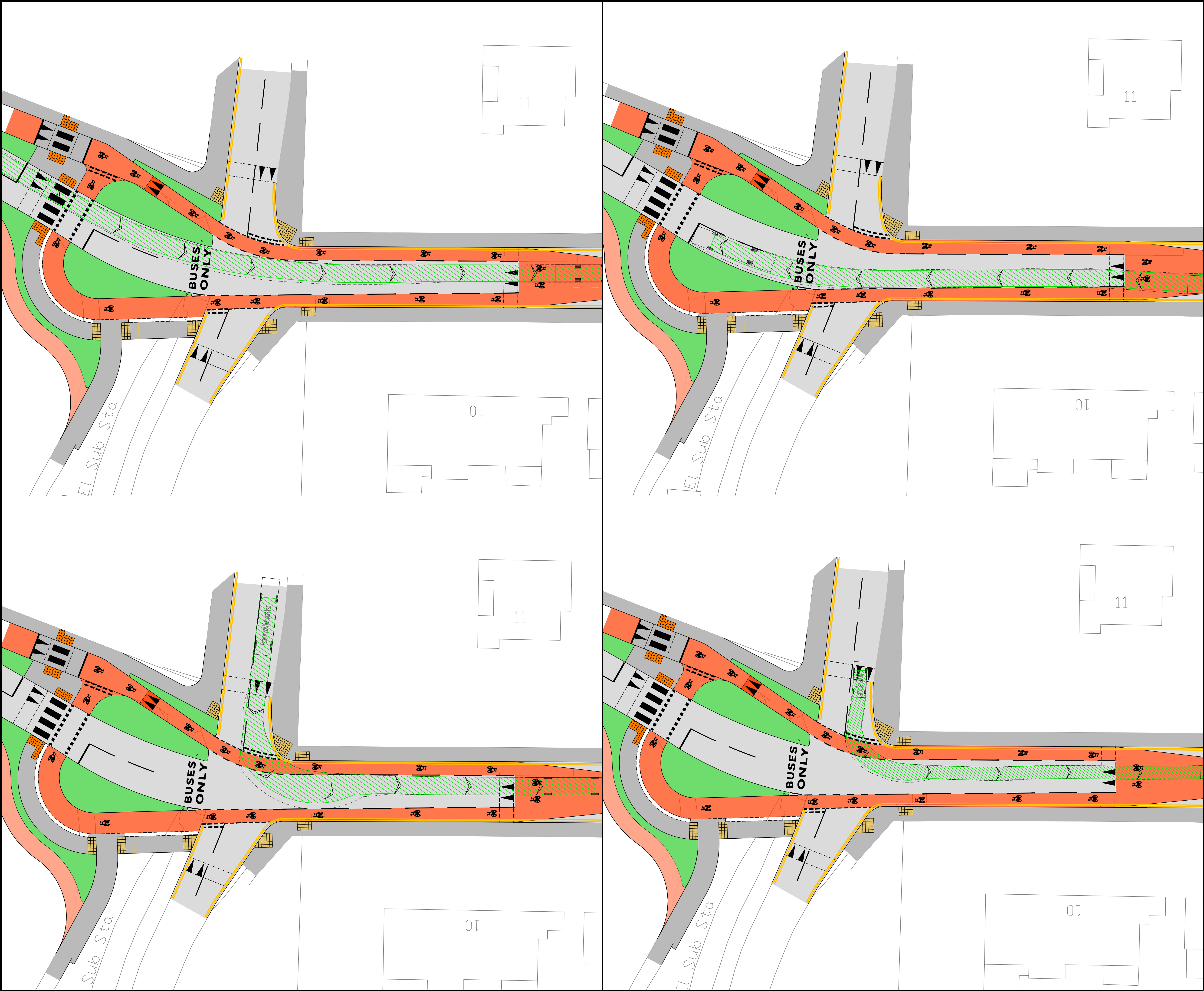


EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.

- NOTES:**
1. Do not scale from this drawing.
 2. This drawing to be read & printed in colour.
 3. This drawing is for illustrative purposes only, and not for construction.
- FOOTWAY WIDENED, MINIMUM OF 2.0m
 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
 - PLANTING FEATURE
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT	Clare Hall		
PROJECT	Cambridge Busway Route Appraisal		
DRAWING TITLE	Proposed Alt. Bus Route via Adams Rd. Option 4 Adams Road, Cycle Street		
SCALE	1:500	SIZE	A1
DRAWN BY	PR	CHECKED BY	KH
		DATE	July 25
 Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS www.pulsartransport.co.uk			
PROJECT REF	21086	DWG NO	21/3
		REV	A



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FOOTWAY WIDENED, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)

PLANTING FEATURE

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

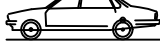
PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m



Pantechnicon / Removals Van
Overall Length 11.000m
Overall Width 2.500m
Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 12.200m



Large Car (2006)
Overall Length 5.079m
Overall Width 1.872m
Max Track Width 1.831m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.900m

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Option 4 Adams Road, Cycle
Street
Swept path sheet 1 of 4

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25



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PROJECT REF

21086

DWG NO

21/4

REV

A

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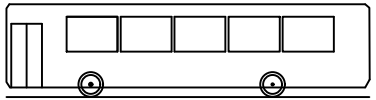
76



NOTES:

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- FOOTWAY WIDENED, MINIMUM OF 2.0m
- RED CYCLE SURFACE TREATMENT
- ASPHALT SURFACE, NO TREATMENT
- CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
- PLANTING FEATURE
- GRASS / LANDSCAPE AREA
- EXISTING TRACK RE-ROUTED
- RAMP TO RAISED CARRIAGEWAY
- CONTROLLED PEDESTRIAN CROSSING
- PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

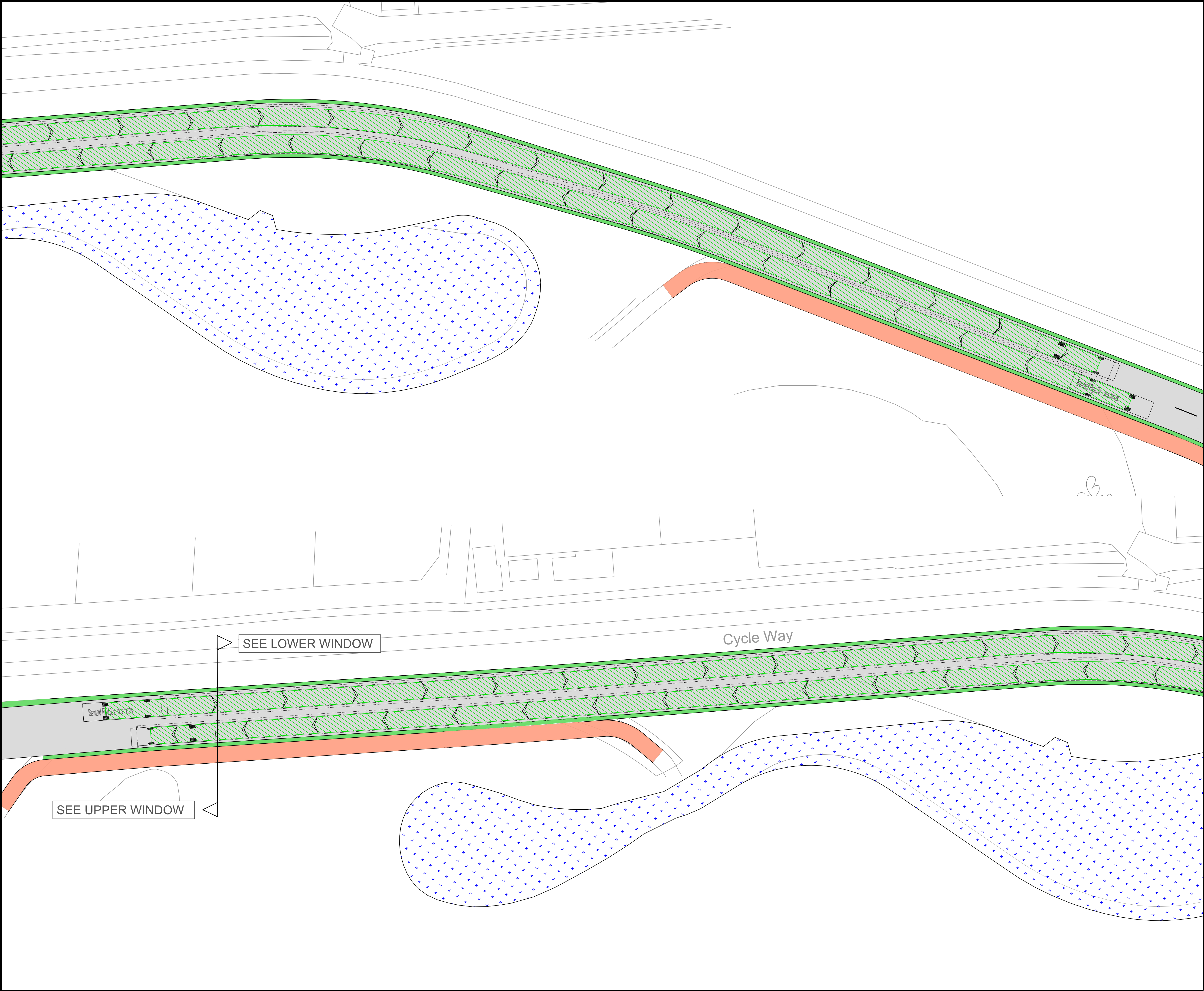
Proposed Alt. Bus Route via
Adams Rd.
Option 4 Adams Road, Cycle
Street
Swept path sheet 2 of 4

SCALE	1:250	SIZE	A1		
DRAWN BY	PR	CHECKED BY	KH	DATE	July 25



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PROJECT REF	21086	DWG NO	21/5	REV	A
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NOTES:

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FOOTWAY WIDENED, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)

PLANTING FEATURE

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Option 4 Adams Road, Cycle
Street
Swept path sheet 3 of 4

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

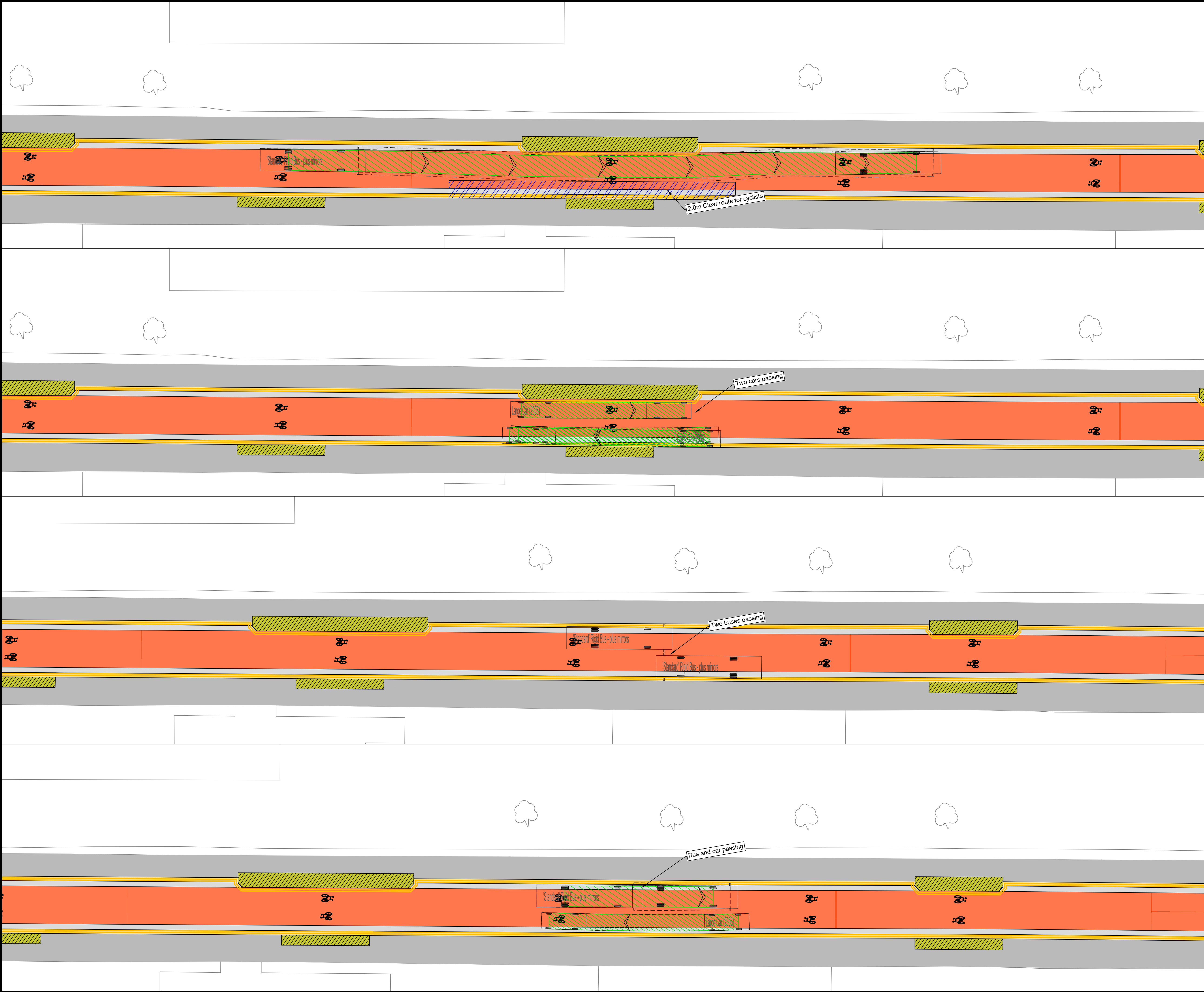
DATE

July 25



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PROJECT REF	DWG NO	REV
21086	21/6	A



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FOOTWAY WIDENED, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)

PLANTING FEATURE

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING

Standard Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
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Pantechnicon / Removals Van
Overall Length 11.000m
Overall Width 2.500m
Track Width 2.500m
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Large Car (2006)
Overall Length 5.079m
Overall Width 1.872m
Max Track Width 1.831m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.900m

A.	RSA Stage 1	PR	KH	AUG 2025
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Option 4 Adams Road, Cycle
Street
Swept path sheet 4 of 4

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25

PULSAR

Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS
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PROJECT REF	DWG NO	REV
21086	21/7	A

APPENDIX M – Option 4 RSA and Designers Response



Pulsar Transport Planning

**PROPOSED HIGHWAYS SCHEME,
ADAMS ROAD, CAMBRIDGE
ALTERNATIVE ROUTE - OPTION 21**

**STAGE 1 – ROAD SAFETY AUDIT
AUGUST 2025**

Transport Planning /Traffic Surveys/ Road Safety Audits

Tel: +44 (0)2920 667663 Email: admin@go-surveys.co.uk Web: www.go-surveys.co.uk
go-surveys Ltd Registered in England and Wales No:5841452
Registered office: go-surveys Ltd, 72 Plasturton Avenue, Cardiff, CF11 9HJ

REPORT CONTROL

Document:	GS1584-2025 - Cambridge Busway Alternative Route Options (Aug 2025 Layout) - Stage 1 RSA - Final.docx
Client:	Pulsar Transport Planning
Job Number:	gs-1584-2025
File Origin:	/Users/go-surveys/Road Safety Audits/GS1584 - Cambridge Busway Alternative Route Options (Aug 2025 Layout) - Stage 1 RSA/GS1584-2025 - Cambridge Busway Alternative Route Options (Aug 2025 Layout) - Stage 1 RSA - Final.docx

Document Checking:			
Primary Author:	T Brooks	Initialled:	TB
Contributor:	R Lister	Initialled:	RL
Reviewed By:		Initialled:	

Document Reference and Revision			
Issue	Date	Status	Checked for Issue
1	10/08/2025	Draft	R Lister
2	11/08/2025	Final	T Brooks
3			
4			

Contents

1 INTRODUCTION..... 2

2 ROAD SAFETY AUDIT FINDINGS FROM RSA 1 6

PROBLEM 1 6

PROBLEM 2 6

PROBLEM 3 6

PROBLEM 4 7

3 AUDIT STATEMENT 8

Appendices

- Appendix A** – List of drawings and documents supplied for audit.
- Appendix B** – Location plan of identified problems.

1 INTRODUCTION

- 1.1 This report presents the findings from a Stage 1 Road Safety Audit (RSA) undertaken on the proposed highways/bus corridor scheme (Option 21) at and in the vicinity of Adams Road and Wilberforce Road, Cambridge.
- 1.2 The audit was carried out by the following:
- | | |
|--|-------------------------------------|
| Tristan Brooks | - Road Safety Audit Team Leader |
| BSc (Hons), MBA, CMILT, MCIHT, MSoRSA, | |
| HE RSA Cert. of Competency | |
|
R Lister |
- Road Safety Audit Team Member |
| BSc (Hons), MSc, MRTPI, MCIHT, MSoRSA | |
- 1.3 The RSA was commissioned by Pulsar Transport Planning (the designers of the scheme) who provided the audit information and although there was no formal 'audit brief' the RSA team has accepted that sufficient information has been provided to undertake the Stage 1 RSA. The audit team have been approved by Pulsar Transport Planning acting as effective project sponsor. The overseeing organisation is Cambridgeshire County Council.
- 1.4 The site visit was undertaken on Friday 11th April 2025 between 14:30 - 15:45 and comprised a walk, cycle and drive through of the scheme (where available). During the site visit both the weather and carriageway surface were dry. Traffic in the vicinity of the scheme was very light along Adams Road. Approximately 85 vehicles were observed to park on either side of Adams Road, effectively narrowing the carriageway width to approximately 4.5 metres when parked opposite each other. A small number of pedestrians were observed during the site visit, a moderate number of cyclists were observed.
- 1.5 Vehicle/cycle survey data recorded for 12 hours (07:00-19:00) and provided as part of the audit information has indicated the following:
- Two-way car/LGV movements of approximately 650 on Adams Road;
 - Two-way HGV movements of approximately 12 on Adams Road; and
 - Two-way cyclist movements of approximately 4,700 on Adams Road.
- 1.6 The highway network in the vicinity of the scheme(s) is subject to a 30mph speed limit and has street lighting throughout.
- 1.7 A review of the Personal Injury Collision (PIC) data in the vicinity of the scheme(s) between 01/01/2019 and 31/12/2023 (based on information in the Crashmap database) has indicated

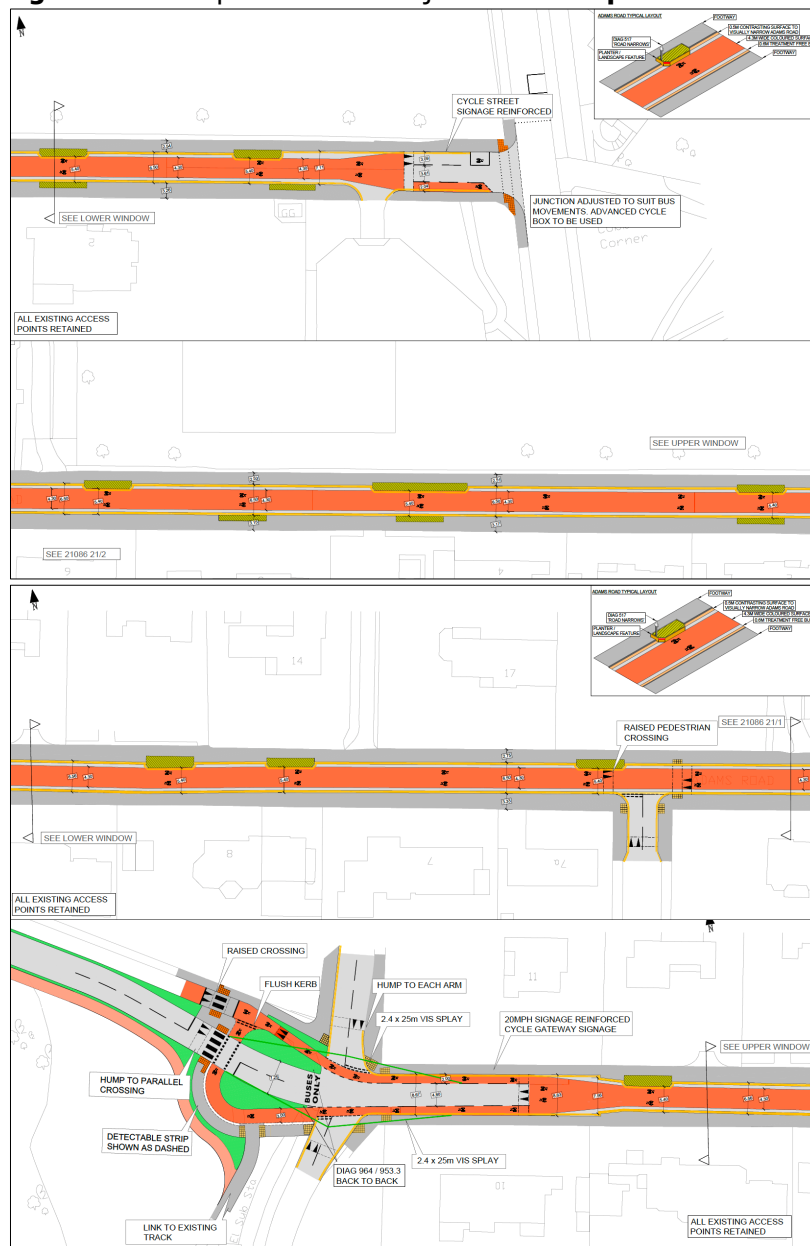
that during this period there has been 1 PIC recorded, that resulted in an injury that was slight in severity. A review of the collision data has indicated the following:

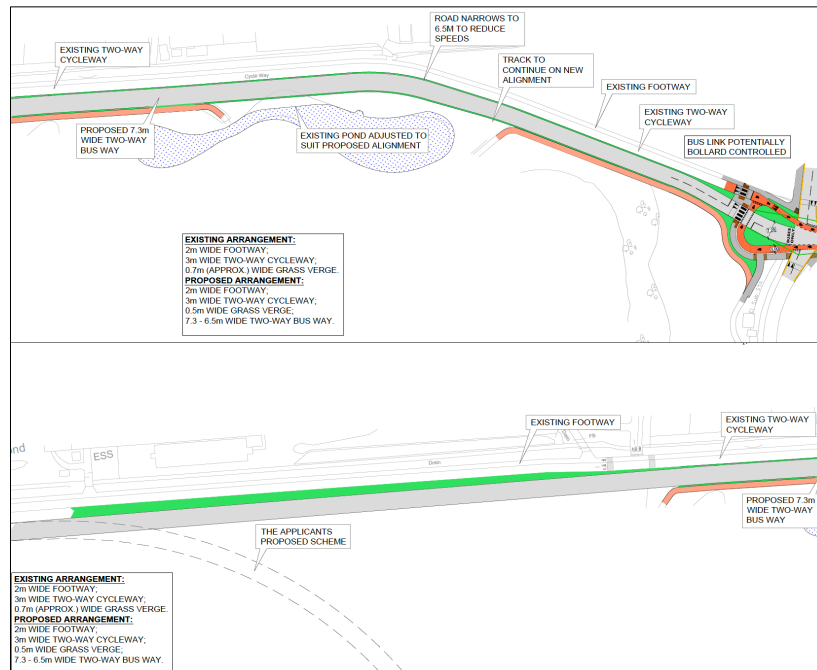
- The PIC occurred on Monday 18th November 2019 at 18:30;
- The collision occurred at Adams Road during the hours of darkness when the carriageway surface was dry; and
- The collision involved a car and a pedal cyclist (aged between 46-55) and was attributed to a car pulling off colliding with a cyclist.

- 1.8 The drawings and documents supplied for audit are listed in **Appendix A**. An annotated drawing showing the locations of the problems identified is provided in **Appendix B**.
- 1.9 The terms of reference of the audit are as that described in DMRB GG/119 Guidelines on Road Safety Audits. This standard has been used for guidance only. The exception to GG/119 is the inclusion (if applicable) of a notes/observation section at the end of the report and inclusion of an illustration of the proposed scheme(s) instead of a written description. The audit team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.
- 1.10 The scope of the RSA is limited to the proposed bus corridor scheme (Option 21) as illustrated in **Figures 1-3**. The audit team have been advised that the scheme subject to this RSA has been based on a 'cycle street' type scheme (i.e. the principle being that cyclists are given priority over motorised vehicles) that has been designed by WSP on behalf of the Greater Cambridge Partnership as part of the Comberton Greenway Project which is due to be implemented imminently.
- 1.11 In summary, the proposed scheme subject to RSA will include:
- Removal of on-street parking along the entirety of Adams Road;
 - Speed limit reduced from 30mph to 20mph on Adams Road;
 - Carriageway width of 6.5 metres with localised narrowing's to 5.4 metres;
 - Coloured surface treatment (in part) and cycle symbol carriageway markings providing priority to cyclists based on the principles of a 'cycle street';
 - Raised table type arrangement at the Adams Road/ Wilberforce Road/ University of Cambridge sports centre access, Adams Road/ Sylvester Road junction and eastern extent of Adams Road;
 - Jug handle type layout for cyclists travelling westbound on Adams Road to join the existing off carriageway cycleway;

- Provision of a parallel type pedestrian/cyclist crossing where the proposed cycle route joins the existing cycle route;
- New uncontrolled pedestrian crossings to the west of Wilberforce Road;
- Revisions to the advanced cycle stop line at the eastern extent of the scheme to accommodate bus swept paths; and
- Proposed 7.3 metre wide (with 6.5 metre wide localised narrowing) two-way bus only corridor to the west of the Adams Road/Wilberforce Road junction with the retention of the existing segregated cycleway/footway to the north of the proposed bus corridor.

Figures 1-3: Scope of scheme subject to RSA – Option 21.





- 1.12 The audit team have been advised that it is forecast that two-way bus volumes associated with the scheme would be in the order of 20 two-way bus movements per hour using Adams Road and it is anticipated by the design team that following the removal of the on-street parking provision along Adams Road this would result in a reduction in total car movements using Adams Road.
- 1.13 The audit team have not been made aware of any previous RSAs undertaken on this scheme (noting that alternative schemes have been subject to RSA) nor any departures from standard within the design of the scheme.
- 1.14 The recommendations included within this report should not be regarded as being prescriptive design solutions to the problems raised. They are intended only to indicate a proportionate and viable means of eliminating or mitigating the identified problem with the scheme as presented, in accordance with GG/119. There may be alternative methods of addressing a problem which would be equally acceptable in achieving the desired elimination or mitigation and these should be considered when responding to this report.

2 ROAD SAFETY AUDIT FINDINGS FROM RSA 1

PROBLEM 1

LOCATION: Adams Road.

SUMMARY: Omission of vertical traffic calming may increase the risk and severity of vehicle/cyclist collisions.

- 2.1 Only limited traffic calming features are indicated as being provided for the majority of Adams Road which may result in poor compliance with the proposed speed limit i.e. 20mph. Excessive vehicle speeds could result in an increased risk of vehicle/cyclist collisions and the severity of a collision should it occur.
- 2.2 It is noted that the narrow carriageway widths would help to mitigate this issue.

RECOMMENDATION

- 2.3 It is recommended that additional traffic calming features be introduced to reduce vehicle speeds.

PROBLEM 2

LOCATION: Throughout the scheme.

SUMMARY: Potential omission of signage may increase the risk of vehicle/cyclist collisions.

- 2.4 No details of the proposed signage has been provided indicating how drivers will be advised that that they are entering a 'cycle street' which affords priority to cyclists over motor vehicles. The omission of guidance to divers that they are entering a 'cycle street' may reduce their compliance with the principles of a 'cycle street' and increase the risk of vehicle/cyclist collisions.

RECOMMENDATION

- 2.5 It is recommended that appropriate signage accompany the scheme to address this potential problem and be made available as part of the stage 2 RSA

PROBLEM 3

LOCATION: North-east of proposed Parallel crossing.

SUMMARY: Proposed cycle route alignment could increase the risk of loss of control type collisions for cyclists or collisions between cyclists

- 2.6 The alignment of the cycle route to the north-east of the parallel crossing (where the proposed route will join the exiting route) will incorporate a 90 degree bend, which can

result in loss of control type collisions or collisions between cyclists due to the relative difficulty in negotiating tight radii when on a cycle route.

RECOMMENDATION

- 2.7 It is recommended that the scheme be revised to address this problem.

PROBLEM 4

LOCATION: Wilberforce Road – Uncontrolled pedestrian crossing.

SUMMARY: Use of diagonal crossing could result in an increased risk of pedestrian/vehicle collisions.

- 2.8 The scheme drawings indicate that the uncontrolled pedestrian crossing on Wilberforce Road will have a diagonal alignment. Diagonal crossings are considered to be atypical and could result in pedestrians with visual impairments having difficulty orientating or establishing the direction of the crossings, potentially resulting in them not being able to locate the opposite crossing point, which could increase the risk of vehicle/pedestrian collisions due to the potentially increased time they could be in the carriageway or pedestrian trip hazards should they have to navigate a full height kerb if they cannot locate the opposite dropped kerb.

RECOMMENDATION

- 2.9 It is recommended that uncontrolled pedestrian crossing points be aligned so that they are perpendicular to the edge of the carriageway.

3 AUDIT STATEMENT

3.1 We certify that this audit has been carried out in accordance with GG/119 unless otherwise noted.

Signed:



Date: 11 August 2025

T Brooks – BSc (Hons), MBA, CMILT, MCIHT, MSoRSA,
HE RSA Cert of Competency
Audit Team Leader
go-surveys Ltd
72 Plasturton Avenue
Cardiff
CF11 9HJ

Signed:



Date: 11 August 2025

R Lister - BSc (Hons), MSc, MRTPI, MCIHT, MSoRSA
Audit Team Member
go-surveys Ltd
72 Plasturton Avenue
Cardiff
CF11 9HJ



APPENDIX A

List of Drawings and Documents Provided for Audit

PTP_21086_21_01-07

Proposed Alt. Bus Route via Adams Rd (Cycle Street)

Adams Road Vehicle/ Cycle Surveys

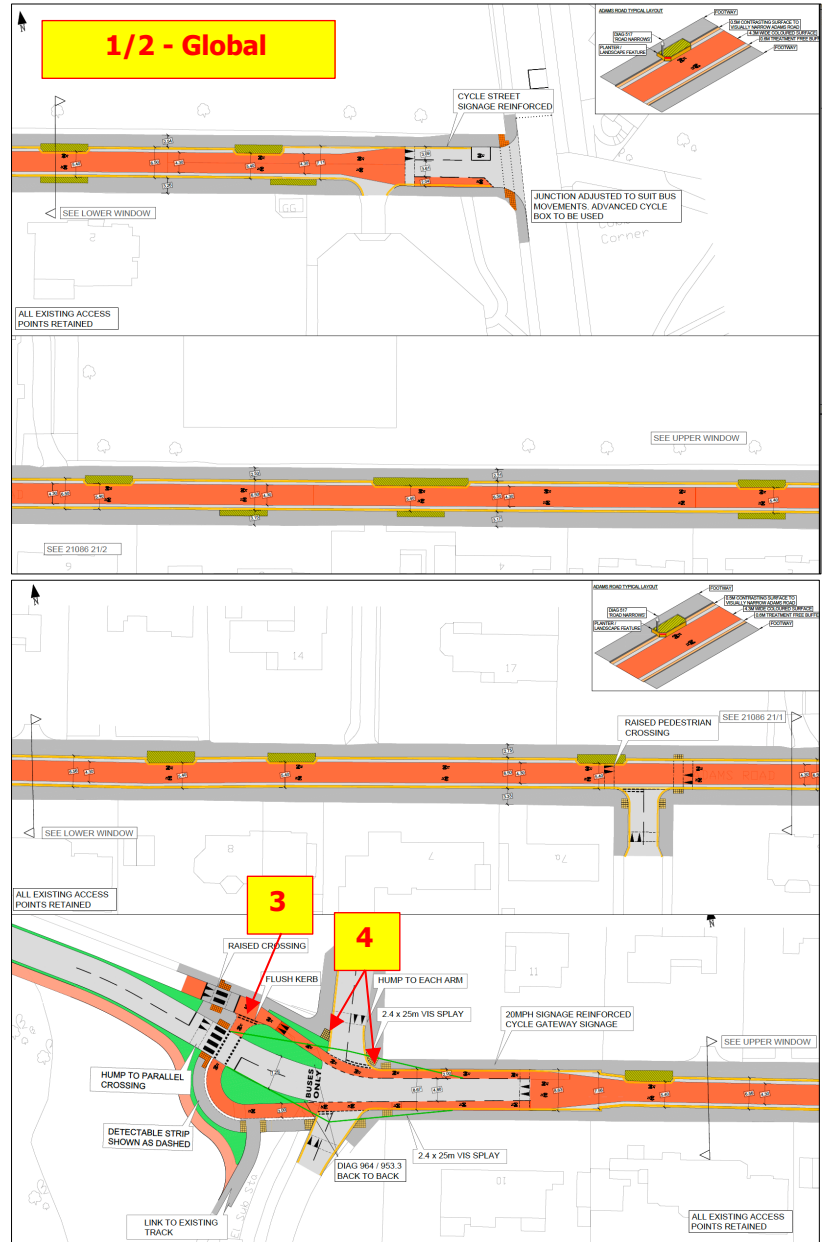
9th January 2020 (Mott McDonald)

PIC Data

1st January 2019 – 31st December 2023

APPENDIX B

Location of Identified Problems





Client:

Clare Hall

Project:

**Cambridge Busway – Option 4
(Drawings 21)**

Designer Response – Stage 1

August 2025

www.pulsartransport.co.uk

REGISTERED OFFICE: Pulsar Transport Limited, Gilmoora House, 57-61 Mortimer Street, London W1W 8HS.

Road Safety Audit Response Report

Project details

Report title:	Proposed highways scheme, Adams Road, Cambridge. Alternative route - option 21
Date:	12 th August 2025
Document reference and revision:	N0-PR-RSA1 Designers Response
Prepared by:	Pulsar Transport Planning

Authorisation sheet

Project:	Cambridge busway alternative route
Report title:	Designers Response
Prepared by:	
Name:	Pete Rushton
Position:	Engineer
Initialed:	PR
Organisation:	Pulsar Transport Planning
Date:	12 th August 2025
Approved by:	
Name:	Kamran Haider
Position:	Director
Initialed:	KH
Organisation:	Pulsar Transport Planning
Date:	12 th August 2025

Introduction

This Designer's Response has been prepared by Pulsar Transport Planning in response to a Stage 2 Road Safety Audit (RSA) undertaken by Go Surveys. The RSA relates to highway works in relation to Alternative options for the proposed bus corridor scheme at and in the vicinity of Adams Road and Wilberforce Road, Cambridge.

Proposals were designed by Pulsar to incorporate the following:

- Removal of on-street parking along the entirety of Adams Road;
- Carriageway width of 6.5 metres with localised narrowing's to 5.4 metres;
- Coloured surface treatment (in part) and cycle symbol carriageway markings providing priority to cyclists based on the principles of a 'cycle street';

- Raised table type arrangement at the Adams Road/ Wilberforce Road/ University of Cambridge sports centre access, Adams Road/ Sylvester Road junction and eastern extent of Adams Road;
- Jug handle type layout for cyclists travelling westbound on Adams Road to join the existing off carriageway cycleway;
- Provision of a parallel type pedestrian/cyclist crossing where the proposed cycle route joins the existing cycle route;
- New uncontrolled pedestrian crossings to the west of Wilberforce Road;
- Revisions to the advanced cycle stop line at the eastern extent of the scheme to accommodate bus swept paths;
- Proposed 7.3 metre wide (with 6.5 metre wide localised narrowing) two-way bus only corridor to the west of the Adams Road/Wilberforce Road junction with the retention of the existing segregated cycleway/footway to the north of the proposed bus corridor.
- New uncontrolled pedestrian crossings to the west of Wilberforce Road; and
- Revisions to the advanced cycle stop line at the eastern extent of the scheme to accommodate bus swept paths.

The RSA was prepared based on the proposals above, for which this Designer's Response has been prepared.

Key personnel

Overseeing Organisation:	
RSA team:	T Brooks and R Lister
Design organisation:	Pulsar Transport Planning

Road safety audit decision log

RSA problem	RSA recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
Omission of vertical traffic calming may increase the risk and severity of vehicle/cyclist collisions.	It is recommended that additional traffic calming features be introduced to reduce vehicle speeds.	Agree. Additional raised crossing at Sylvester Road with pedestrian facilities. Further raised tables could be considered.		
Potential omission of signage may increase the risk of vehicle/cyclist collisions	It is recommended that appropriate signage accompany the scheme to address this potential problem and be made available as part of the stage 2 RSA	Agree, detailed signage to be proposed during the detailed design phase		
Proposed cycle route alignment could increase the risk of loss of control type collisions for cyclists or collisions between cyclists.	It is recommended that the scheme be revised to address this problem.	Disagree. The proposed junction will act as a conventional priority junction where a cycle route joins another route. Similar to figure 6.4 of LTN 1/20 (Below).		
Use of diagonal crossing could result in an increased risk of pedestrian/vehicle collisions.	It is recommended that uncontrolled pedestrian crossing points be aligned so that they are perpendicular to the edge of the carriageway.	Disagree. The crossing has been located on the likely desire line to encourage use. The tactile paving would be aligned to ensure that partial sighted users can align themselves correctly. It wouldn't however have a design impact should they be re-aligned as the recommendation.		

Figure 6.4 LTN 1/20



Name:	Pete Rushton
Signed	
Position:	Engineer
Organisation:	Pulsar Transport
Date:	12 August 2025



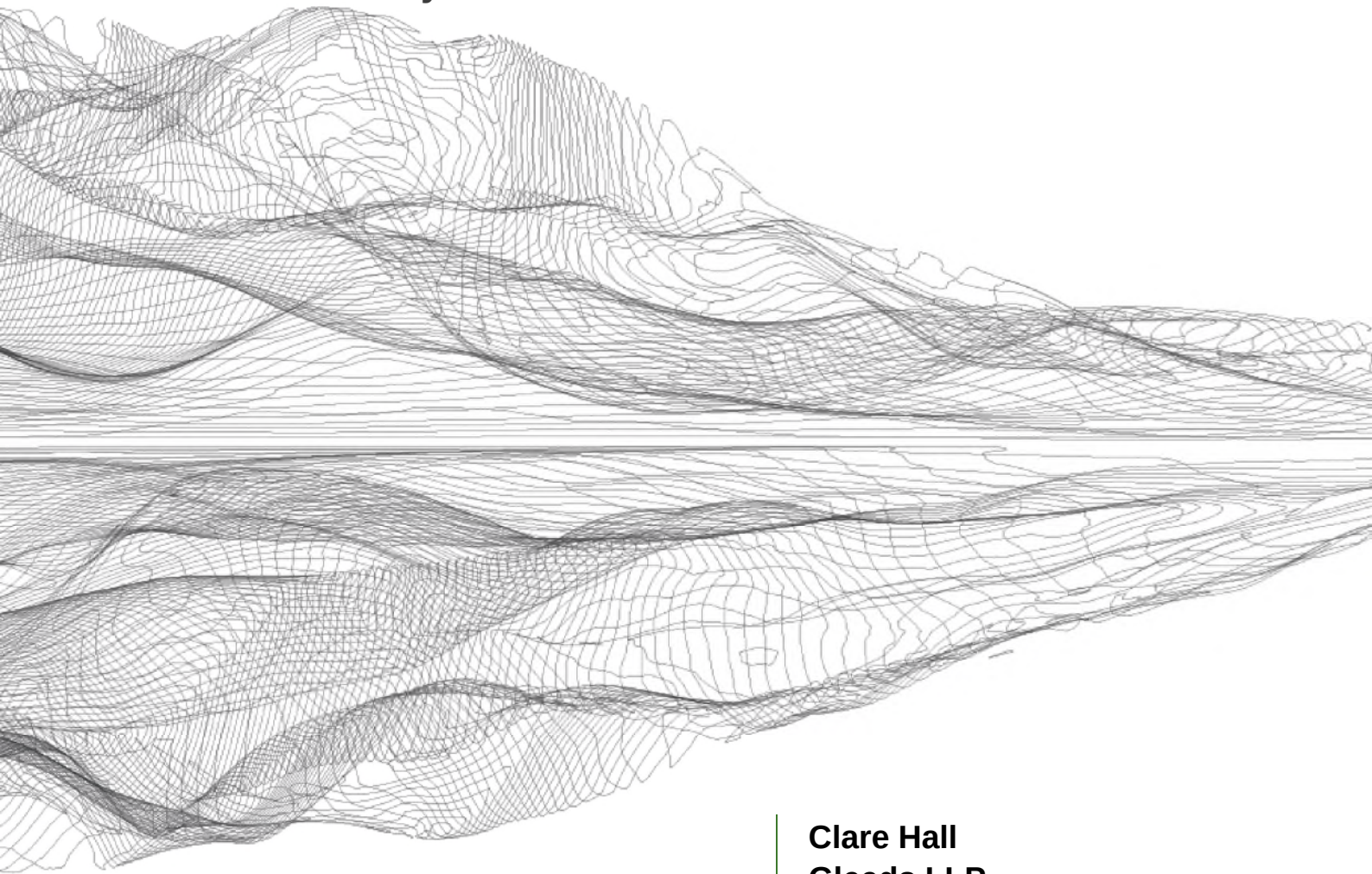
www.pulsartransport.co.uk

REGISTERED OFFICE: Gilmoora House, 57-61 Mortimer Street, London W1W 8HS.

APPENDIX N – Gleeds Cost Estimates

Busway Route Cost Appraisal for Clare Hall

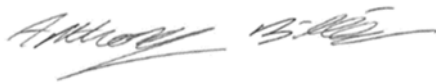
Feasibility Order of Cost Estimate Nr 2



Clare Hall
Gleeds LLP
CMCM0582

Version: Rev 1
Date: 18th August 2025

Document control

Project name	Busway Route Cost Appraisal for Clare Hall	Project number	CMCM0582
Date of issue	18 th August 2025	Version number	Rev 1
Reason for issue	Feasibility Order of Cost Estimate Nr 2		
Document author	Anthony Bilbé	Grade	Quantity Surveyor
Signature			
Contributors	Connor Leneghan		
Approved by	Carl Maidment	Grade	Director
Signature			
Security classification	N/A		
Distribution to	Clare Hall c/o Pulsar Transport Planning		
Related project documents	N/A		

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1	Executive Summary	3
2	Basis of this Order of Cost Estimate	6
3	Qualifications and Assumptions	11
4	Exclusions	16
5	Cost Summary	18

Appendices

Appendix A: Feasibility Order of Cost Estimate for Rifle Range Route

Appendix B: Feasibility Order of Cost Estimate for Adams Road Option 1

Appendix C: Feasibility Order of Cost Estimate for Adams Road Option 2

Appendix D: Feasibility Order of Cost Estimate for Shared Section

Appendix E: Drawings

Appendix F: Photographs

1

Executive Summary

1.0 Executive Summary

1.1 Generally

1.1.1 Gleeds have been appointed by Clare Hall c/o Pulsar Transport Planning to provide a Feasibility Order of Cost Estimate consisting of three options for proposed Busway Routes. The options are listed below and are based on the information provided on 3rd July 2025 and 1st August 2025, issued by Pulsar Transport Planning to Clare Hall:

- Rifle Range Access Route.
- Adams Road Route Option 1.
- Adams Road Route Option 2.

1.1.2 This Feasibility Order of Cost Estimate provides Clare Hall c/o Pulsar Transport Planning with an estimated Project Cost for the aforementioned options. Below is a brief description of each option:

- Rifle Range Access Route – New busway and cycleway running from Charles Babbage Road to Grange Road, involving construction of a new bridge structure over Bin Brook, retention ponds, swales and other elements.
- Adams Road Route Option 1 – New busway running from Charles Babbage Road through Coton Cycleway to Adams Road. Adams Road is to be resurfaced based upon its current layout, involving new road markings, signage and other elements.
- Adams Road Route Option 2 – New busway running from Charles Babbage Road through Coton Cycleway to Adams Road. Adams Road is to be adjusted through carriageway widening and resurfacing of other areas based upon a cycle street layout (proposed by others) which has not yet been constructed.

1.1.3 It must be noted that the presented costs exclude the following:

- Other Development and Project Costs.
- Employer Other Risk.
- Value Added Tax.

1.1.4 The project comprises of three options for the construction of new Busway Routes. The costs reported in this Feasibility Order of Cost Estimate are inclusive of the Works, Main Contractor's Preliminaries, Traffic Management, Design Fees, Main Contractors Design Development and Construction Risk, and Overheads and Profit. The estimate makes further allowances for Project Design Team Fees, Employer Risk, and Inflation.

1.1.5 The estimated project costs for each option are summarised in Table 01 (page 5) and Section 5.0 of this report. For further details, please refer to the detailed Feasibility Order of Cost Estimate for Rifle Range Access Route within Appendix A, Feasibility Order of Cost Estimate for Adams Road Route Option 1 within Appendix B, Feasibility Order of Cost Estimate for Adams Road Route Option 2 within Appendix C and Feasibility Order of Cost Estimate for the Shared Section within Appendix D.

1.1.6 A number of clarifications, assumptions and exclusions have been made in the formulation of the estimates. Please refer to Section 3.0 and Section 4.0 of this report for further details.

1.1.7 This Order of Cost Estimate has been prepared solely in accordance with the information stated in this document in Section 2.0.

1.0 Executive Summary (Continued)

1.1 Generally (Continued)

TABLE 01: FEASIBILITY ORDER OF COST ESTIMATE - COST OPTION SUMMARY

Ref.	Description	Rifle Range Route	Adams Road Route Option 1	Adams Road Route Option 2
1.0	Construction Works including Main Contractor On Costs	£16,200,000	£8,300,000	£8,900,000
2.0	Total Construction Cost	£16,200,000	£8,300,000	£8,900,000
2.1	Project / Design Team Fees - 10% allowance	£1,620,000	£830,000	£890,000
2.2	Other Development / Project Costs	Excluded	Excluded	Excluded
3.0	Sub Total Excluding Risk and Inflation (Rounded)	£17,800,000	£9,100,000	£9,800,000
3.1	Risk (Design / Construction / Employer Change) - 25% allowance	£4,450,000	£2,275,000	£2,450,000
3.2	Risk (Employer Other Risk) - Excluded	Excluded	Excluded	Excluded
4.0	Sub Total Including Risk (Rounded)	£22,300,000	£11,400,000	£12,300,000
4.1	Tender Inflation – 5.2% allowance (On Construction Costs Only)	£840,000	£430,000	£460,000
4.2	Construction Inflation – 2.7% allowance (Tender Return to Mid-Point of Construction)	£460,000	£230,000	£250,000
4.2	Allowance for inflation on other project costs - 5% allowance	£300,000	£160,000	£170,000
5.0	Estimated Project Cost Including Inflation (Excluding VAT)	£23,900,000	£12,200,000	£13,200,000

2

Basis of this Order of Cost Estimate



2.0 Basis of this Order of Cost Estimate

2.1 Generally

- 2.1.1 The prices/rates within the Order of Cost Estimate are current as of 3Q 2025 and allowances have been made for increased prices between this base date and the estimated mid-point of construction. Gleeds have made the below assumptions with regards to programme following conversations with Pulsar Transport Planning.
- 2.1.2 Gleeds note that the Proposed Adams Road Options would have a shorter construction programme and therefore upon receipt of an indicative programme, Gleeds can adjust the inflation indices accordingly for each option. For the purposes of this estimate, inflation has been applied to reflect a mid-point of construction in 1Q 2028 for all options.
- 2.1.3 The estimated key dates are outlined below.

TABLE 02: BCIS TENDER AND CONSTRUCTION INFLATION CALCULATION

Project Stage	Quarter	TPI	BCI
Base Date	3Q25	403	
Return of Tenders (estimated)	2Q27	424	500.3
Start Date (estimated)	3Q27		
Mid-point of Construction (estimated)	1Q28		513.7
Inflation (Rounded)		5.2%	2.7%

- 2.1.4 Gleeds have based the inflation calculations on the BCIS Tender Price Indices (13th June 2025) and BCIS General Building Cost Index (22nd July 2025).

2.2 Information Utilised

- 2.2.1 The Order of Cost Estimate has principally been based on the following design information and a site visit undertaken by Gleeds on Monday 4th August 2025:

Document Title	Area
Cambourne-to-Cambridge-proposed-site-plans	Rifle Range
Cambourne-to-Cambridge-structures-Bin-Brook-bridge	Rifle Range
PTP_21086_010_Rev B	Adams Road Opt. 1
PTP_21086_021	Adams Road Opt. 2
Adams-Road-September-2024	Council Scheme
0420_001	Shared Section
Emails received from Pulsar Transport Planning containing key details in relation to the scope of works on the following dates: 29 th July 2025; 31 st July 2025; 1 st August 2025; 5 th August 2025; 6 th August 2025, 12 th August 2025	All Areas

2.0 Basis of this Order of Cost Estimate (Continued)

2.3 Market Conditions

- 2.3.1 Gleeds' construction cost forecasts are informed by the latest supply chain data and reflect conditions as of the issue date. However, they remain subject to change due to evolving market dynamics and potential disruptors, necessitating regular reviews to incorporate market feedback.
- 2.3.2 Although volatility in materials pricing has eased, costs remain higher than pre-pandemic levels. Some product price increases were announced for the new year, largely driven by rising energy costs.
- 2.3.3 Interest rate reductions, coupled with expectations of further cuts and a strong pipeline of infrastructure and energy-related projects, are helping to bolster market confidence. While concerns about sluggish economic growth persist, industry data indicates cautious optimism for a rise in activity.
- 2.3.4 Nevertheless, caution persists across the supply chain, particularly given the elevated rate of construction insolvencies. These insolvencies are dampening risk appetite and capacity in certain areas. Additionally, strong demand in particular sectors — such as data centres — places strain on supply chain resources, particularly in mechanical and electrical trades. This demand may lead to regional price increases influenced by supply and demand.
- 2.3.5 Geopolitical tensions, alongside economic measures such as tariffs, continue to fuel uncertainty. Any escalation has the potential to severely disrupt supply chains and drive renewed inflationary pressures. As such, we strongly recommend regular reviews and updates to cost forecasts to ensure they remain aligned with the latest market conditions.

2.4 Areas

- 2.4.1 The measurements contained within this document have been based upon documentation outlined within Section 2.2. The areas herein have been prepared for the purpose of the Order of Cost Estimates and should not be used for any other purposes.
- 2.4.2 All areas will be affected by design development, additional client requests, as well as measurement and construction tolerances.

2.5 Procurement

- 2.5.1 Procurement of a Main Contractor via a single stage design and build contract with competitive tender being sought utilising the RIBA Stage 4 design. We have assumed there is no phasing strategy and works will be undertaken in a single phase.

2.6 Benchmarking

- 2.6.1 Gleeds have undertaken a high-level benchmarking exercise for the options against similar nature projects with the aim of demonstrating that costs are broadly in line with projects of a similar nature. It is key to note that infrastructure schemes can vary significantly and will have varying risks, phasing strategies, management and maintenance of existing road users, ground conditions and local authority restrictions. Due consideration should be given to these points when making reference to this in-house benchmarking. Details regarding this benchmarking exercise and the benchmarked projects are listed below.

2.0 Basis of this Order of Cost Estimate (Continued)

2.6 Benchmarking (Continued)

- 2.6.2 Table 03 below provides a comparison of the cost per linear metre and cost per square meter (busway road area) for the three options proposed by Pulsar Transport Planning and two benchmarked projects. This benchmarking exercise applies solely to the construction costs and not project costs. The Adams Road (*Busway only*) values captures both options of Adams Road since the Coton Cycleway element remains consistent between both options. Both benchmarked projects have been uplifted for inflation to align with the base dates for the Rifle Range Access Route and both Adams Road Options. This allows comparison on a like-for-like basis.
- 2.6.3 Project A is a guided busway with a length of approximately 1,600 linear metres. The scheme encompasses new carriageway construction, cycleways, footpaths, beam guardrails, drainage, attenuation tanks, traffic signals, lighting columns and ducting, fencing in addition to landscaping. Abnormal preliminaries have been deducted from the contract sum in this benchmarking exercise. It has similarities to both our options.
- 2.6.4 Project B is also a guided busway with a length of approximately 650 linear metres. The scheme encompasses the same scope of works as Project A but has a different approach to phasing. Since Project B does not solely relate to new busway construction, adjustments to the contract sum have been made to recognise the costs related to new busway construction, marked by the * in the below table. Abnormal preliminaries have also been further deducted from the contract sum in this benchmarking exercise.

TABLE 03: HIGH LEVEL BENCHMARKING ANALYSIS

Item	Rifle Range Route	Adams Road (<i>Busway only</i>)	Benchmarked Project A	Benchmarked Project B
Contract Sum (rounded)	£16,200,000	£6,800,000**	£15,300,000	£4,800,000*
Length of busway (m)	1,602	519**	1,600	650
Area of busway (m ²)	11,926	4,044	10,800	2,925
Adjustment for inflation (%)	0.0%	0.0%	6.1%	3.5%
Cost per linear metre	£10,100	£13,100	£9,560	£7,385
Cost per square metre	£1,360	£1,680	£1,420	£1,640

- 2.6.5 For Adams Road, the cost and length of the busway has only been taken from where there is to be new carriageway construction (Coton Cycleway), marked by the ** in the above table. The cost and length of busway for resurfacing and widening (Adams Road) has been excluded from this analysis as it would not be useful for a direct comparison.
- 2.6.7 Greater reliance should be placed upon the benchmarked cost per square metre than the benchmarked cost per linear metre, as there are varying widths of roads utilised in this benchmark analysis. Therefore, comparing the cost per square meter provides a greater like-for-like comparison. Although the benchmarked cost per linear metre may prove useful information to understand and compare projects from a high-level perspective, it does not consider the width of the roads which is a critical element to take into account when benchmarking projects of this nature. The benchmarked cost per square metre does indeed take account of these road widths which should provide a more informed comparison.

2.0 Basis of this Order of Cost Estimate (Continued)

2.6 Benchmarking (Continued)

- 2.6.8 Table 03 above demonstrates that the estimated sums when equated to a cost per square metre for the three options are within a comparable range against the benchmarked projects, with an average cost per square meter of £1,525m². As aforementioned, infrastructure scheme can vary significantly, and this should be considered in any benchmarking analysis or reliance of such figures. For example, the retention ponds and bridge structure within the Rifle Range Access Route and the adjustments to the existing pond within the Adams Road Route Options - neither of the benchmarked projects contained these elements.
- 2.6.9 This benchmarking exercise aims to provide a level of comfort that the estimated sums contained within Appendix A, B and C are within reasonable ranges based upon other similar schemes.

3

Qualifications and Assumptions



3.0 Qualifications and Assumptions

The following assumptions have been made during the preparation of the Order of Cost Estimate.

3.1 Generally

- 3.1.1 The measurements contained within this document have been prepared solely for the computation of these Order of Cost Estimates. These measurements must not be relied upon for any purpose other than the formation of this estimate.
- 3.1.2 The price level included in this Order of Cost Estimate is on the basis that works are subject to competitive tender by suitably qualified general and specialist contractors.
- 3.1.3 This Order of Cost Estimate has been prepared solely in accordance with the information stated within this document.
- 3.1.4 The figures are issued subject to confirmation or amendment following revisions to the information stated and discussion with the Client and other Consultants at which time this Order of Cost Estimate may be revised and re-issued.
- 3.1.5 It is assumed that procurement will be via a main contractor, using a single stage design and build procurement methodology with competitive tenders being sought at RIBA Stage 4.

3.2 Work Specific (All Three Options)

- 3.2.1 It has been assumed that the shared section between both options will commence from the junction at Charles Babbage Road and will end at the deviation point in accordance with drawing 0420_001 provided by Pulsar Transport Planning.
- 3.2.2 It has been assumed that some trees located within close proximity to the construction areas have TPO's and therefore an allowance has been made to carefully hand-dig / vacuum excavate around tree roots.
- 3.2.3 Due to the limited design information to update our costings, Gleeds have utilised typical details based on projects of a similar nature for the construction build-up of the Bus and Cycle Ways, with the Busway construction being 1100mm deep and the Cycleway/Footpath being 400mm deep. It has been assumed the existing ground conditions allow this type of build-up; however further investigative surveys are required to determine this. Further information regarding the construction build-ups can be found within Appendix A, B and C, sub-title 700: Pavements.
- 3.2.4 It has been assumed a proportion of excavated material is suitable for stockpiling on-site and being reused for backfilling and topsoiling.
- 3.2.5 It has been assumed that the existing services infrastructure is adequate for the construction, and no allowance has been made to upgrade the existing utilities. Allowances have been made for new service routes/trenches and ducting on site.
- 3.2.6 No allowance has been included for the excavation, disposal, or the remediation of contaminated land.
- 3.2.7 Financial allowances have been included for Environmental Mitigation Measures, refer to detailed cost estimates for amounts for each cost option.

3.0 Qualifications and Assumptions (Continued)

3.2 Work Specific (All Three Options)

- 3.2.8 Allowances for timber and noise barrier fencing have been included, where the new routes will be in close proximity to residential and university dwellings, however, further studies will be required to determine if this is required.
- 3.2.9 Allowances have been made for new surface water drainage, basin/retention ponds, formation of swales, attenuation geocellular tanks, and where possible connections into the existing surface water drainage network.
- 3.2.10 Allowances have been made for a galvanised steel barrier beam guardrail to both sides of new busway construction.
- 3.2.11 Allowances have been made for pedestrian guard railing (PGR) metal restraint system in select areas.
- 3.2.12 Allowances have been made for 480 x 150mm combined kerb drains (CKD) to both sides of the busway.
- 3.2.13 Allowances have been made for new lighting columns, being at every 25/m centres.
- 3.2.14 Allowances have been made for new service trenching and ducts.
- 3.2.15 Allowances have been made for a new bridge structure over the existing ditch leading to Charles Babbage Road.
- 3.2.16 Allowances have been made for new Bus Gate Entry and Exit Points.
- 3.2.17 Allowances have been made to tie-in to existing roads at each end of the routes.

3.3 Work Specific (Adams Road Option 1)

- 3.3.1 It has been assumed all on-street parking on Adams Road will be removed for the Adams Road Option to be a viable proposal.
- 3.3.2 It has been assumed no major utilities are located alongside the Coton cycleway/footway and therefore there is no requirement to divert large quantities of existing utilities.
- 3.3.3 It has been assumed the proposed works on Adams Road should not affect any utilities.
- 3.3.4 It has been assumed this route will not impact any existing swales or watercourses and no allowances have been included to reconfigure existing swales and the like.
- 3.3.5 It has been assumed Land Purchases required are achievable to make this option viable.
- 3.3.6 The majority of work required to Adams Road Option is as per drawing PTP_21086_010_Rev B – Proposed Alt. Bus Route via Adams Rd., Option 3: Segregated Corridor.

3.0 Qualifications and Assumptions (Continued)

3.3 Work Specific (Adams Road Option 1)

- 3.3.7 It has been assumed that the existing footpath and cycleway on the Coton Cycleway will require resurfacing and replacement kerbing due to risk of damage whilst the new busway construction is taking place. Allowances have been included for breaking out the existing surface, new surfacing and replacement kerbing and edgings.
- 3.3.8 Allowances have been made for Combined Kerb Drains (CKDs) to both sides of the new busway.
- 3.3.9 Allowances have been made for mass cut and fill which at this stage are for the sole purpose of including financial provisions. Further detailed surveys and design work is required to enable any accuracy in the cut and fill calculations. It is assumed that all cut and fill will be retained on site.
- 3.3.10 An allowance has been made for Traffic Management for when road tie-in works and junction reconfiguration are being undertaken.
- 3.3.11 Allowances have been made for adjustments to the existing pond to suit the new proposed alignment of the busway.

3.4 Work Specific (Adams Road Option 2)

- 3.4.1 It has been assumed all on-street parking on Adams Road will be removed for the Adams Road Option to be a viable proposal.
- 3.4.2 It has been assumed no major utilities are located alongside the Coton cycleway/footway and therefore there is no requirement to divert large quantities of existing utilities.
- 3.4.3 It has been assumed the proposed works on Adams Road should not affect any utilities.
- 3.4.4 It has been assumed this route will not impact any existing swales or watercourses and no allowances have been included to reconfigure existing swales and the like.
- 3.4.5 It has been assumed Land Purchases required are achievable to make this option viable.
- 3.4.6 The majority of work required to Adams Road Option is as per drawing PTP_21086_021 – Proposed Alt. Bus Route via Adams Rd., Option 3: Segregated Corridor.
- 3.4.7 It has been assumed the existing 2m wide footway and 3.5m wide cycleway is to stay in-situ and is not impacted by the works, as per the drawing. An allowance has been made for protection and segregation of the existing footpath and cycleway throughout the duration of the works.
- 3.4.8 It has been assumed that the existing footpath and cycleway on the Coton Cycleway will require resurfacing and replacement kerbing due to risk of damage whilst the new busway construction is taking place. Allowances have been included for breaking out the existing surface, new surfacing and replacement kerbing and edgings.
- 3.4.9 Allowances have been made for Combined Kerb Drains (CKDs) to both sides of the new busway.

3.0 Qualifications and Assumptions (Continued)

3.4 Work Specific (Adams Road Option 2)

- 3.4.10 Allowances have been made for mass cut and fill which at this stage are for the sole purpose of including financial provisions. Further detailed surveys and design work is required to enable any accuracy in the cut and fill calculations. It is assumed that all cut and fill will be retained on site.
- 3.4.11 It is assumed that where the carriageway is to be widened based on the scheme proposed by the council to covert the existing Adams Road layout to a cycle street, the widening will involve an excavation depth of 510mm, comprising 150mm MOT type 1, and 360mm carriageway buildup. Refer to Appendix B for further details.
- 3.4.12 The extent of the carriageway widening has been based on drawing PTP_21086_21 Proposed Alt. Bus Route via Adams Rd., Option 3: Segregated Corridor and the drawings provided that show the scheme proposed by the council to convert Adams Road to a cycle street. If these works are not undertaken, the sums estimated for carriageway widening would no longer be representative.
- 3.4.13 An allowance has been made for Traffic Management for when road tie-in works and junction reconfiguration are being undertaken.
- 3.4.14 Allowances have been made for adjustments to the existing pond to suit the new proposed alignment of the busway.

3.5 Work Specific (Rifle Range Access Route)

- 3.5.1 Allowances have been made for the construction of the bridge structure over the existing brook based upon the information provided.
- 3.5.2 It has been assumed the bridge structure is the same width as the proposed Bus Route and Cycle Route and is constructed utilising a primary steel/concrete structure.
- 3.5.3 Allowances have been made for post and rail safety fencing to protect the basin/retention ponds.
- 3.5.4 It has been assumed Land Purchases required are achievable to make this option viable.
- 3.5.5 There have been several assumptions with regards to the drainage specification, refer to Appendix A for further details.
- 3.5.6 There have been several assumptions with regards to the pavement build-up and construction, refer to Appendix A for further details.
- 3.5.7 Allowances have been made for mass cut and fill which at this stage are for the inclusion of financial provisions. Further detailed surveys and design work is required to enable any accuracy in the cut and fill calculations. It is assumed that all cut and fill will be retained on site.
- 3.5.8 An allowance has been made for Traffic Management for when tie-in works are being undertaken between RRA and Grange Road. Note no financial allowances have been included for significant reconfiguration of the RRA and Grange Road junction, as further design would require landowner consultation.

4

Exclusions



4.0 Exclusions

The following are excluded from this Order of Cost Estimate:

4.1 General Items

- 4.1.1 Aftercare, maintenance and operation beyond practical completion of the construction works.
- 4.1.2 Risk allowances beyond those stated.
- 4.1.3 Grants and tax allowance and/or relief.
- 4.1.4 Financing costs and charges.
- 4.1.5 Tax recovery, tax relief or grant funding allowances.
- 4.1.6 Fees payable to and or restrictions by adjacent landowners.
- 4.1.7 Local authority financial contributions or upgrades to the local infrastructure.
- 4.1.8 Value Added Tax.
- 4.1.9 Compensation to residents/landowners, and/or enhancements to properties.

4.2 Works related

- 4.2.1 Legal costs and fees.
- 4.2.2 Planning fees.
- 4.2.3 Fees in connection with Party Wall awards.
- 4.2.4 Charges in connection with highways and services.
- 4.2.5 Environmental improvement works and flood risk measures, unless specifically allowed for.
- 4.2.6 Accreditations and resulting works such as BREEAM and Ska.
- 4.2.7 Disposal / treatment of asbestos and contaminated materials.
- 4.2.8 Out of hours working.
- 4.2.9 Phasing of the works.
- 4.2.10 Site wide mass cut and fill, unless specifically allowed for (refer to Appendix A and Appendix B).
- 4.2.11 All works and costs associated with archaeological investigations.
- 4.2.12 Demolition of existing property/buildings to allow construction.
- 4.2.13 Land purchase / acquisitions / compulsory purchase orders and all associated fees, costs and charges.
- 4.2.14 Subsequential works and costs resulting from the works.
- 4.2.15 Relocation and diversions of the Granta Back Bone Network (GBN).
- 4.2.16 Neighbour consultations.
- 4.2.17 Works to existing utilities / services below ground, unless specifically allowed for (refer to Appendix A and Appendix B).
- 4.2.18 Locating buried road lighting and traffic signs cables.
- 4.2.19 Upgrading of existing utilities and services feeding existing buildings in close proximity to the works.
- 4.2.20 New signalised junction to Adams Road / Wilberforce Road and New Busway exit point.
- 4.2.21 Remediation of land.
- 4.2.22 Works to existing ditches.
- 4.2.23 Financial provision for fixed price contract.
- 4.2.24 Temporary relocation costs of nearby premises throughout the works.

5 | **Cost Summary**



Clare Hall - Busway Options

Feasibility Order of Cost Estimate - Cost Summary

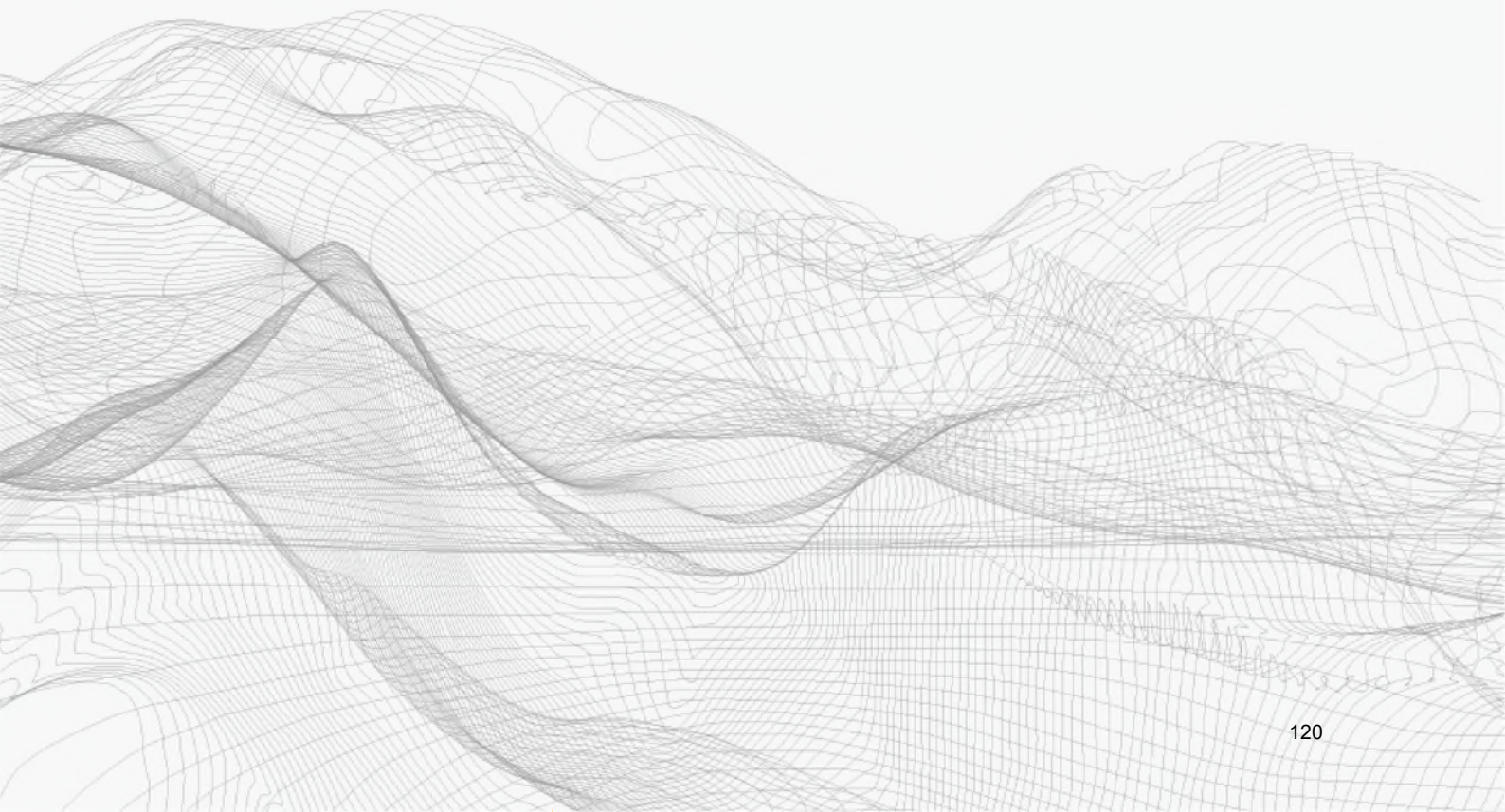
14 August 2025



Ref.	Description	Rifle Range Route	Adams Road Option 1	Adams Road Option 2
0.0	Construction Works / Roadworks (as per build-ups) - Shared Section of Road Only	£1,560,000	£1,560,000	£1,560,000
1.0	Construction Works / Roadworks (as per build-ups)	£9,260,000	£3,630,000	£4,020,000
2.0	Total Roadworks (Rounded)	£10,820,000	£5,190,000	£5,580,000
3.1	Main Contractor's Preliminaries - 25% / 30% / 30%	£2,710,000	£1,560,000	£1,680,000
3.2	Main Contractor's Traffic Management (allowance)	£50,000	£50,000	£50,000
3.3	Main Contractor's Design Fees - 7% allowance (on Ref 2.0 only)	£760,000	£360,000	£390,000
3.4	Main Contractor's Design Development + Construction Risk - 10% allowance (on Ref 2.0 only)	£1,082,000	£519,000	£558,000
3.5	Main Contractor's Overheads & Profit - 5% / 8% / 8%	£770,000	£610,000	£660,000
4.0	Total Construction Cost Including Main Contractor On-Costs (Rounded)	£16,200,000	£8,300,000	£8,900,000
5.1	Project / Design Team Fees - 10% allowance	£1,620,000	£830,000	£890,000
5.2	Other Development / Project Costs	Excluded	Excluded	Excluded
6.0	Sub Total Excluding Risk and Inflation (Rounded)	£17,800,000	£9,100,000	£9,800,000
7.1	Risk (Design / Construction / Employer Change) - 25% allowance	£4,450,000	£2,275,000	£2,450,000
7.2	Risk (Employer Other Risk) - Excluded	Excluded	Excluded	Excluded
8.0	Sub Total Including Risk (Rounded)	£22,300,000	£11,400,000	£12,300,000
9.1	Tender Inflation - 5.2% allowance (On Ref 4.0)	£840,000	£430,000	£460,000
9.2	Construction Inflation - 2.7% allowance (Tender Return to Mid-Point of Construction)	£460,000	£230,000	£250,000
9.3	Allowance for inflation on other project costs (ref 5.1 and 7.1); say 5%	£300,000	£160,000	£170,000
10.0	Estimated Project Cost Including Inflation (Excluding VAT)	£23,900,000	£12,200,000	£13,200,000

A

**Feasibility Order
of Cost Estimate
for Rifle Range
Access Route**



Ref.	Description	Quantity	Unit	Rate	Total
<u>0.0</u>	<u>200: Site Clearance</u>				
0.0.1	General site clearance; including removal of vegetation, trees, lighting columns, signage, etc.	104,576	m²	£3	£313,728
<u>1.0</u>	<u>300: Fencing</u>				
1.0.1	Beam guardrail to busway; both sides of busway; galvanised steel barrier system; socketed concrete foundations 600mm x 800mm x 600mm deep	3,204	m	£90	£288,360
1.0.2	Safety fencing to protect basin/retention ponds; post and rail fencing; 1300mm high; including all fixings, concrete foundations for posts and postmix	498	m	£120	£59,760
1.0.3	Extra over allowance for metal gates (approximate quantity)	10	nr	£2,750	£27,500
1.0.4	Security Fencing; Palisade fencing; 1800mm high	1	item	Excluded	Excluded
1.0.5	Allowance for acoustic barriers; assumed 1500mm high; (assumed running parallel with busway in select areas)	2,119	m	£220	£466,180
1.0.6	Pedestrian guard railing (PGR) in select areas; 1050mm height; metal restraint system	100	m	£100	£10,000
<u>1.1</u>	<u>500: Drainage and Service Ducts</u>				
1.1.1	Carrier drains; assumed 450mm diameter; UPVC on type S bedding; depth to invert not exceeding 2m; average depth to invert 1.75m	789	m	£400	£315,600
1.1.2	Manhole chambers, assumed 1050mm diameter type 7 catchpit with class D400 cover; installed at depths not exceeding 3.0m	25	nr	£4,390	£109,750
	Extra over for petrol interceptors and hydro-brake manholes	1	item	£50,000	£50,000
1.1.3	Drainage outfalls; precast concrete; 450mm diameter opening connected to carrier drains	9	nr	£5,030	£45,270
1.1.4	Drainage attenuation geocellular tanks; assumed installed at depth not exceeding 3.5m, tank depth assumed 2.4m; including all crates and connecting components	2026	m³	£350	£708,960
1.1.5	Allowance for formation of basin/retention ponds; including geocellular membrane and all other waterproofing components; assumed average depth not exceeding 3.0m	3,470	m²	£150	£520,500
1.1.6	Allowance for formation of swale, not exceeding 4500mm width, including geocellular membrane; assumed average depth not exceeding 750mm; including aquatics planting	536	m	£100	£53,600
1.1.7	Allowance for forming connections into existing surface water drainage network	1	item	£27,500	£27,500
1.1.8	Allowance for diversion works to the GBN along RRA route	1	item	Excluded	Excluded
<u>1.2</u>	<u>600: Earthworks</u>				
<u>1.2.1</u>	<u>Excavation: Busway</u>				
1.2.1.1	Excavation of acceptable material Class 5A; Busway	13,074	m³	£10	£130,741
1.2.1.2	Extra over; breaking out existing hardstanding's (Bin Brook to Grange Rd Junction); assumed 400mm depth	1,148	m³	£40	£45,904
1.2.1.3	Extra over; breaking out existing hardstanding's (access road off Charles Babbage Rd); assumed 400mm depth	365	m³	£40	£14,592
1.2.1.4	Extra over allowance; excavation in hard materials below ground (rock); say 10%	1,307	m³	£10	£13,074
1.2.1.5	Extra over for hand digging / vacuum excavation around trees / services (say 20 visits)	1	item	£50,000	£50,000
1.2.1.6	Excavation of hazardous/contaminated materials	1	item	Excluded	Excluded
<u>1.2.2</u>	<u>Excavation: Shared Use Paths / Verges</u>				
1.2.2.1	Excavation of acceptable material Class 5A; Cycle way	1,703	m³	£10	£17,030
1.2.2.2	Excavation of acceptable material Class 5A; Verges	2,107	m³	£10	£21,068
1.2.2.3	Excavation of acceptable material Class 5A; Private Means Access	63	m³	£10	£632
1.2.2.4	Excavation of acceptable material Class 5A; Footpaths	182	m³	£10	£1,820
1.2.2.5	Extra over; breaking out existing hardstanding's (Private Means Access); assumed 400mm depth	63	m³	£40	£2,528
1.2.2.6	Extra over; breaking out existing hardstanding's (Footpaths); assumed 400mm depth	182	m³	£40	£7,280
1.2.2.7	Extra over allowance; excavation in hard materials below ground (rock); say 10%	406	m³	£10	£4,055
1.2.2.8	Excavation of hazardous/contaminated materials	1	item	Excluded	Excluded
1.2.2.9	Allowance for mass cut and fill; 20,000m³ (approximate quantity); survey to be undertaken; assumed retained on site	20,000	m³	£10	£200,000
<u>1.2.3</u>	<u>Deposition of Fill</u>				
1.2.3.1	Deposition of acceptable excavated materials in areas of carrier drains - say 25%	296	m³	£10	£2,959
1.2.3.2	Deposition of acceptable excavated materials in areas of inspection chambers - say 25%	27	m³	£10	£270
1.2.3.3	Deposition of acceptable excavated materials in areas of geocellular attenuation tanks - say 25%	506	m³	£10	£5,064
1.2.3.4	Deposition of acceptable excavated materials in areas of basin/retention ponds - say 25%	2603	m³	£10	£26,025
1.2.3.5	Deposition of acceptable excavated materials in areas of swales - say 25%	452	m³	£10	£4,523
1.2.3.6	Deposition of acceptable excavated materials in areas of fill - say 25%	4,282	m³	£10	£42,823
1.2.3.7	Deposition of acceptable excavated material; 150mm topsoil layer to verges	790	m³	£10	£7,901
<u>1.2.4</u>	<u>Disposal of Material</u>				
1.2.4.1	Disposal of part excavated material off-site (allowance/balance)	23,709	m³	£40	£948,355
1.2.4.2	Disposal of existing hardstanding/hard materials	3,471	m³	£40	£138,821
1.2.4.3	Extra over allowance for disposal; 25% bulking factor	5,927	m³	£40	£237,089
1.2.4.4	Disposal of hazardous/contaminated materials	1	item	Excluded	Excluded

Clare Hall - Busway Options

Feasibility Order of Cost Estimate - Appendix A: Rifle Range Access Route

14 August 2025

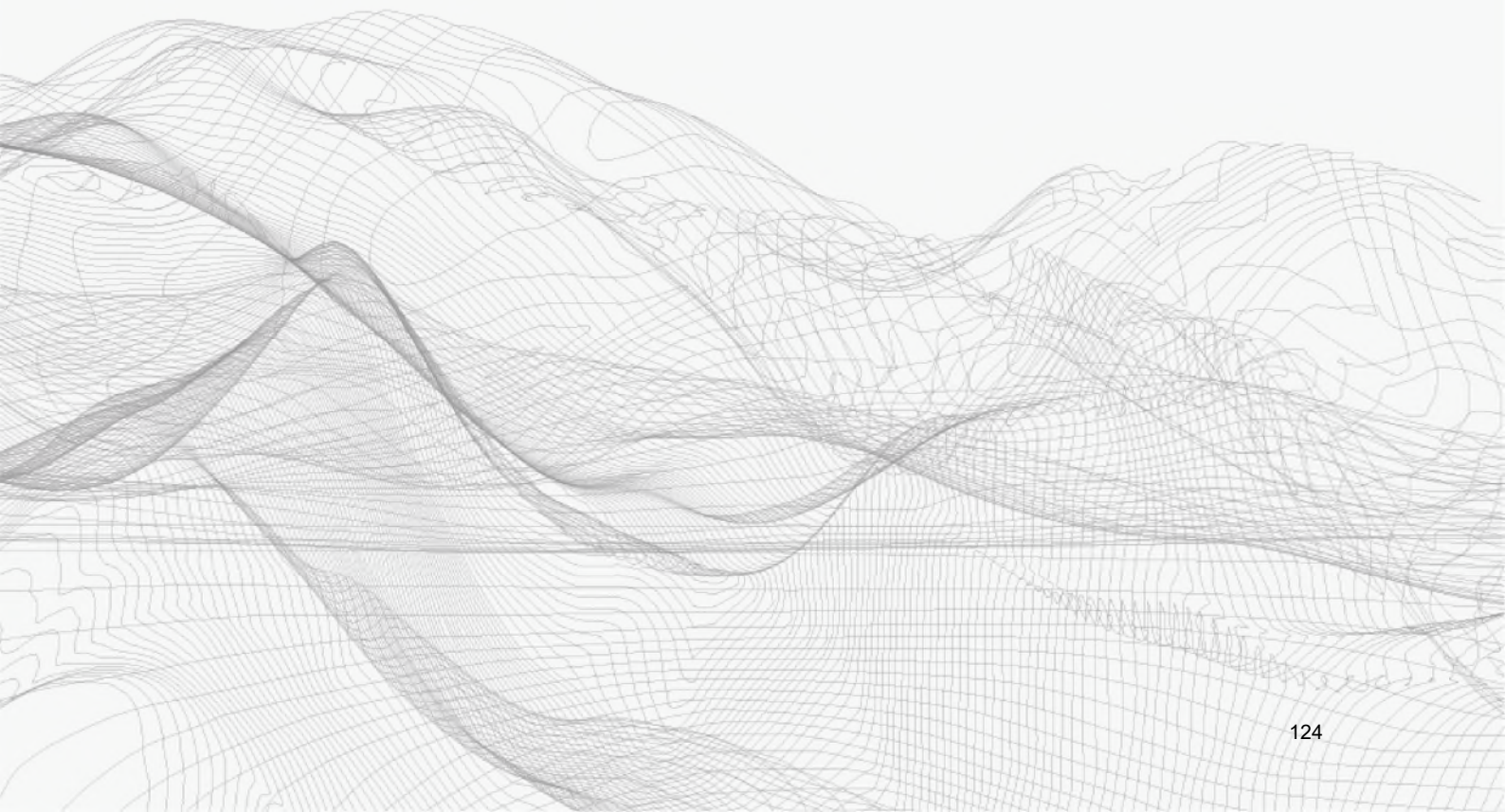


Ref.	Description	Quantity	Unit	Rate	Total
<u>1.2.5</u>	<u>Imported Fill</u>				
1.2.5.1	Imported 6F2/6F5 capping layer; 600mm thick to Busway	7,067	m³	£70	£494,697
1.2.5.2	Imported MOT Type 1; 150mm layer to Busway	1,767	m³	£90	£159,010
1.2.5.3	Imported Type 3; 300mm thick to Cycleway	1,277	m³	£110	£140,498
1.2.5.4	Imported Type 3; 300mm thick to Private Means Access	47	m³	£110	£5,214
1.2.5.5	Imported Type 3; 300mm thick to Footpaths	137	m³	£110	£15,015
1.2.5.6	Imported Topsoil; 250mm thick to verges (150mm deposition above)	1,317	m³	£80	£105,340
<u>1.2.6</u>	<u>Compaction of Fill</u>				
1.2.6.1	Compaction of subgrade - Busway	11,779	m²	£2	£23,557
1.2.6.2	Compaction of imported 6F2/6F5 capping layer; in 200mm layers	35,336	m²	£2	£70,671
1.2.6.3	Compaction of imported MOT Type 1; 150mm layer to Busway; in 150mm layers	11,779	m²	£2	£23,557
1.2.6.4	Compaction of subgrade; Cycleway	4,258	m²	£2	£8,515
1.2.6.5	Compaction of imported Type 3; to Cycleway; in 150mm layers	8,515	m²	£2	£17,030
1.2.6.6	Compaction of subgrade; Private Means Access	158	m²	£2	£316
1.2.6.7	Compaction of imported Type 3; to Private Means Access; in 150mm layers	316	m²	£2	£632
1.2.6.8	Compaction of subgrade; Footpaths	455	m²	£2	£910
1.2.6.9	Compaction of imported Type 3; to Footpaths; in 150mm layers	910	m²	£2	£1,820
<u>1.3</u>	<u>700: Pavements</u>				
1.3.1	Allowance for 360mm carriageway build-up to bus route; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram (750mm subbase measured above)	11,779	m²	£110	£1,295,635
1.3.2	Allowance for 400mm carriageway build-up to cycleway; 20mm thick surface course; 80mm thick binder course (300mm subbase measured above)	4,258	m²	£50	£212,875
1.3.3	Allowance for 400mm build-up to private means access; 20mm thick surface course; 80mm thick binder course (300mm subbase measured above)	158	m²	£50	£7,900
1.3.4	Allowance for 400mm build-up to footpaths; 20mm thick surface course; 80mm thick binder course (300mm subbase measured above)	455	m²	£50	£22,750
1.3.5	Allowance for tactile paving; 400mm x 400mm paviours; 50mm thick; installed at various crossing points	43	m²	£240	£10,320
1.3.6	Allowance for 200mm build-up to busway over bridge structure; 40mm thick surface course; 60mm thick binder course; 100mm thick base course	148	m²	£60	£8,850
1.3.7	Allowance for 200mm build-up to cycleway over bridge structure; 40mm thick surface course; 60mm thick binder course; 100mm thick base course	148	m²	£60	£8,850
1.3.8	Allowance to tie-in new Bus Route to existing carriageway	2	nr	£20,000	£40,000
<u>1.4</u>	<u>1100: Kerbs, Footways and Paved Areas</u>				
1.4.1	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Busway	1,287	m	£60	£77,220
1.4.2	Allowance for precast combined kerb drains (CKD) in concrete haunching; 480 x 150mm; Busway	1,825	m	£130	£237,250
1.4.3	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Cycleway	1,234	m	£60	£74,040
1.4.4	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Private Means Access	76	m	£60	£4,560
1.4.5	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Footway	181	m	£60	£10,860
1.4.6	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Cycleway	1,077	m	£30	£32,310
1.4.7	Allowance for tref kerbs to bridge	80	m	£165	£13,200
1.4.8	Allowance for drop kerbs	1	item	Included	Included
<u>1.5</u>	<u>1200: Traffic Signs and Road Markings</u>				
1.5.1	Allowance for traffic signs and road markings (cost per m² of total busway area including cycle routes)	16,331	m²	£10	£163,310
1.5.2	Traffic Signal Installation; RRA and Grange Rd Junction	1	item	£27,500	£27,500
1.5.3	Allowance for Bus Gate (Entry/Exit Points)	1	nr	£60,000	£60,000
1.5.4	Allowance for bollards	1	item	Excluded	Excluded
<u>1.6</u>	<u>1300: Road Lighting Columns and Brackets, CCTV</u>				
1.6.1	Allowance for single arm road lighting column at 25m centres; 10m height	129	nr	£3,850	£496,650
1.6.2	Allowance for road lighting to bridge structure	1	item	£27,500	£27,500
1.6.3	CCTV / ANPR installations (2 locations)	2	nr	£22,000	£44,000
<u>1.7</u>	<u>1400: Electrical Work for Road Lighting and Traffic Signs</u>				
1.7.1	Allowance for trenching and ducts; trench depth not exceeding 600mm wide nor 1.50m deep; including backfilling; assumed two-way ducts throughout	1,602	m	£140	£224,280
1.7.2	Allowance for locating buried road lighting and traffic signs cable	1	item	Excluded	Excluded
1.7.3	Allowance for new feeder pillars	5	nr	£2,500	£12,500

Ref.	Description	Quantity	Unit	Rate	Total
<u>1.8</u>	<u>2500: Special Structures</u>				
1.8.1	Engineered structure over Bin Brook; refer to below details	1	item	£500,000	£500,000
1.8.2	RC piles to underside of bridge; assumed 20m length; assumed 600mm diameter; connected to piers	320	m	Incl.	Incl.
1.8.3	Piers to underside of bridge; assumed 1m width x 2m height; placed on top of piles	30	m	Incl.	Incl.
1.8.4	Deck soffit; fixed to underside of precast beams; fixed to integral abutment walls	295	m ²	Incl.	Incl.
1.8.5	MY2 beams; precast prestressed beams; assumed 950mm width x 350mm depth; fixed to underside of bridge	86	m ³	Incl.	Incl.
1.8.6	MYE2 beams; precast prestressed beams; assumed 950mm width x 350mm depth; fixed to edges of bridge	14	m ³	Incl.	Incl.
1.8.7	Concrete infill; installed between beams and underside of busway surfacing; 150mm thick infill; average depth 300mm	89	m ³	Incl.	Incl.
1.8.8	Concrete Abutment walls; 1800mm height; to retain earth at both ends of bridge	54	m ²	Incl.	Incl.
1.8.9	Reinforced concrete retaining wing walls; average 2m height; to retain earth at both ends of bridge	74	m ²	Incl.	Incl.
1.8.10	Parapet cantilever; precast concrete; assumed 500mm width x 500mm depth; both sides of bridge	10	m ³	Incl.	Incl.
1.8.11	Parapet rail; 1800mm high; infilled; fixed to concrete parapet cantilever; including all fixings and components	40	m	Incl.	Incl.
1.8.12	Extra over to bridge over existing drainage ditch leading to Charles Babbage Road	1	item	£50,000	£50,000
<u>1.9</u>	<u>3000: Landscape and Ecology</u>				
1.9.1	Allowance for ground preparation and cultivation	64,938	m ²	£3	£194,814
1.9.2	Allowance for Grassland Feature	26,891	m ²	£7	£188,237
1.9.3	Allowance for Hedgerows	483	m	£100	£48,300
1.9.4	Allowance for Native Woodland Planting	8,897	m ²	£7	£62,279
1.9.5	Allowance for Shrub Planting	4,120	m ²	£6	£24,720
1.9.6	Allowance for Aquatics Planting	17,398	m ²	£12	£208,776
1.9.7	Allowance for seeding; to verges	5,267	m ²	£2	£10,534
1.9.8	Allowance for trees; 250-300 RB various sizes; including pit and protective fencing	237	nr	£300	£71,100
1.9.9	Allowance for Environmental Mitigation Measures	3.50	%	£10,460,000	£366,100
1.9.10	Remediation of contaminated ground	1	item	Excluded	Excluded
2.0	Estimated Construction Works (Rounded)				£10,820,000

B

**Feasibility Order
of Cost Estimate
for Adams Road
Route Option 1**



Clare Hall - Busway Options

Feasibility Order of Cost Estimate - Appendix B: Adams Road Option 1

14 August 2025



Ref.	Description	Quantity	Unit	Rate	Total
0.0	<u>Shared Section of GCP Route up to Adams Road Deviation Point</u>				
0.0.0	As per cost build-up of Appendix B	1	item	£1,560,000	£1,560,000
0.0	<u>200: Site Clearance</u>				
0.0.1	General site clearance; including removal of vegetation, trees, lighting columns, signage, etc.	13,373	m²	£3	£40,119
1.0	<u>300: Fencing</u>				
1.0.1	Beam guardrail to busway; both sides of busway; galvanised steel barrier system; socketed concrete foundations 600mm x 800mm x 600mm deep	1,091	m	£90	£98,190
1.0.2	Replacement safety fencing to protect pond; post and rail fencing; 1300mm high; including all fixings, concrete foundations for posts and postmix	327	m	£120	£39,240
1.0.3	Extra over allowance for metal gate	4	nr	£2,750	£11,000
1.0.4	Security Fencing; Palisade fencing; 1800mm high	1	item	Excluded	Excluded
1.0.5	Allowance for acoustic barriers; assumed 1500mm high; (assumed running parallel with busway in select areas)	557	m	£220	£122,540
1.0.6	Pedestrian guard railing (PGR) in select areas; 1050mm height; metal restraint system	50	m	£100	£5,000
1.1	<u>500: Drainage and Service Ducts</u>				
1.1.1	Drainage and Service Ducts (cost per m2 of total carriageway area including cycle routes)	4,128	m²	£35	£144,480
1.1.2	Allowance for connections into existing surface water drainage network	1	item	£27,500	£27,500
1.2	<u>600: Earthworks</u>				
1.2.1	<u>Excavation: Busway</u>				
1.2.1.1	Excavation of acceptable material Class 5A; Busway (Coton Cycleway)	4,489	m³	£10	£44,888
1.2.1.2	Extra over; breaking out existing hardstanding's; assumed 100mm depth for resurfacing	429	m³	£40	£17,148
1.2.1.3	Extra over allowance; excavation in hard materials below ground (rock); say 10%	449	m³	£10	£4,489
1.2.1.4	Extra over for hand digging / vacuum excavation around trees / services (say 10 visits)	1	item	£25,000	£25,000
1.2.1.5	Excavation of hazardous/contaminated materials	1	item	Excluded	Excluded
1.2.2	<u>Excavation: Shared Use Paths / Verges</u>				
1.2.2.1	Excavation of acceptable material Class 5A; Cycleway	34	m³	£10	£336
1.2.2.2	Excavation of acceptable material Class 5A; Verges	570	m³	£10	£5,704
1.2.2.3	Excavation of acceptable material Class 5A; Footpaths	57	m³	£10	£572
1.2.2.4	Excavation of acceptable material Class 5A; Re-routed track; assumed 200mm depth	161	m³	£10	£1,606
1.2.2.5	Extra over; breaking out existing hardstanding's (Footpaths); assumed 100mm depth for resurfacing	250	m³	£40	£9,988
1.2.2.6	Extra over; breaking out existing hardstanding's (Existing cyclepath on Coton Cycleway); assumed 250mm depth for resurfacing	491	m³	£40	£19,640
1.2.2.7	Extra over; breaking out existing hardstanding's (Existing footpath on Coton Cycleway); assumed 250mm depth for resurfacing	263	m³	£40	£10,530
1.2.2.8	Extra over allowance; excavation in hard materials below ground (rock); say 10%	82	m³	£10	£822
1.2.2.9	Excavation of hazardous/contaminated materials	1	item	Excluded	Excluded
1.2.2.10	Allowance for mass cut and fill; 10,000m³ (approximate quantity); survey to be undertaken; assumed retained on site	10,000	m³	£10	£100,000
1.2.3	<u>Deposition of Fill</u>				
1.2.3.1	Deposition of acceptable excavated materials in areas of fill - say 25%	1,328	m³	£10	£13,277
1.2.3.2	Deposition of acceptable excavated material; 150mm topsoil layer to verges	214	m³	£10	£2,139
1.2.4	<u>Disposal of Material</u>				
1.2.4.1	Disposal of part excavated material off-site (allowance/balance)	3,769	m³	£40	£150,763
1.2.4.2	Extra over for disposal of existing hardstanding/hard materials	1,964	m³	£40	£78,549
1.2.4.3	Extra over allowance for disposal; 25% bulking factor	942	m³	£40	£37,691
1.2.4.4	Disposal of hazardous/contaminated materials	1	item	Excluded	Excluded
1.2.5	<u>Imported Fill</u>				
1.2.5.1	Imported 6F2/6F5 capping layer; 600mm thick to Busway (Coton Cycleway)	2,426	m³	£70	£169,848
1.2.5.2	Imported MOT Type 1; 150mm layer to Busway (Coton Cycleway)	607	m³	£90	£54,594
1.2.5.3	Imported Type 3; 300mm thick to Cycleway	25	m³	£110	£2,772
1.2.5.4	Imported Type 3; 300mm thick to Footpaths	43	m³	£110	£4,719
1.2.5.5	Granular Material Type 3; 150mm thick to Re-routed track	120	m³	£110	£13,250
1.2.5.6	Imported Topsoil; 250mm thick to verges (150mm deposition above)	357	m³	£80	£28,520

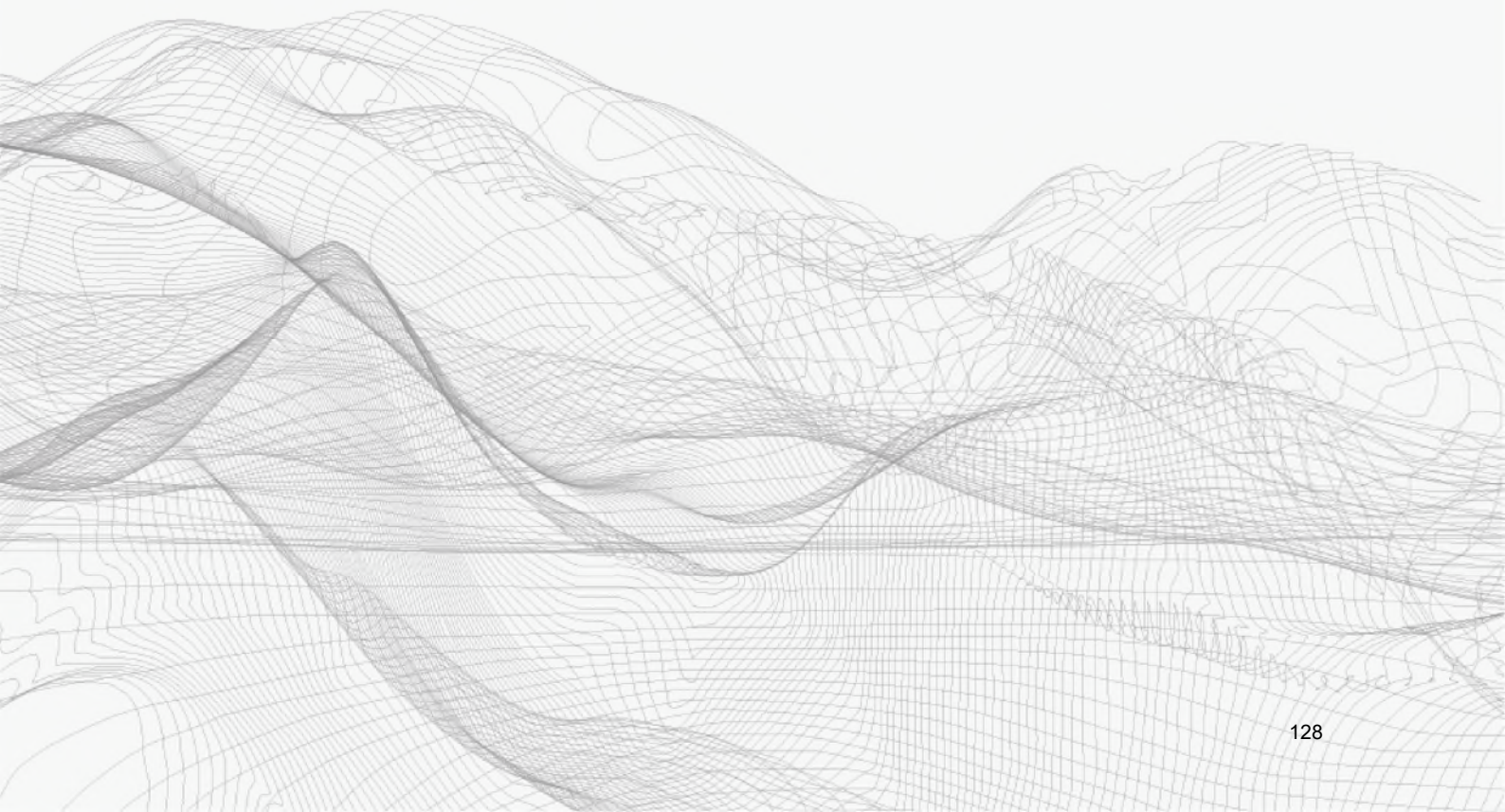
Ref.	Description	Quantity	Unit	Rate	Total
<u>1.2.6</u>	<u>Compaction of Fill</u>				
1.2.6.1	Compaction of subgrade - Busway (Coton Cycleway)	4,044	m ²	£2	£8,088
1.2.6.2	Compaction of imported 6F2/6F5 capping layer; in 200mm layers (Coton Cycleway)	12,132	m ²	£2	£24,264
1.2.6.3	Compaction of imported MOT Type 1; 150mm layer to Busway; in 150mm layers (Coton Cycleway)	4,044	m ²	£2	£8,088
1.2.6.4	Compaction of subgrade; Cycleway	84	m ²	£2	£168
1.2.6.5	Compaction of imported Type 3; to Cycleway; in 150mm layers	168	m ²	£2	£336
1.2.6.6	Compaction of subgrade; Footpaths	143	m ²	£2	£286
1.2.6.7	Compaction of imported Type 3; to Footpaths; in 150mm layers	286	m ²	£2	£572
1.2.6.8	Compaction of subgrade; Re-routed track	803	m ²	£2	£1,606
1.2.6.9	Compaction of Granular Material Type 3; to Re-routed track; in 150mm layers	803	m ²	£2	£1,606
<u>1.3</u>	<u>700: Pavements</u>				
1.3.1	Allowance for 360mm carriageway build-up to bus route; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram (750mm subbase measured above)	4,044	m ²	£110	£444,840
1.3.2	Allowance for 360mm carriageway build-up to cycle route; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram (750mm subbase measured above); red colour to denote cycleway	84	m ²	£110	£9,240
1.3.3	Allowance for 400mm build-up to footpath; 20mm thick surface course; 80mm thick binder course (300mm subbase measured above)	143	m ²	£50	£7,150
1.3.4	Allowance for 200mm build-up to re-routed track; 50mm self binding limestone gravel; Terram T1000 geotextile separation layer (150mm subbase measured above)	803	m ²	£30	£24,090
1.3.5	Allowance for tactile paving; 400mm x 400mm paviours; 50mm thick; installed at various crossing points	49	m ²	£240	£11,760
1.3.6	Allowance for carriageway resurfacing; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; including milling; no carriageway widening required (existing width circa 8m)	3,715	m ²	£50	£185,750
1.3.7	Allowance for cycleway resurfacing; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; including milling; red colour to denote cycleway	677	m ²	£50	£33,850
1.3.8	Allowance for footway resurfacing; including 25mm thick surface course; 55mm thick binder course 15mm regulating binder course and tack course; including milling	2,405	m ²	£30	£72,150
1.3.9	Allowance for cycleway resurfacing to Coton Cycleway; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; 150 thick base course; including milling; red colour to denote cycleway	1,964	m ²	£80	£157,120
1.3.10	Allowance for footway resurfacing to Coton Cycleway; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; 150 thick base course; including milling	1,053	m ²	£80	£84,240
1.3.11	Allowance to tie-in new Bus Route to existing carriageway	2	nr	£20,000	£40,000
<u>1.4</u>	<u>1100: Kerbs, Footways and Paved Areas</u>				
	Allowance for breaking out existing kerbs on Adams Road	1,048	m	£25	£26,200
1.4.1	Allowance for precast combined kerb drains (CKD) in concrete haunching; 480 x 150mm; Busway (Coton Cycleway)	1,150	m	£130	£149,500
1.4.2	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Footway (Adams Road)	1,064	m	£60	£63,840
1.4.3	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Cycleway	166	m	£30	£4,980
1.4.4	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Footpath	92	m	£30	£2,760
1.4.5	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Re-routed track	698	m	£30	£20,940
1.4.6	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Existing footpath on Coton Cycleway	558	m	£60	£33,480
1.4.7	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Existing cycleway on Coton Cycleway	559	m	£30	£16,770
1.4.8	Allowance for drop kerbs	1	item	Included	Included
1.4.9	Allowance for replacement kerbs to reconfigured junction (locations where not affected)	1	item	Excluded	Excluded
<u>1.5</u>	<u>1200: Traffic Signs and Road Markings</u>				
1.5.1	Allowance for traffic signs and road markings (cost per m ² of total carriageway area including cycle routes)	8,520	m ²	£10	£85,200
1.5.2	Traffic Signal Installation	1	item	Excluded	Excluded
1.5.3	Allowance for Bus Gate (Entry/Exit Points) - Assumed at Grange Rd.	1	nr	£60,000	£60,000
1.5.4	Allowance for bollards	1	item	Excluded	Excluded
1.5.5	Allowance for implementation of parking restrictions (double yellow lines) to entirety of Adams Road and part of Wilberforce Road	1	item	Excluded	Excluded
<u>1.6</u>	<u>1300: Road Lighting Columns and Brackets, CCTV</u>				
1.6.1	Allowance for single arm road lighting column at 25m centres; 10m height (Coton Cycleway)	42	nr	£3,850	£161,700
1.6.2	Allowance for double arm road lighting column at 25m centres; 10m height (Adams Road)	44	nr	£4,950	£217,800
1.6.3	CCTV / ANPR installations (2nr locations)	2	nr	£22,000	£44,000



Ref.	Description	Quantity	Unit	Rate	Total
1.7	1400: Electrical Work for Road Lighting and Traffic Signs				
1.7.1	Allowance for trenching and ducts; trench depth not exceeding 600mm wide nor 1.50m deep; including backfilling (Coton Cycleway)	519	m	£140	£72,660
1.7.2	Allowance for diversion of existing services and utilities	1	item	Excluded	Excluded
1.7.3	Allowance for locating buried road lighting and traffic signs cable	1	item	Excluded	Excluded
1.7.4	Allowance for new feeder pillars	2	nr	£2,500	£5,000
1.8	2500: Special Structures				
1.8.1	Allowance for special structures	1	item	Excluded	Excluded
1.9	3000: Landscape and Ecology				
1.9.1	Allowance for existing pond adjustments to suit proposed alignment	1835	m²	£50	£91,750
1.9.2	Allowance for seeding; to verges	1,426	m²	£2	£2,852
1.9.3	Allowance for planting (Shrubs and Trees)	1	item	£50,000	£50,000
1.9.4	Allowance for Environmental Mitigation Measures	3.50	%	£3,510,000	£122,850
1.9.5	Remediation of contaminated ground	1	item	Excluded	Excluded
2.0	Estimated Construction Works (Rounded)				£5,190,000

C

**Feasibility Order
of Cost Estimate
for Adams Road
Route Option 2**



Clare Hall - Busway Options

Feasibility Order of Cost Estimate - Appendix C: Adams Road Option 2

14 August 2025



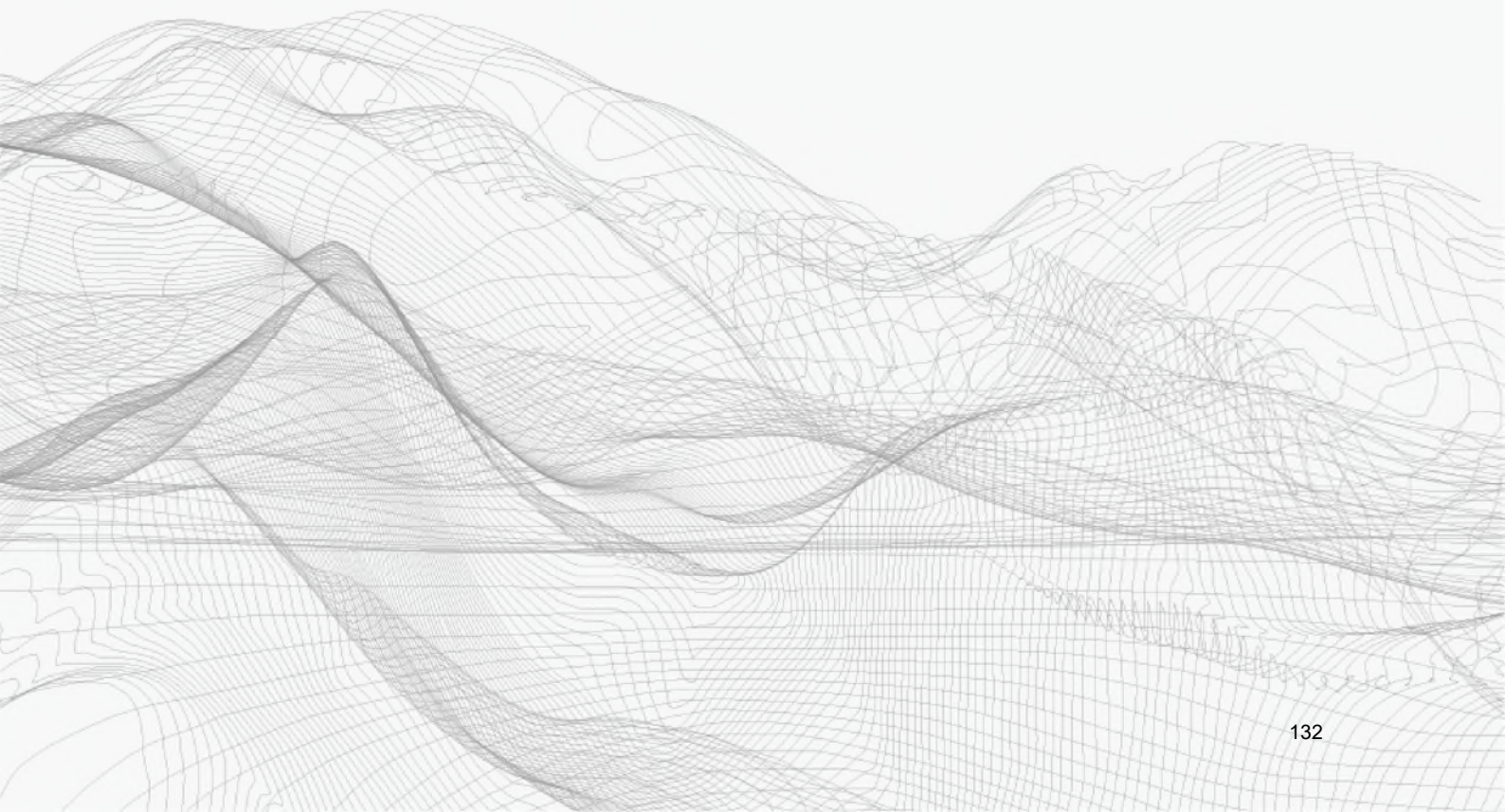
Ref.	Description	Quantity	Unit	Rate	Total
<u>0.0</u>	<u>Shared Section of GCP Route up to Adams Road Deviation Point</u>				
0.0.0	As per cost build-up of Appendix B	1	item	£1,560,000	£1,560,000
<u>0.0</u>	<u>200: Site Clearance</u>				
0.0.1	General site clearance; including removal of vegetation, trees, lighting columns, signage, etc.	13,373	m²	£3	£40,119
<u>1.0</u>	<u>300: Fencing</u>				
1.0.1	Beam guardrail to busway; both sides of busway; galvanised steel barrier system; socketed concrete foundations 600mm x 800mm x 600mm deep	1,091	m	£90	£98,190
1.0.2	Replacement safety fencing to protect pond; post and rail fencing; 1300mm high; including all fixings, concrete foundations for posts and postmix	327	m	£120	£39,240
1.0.3	Extra over allowance for metal gate	4	nr	£2,750	£11,000
1.0.4	Security Fencing; Palisade fencing; 1800mm high	1	item	Excluded	Excluded
1.0.5	Allowance for acoustic barriers; assumed 1500mm high; (assumed running parallel with busway in select areas)	557	m	£220	£122,540
1.0.6	Pedestrian guard railing (PGR) in select areas; 1050mm height; metal restraint system	50	m	£100	£5,000
<u>1.1</u>	<u>500: Drainage and Service Ducts</u>				
1.1.1	Drainage and Service Ducts (cost per m2 of total carriageway area including cycle routes)	4,128	m²	£35	£144,480
1.1.3	Allowance for connections into existing surface water drainage network	1	item	£27,500	£27,500
<u>1.2</u>	<u>600: Earthworks</u>				
<u>1.2.1</u>	<u>Excavation: Busway</u>				
1.2.1.1	Excavation of acceptable material Class 5A; Busway (Coton Cycleway)	4,489	m³	£10	£44,888
1.2.1.2	Breaking out existing hardstanding's (Adams Road); assumed 250mm depth for resurfacing	870	m³	£40	£34,810
1.2.1.3	Breaking out existing hardstanding's (Adams Road); assumed 510mm depth for carriageway widening	244	m³	£40	£9,772
1.2.1.4	Extra over allowance; excavation in hard materials below ground (rock); say 10%	449	m³	£10	£4,489
1.2.1.5	Extra over for hand digging / vacuum excavation around trees / services (say 10 visits)	1	item	£25,000	£25,000
1.2.1.6	Excavation of hazardous/contaminated materials	1	item	Excluded	Excluded
<u>1.2.2</u>	<u>Excavation: Shared Use Paths / Verges</u>				
1.2.2.1	Excavation of acceptable material Class 5A; Cycleway	34	m³	£10	£336
1.2.2.2	Excavation of acceptable material Class 5A; Verges	570	m³	£10	£5,704
1.2.2.3	Excavation of acceptable material Class 5A; Footpaths	57	m³	£10	£572
1.2.2.4	Excavation of acceptable material Class 5A; Re-routed track; assumed 200mm depth	106	m³	£10	£1,064
1.2.2.5	Breaking out existing hardstanding's (Adams Road Footpaths); assumed 250mm depth for resurfacing	582	m³	£40	£23,280
1.2.2.6	Extra over; breaking out existing hardstanding's (Existing cyclepath on Coton Cycleway); assumed 250mm depth for resurfacing	491	m³	£40	£19,640
1.2.2.7	Extra over; breaking out existing hardstanding's (Existing footpath on Coton Cycleway); assumed 250mm depth for resurfacing	263	m³	£40	£10,530
1.2.2.8	Extra over allowance; excavation in hard materials below ground (rock); say 10%	77	m³	£10	£768
1.2.2.9	Excavation of hazardous/contaminated materials	1	item	Excluded	Excluded
1.2.2.10	Allowance for mass cut and fill; 10,000m³ (approximate quantity); survey to be undertaken; assumed retained on site	10,000	m³	£10	£100,000
<u>1.2.3</u>	<u>Deposition of Fill</u>				
1.2.3.1	Deposition of acceptable excavated materials in areas of fill - say 25%	1,314	m³	£10	£13,141
1.2.3.2	Deposition of acceptable excavated material; 150mm topsoil layer to verges	214	m³	£10	£2,139
<u>1.2.4</u>	<u>Disposal of Material</u>				
1.2.4.1	Disposal of part excavated material off-site (allowance/balance)	3,728	m³	£40	£149,137
1.2.4.2	Extra over for disposal of existing hardstanding/hard materials	2,976	m³	£40	£119,057
1.2.4.3	Extra over allowance for disposal; 25% bulking factor	932	m³	£40	£37,284
1.2.4.4	Disposal of hazardous/contaminated materials	1	item	Excluded	Excluded
<u>1.2.5</u>	<u>Imported Fill</u>				
1.2.5.1	Imported 6F2/6F5 capping layer; 600mm thick to Busway (Coton Cycleway)	2,426	m³	£70	£169,848
1.2.5.2	Imported MOT Type 1; 150mm layer to Busway (Coton Cycleway)	607	m³	£90	£54,594
1.2.5.3	Imported MOT Type 1; 150mm layer to Adams Road widening	72	m³	£90	£6,467
1.2.5.4	Imported Type 3; 300mm thick to Cycleway	25	m³	£110	£2,772
1.2.5.5	Imported Type 3; 300mm thick to Footpaths	43	m³	£110	£4,719
1.2.5.6	Granular Material Type 3; 150mm thick to Re-routed track	80	m³	£110	£8,778
1.2.5.7	Imported Topsoil; 250mm thick to verges (150mm deposition above)	357	m³	£80	£28,520

Ref.	Description	Quantity	Unit	Rate	Total
<u>1.2.6</u>	<u>Compaction of Fill</u>				
1.2.6.1	Compaction of subgrade - Busway (Coton Cycleway)	4,044	m ²	£2	£8,088
1.2.6.2	Compaction of imported 6F2/6F5 capping layer; in 200mm layers (Coton Cycleway)	12,132	m ²	£2	£24,264
1.2.6.3	Compaction of imported MOT Type 1; 150mm layer to Busway; in 150mm layers (Coton Cycleway)	4,044	m ²	£2	£8,088
1.2.6.4	Compaction of imported MOT Type 1; 150mm layer to Adams Road widening; in 150mm layers	479	m ²	£2	£958
1.2.6.5	Compaction of subgrade; Cycleway	84	m ²	£2	£168
1.2.6.6	Compaction of imported Type 3; to Cycleway; in 150mm layers	168	m ²	£2	£336
1.2.6.7	Compaction of subgrade; Footpaths	143	m ²	£2	£286
1.2.6.8	Compaction of imported Type 3; to Footpaths; in 150mm layers	286	m ²	£2	£572
1.2.6.9	Compaction of subgrade; Re-routed track	803	m ²	£2	£1,606
1.2.6.10	Compaction of Granular Material Type 3; to Re-routed track; in 150mm layers	803	m ²	£2	£1,606
<u>1.3</u>	<u>700: Pavements</u>				
1.3.1	Allowance for 360mm carriageway build-up to bus route; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram (750mm subbase measured above)	4,044	m ²	£110	£444,840
1.3.2	Allowance for 360mm carriageway build-up to cycle route; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram (750mm subbase measured above); red colour to denote cycleway	84	m ²	£110	£9,240
1.3.3	Allowance for 400mm build-up to footpath; 20mm thick surface course; 80mm thick binder course (300mm subbase measured above)	143	m ²	£50	£7,150
1.3.4	Allowance for 200mm build-up to re-routed track; 50mm self binding limestone gravel; Terram T1000 geotextile separation layer (150mm subbase measured above)	532	m ²	£30	£15,960
1.3.5	Allowance for tactile paving; 400mm x 400mm paviours; 50mm thick; installed at various crossing points	49	m ²	£240	£11,760
1.3.6	Allowance for 360mm carriageway build-up to Adams Road widening; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram	479	m ²	£110	£52,690
1.3.7	Allowance for resurfacing to Adams Road; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; 150 thick base course; including milling	823	m ²	£80	£65,840
1.3.8	Allowance for resurfacing to Adams Road; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; 150 thick base course; including milling; red colour to denote cycleway	2,062	m ²	£80	£164,960
1.3.9	Allowance for Adams Road footway resurfacing; including 25mm thick surface course; 55mm thick binder course 15mm regulating binder course and tack course; 170 thick base course; including milling	2,660	m ²	£70	£186,200
1.3.10	Allowance for cycleway resurfacing to Coton Cycleway; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; 150 thick base course; including milling; red colour to denote cycleway	1,964	m ²	£80	£157,120
1.3.11	Allowance for footway resurfacing to Coton Cycleway; including 40mm thick surface course; 60mm thick binder course 15mm regulating binder course and tack course; 150 thick base course; including milling	1,053	m ²	£80	£84,240
1.3.12	Allowance to tie-in new Bus Route to existing carriageway	2	nr	£20,000	£40,000
<u>1.4</u>	<u>1100: Kerbs, Footways and Paved Areas</u>				
1.4.1	Allowance for breaking out existing kerbs on Adams Road	1,048	m	£25	£26,200
1.4.2	Allowance for precast combined kerb drains (CKD) in concrete haunching; 480 x 150mm; Busway (Coton Cycleway)	1,150	m	£130	£149,500
1.4.3	Allowance for buffer strip; 500 x 255mm; assumed in-situ concrete poured between kerb and footway	84	m ³	£300	£25,245
1.4.4	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Footway (Adams Road)	1,036	m	£60	£62,160
1.4.5	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Cycleway	166	m	£30	£4,980
1.4.6	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Footpath	92	m	£30	£2,760
1.4.7	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Re-routed track	460	m	£30	£13,800
1.4.8	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Existing footpath on Coton Cycleway	558	m	£60	£33,480
1.4.9	Allowance for edging kerbs in concrete haunching; 150 x 150mm; Existing cycleway on Coton Cycleway	559	m	£30	£16,770
1.4.10	Allowance for drop kerbs	1	item	Included	Included
1.4.11	Allowance for replacement kerbs to reconfigured junction (locations where not affected)	1	item	Excluded	Excluded
<u>1.5</u>	<u>1200: Traffic Signs and Road Markings</u>				
1.5.1	Allowance for traffic signs and road markings (cost per m ² of total carriageway area including cycle routes)	7,492	m ²	£10	£74,920
1.5.2	Traffic Signal Installation	1	item	Excluded	Excluded
1.5.3	Allowance for Bus Gate (Entry/Exit Points) - Assumed at Grange Rd.	1	nr	£60,000	£60,000
1.5.4	Allowance for bollards	1	item	Excluded	Excluded
1.5.5	Allowance for implementation of parking restrictions (double yellow lines) to entirety of Adams Road and part of Wilberforce Road	1	item	Excluded	Excluded

Ref.	Description	Quantity	Unit	Rate	Total
<u>1.6</u>	<u>1300: Road Lighting Columns and Brackets. CCTV</u>				
1.6.1	Allowance for single arm road lighting column at 25/m centres; 10m height (Coton Cycleway)	42	nr	£3,850	£161,700
1.6.2	Allowance for double arm road lighting column at 25/m centres; 10m height (Adams Road)	44	nr	£4,950	£217,800
1.6.3	CCTV / ANPR installations (2nr locations)	2	nr	£22,000	£44,000
<u>1.7</u>	<u>1400: Electrical Work for Road Lighting and Traffic Signs</u>				
1.7.1	Allowance for trenching and ducts; trench depth not exceeding 600mm wide nor 1.50m deep; including backfilling (Coton Cycleway)	519	m	£140	£72,660
1.7.2	Allowance for diversion of existing services and utilities	1	item	Excluded	Excluded
1.7.3	Allowance for locating buried road lighting and traffic signs cable	1	item	Excluded	Excluded
1.7.4	Allowance for new feeder pillars	2	nr	£2,500	£5,000
<u>1.8</u>	<u>2500: Special Structures</u>				
1.8.1	Allowance for special structures	1	item	Excluded	Excluded
<u>1.9</u>	<u>3000: Landscape and Ecology</u>				
1.9.1	Allowance for existing pond adjustments to suit proposed alignment	1835	m²	£50	£91,750
1.9.2	Allowance for removal of existing planters	12	nr	£2,000	£24,000
1.9.3	Allowance for new planters	12	nr	£7,500	£90,000
1.9.4	Allowance for seeding; to verges	1,426	m²	£2	£2,852
1.9.5	Allowance for planting (Shrubs and Trees)	1	item	£50,000	£50,000
1.9.6	Allowance for Environmental Mitigation Measures	3.50	%	£3,880,000	£135,800
1.9.7	Remediation of contaminated ground	1	item	Excluded	Excluded
2.0	Estimated Construction Works (Rounded)				£5,580,000

D

**Feasibility Order
of Cost Estimate
for the Shared
Section**



Clare Hall - Busway Options

Feasibility Order of Cost Estimate - Appendix D: Shared Section of Busway

14 August 2025

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Ref.	Description	Quantity	Unit	Rate	Total
<u>0.0</u>	<u>200: Site Clearance</u>				
0.0.1	General site clearance; including removal of vegetation, trees, lighting columns, signage, etc.	13,199	m²	£3	£39,597
<u>1.0</u>	<u>300: Fencing</u>				
1.0.1	Beam guardrail to busway; both sides of busway; galvanised steel barrier system; socketed concrete foundations 600mm x 800mm x 600mm deep	596	m	£90	£53,640
1.0.2	Allowance for acoustic barriers; assumed 1500mm high; (assumed running parallel with busway in select areas)	164	m	£220	£36,080
<u>1.1</u>	<u>500: Drainage and Service Ducts</u>				
1.1.1	Carrier drains; assumed 450mm diameter; UPVC on type S bedding; depth to invert not exceeding 2m; average depth to invert 1.75m	40	m	£400	£16,000
1.1.2	Manhole chambers, assumed 1050mm diameter type 7 catchpit with class D400 cover; installed at depths not exceeding 3.0m	4	nr	£4,390	£17,560
1.1.3	Extra over for petrol interceptors and hydro-brake manholes	1	item	£25,000	£25,000
1.1.4	Drainage outfalls; precast concrete; 450mm diameter opening connected to carrier drains	2	nr	£5,030	£10,060
1.1.5	Drainage attenuation geocellular tanks; assumed installed at depth not exceeding 3.5m, tank depth assumed 2.4m; including all crates and connecting components	650	m³	£350	£227,640
1.1.6	Allowance for formation of swale, not exceeding 4500mm width, including geocellular membrane; assumed average depth not exceeding 750mm; including aquatics planting	69	m	£100	£6,900
<u>1.2</u>	<u>600: Earthworks</u>				
<u>1.2.1</u>	<u>Excavation: Busway</u>				
1.2.1.1	Excavation of acceptable material Class 5A; Busway	2,484	m³	£10	£24,842
1.2.1.2	Extra over; breaking out existing hardstanding's; assumed 100mm depth for resurfacing	91	m³	£40	£3,648
1.2.1.3	Extra over allowance; excavation in hard materials below ground (rock); say 10%	248	m³	£10	£2,484
1.2.1.4	Extra over for hand digging / vacuum excavation around trees / services (say 5 visits)	1	item	£12,500	£12,500
<u>1.2.2</u>	<u>Excavation: Shared Use Paths / Verges</u>				
1.2.2.1	Excavation of acceptable material Class 5A; Verges	200	m³	£10	£1,996
1.2.2.2	Extra over allowance; excavation in hard materials below ground (rock); say 10%	20	m³	£10	£200
1.2.2.3	Allowance for mass cut and fill; 5,000m³ (approximate quantity); survey to be undertaken; assumed retained on site	5,000	m³	£10	£50,000
<u>1.2.3</u>	<u>Deposition of Fill</u>				
1.2.3.1	Deposition of acceptable excavated materials in areas of carrier drains - say 25%	15	m³	£10	£150
1.2.3.2	Deposition of acceptable excavated materials in areas of inspection chambers - say 25%	4	m³	£10	£43
1.2.3.3	Deposition of acceptable excavated materials in areas of geocellular attenuation tanks - say 25%	163	m³	£10	£1,626
1.2.3.4	Deposition of acceptable excavated materials in areas of swales - say 25%	58	m³	£10	£582
1.2.3.5	Deposition of acceptable excavated materials in areas of fill - say 25%	671	m³	£10	£6,709
1.2.3.6	Deposition of acceptable excavated material; 150mm topsoil layer to verges	75	m³	£10	£749
<u>1.2.4</u>	<u>Disposal of Material</u>				
1.2.4.1	Disposal of part excavated material off-site (allowance/balance)	2,658	m³	£40	£106,336
1.2.4.2	Extra over for disposal of existing hardstanding/hard materials	360	m³	£40	£14,383
1.2.4.3	Extra over allowance for disposal; 25% bulking factor	665	m³	£40	£26,584
<u>1.2.5</u>	<u>Imported Fill</u>				
1.2.5.1	Imported 6F2/6F5 capping layer; 600mm thick to Busway	1,343	m³	£70	£93,996
1.2.5.2	Imported MOT Type 1; 150mm layer to Busway	336	m³	£90	£30,213
1.2.5.3	Imported Topsoil; 250mm thick to verges (150mm deposition above)	125	m³	£80	£9,980
<u>1.2.6</u>	<u>Compaction of Fill</u>				
1.2.6.1	Compaction of subgrade - Busway	2,238	m²	£2	£4,476
1.2.6.2	Compaction of imported 6F2/6F5 capping layer; in 200mm layers	6,714	m²	£2	£13,428
1.2.6.3	Compaction of imported MOT Type 1; 150mm layer to Busway; in 150mm layers	2,238	m²	£2	£4,476
<u>1.3</u>	<u>700: Pavements</u>				
1.3.1	Allowance for 360mm carriageway build-up to bus route; 40mm thick surface course; 60mm thick binder course; 80mm thick dense base asphalt concrete; 180mm thick cement bound granular mixture; Terram (750mm subbase measured above)	2,238	m²	£110	£246,180
1.3.2	Allowance for tactile paving; 400mm x 400mm paviours; 50mm thick; installed at various crossing points	7	m²	£240	£1,680
<u>1.4</u>	<u>1100: Kerbs, Footways and Paved Areas</u>				
1.4.1	Allowance for precast combined kerb drains (CKD) in concrete haunching; 480 x 150mm; Busway	363	m	£130	£47,190
1.4.2	Allowance for precast concrete kerbs in concrete haunching; 125 x 255mm; Footway	237	m	£60	£14,220

Clare Hall - Busway Options

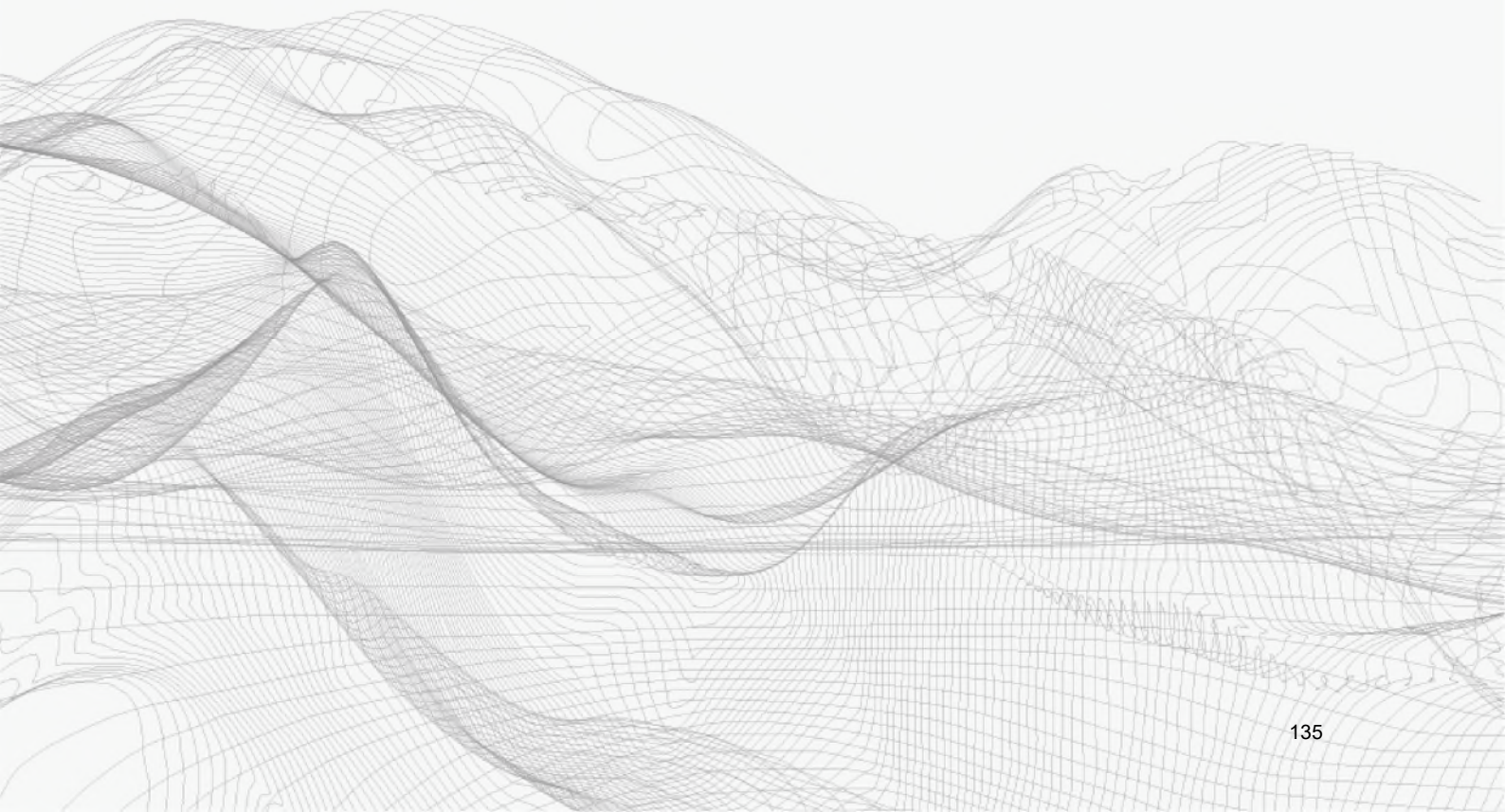
Feasibility Order of Cost Estimate - Appendix D: Shared Section of Busway

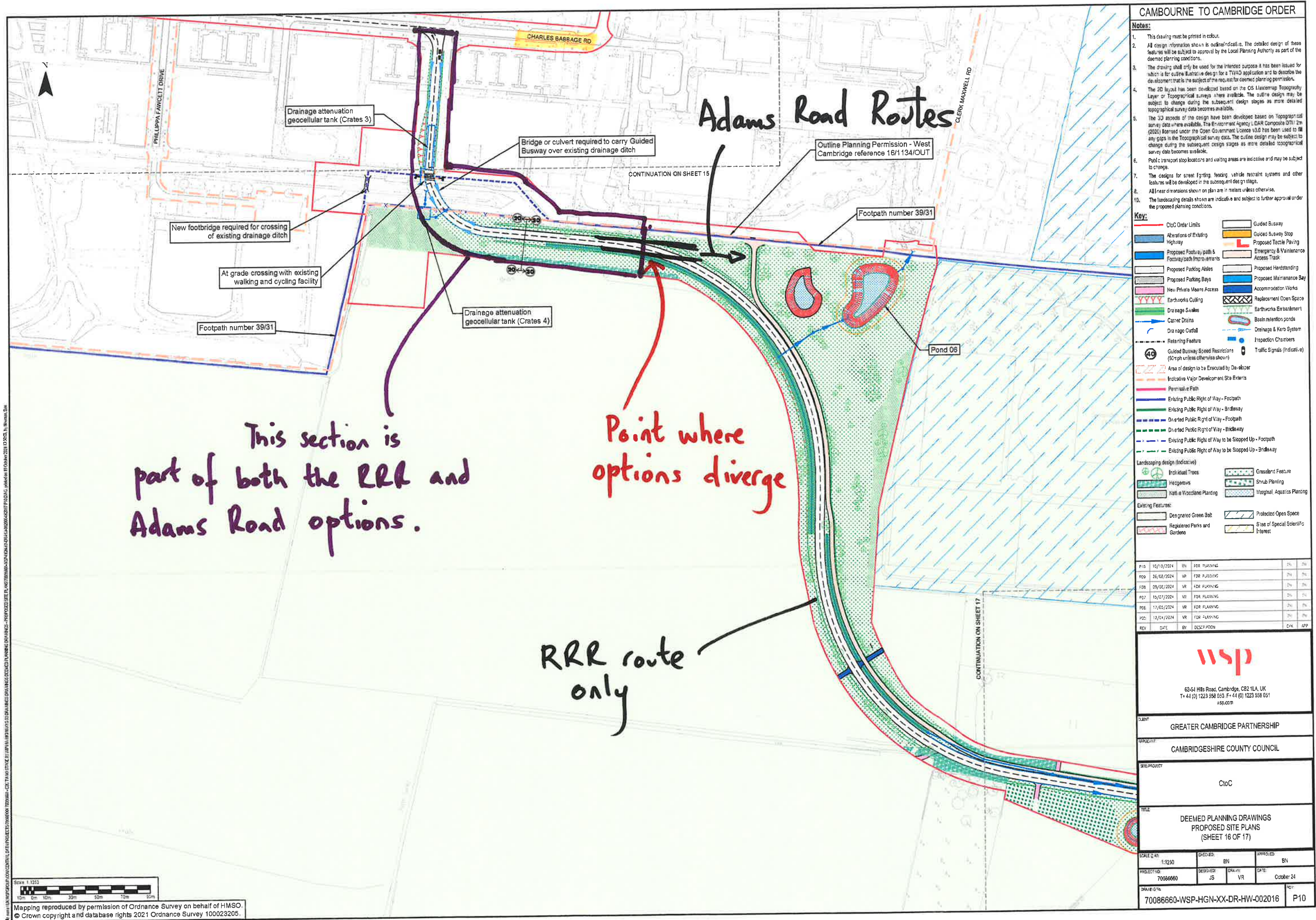
14 August 2025

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Ref.	Description	Quantity	Unit	Rate	Total
<u>1.5</u>	<u>1200: Traffic Signs and Road Markings</u>				
1.5.1	Allowance for traffic signs and road markings (cost per m² of total carriageway area)	2,238	m²	£10	£22,380
1.5.2	Allowance for Bus Gate (Entry/Exit Points)	1	nr	£60,000	£60,000
<u>1.6</u>	<u>1300: Road Lighting Columns and Brackets, CCTV</u>				
1.6.1	Allowance for single arm road lighting column at 25m centres; 10m height; to Busway	24	nr	£3,850	£92,400
1.6.2	CCTV / ANPR installations (2nr locations)	1	nr	£22,000	£22,000
<u>1.7</u>	<u>1400: Electrical Work for Road Lighting and Traffic Signs</u>				
1.7.1	Allowance for trenching and ducts; trench depth not exceeding 600mm wide nor 1.50m deep; including backfilling	298	m	£140	£41,720
1.7.2	Allowance for new feeder pillars	2	nr	£2,500	£5,000
<u>1.8</u>	<u>2500: Special Structures</u>				
1.8.1	Allowance for special structures	1	item	Excluded	Excluded
1.8.2	Extra over to bridge over existing drainage ditch leading to Charles Babbage Road	1	item	£50,000	£50,000
<u>1.9</u>	<u>3000: Landscape and Ecology</u>				
1.9.1	Allowance for ground preparation and cultivation	5,227	m²	£3	£15,681
1.9.2	Allowance for Grassland Feature	2,035	m²	£7	£14,245
1.9.3	Allowance for Hedgerows	130	m	£100	£13,000
1.9.4	Allowance for Native Woodland Planting	2,064	m²	£7	£14,448
1.9.5	Allowance for seeding; to verges	499	m²	£2	£998
1.9.6	Allowance for trees; 250-300 RB various sizes; including pit and protective fencing	4	nr	£300	£1,200
1.9.7	Allowance for Environmental Mitigation Measures	3.50	%	£1,500,000	£52,500
2.0	Estimated Construction Works (Rounded)				£1,560,000

E Drawings





CAMBOURNE TO CAMBRIDGE ORDER

- Notes:**
- This drawing must be printed in colour.
 - All design information shown is outline/indicative. The detailed design of these features will be subject to approval by the Local Planning Authority as part of the deemed planning conditions.
 - The drawing shall only be used for the intended purpose it has been issued for which is for outline/indicative design for a TVAD application and to describe the development that is the subject of the request for deemed planning permission.
 - The 2D layout has been developed based on the OS Mastermap Topography Layer or Topographical surveys where available. The outline design may be subject to change during the subsequent design stages as more detailed topographical survey data becomes available.
 - The 3D aspects of the design have been developed based on Topographical survey data where available. The Environment Agency's LIDAR Composite DTM 2m (2020) licensed under the Open Government Licence v3.0 has been used to fill any gaps in the Topographical survey data. The outline design may be subject to change during the subsequent design stages as more detailed topographical survey data becomes available.
 - Public transport stop locations and waiting areas are indicative and may be subject to change.
 - The designs for street lighting, fencing, vehicle restraint systems and other features will be developed in the subsequent design stages.
 - All linear dimensions shown on plan are in meters unless otherwise stated.
 - The landscaping details shown are indicative and subject to further approval under the proposed planning conditions.

- Key:**
- ClO Order Limits
 - Alterations of Existing Highway
 - Proposed Footpath path & Footway/path improvements
 - Proposed Parking Aides
 - Proposed Parking Bays
 - New Private Means Access
 - Earthworks Cutting
 - Drainage Swales
 - Carrier Drains
 - Drainage Cutoff
 - Retaining Feature
 - Guided Busway Speed Restrictions (50mph unless otherwise shown)
 - Area of design to be Executed by Developer
 - Indicative Major Development Site Extents
 - Permissive Path
 - Existing Public Right of Way - Footpath
 - Existing Public Right of Way - Bridleway
 - Diverted Public Right of Way - Footpath
 - Diverted Public Right of Way - Bridleway
 - Existing Public Right of Way to be Stopped Up - Footpath
 - Existing Public Right of Way to be Stopped Up - Bridleway
 - Landscaping design (indicative)
 - Individual Trees
 - Herbaceous
 - Natural Woodland Planting
 - Existing Features
 - Designated Green Belt
 - Registered Parks and Gardens
 - Guided Busway
 - Guided Busway Stop
 - Proposed Tactile Paving
 - Emergency & Maintenance Access Track
 - Proposed Handstanding
 - Proposed Maintenance Bay
 - Accommodation Works
 - Replacement Open Space
 - Earthworks Embankment
 - Basin retention ponds
 - Drainage & Kerb System
 - Inspection Chambers
 - Traffic Signals (Indicative)
 - Grassland Feature
 - Shrub Planting
 - Marginal Aquatics Planting
 - Protected Open Space
 - Stat of Special Scientific Interest

REV	DATE	BY	DESCRPTION	CHK	APP
P10	10/10/2024	BN	FOR PLANNING	BN	BN
P09	26/08/2024	VP	FOR PLANNING	BN	BN
P08	09/08/2024	VR	FOR PLANNING	BN	BN
P07	15/07/2024	VR	FOR PLANNING	BN	BN
P06	17/05/2024	VR	FOR PLANNING	BN	BN
P05	12/04/2024	VR	FOR PLANNING	BN	BN

Client
GREATER CAMBRIDGE PARTNERSHIP

Applicant
CAMBRIDGESHIRE COUNTY COUNCIL

Site/Project
ClO C

Title
DEEMED PLANNING DRAWINGS
PROPOSED SITE PLANS
(SHEET 16 OF 17)

Scale
1:1250

Project No
70066660

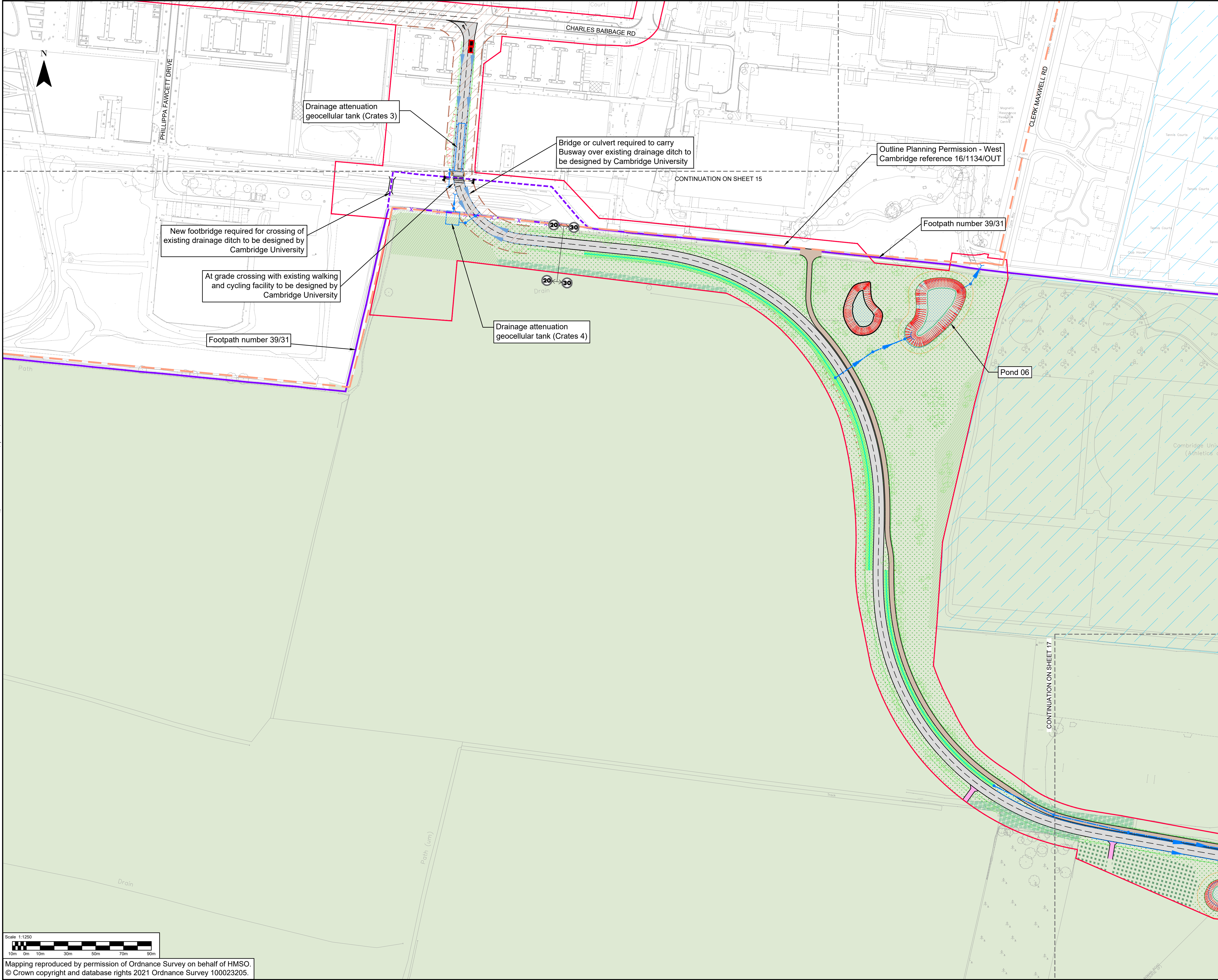
Drawn by
JS

Checked by
VR

Date
October 24

Drawn by
70066660-WSP-HGN-XX-DR-HW-002016

Rev
P10



CAMBOURNE TO CAMBRIDGE ORDER

Notes:

- This drawing must be printed in colour.
- All design information shown is outline/indicative. The detailed design of these features will be subject to approval by the Local Planning Authority as part of the deemed planning conditions.
- The drawing shall only be used for the intended purpose it has been issued for which is for outline/illustrative design for a TWAO application and to describe the development that is the subject of the request for deemed planning permission.
- The 2D layout has been developed based on the OS Mastermap Topography Layer or Topographical surveys where available. The outline design may be subject to change during the subsequent design stages as more detailed topographical survey data becomes available.
- The 3D aspects of the design have been developed based on Topographical survey data where available. The Environment Agency LiDAR Composite DTM 2m (2020) licensed under the Open Government Licence v3.0 has been used to fill any gaps in the Topographical survey data. The outline design may be subject to change during the subsequent design stages as more detailed topographical survey data becomes available.
- Public transport stop locations and waiting areas are indicative and may be subject to change.
- The designs for street lighting, fencing, vehicle restraint systems and other features will be developed in the subsequent design stage.
- All linear dimensions shown on plan are in meters unless otherwise.
- The landscaping details shown are indicative and subject to further approval under the proposed planning conditions.

Key:

C2C Scheme Boundary	Busway
Alterations of Existing Highway	Busway Stop
Proposed Footway/path & Footway/path Improvements	Proposed Tactile Paving
Proposed Parking Aisles	Emergency & Maintenance Access Track
Proposed Parking Bays	Proposed Handstanding
New Private Means Access	Proposed Maintenance Bay
Earthworks Cutting	Replacement Open Space
Drainage Swales	Earthworks Embankment
Carrier Drains	Basin/retention ponds
Drainage Outfall	Drainage & Kerb System
Retaining Feature	Inspection Chambers
Busway Speed Restrictions (50mph unless otherwise shown)	Traffic Signals (Indicative)
Area of design to be Executed by Developer	
Indicative Major Development Site Extents	
Permissive Path	
Existing Public Right of Way - Footpath	
Existing Public Right of Way - Bridleway	
Diverted Public Right of Way - Footpath	
Diverted Public Right of Way - Bridleway	
Existing Public Right of Way to be Stopped Up - Footpath	
Existing Public Right of Way to be Stopped Up - Bridleway	

Landscaping design (Indicative)

Individual Trees	Grassland Feature
Hedgerows	Shrub Planting
Native Woodland Planting	Marginal, Aquatics Planting

Existing Features:

Designated Green Belt	Protected Open Space
Registered Parks and Gardens	Sites of Special Scientific Interest

PO4	22/11/2023	VR	FOR PLANNING	BN	BN
PO3	23/08/2023	VR	FOR PLANNING	BN	BN
PO2	26/05/2023	JS	FOR PLANNING	BN	BN
PO1	08/03/2023	DH	FIRST ISSUE	BN	BN
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS:

S2 - FOR INFORMATION

62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 558 050, F+ 44 (0) 1223 558 051
wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

APPLICANT: CAMBRIDGESHIRE COUNTY COUNCIL

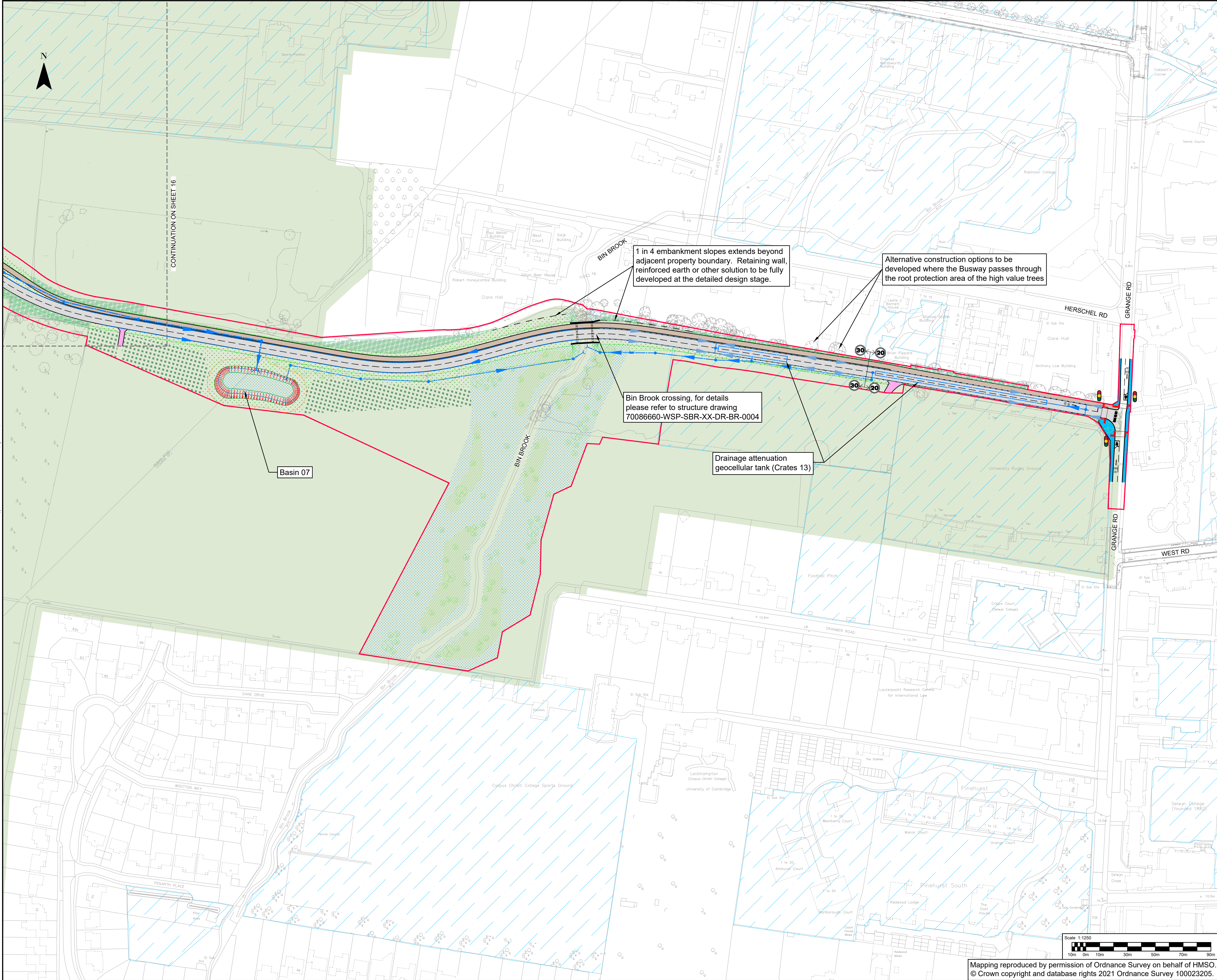
SITE/PROJECT: C2C SCHEME

TITLE: DEEMED PLANNING DRAWINGS
PROPOSED SITE PLANS
(SHEET 16 OF 17)

SCALE @ A1:	CHECKED:	APPROVED:
1:1250	BN	BN
PROJECT NO:	DESIGNED:	DRAWN:
70086660	JS	VR
DRAWING NO:	DATE:	REV:
70086660-WSP-HGN-XX-DR-HW-002016	November 23	P04

File: c:\p\l\k\wsp\group\central_data\project\70086660\c2c\twao\stage03\mp\hw\highways\03\drawings\drawings\deemed planning drawings - proposed site plans\70086660-WSP-HGN-XX-DR-HW-002016.dwg, printed on 22 November 2023 15:15:15, by Neema, Ban

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CAMBOURNE TO CAMBRIDGE ORDER

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 8. All linear dimensions shown on plan are in meters unless otherwise.
 10. The landscaping details shown are indicative and subject to further approval under the proposed planning conditions.

Key:

C2C Scheme Boundary	Busway
Alterations of Existing Highway	Busway Stop
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Earthworks Cutting	Replacement Open Space
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Retaining Feature	Inspection Chambers
Busway Speed Restrictions (50mph unless otherwise shown)	Traffic Signals (Indicative)
Area of design to be Executed by Developer	
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Landscaping design (Indicative)	
Individual Trees	Grassland Feature
Hedgerows	Shrub Planting
Native Woodland Planting	Marginal, Aquatics Planting
Existing Features:	
Designated Green Belt	Protected Open Space
Registered Parks and Gardens	Sites of Special Scientific Interest

P04	22/11/2023	VR	FOR PLANNING	BN	BN
P03	23/08/2023	VR	FOR PLANNING	BN	BN
P02	26/05/2023	JS	FOR PLANNING	BN	BN
PD1	06/03/2023	DH	FIRST ISSUE	BN	BN
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: S2 - FOR INFORMATION

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62-64 Hills Road, Cambridge, CB2 1LA, UK
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wsp.com

CLIENT: GREATER CAMBRIDGE PARTNERSHIP

APPLICANT: CAMBRIDGESHIRE COUNTY COUNCIL

SITE/PROJECT: C2C SCHEME

TITLE: DEEMED PLANNING DRAWINGS
PROPOSED SITE PLANS
(SHEET 17 OF 17)

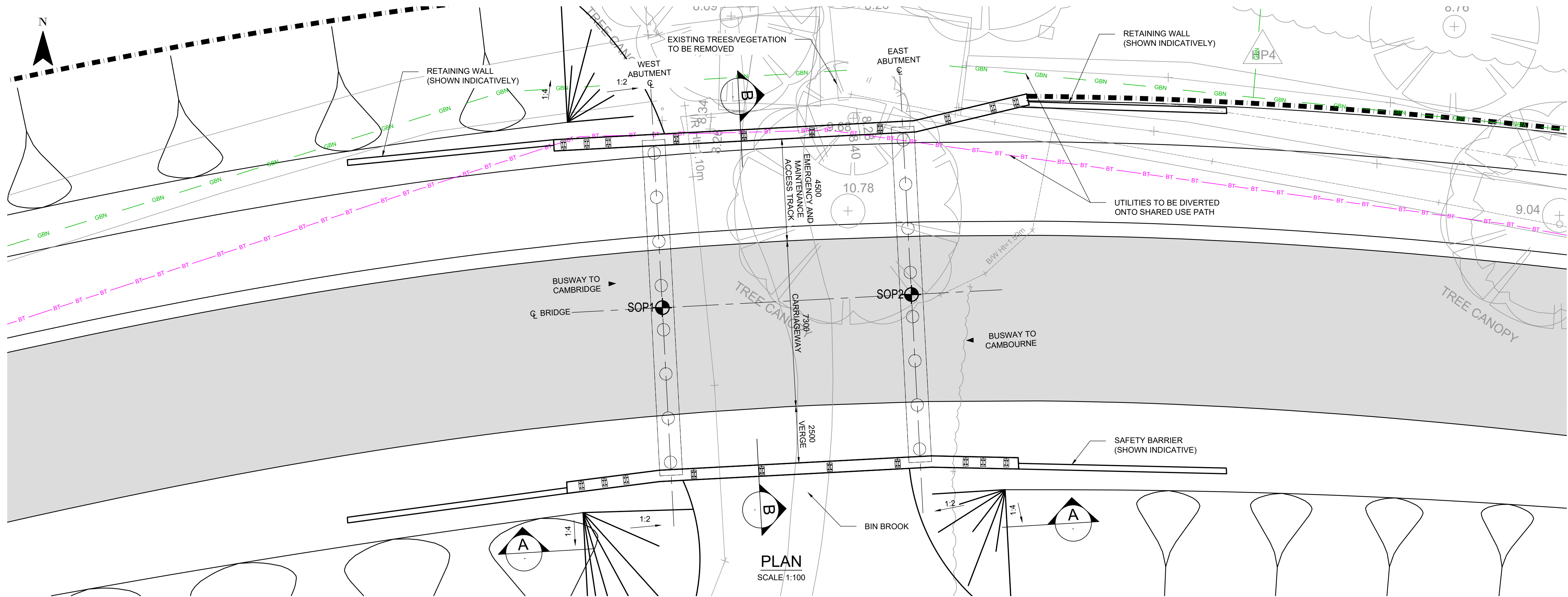
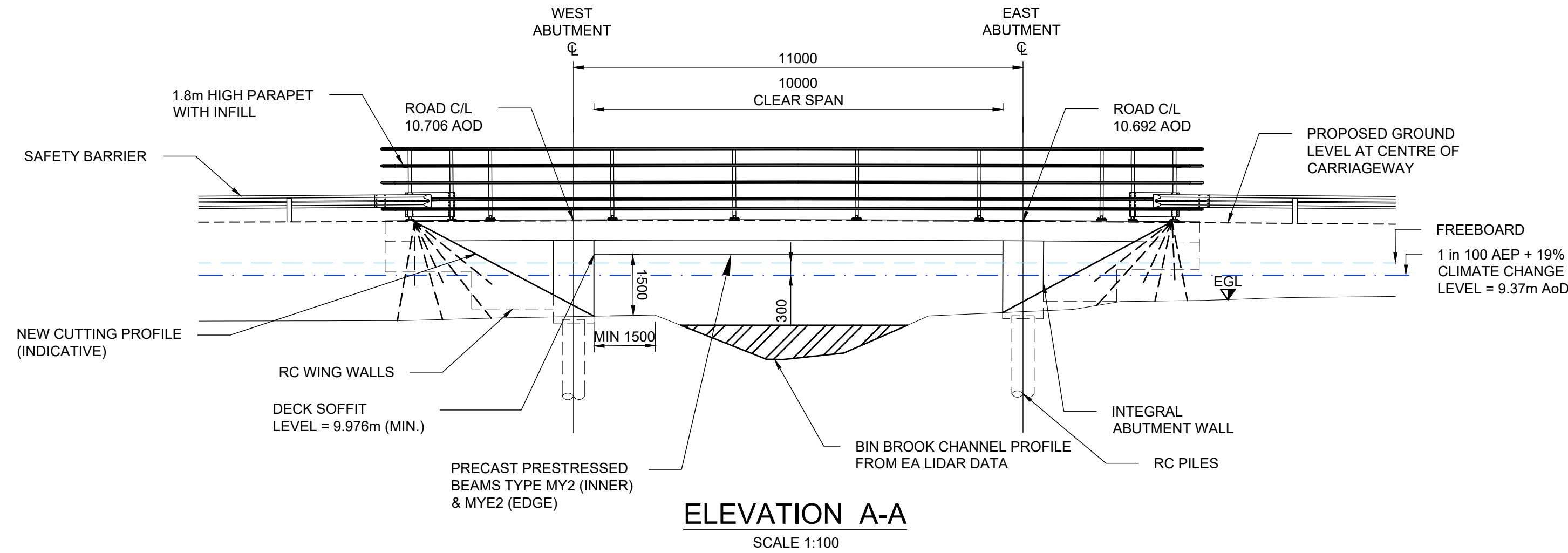
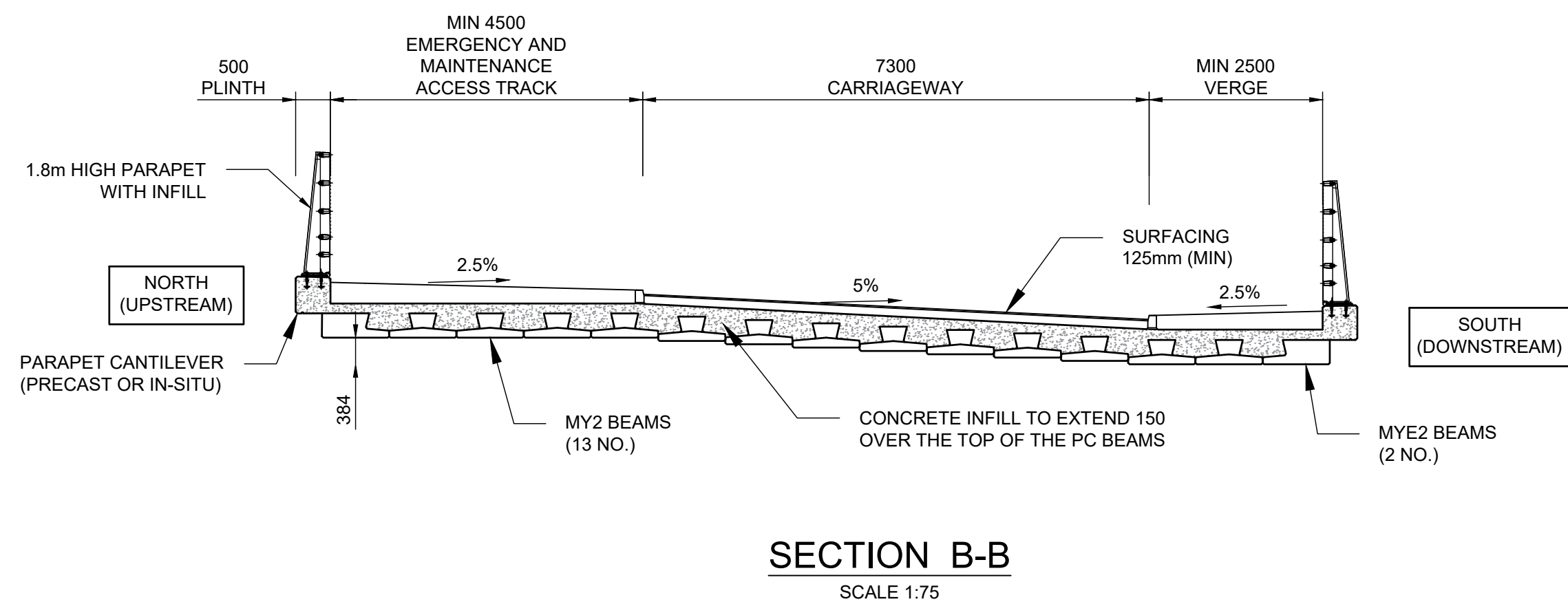
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PROJECT NO: 70086660	DESIGNED: JS	DRAWN: VR
		DATE: November 23

DRAWING No: 70086660-WSP-HGN-XX-DR-HW-002017	REV: P04
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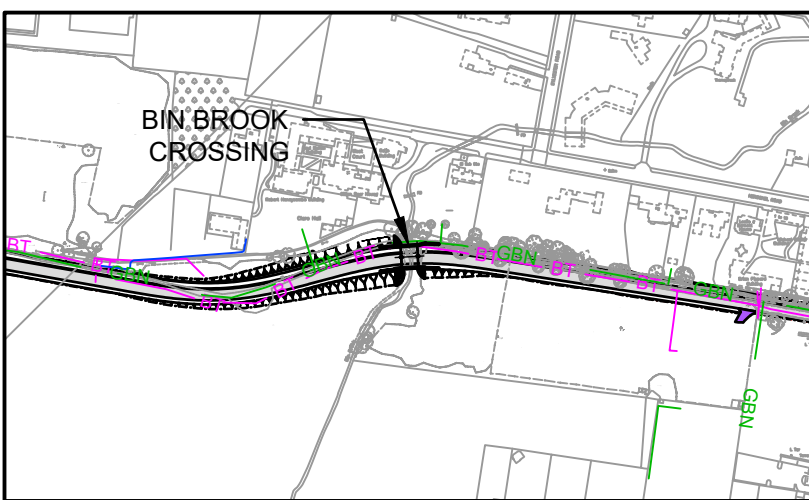
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CAMBOURNE TO CAMBRIDGE ORDER

NOTES:

- This drawing illustrates the outline design and is to be read in conjunction with all relevant project drawings and documents, including the technical note, document reference: 70086660-WSP-SBR-XX-RP-CB-00002. Details shown are indicative only and is subject to change during the subsequent design stages.
- Do not scale from this drawing, use only values of stated dimensions.
- For geometric details of the proposed Busway, refer to relevant road plan and profile drawings, reference: 70086660-WSP-HGN-XX-DR-HW-00010001-001018.
- Foundations shown as indicative only, type and size of foundations to be developed during the preliminary / detailed design stage and will be subject to geotechnical design report.



SETTING OUT CO-ORDINATES		
SOP REF	EASTING (m)	NORTHING (m)
SOP1	543595.3739	258292.0697
SOP2	543606.3586	258292.6497

P02	19/05/2023	AH	FOR PLANNING	AH	PC
P01	21/12/2022	EL	FIRST ISSUE	AH	PC
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS:
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CLIENT:
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APPLICANT:
CAMBRIDGESHIRE COUNTY COUNCIL

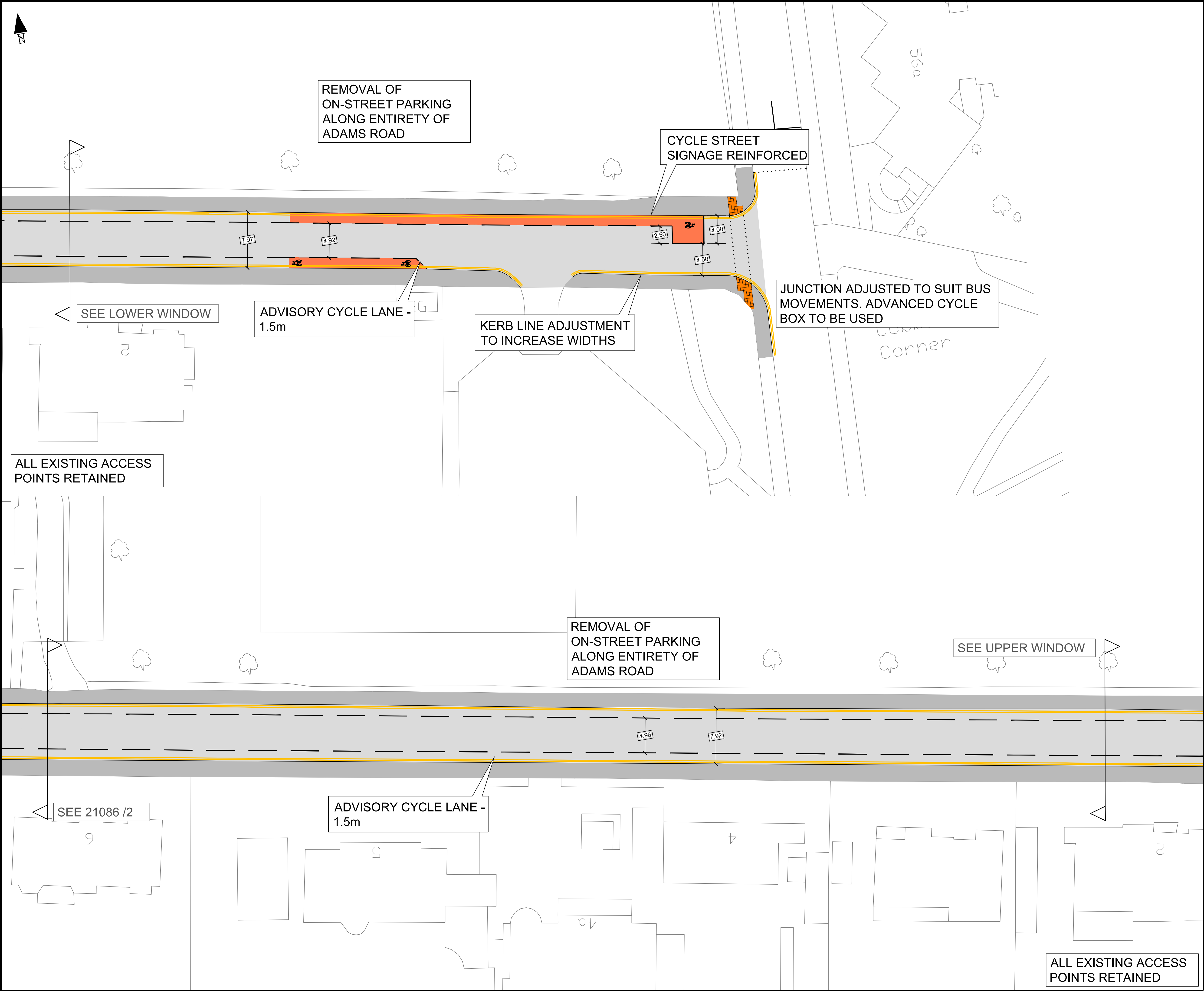
SITE/PROJECT:
C2C SCHEME

TITLE:
BIN BROOK BRIDGE
GENERAL ARRANGEMENT DRAWING

SCALE @ AT:	CHECKED:	APPROVED:
VARIES	AH	PC
PROJECT NO:	DESIGNED:	DRAWN:
70086660	AH	AH
		DATE:
		May 23

DRAWING NO:	REV:
70086660-WSP-SBR-XX-DR-BR-0004	P02

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NOTES:

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2. This drawing to be read & printed in colour.
3. This drawing is for illustrative purposes only, and not for construction.

	FOOTWAY, MINIMUM OF 2.0m
	RED CYCLE SURFACE TREATMENT
	ASPHALT SURFACE, NO TREATMENT
	GRASS / LANDSCAPE AREA
	EXISTING TRACK RE-ROUTED
	RAMP TO RAISED CARRIAGEWAY
	CONTROLLED PEDESTRIAN CROSSING
	PEDESTRIAN CROSSING

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

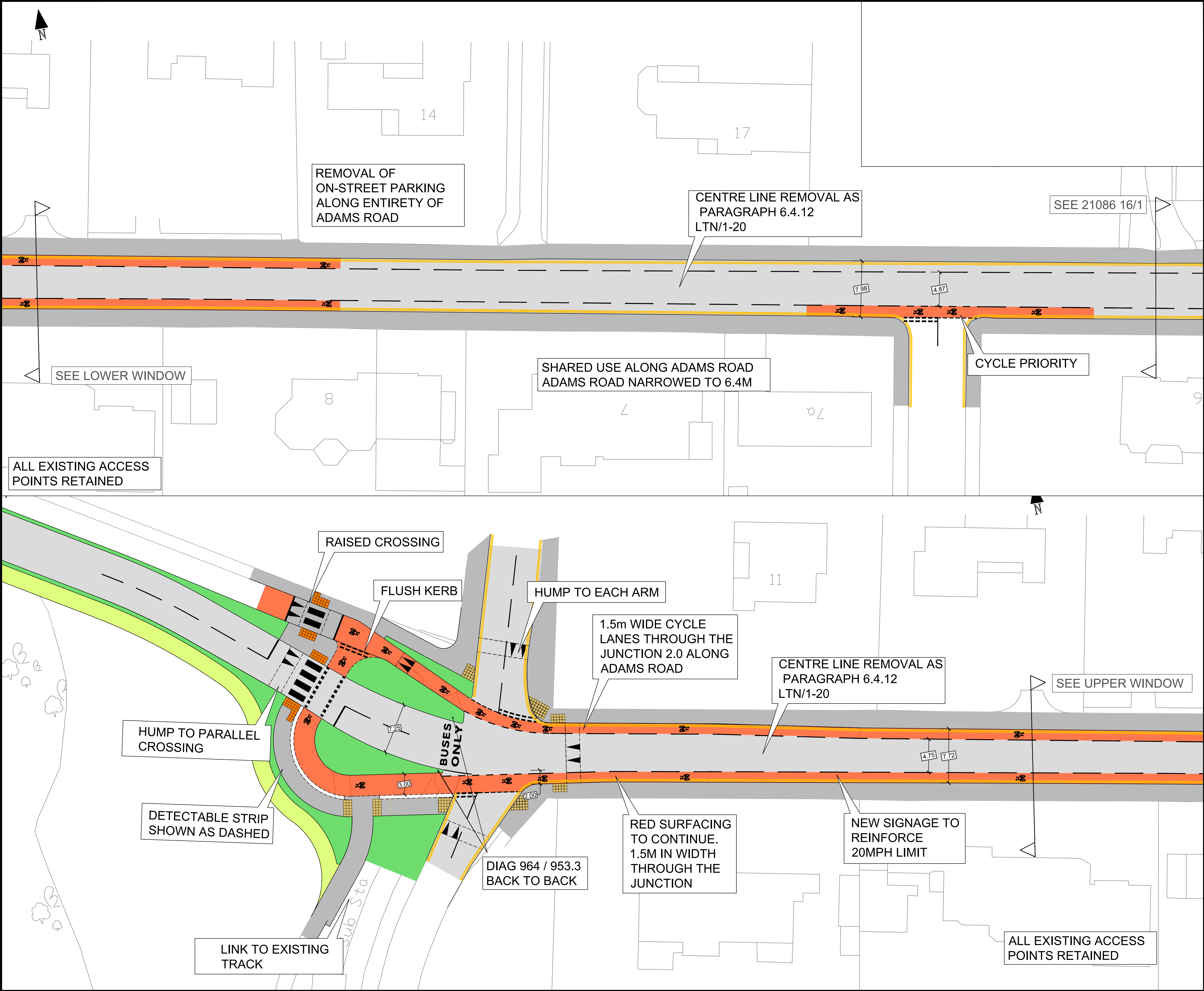
Proposed Alt. Bus Route via Adams Rd.
Option 3: Segregated Corridor

SCALE	1:250	SIZE	A1		
DRAWN BY	PR	CHECKED BY	KH	DATE	July 25

PULSAR

Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS
www.pulsartransport.co.uk

PROJECT REF	DWG NO	REV
21086	10/1	B



NOTES:

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	FOOTWAY, MINIMUM OF 2.0m
	RED CYCLE SURFACE TREATMENT
	ASPHALT SURFACE, NO TREATMENT
	GRASS / LANDSCAPE AREA
	EXISTING TRACK RE-ROUTED
	RAMP TO RAISED CARRIAGEWAY
	CONTROLLED PEDESTRIAN CROSSING
	PEDESTRIAN CROSSING

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

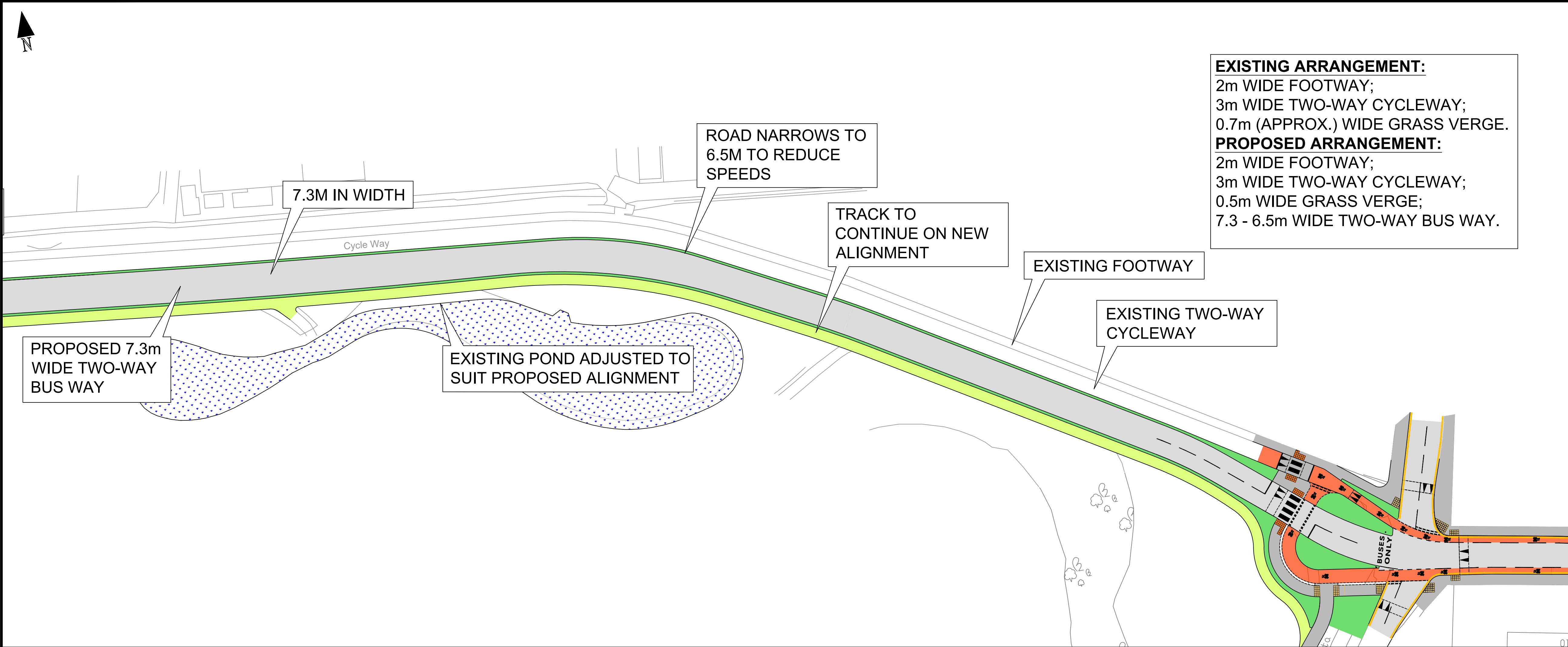
Proposed Alt. Bus Route via Adams Rd.
Option 3: Segregated Corridor

SCALE	1:250	SIZE	A1
DRAWN BY	PR	CHECKED BY	KH
		DATE	July 25

PULSAR

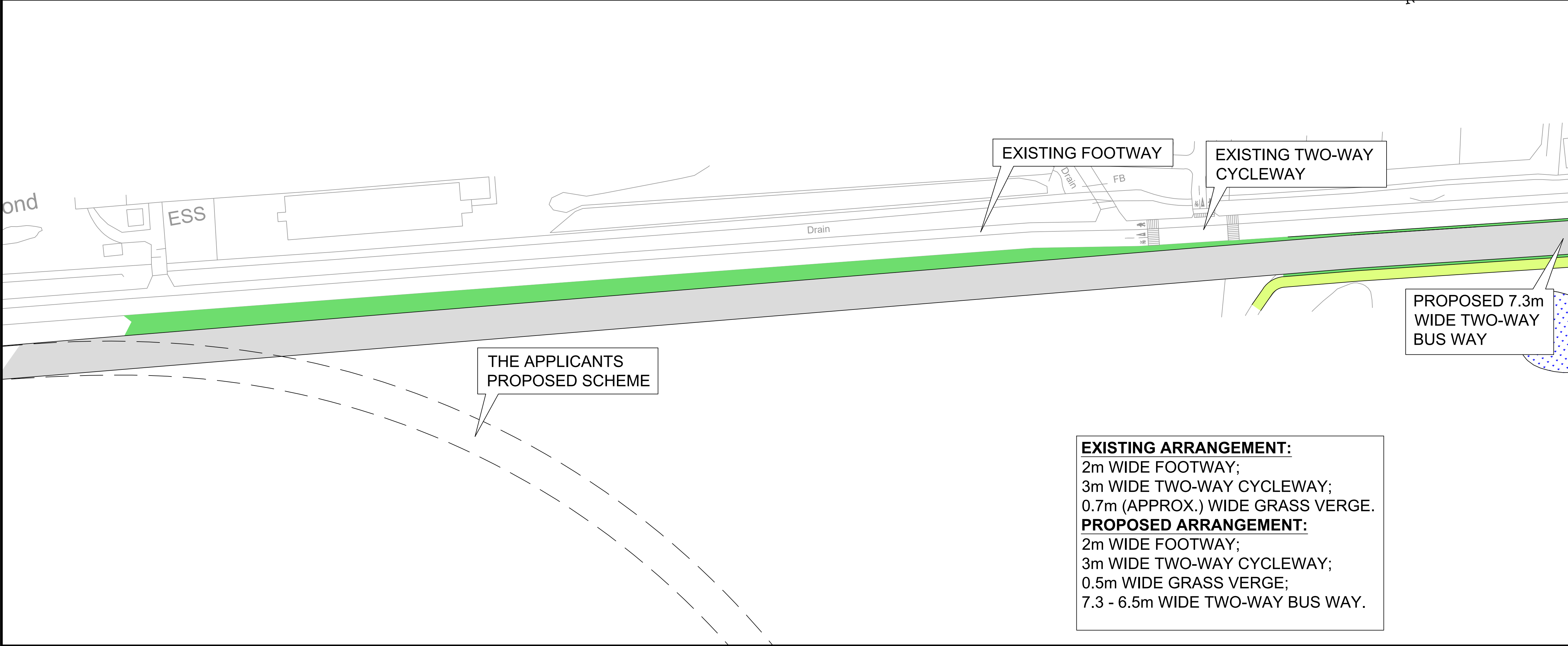
Gilmora House, 57-61 Mortimer Street, London, W1W 8HS
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PROJECT REF	DWG NO	REV
21086	10/2	B



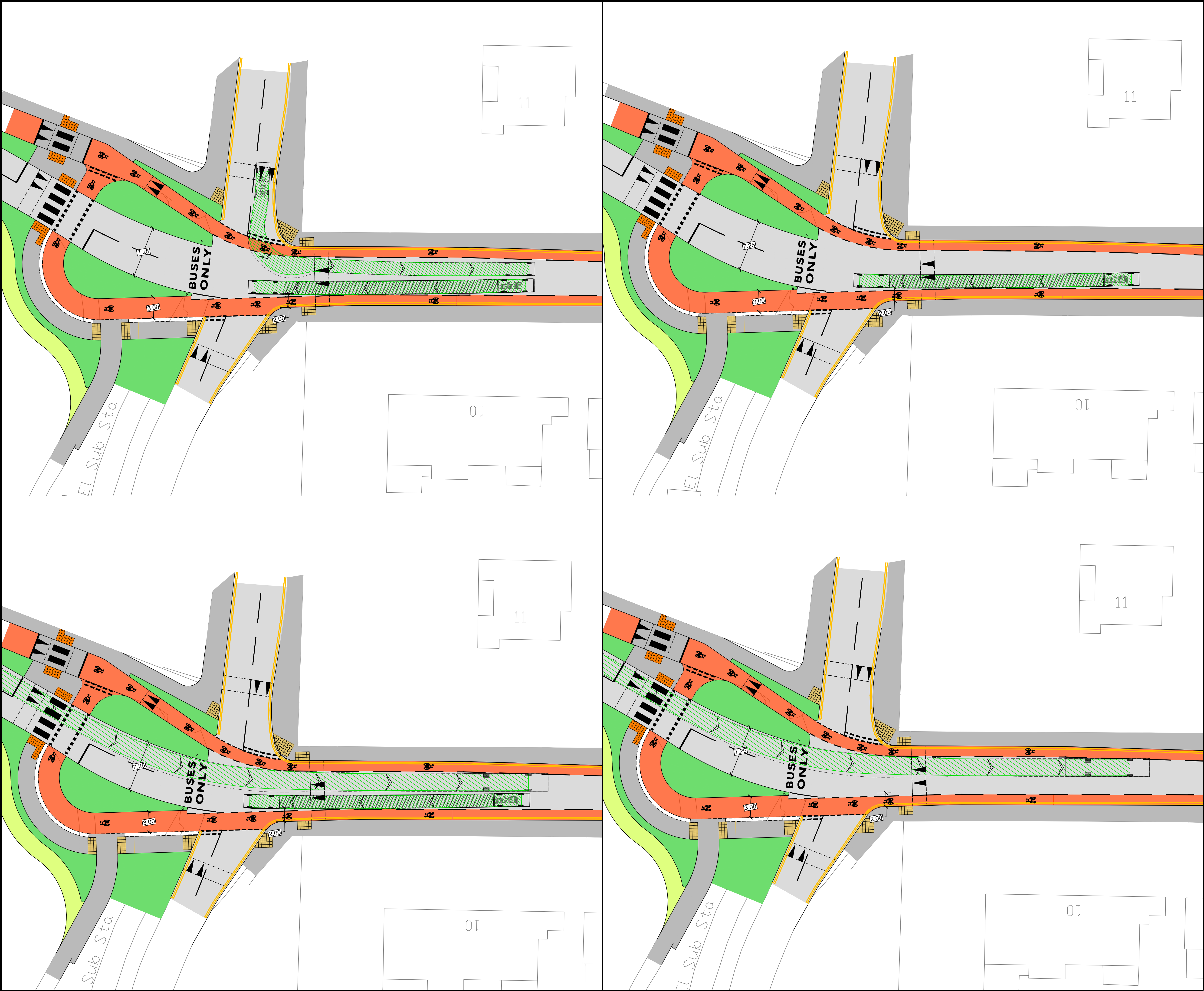
EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.

- NOTES:**
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- FOOTWAY, MINIMUM OF 2.0m
 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING



EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE
CLIENT				
Clare Hall				
PROJECT				
Cambridge Busway Route Appraisal				
DRAWING TITLE				
Proposed Alt. Bus Route via Adams Rd. Option 3: Segregated Corridor				
SCALE			SIZE	
1:500			A1	
DRAWN BY		CHECKED BY		DATE
PR		KH		July 25
<div><div>PULSAR</div></div> <p>Gilmoora House, 57-61 Mortimer Street, London, W1W 8HS www.pulsartransport.co.uk</p>				
PROJECT REF		DWG NO		REV
21086		10/3		B



NOTES:

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FOOTWAY, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

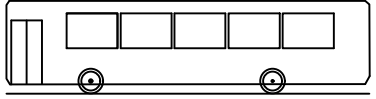
GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Option 3: Segregated Corridor
Swept path sheet 1 of 2

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25



Gilmora House, 57-61 Mortimer Street, London, W1W 8HS
www.pulsartransport.co.uk

PROJECT REF

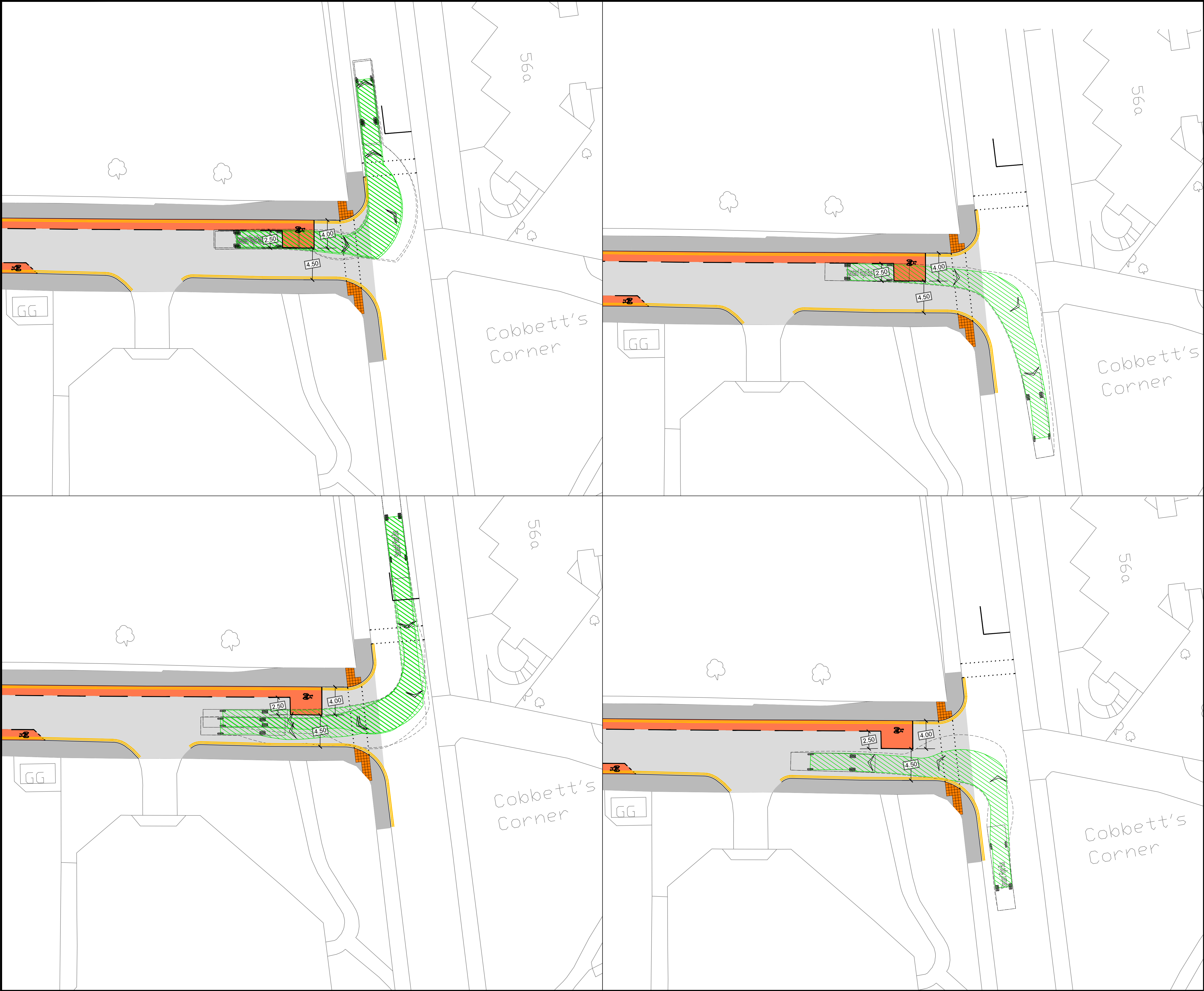
21086

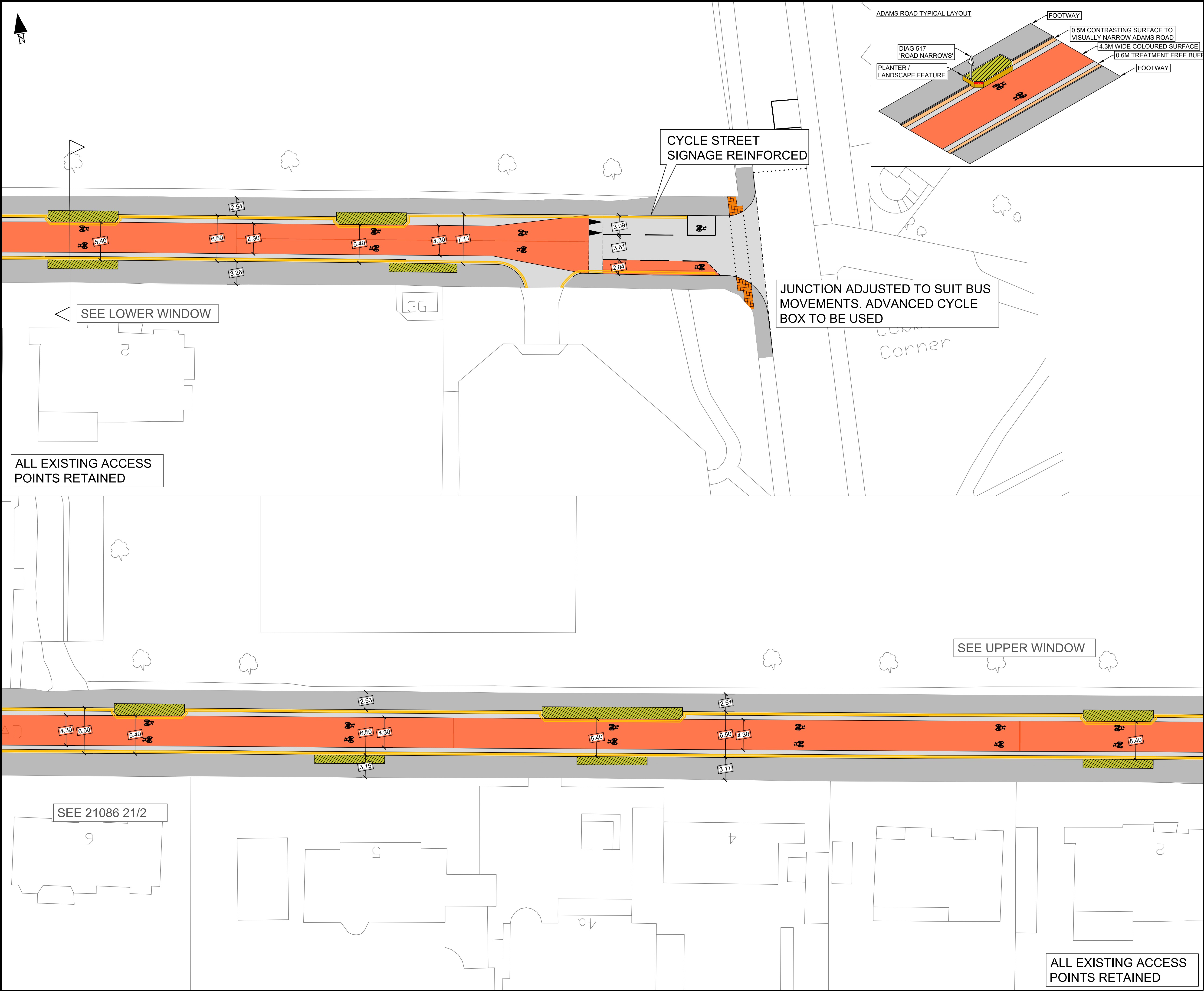
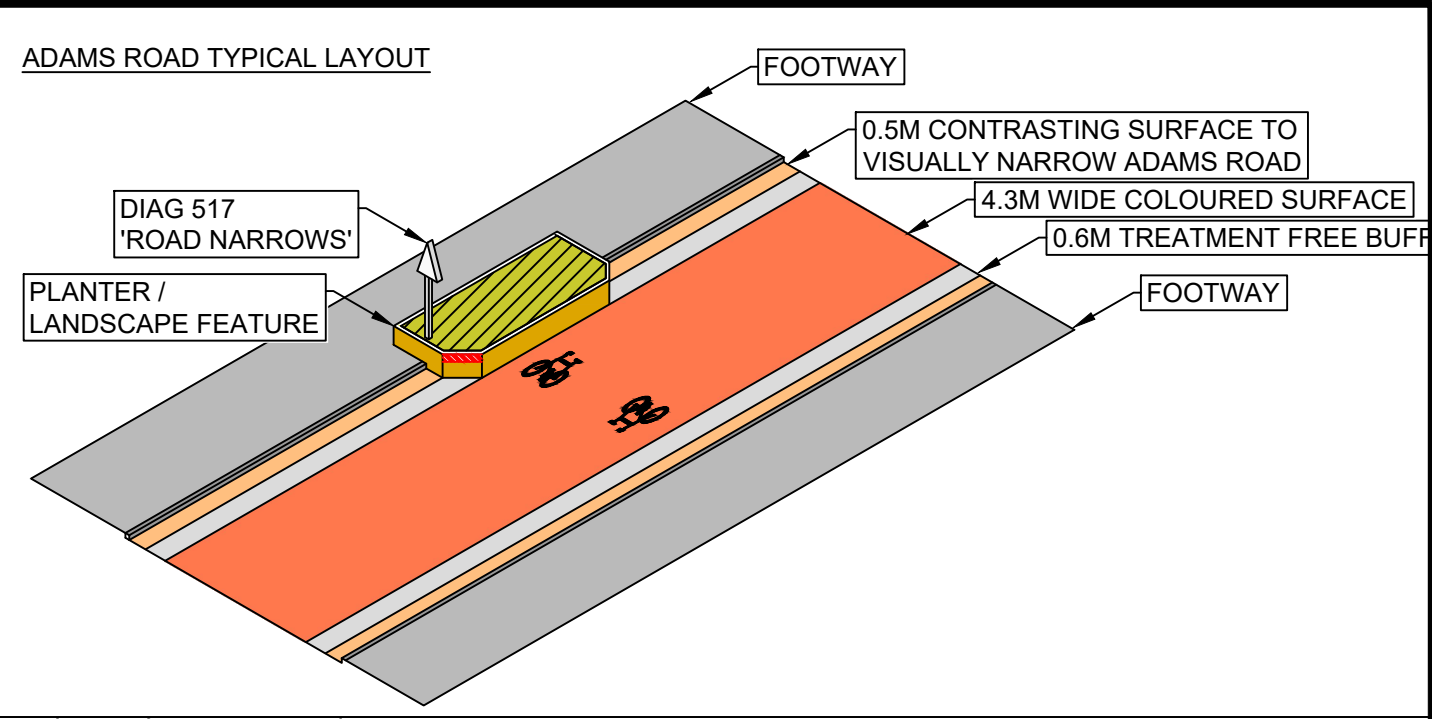
DWG NO

10/4

REV

A





- NOTES:**
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 3. This drawing is for illustrative purposes only, and not for construction.
- FOOTWAY WIDENED, MINIMUM OF 2.0m
 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
 - PLANTING FEATURE
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via Adams Rd.
Adams Road, Cycle Street

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25



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PROJECT REF

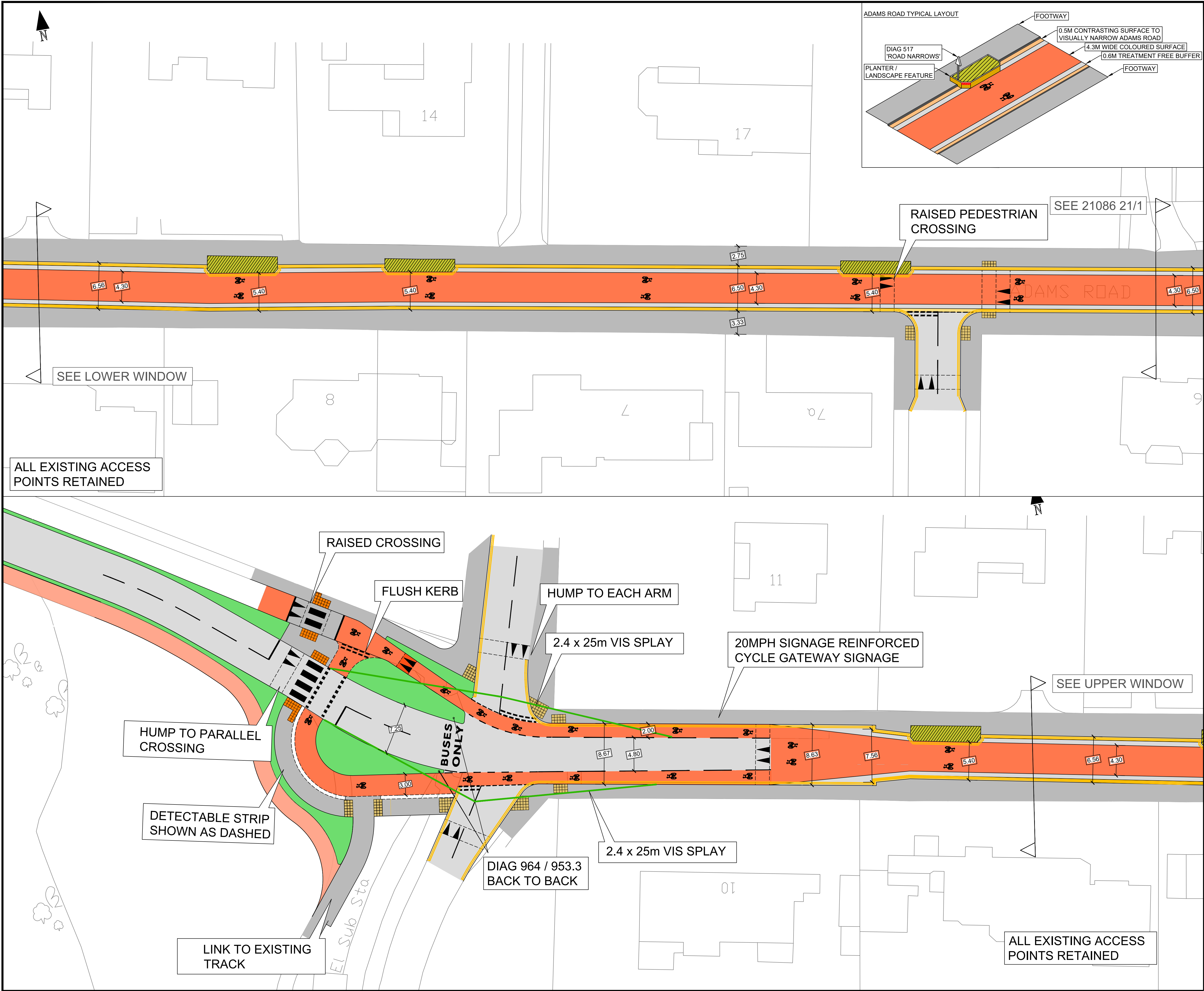
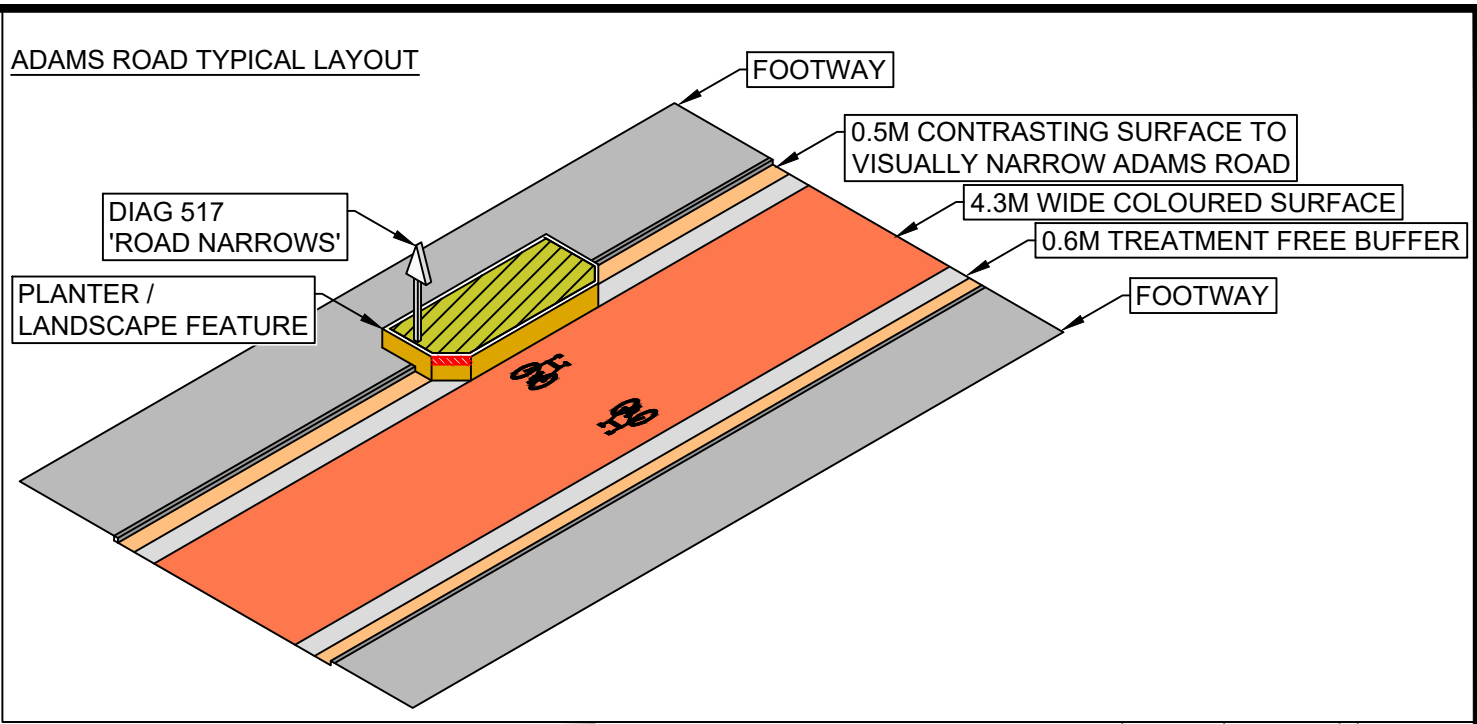
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DWG NO

21/1

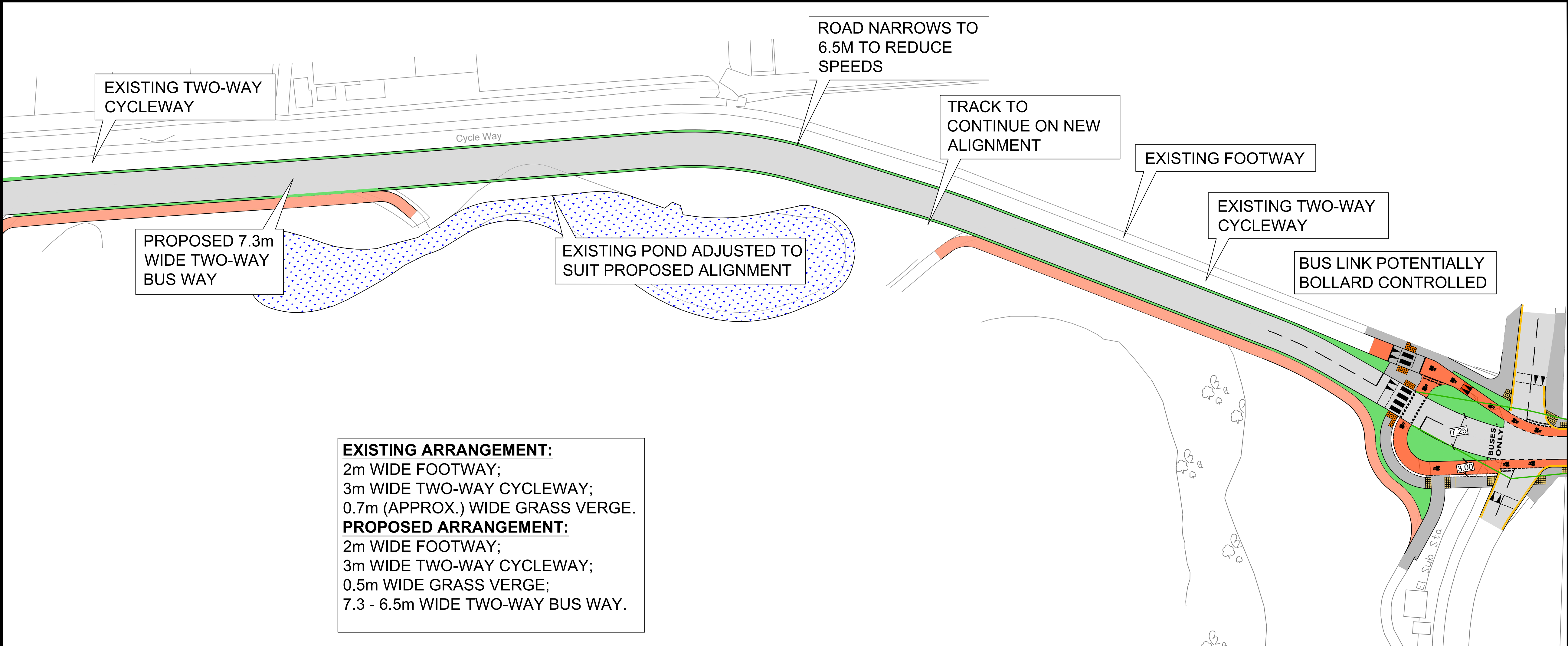
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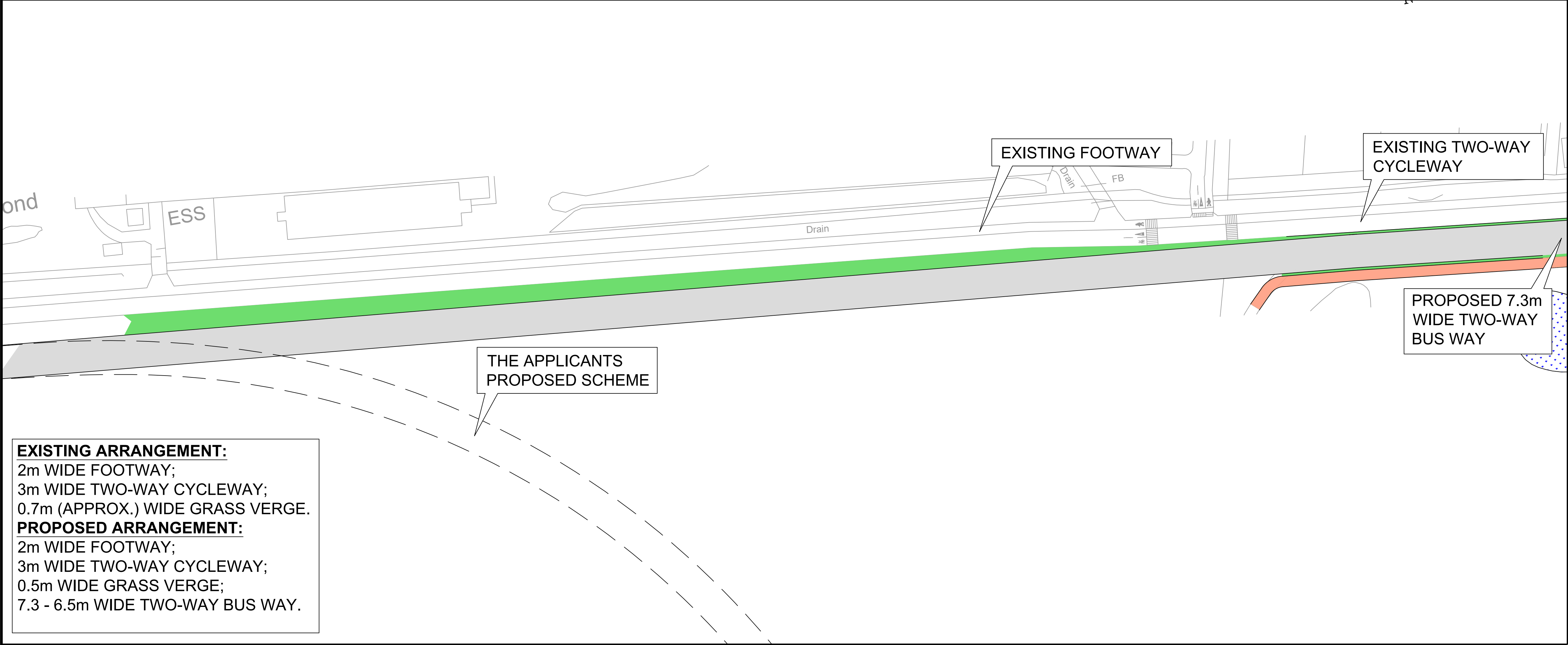


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 - RED CYCLE SURFACE TREATMENT
 - ASPHALT SURFACE, NO TREATMENT
 - CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
 - PLANTING FEATURE
 - GRASS / LANDSCAPE AREA
 - EXISTING TRACK RE-ROUTED
 - RAMP TO RAISED CARRIAGEWAY
 - CONTROLLED PEDESTRIAN CROSSING
 - PEDESTRIAN CROSSING

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE
CLIENT				
Clare Hall				
PROJECT				
Cambridge Busway Route Appraisal				
DRAWING TITLE				
Proposed Alt. Bus Route via Adams Rd. Adams Road, Cycle Street				
SCALE			SIZE	
1:250			A1	
DRAWN BY		CHECKED BY		DATE
PR		KH		July 25
<div><div>PULSAR</div></div>				
Gilmoor House, 57-61 Mortimer Street, London, W1W 8HS www.pulsartransport.co.uk				
PROJECT REF		DWG NO		REV
21086		21/2		.



EXISTING ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.7m (APPROX.) WIDE GRASS VERGE.
PROPOSED ARRANGEMENT:
2m WIDE FOOTWAY;
3m WIDE TWO-WAY CYCLEWAY;
0.5m WIDE GRASS VERGE;
7.3 - 6.5m WIDE TWO-WAY BUS WAY.



EXISTING ARRANGEMENT:
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	FOOTWAY WIDENED, MINIMUM OF 2.0m
	RED CYCLE SURFACE TREATMENT
	ASPHALT SURFACE, NO TREATMENT
	CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
	PLANTING FEATURE
	GRASS / LANDSCAPE AREA
	EXISTING TRACK RE-ROUTED
	RAMP TO RAISED CARRIAGEWAY
	CONTROLLED PEDESTRIAN CROSSING
	PEDESTRIAN CROSSING

REV	DETAILS	DRAWN	CHECKED	DATE
...	...	...	...	...

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Adams Road, Cycle Street

SCALE

1:500

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

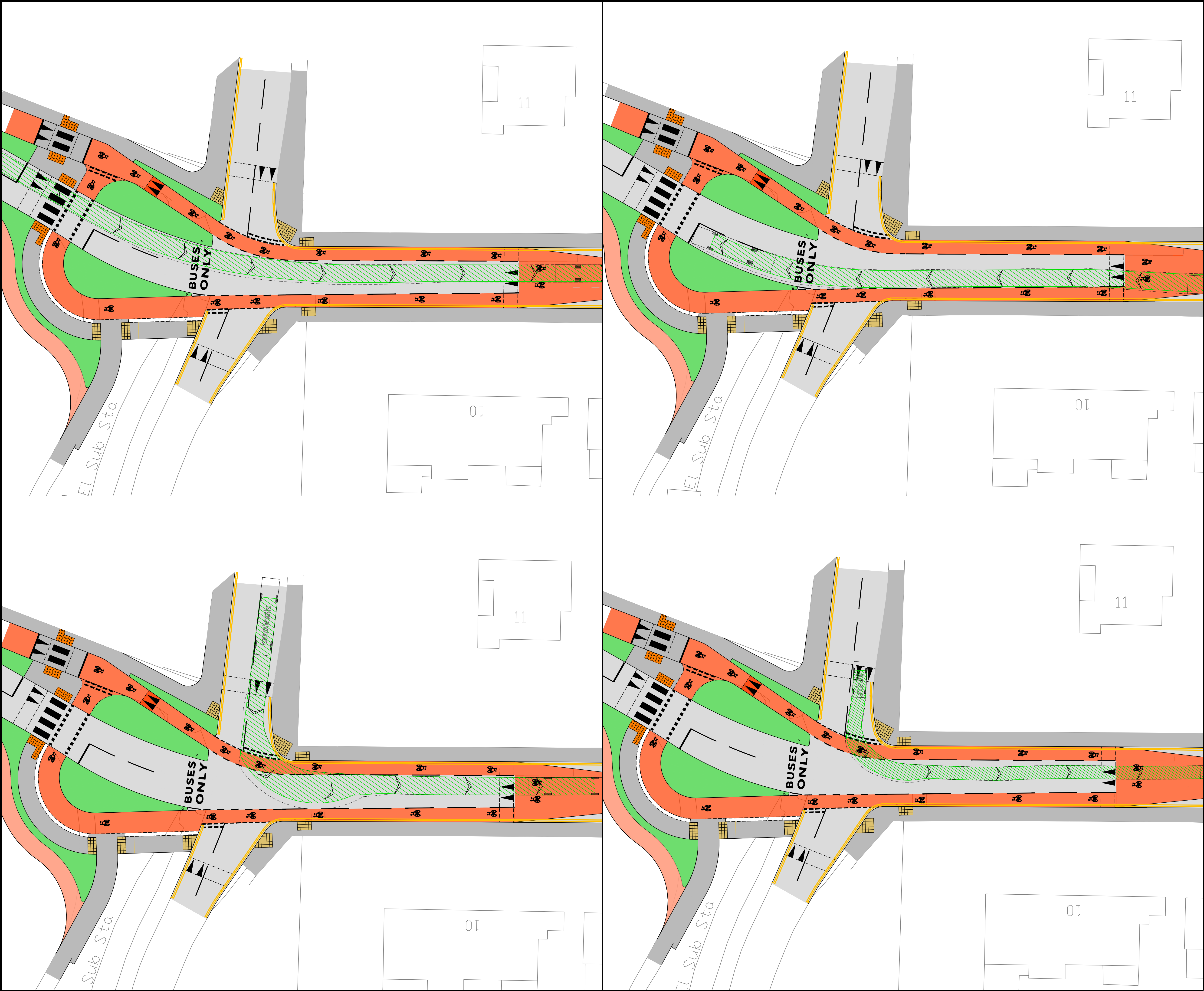
DATE

July 25

PULSAR

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www.pulsartransport.co.uk

PROJECT REF	DWG NO	REV
21086	21/3	.



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3. This drawing is for illustrative purposes only, and not for construction.

FOOTWAY WIDENED, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)

PLANTING FEATURE

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING

'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

Pantechnicon / Removals Van
Overall Length 11.000m
Overall Width 2.500m
Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 12.200m

Large Car (2006)
Overall Length 5.079m
Overall Width 1.872m
Max Track Width 1.831m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.900m

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Adams Road, Cycle Street
Swept path sheet 1 of 4

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25

PULSAR

Gilmora House, 57-61 Mortimer Street, London, W1W 8HS
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PROJECT REF	DWG NO	REV
21086	21/4	.

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NOTES:

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3. This drawing is for illustrative purposes only, and not for construction.

- FOOTWAY WIDENED, MINIMUM OF 2.0m
- RED CYCLE SURFACE TREATMENT
- ASPHALT SURFACE, NO TREATMENT
- CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)
- PLANTING FEATURE
- GRASS / LANDSCAPE AREA
- EXISTING TRACK RE-ROUTED
- RAMP TO RAISED CARRIAGEWAY
- CONTROLLED PEDESTRIAN CROSSING
- PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

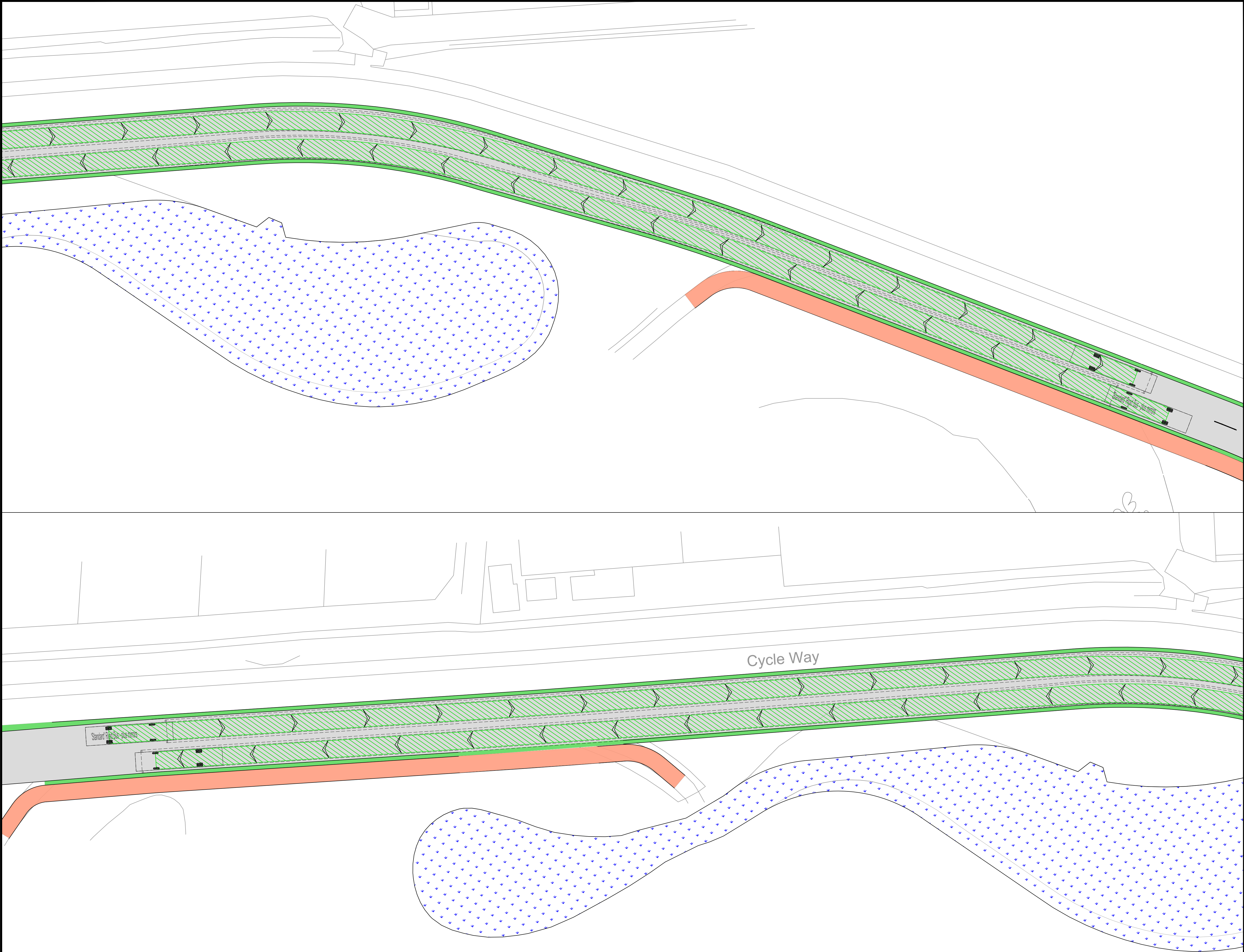
Proposed Alt. Bus Route via
Adams Rd.
Adams Road, Cycle Street
Swept path sheet 2 of 4

SCALE	1:250	SIZE	A1
DRAWN BY	PR	CHECKED BY	KH
DATE	July 25		



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PROJECT REF	DWG NO	REV
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FOOTWAY WIDENED, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)

PLANTING FEATURE

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING



'Standard' Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

...	...	...	...	...
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Adams Road, Cycle Street
Swept path sheet 3 of 4

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

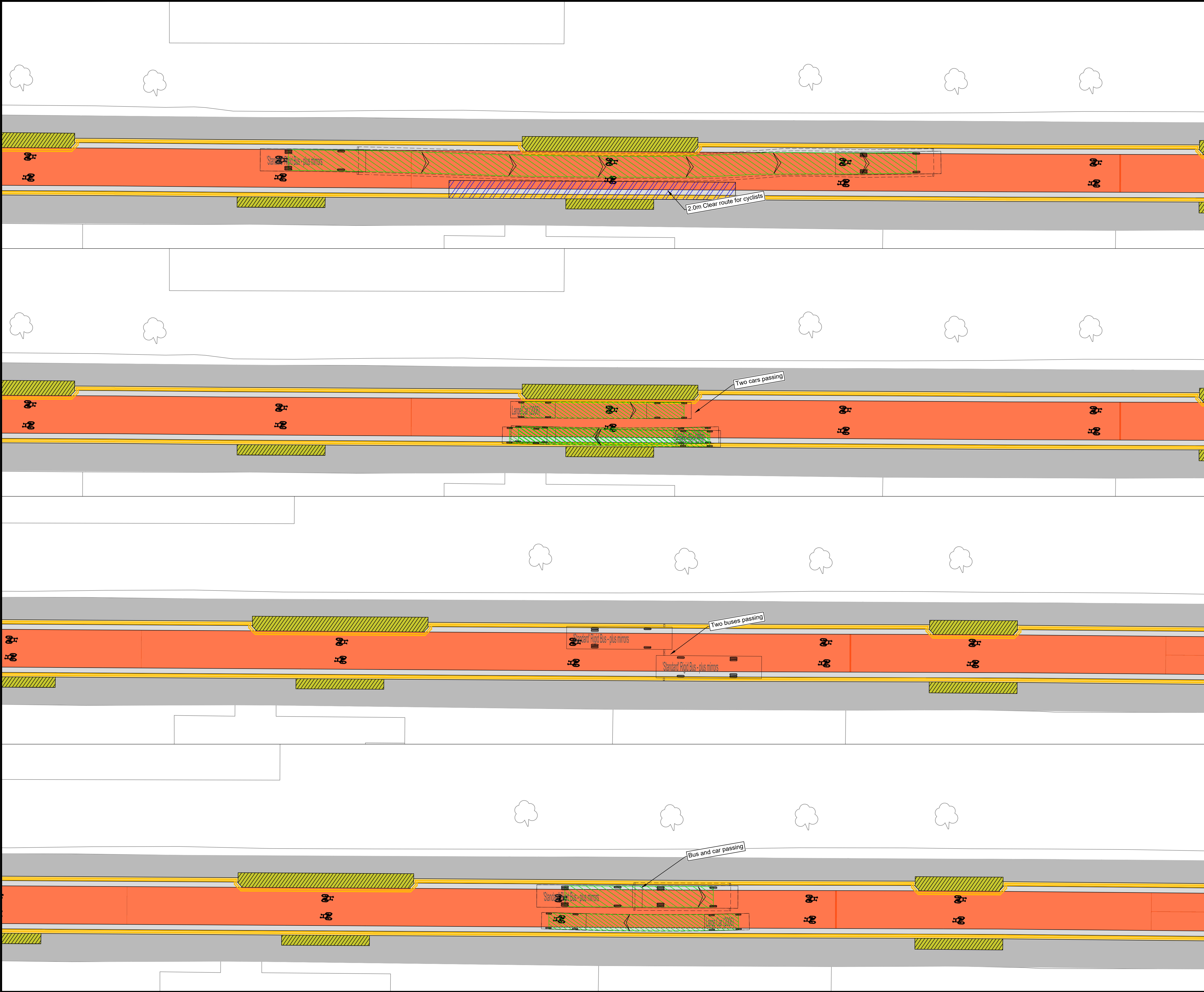
DATE

July 25



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PROJECT REF	DWG NO	REV
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FOOTWAY WIDENED, MINIMUM OF 2.0m

RED CYCLE SURFACE TREATMENT

ASPHALT SURFACE, NO TREATMENT

CONTRASTING BUFFER STRIP (FLUSH CARRIAGEWAY)

PLANTING FEATURE

GRASS / LANDSCAPE AREA

EXISTING TRACK RE-ROUTED

RAMP TO RAISED CARRIAGEWAY

CONTROLLED PEDESTRIAN CROSSING

PEDESTRIAN CROSSING

Standard Rigid Bus
Overall Length 12.000m
Overall Width 2.550m
Track Width 2.350m
Lock to lock time 4.00s
Wall to Wall Turning Radius 10.771m

Pantechnicon / Removals Van
Overall Length 11.000m
Overall Width 2.500m
Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 12.200m

Large Car (2006)
Overall Length 5.079m
Overall Width 1.872m
Max Track Width 1.831m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.900m

REV	DETAILS	DRAWN	CHECKED	DATE
...	...	...	...	...

CLIENT

Clare Hall

PROJECT

Cambridge Busway Route Appraisal

DRAWING TITLE

Proposed Alt. Bus Route via
Adams Rd.
Adams Road, Cycle Street
Swept path sheet 4 of 4

SCALE

1:250

SIZE

A1

DRAWN BY

PR

CHECKED BY

KH

DATE

July 25

**PULSAR**

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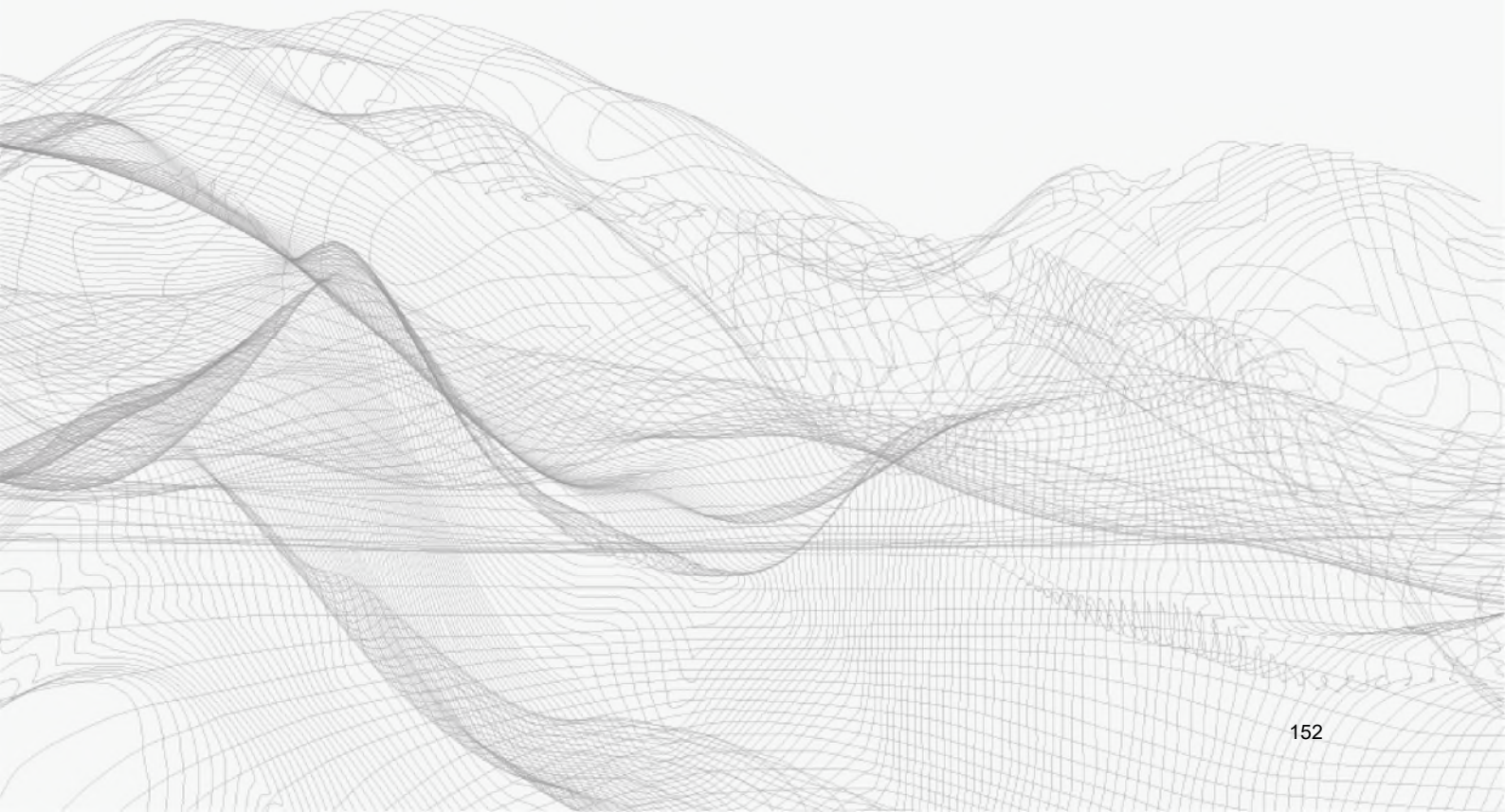




Figure 1 - Shared Route #1



Figure 2 - Shared Route #2



Figure 3 - Rifle Range Route #1



Figure 4 - Rifle Range Route #2



Figure 5 – Adams Road #1



Figure 6 – Adams Road #2



Figure 7 – Adams Road #3



Figure 8 – Adams Road #4

