CAMBRIDGESHIRE
& PETERBOROUGH
COMBINED AUTHORITY

27 February 2024

[redacted]

Dear [redacted]

Re: Freedom of Information request ref CA289

Thank you for your request for information received on 1 February 2024. The response to CA289 is given below:

Request

I would like to see the proposals made by Egis Group and Mott Macdonald for concepts for the Cambridgeshire Autonomous Metro, as the web site on which they were viewable is no longer online.

Response

Please find attached the concept packs from the Egis Group and Mott MacDonald.

I hope this information is helpful but if you are unhappy with the service you have received in relation to your request and wish to make a complaint or request a review, you should write to us via our contact us email address: democratic.services@cambridgeshirepeterborough-ca.gov.uk or write a letter to Complaints, Cambridgeshire and Peterborough Combined Authority, 2nd Floor, Pathfinder House, St Mary's Street, Huntingdon, Cambs PE29 3TN within 40 days of the date of this e-mail.

If you are not content with the outcome of the internal review, you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF, or via their website: https://ico.org.uk/

2nd Floor
Pathfinder House
St Mary's Street
Huntingdon
Cambs
PE29 3TN

Generally, the ICO will not undertake a review or make a decision on a request until the internal review process has been completed.

Yours sincerely

[redacted]

Susan Hall
Data Protection Officer

2nd Floor
Pathfinder House
St Mary's Street
Huntingdon
Cambs
PE29 3TN

Mott MacDonald Integrated System (MMIS)

End Stage Gate Media Pack

CAM
CAMBRIDGESHIRE
AUTONOMOUS METRO

MOTT MACDONALD
Maynard.
TDI TRANSPORT DESIGN INTERNATIONAL
podaris
MTR

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Northstowe
Waterbeach
MOTT MACDONALD
Maynard.
TDI TRANSPORT DESIGN INTERNATIONAL
podaris
MTR

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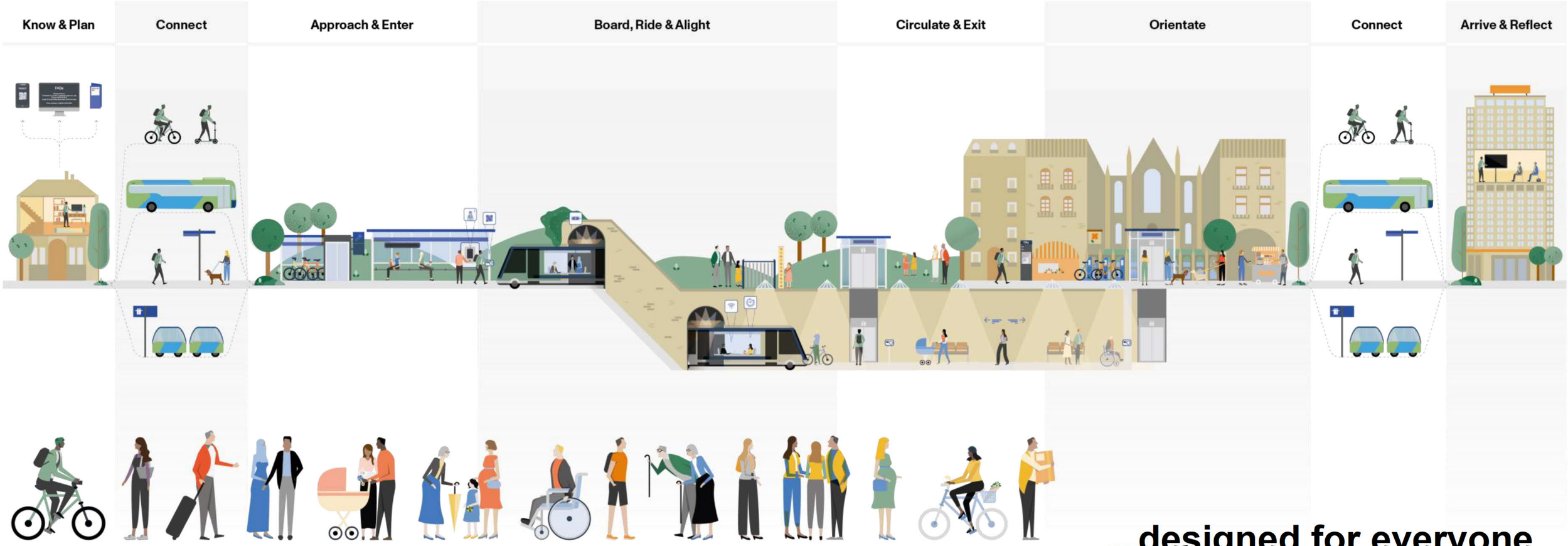
Cambridgeshire Autonomous Metro

An end-to-end service...



...designed for everyone

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Maynard.
TDI
TRANSPORT DESIGN
INTERNATIONAL
Doors will open on the other side

CAM

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podaris

Maynard.

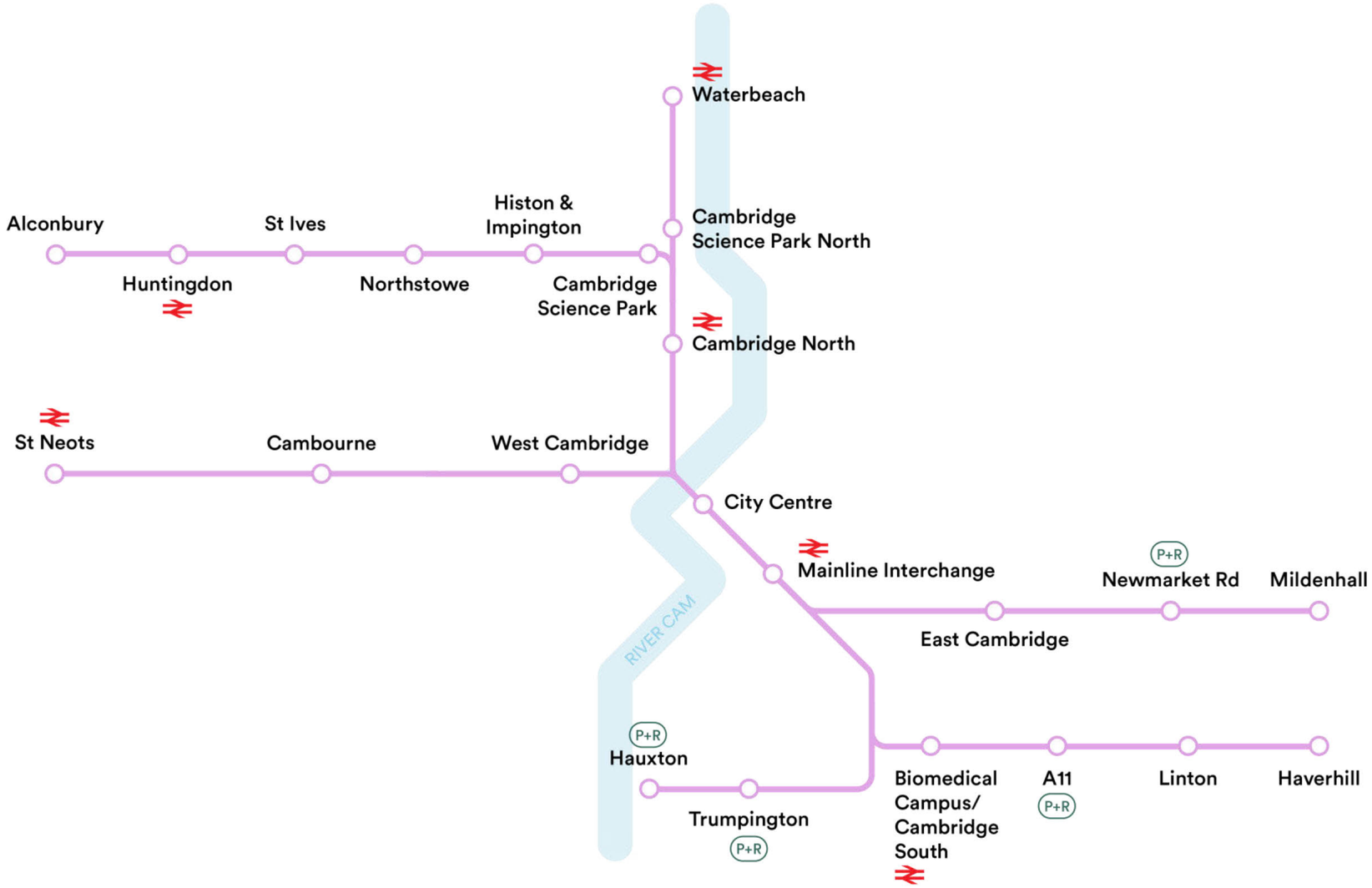
TDI TRANSPORT DESIGN INTERNATIONAL

Cambridgeshire Autonomous Metro

Network

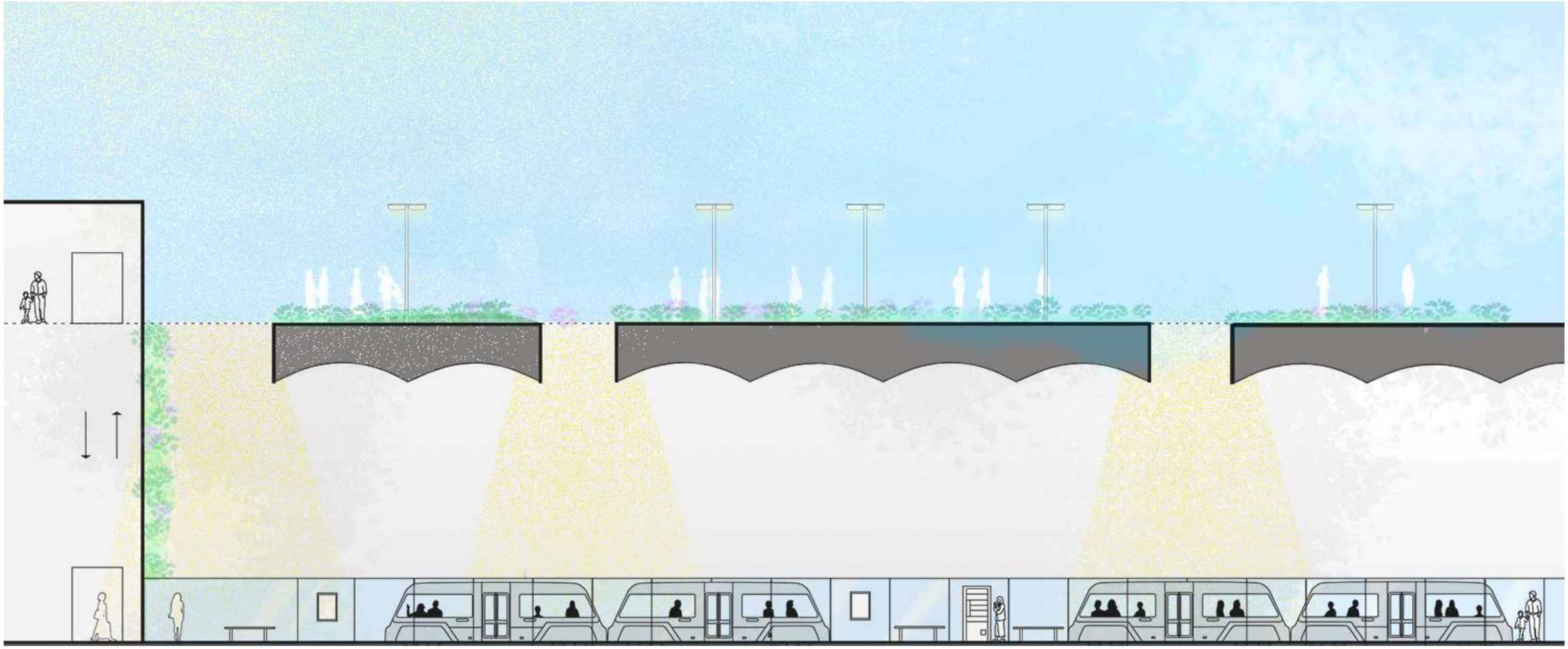
A surface running solution is possible in the central core which would deliver a potential saving on the capital cost.

It would require a significant change in the current attitude towards private car use in order to re-allocate road in favour of CAM.



Cambridgeshire Autonomous Metro

Inviting nature into underground spaces



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Environment and Sustainability

- **Reducing the carbon footprint of construction through design**
- **Low-impact operation and benefits beyond CAM**
  - **Reducing energy demand**
  - **Energy generation**
  - **Final mile delivery**

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What does our concept offer?

- Balance of Proven and New Technology
- Credible
- Affordable and Value for Money
- Scalable and Flexible

Civic. Seamless. Connected.

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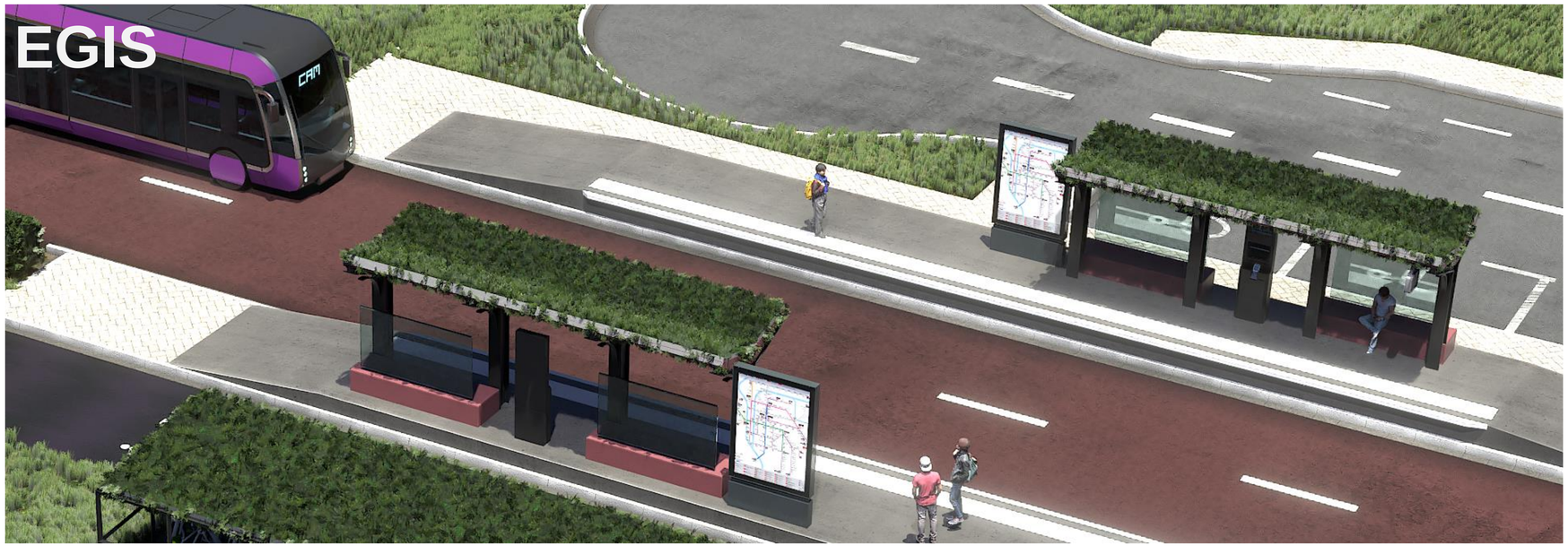
CAM Concept Design



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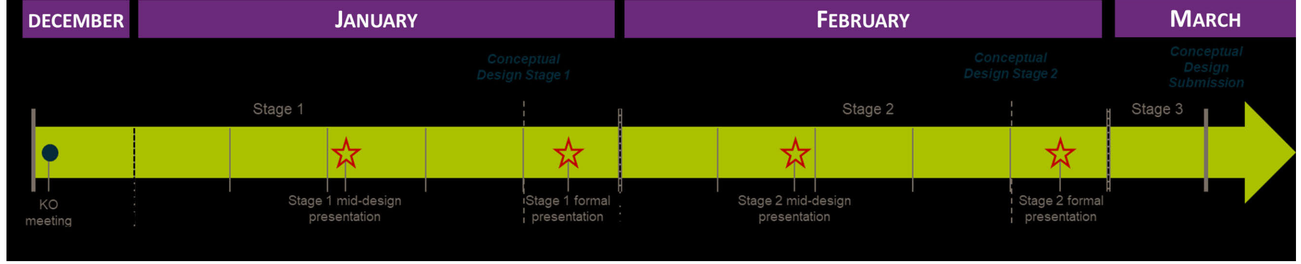
Cambridgeshire Autonomous Metro



CAM OBJECTIVES

- ✓ **Seamless passenger experience** through integrated transport network
- ✓ **High quality and reliability** public transport service
- ✓ **Modal shift** from private car to public transport service
- ✓ **Innovative solution** to reflect Cambridgeshire ambition
- ✓ **Long term environmentally sustainable** transport system
- ✓ **Economic opportunities** through improved connectivity
- ✓ **Trackless system**

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egis

CAM CAMBRIDGESHIRE AUTONOMOUS METRO

Cambridgeshire Autonomous Metro

CAM CONCEPT

A PROGRESSIVE DRIVERLESS IMPLEMENTATION

- ✓ A first realistic step given the current market
- ✓ A longer term driverless vision

A PASSENGER ORIENTED SOLUTION

- ✓ High quality facilities
- ✓ Integrated user interface

A FULLY SEGREGATED NETWORK

- ✓ High reliability
- ✓ Efficient journey time

A LOW-CARBON SYSTEM

- ✓ Electric vehicles
- ✓ Renewable energy production

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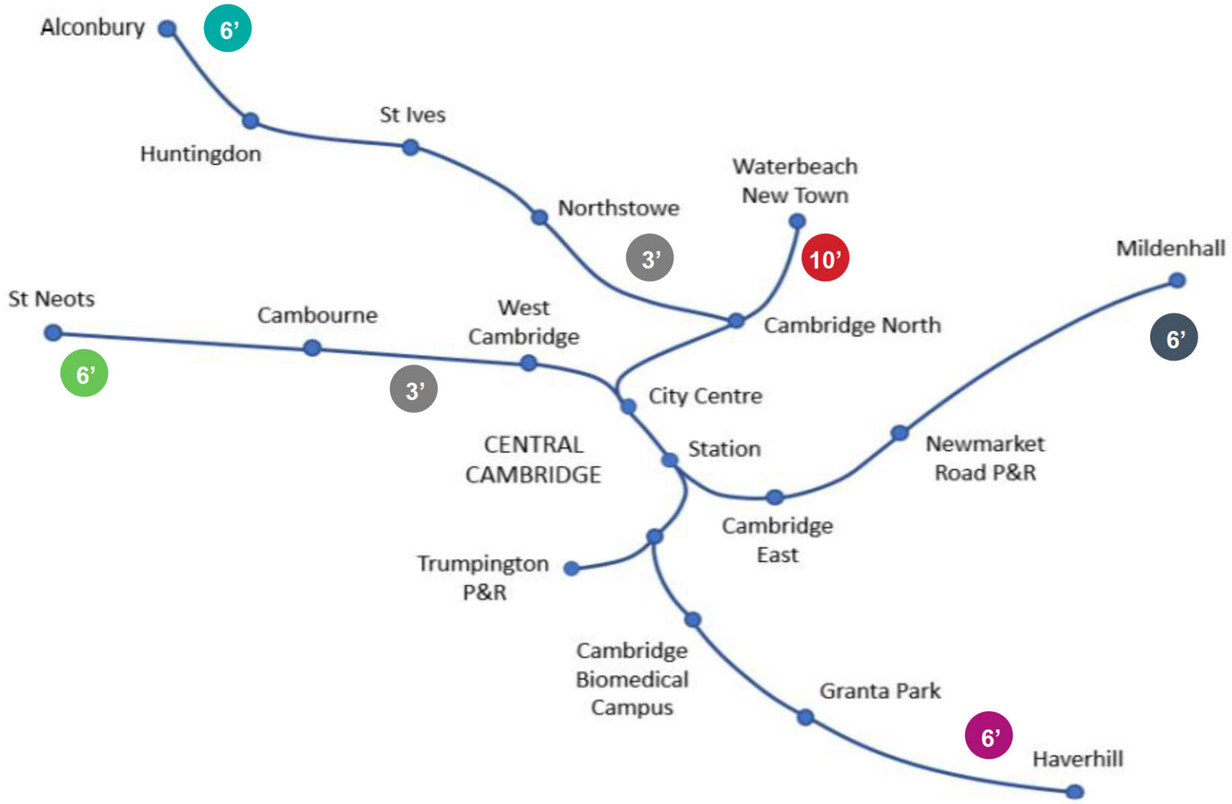
CAM NETWORK



5 services

- Cambourne - Mildenhall
- St Neots – Newmarket Road P&R
- Alconbury - Trumpington
- St Ives - Haverhill
- Waterbeach – Cambridge North

Headway

- ✓ 6 minutes on outer corridor
- ✓ 3 minutes on inner corridor
- ✓ 10 minutes on Waterbeach corridor

85% of stops are under 40 minutes from Cambridge Railway Station

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CAM PHASING

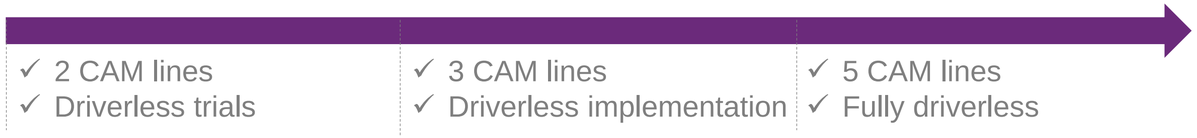
WHY PHASE A TRANSPORT NETWORK?

Tailor the services to the demand

Spread the works and disruptions

Spread the cost

Driverless possible



Stage 1:

- ✓ **2 CAM lines**
- ✓ CGB still in operation
- ✓ Driverless operation in depot
- ✓ Driverless trial on CAM with backup driver

Stage 2:

- ✓ **3 CAM lines**
- ✓ CGB repurposing
- ✓ Progressive driverless implementation on the whole network

Stage 3:

- ✓ **5 CAM lines**
- ✓ Full driverless operation
- ✓ Potential on-demand services on specific branches

Beyond:

- ✓ Potential on-demand services on the whole network

Cambridgeshire Autonomous Metro

PASSENGER EXPERIENCE

Arriving at the station
Parking facilities for cars and bicycles, use smartphone to access to the parking, green car places

CAM Station

Smartphone Interface
Check the next transit, buy a ticket or the subscription, check the connection with other modes (railway)…

Improve the first km experience
with urban planning and design (Comfort of walking and attractiveness, safety feeling, dedicated cycle lanes, reduction of car speed)

Equipment
Tram like, passenger services, real time information, universal access, accessibility, low floor, wheelchair space, audio, tactile aids, USB charger, WiFi

Dynamic Information
Time to destination, connection, alternative mode availability

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PASSENGER EXPERIENCE

18.7m

110 passengers (4p/m²)

On roof batteries

Rubber-tyre

Low floor & single deck / enhanced accessibility

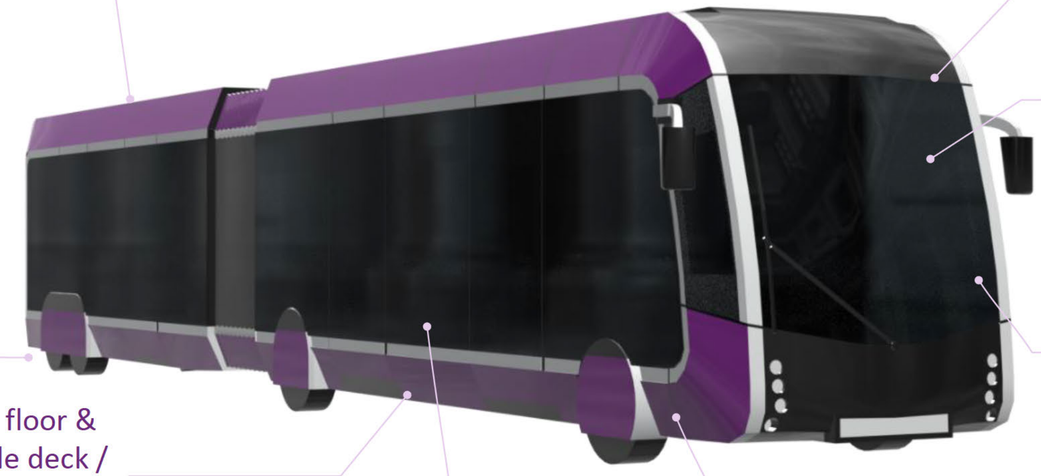
4 doors to maximise flow

Docking assistance

Ready for driverless operation

Eco-driving

Driver assistance



32 seats

USB device
Free WIFI

Dynamic passenger information

Emergency help point

On-board CCTV

2 wheelchair areas

Priority seats

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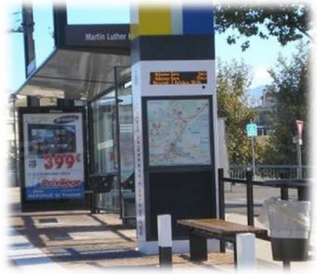
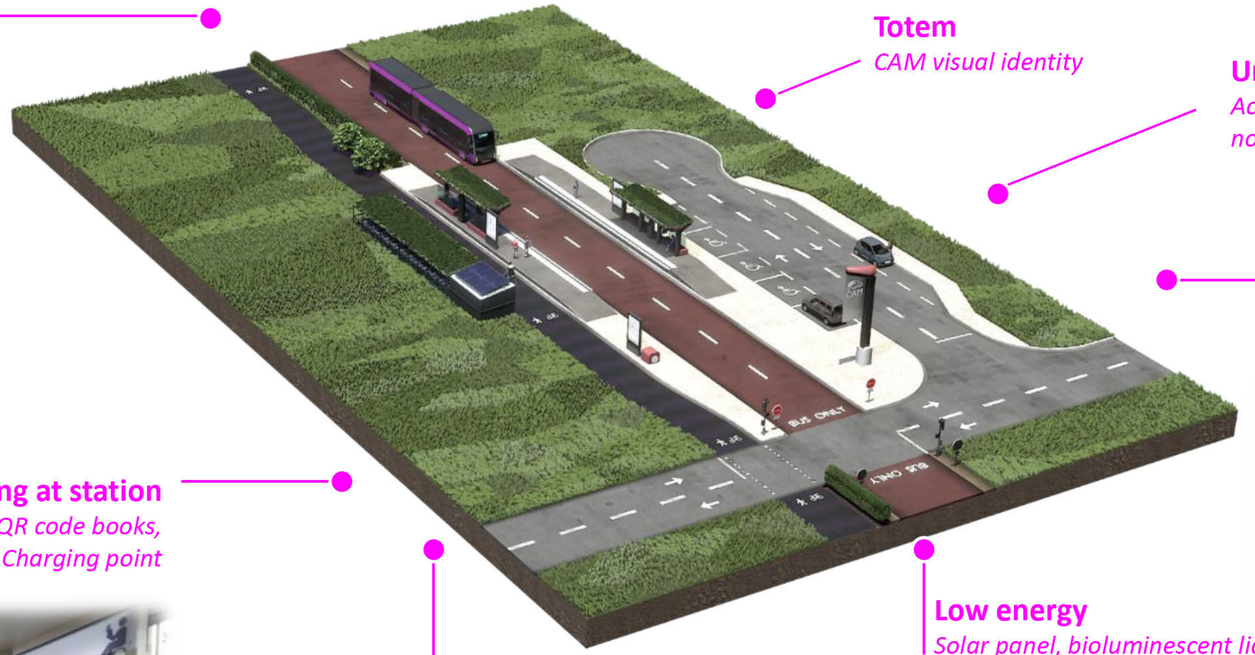
Cambridgeshire Autonomous Metro

PASSENGER EXPERIENCE

Integrated ticketing system
Combine different transport mode on one unique support, validate with a card or a smartphone

Passenger Information
Dynamic information, Walking distance map, autodetect, advertising





Totem
CAM visual identity

Universal access
Accessibility, Tactile warnings, no-step, audio visual aids

Green roof porch
An integration respectful of the existing landscape and improving biodiversity

Waiting at station
Book shelf, QR code books, Charging point

Low energy
Solar panel, bioluminescent lighting

Cycling facilities
Cycle parking with green roof
Cycle lockers with solar panels

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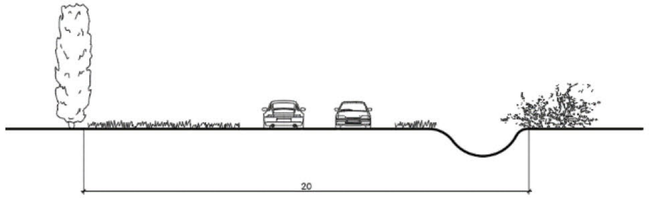
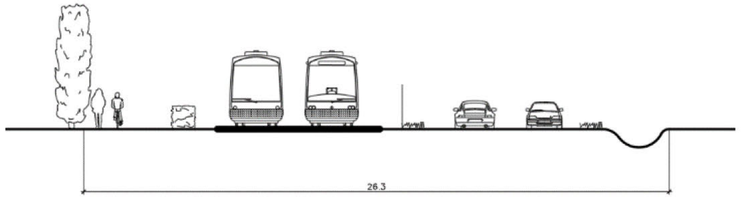
PASSENGER EXPERIENCE

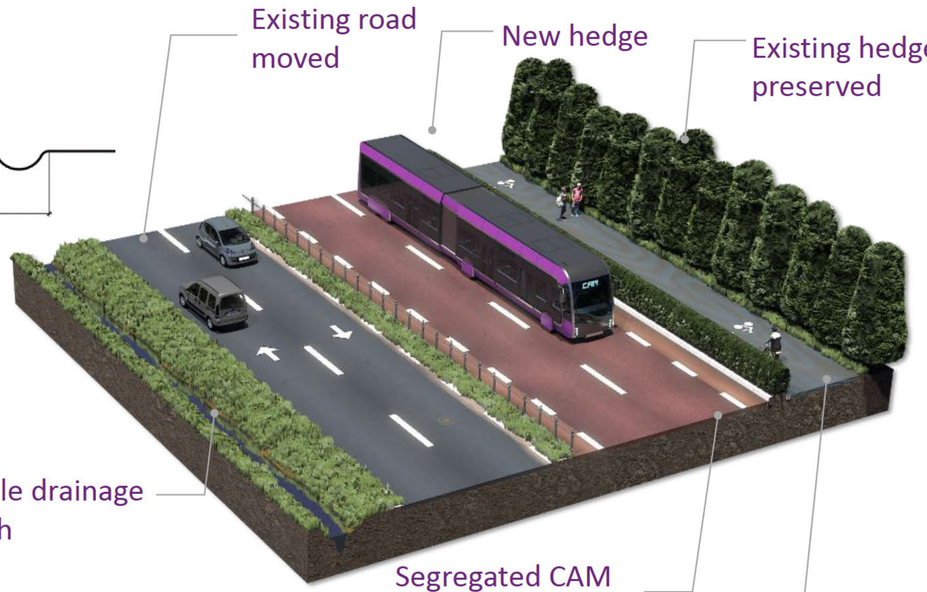
Cycling and pedestrian path
Qualitative path, natural phosphorescent lighting

Segregated Routes
Ensure reliability, efficient journey time, green corridors

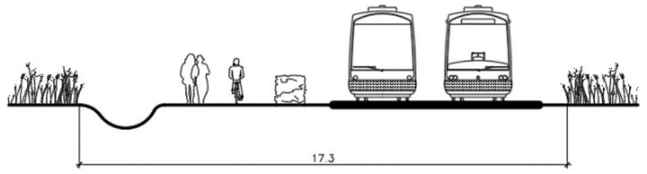
Existing road enlarged – fully segregated







New road – fully segregated



Cambridgeshire Autonomous Metro

City Centre

Integrated ticketing system

Combine different transport mode on one unique support, validate with a card or a smartphone

Network integration

Propose complementary modes for the last mile in the city centre (shared bicycles, scooter, Segway) working with the same integrated system

CAM Station

Reliable and rapid interchanges

Dedicated walking path, direction and walking time indications

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FIRST AND LAST MILE EXPERIENCE

14 P&R network

- ✓ Support modal shift
- ✓ 14,000 spaces

Improved first/last mile experience

- ✓ New cycling routes
- ✓ Cycle parking and lockers at each stop
- ✓ Improved pedestrian environment
- ✓ Complementary modes integration
- ✓ Reliable and rapid interchanges

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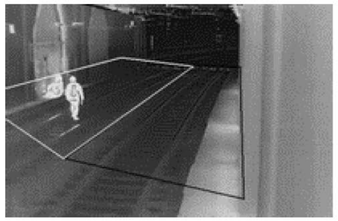
CAM INNOVATION



Artificial intelligence
CCTV systems specific features to support driving assistance, degraded modes, security & anti-fraud policy

Increased autonomy range
Hydrogen fuel cell range extender providing greater robustness & flexibility

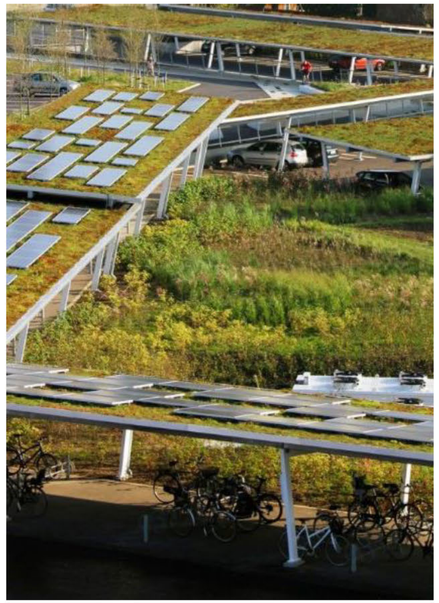
Infrastructure sharing
Logistics and Delivery autonomous vehicles use CAM infrastructure during off-peak hours

CAM Depot

CAM P&R

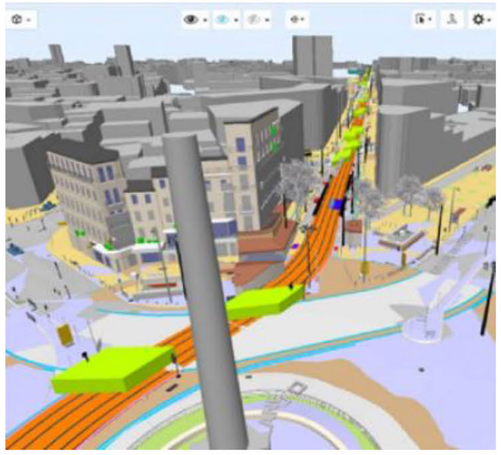
CAM Station

Solar panels & green areas
At the depot, P&R and stabling areas



CAM Station

Digital twin
Driverless enhanced vision: digital twin of the infrastructure & operating conditions



Data driven maintenance
Vehicles equipped with sensors feed into the digital twin with data on the infrastructure condition

On-demand mobility
Mixed vehicle capacity to enable a flexible operation tailored to the demand, through an innovative user interface

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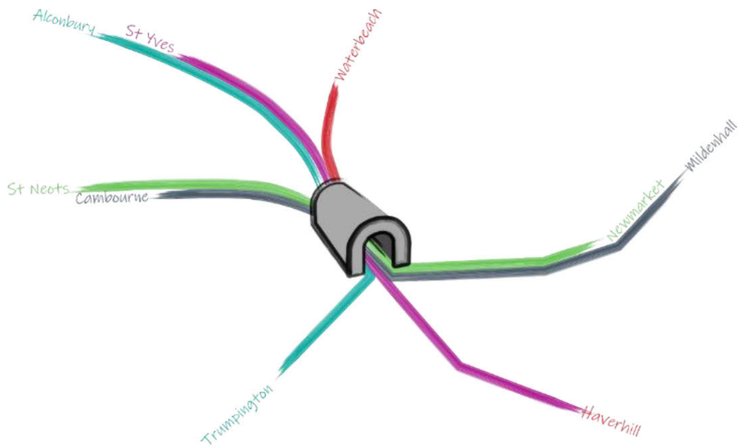
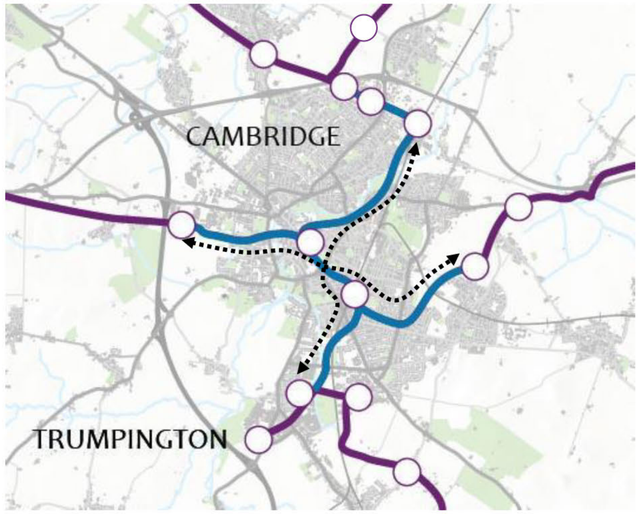
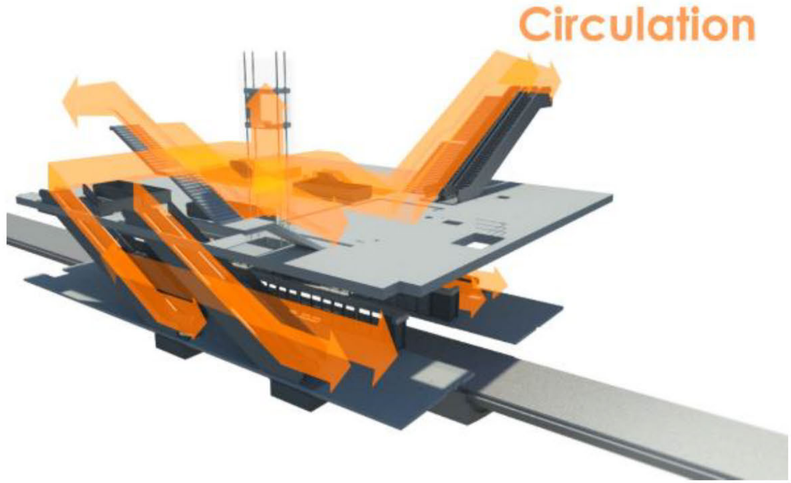
TWO OPTIONS WITHIN CAMBRIDGE: TUNNEL AND AT GRADE







TUNNEL OPTIMISATION ANALYSIS

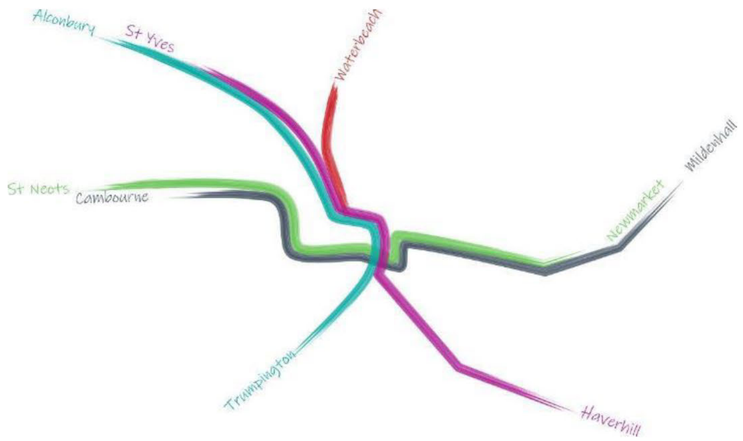
✓ Reduce walking time underground
- Reduce platform level depth
- Compact the station

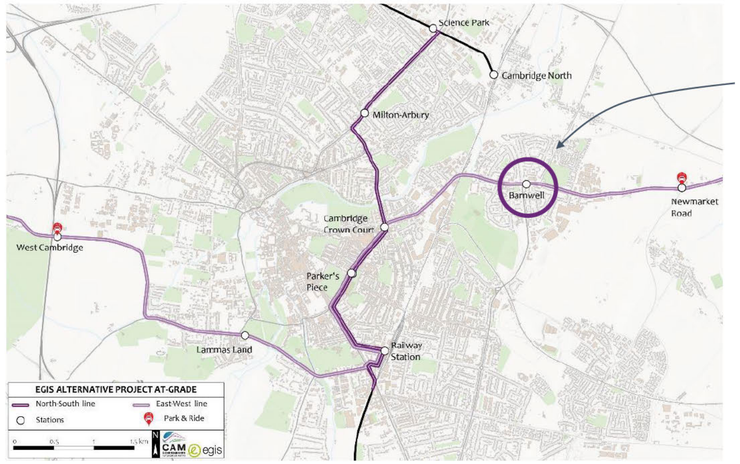
✓ Reduce the tunnel complexity
- Optimise the number of tubes
- Reduce the tunnel depth

✓ Reduce the investment cost
- Around £ 170 M

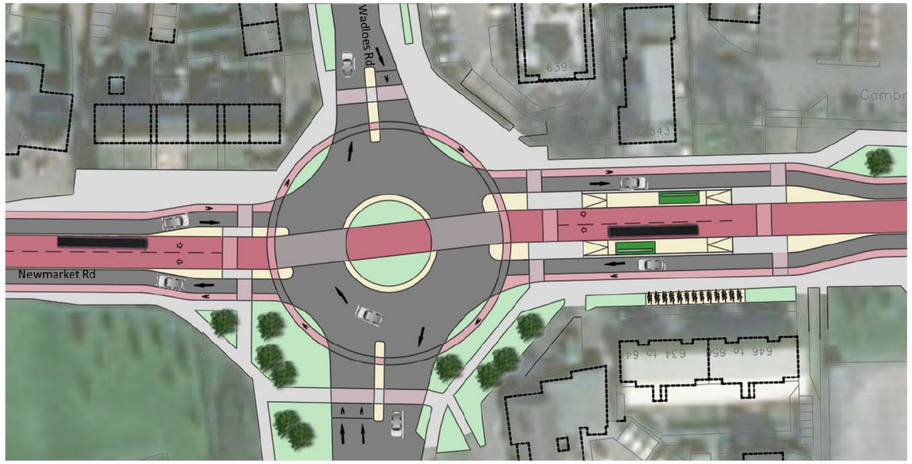
Cambridgeshire Autonomous Metro

TWO OPTIONS WITHIN CAMBRIDGE: TUNNEL AND AT GRADE





BARMWELL CAM STATION



AT GRADE ROUTE ANALYSIS

- ✓ Enhance the transportation network coverage and attractiveness
- ✓ Improve Cambridge urban realm and identity
- ✓ Support modal shift, reduce car traffic and pollution within Cambridge
- ✓ Create cyclists and pedestrian opportunities
- ✓ Protect the environment
- ✓ Maximise value for money

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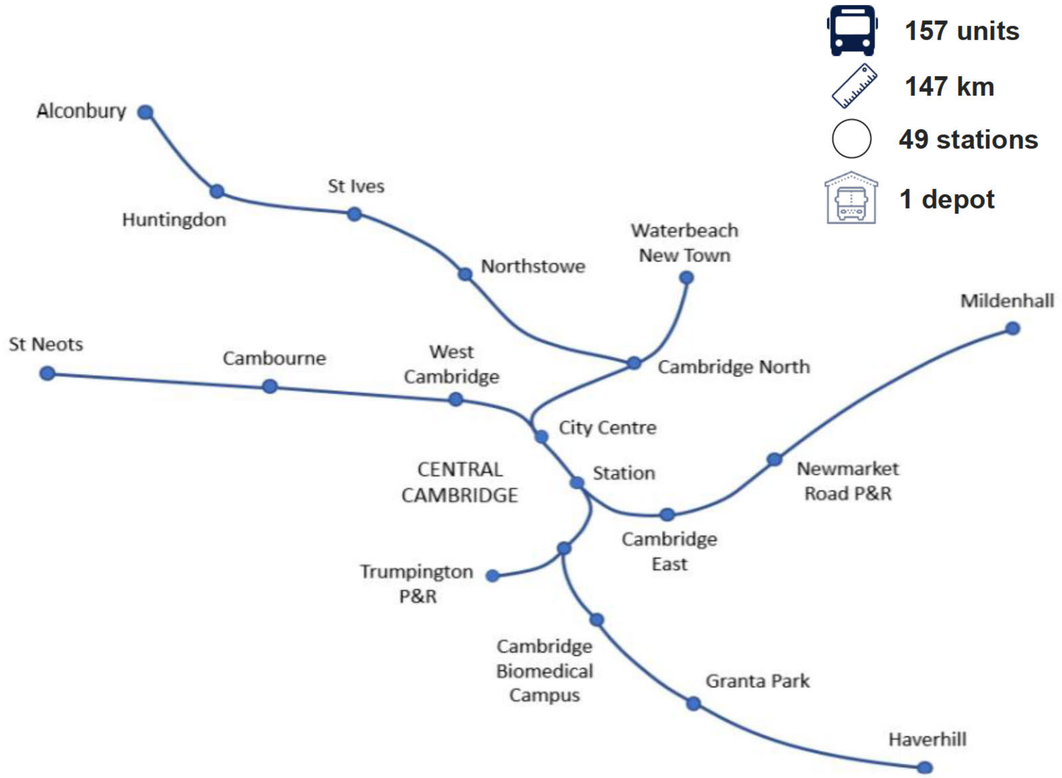
CAPITAL AND OPERATING COST



CAPITAL INVESTMENT COST:

TUNNEL OPTION:
- ✓**£ 2,667 M**
  (tunnel: £ 1,608 M)
- ✓**£ 18.1 M / km**

AT GRADE OPTION:
- ✓**£ 1,059 M**
- ✓**£ 7.2 M / km**

OPERATING COST:

TUNNEL OPTION:
- ✓**£ 75.4 M / year**
  (tunnel: £ 780 k/year)

AT GRADE OPTION:
- ✓**£ 74.6 M / year**

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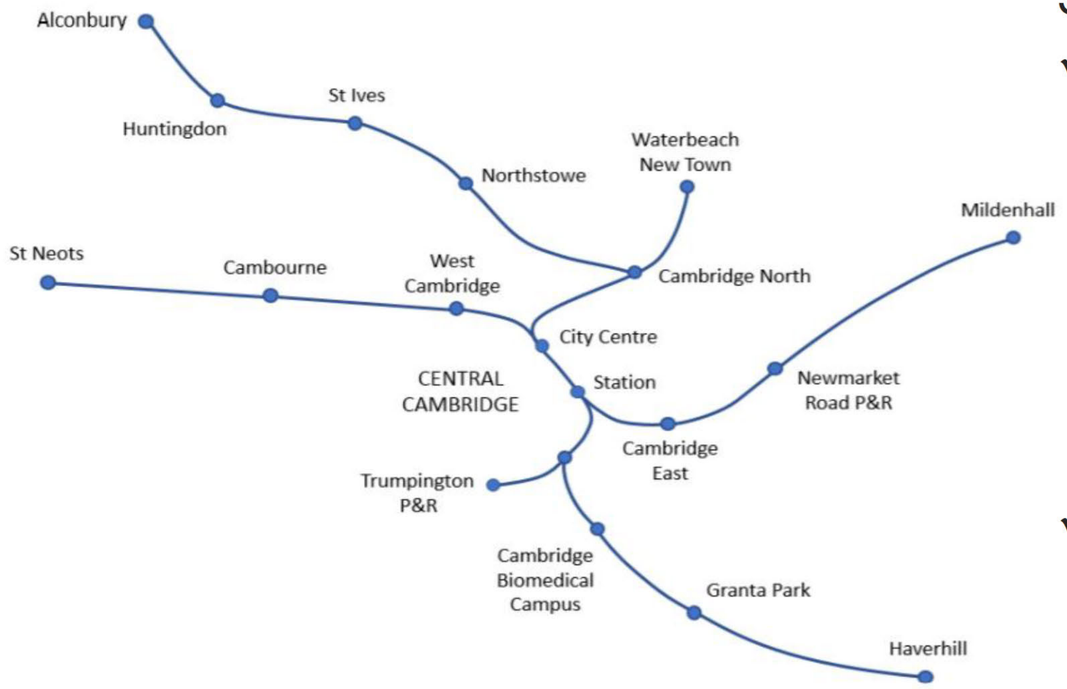
FURTHER STEPS: TRIAL OF ON-DEMAND TRANSPORT ON SPECIFIC AREAS



Stage 3: introduction of new vehicles and services

✓ Mixed vehicles fleet

Capacity 20 passengers

Capacity 110 passengers

✓ Commercial services:

- Peak hour: scheduled services
- Off-peak hours: on-demand services on lower demand branches
  - Departure triggered by % capacity request
  - Minimal frequency ensured


CAM FUTURE VISION
EGIS