

Cambridge creating a driverless public transport blueprint for the world

Mayor aims to harness the city's technology skills to develop an innovative transit system

Cambridge and Peterborough Combined Authority is looking to use autonomous vehicle technology to create a public transport network of the kind expected in a major city at a fraction of the cost.

Cambridge's economic progress has grown exponentially over the past 40 years as the best scientific companies and academics have been attracted to the city alongside international life sciences and technology businesses keen to recruit some of the best minds in the world.

However, house price increases in the centre of Cambridge have displaced many residents who now commute by car from towns and villages on the outskirts, leading to a congested rush hour full of idling vehicles, flanked by a flow of irritated cyclists.

Mayor James Palmer thinks the Cambridgeshire Autonomous Metro (CAM) is the solution to linking the garden towns, hospitals and science parks surrounding Cambridge to the centre of the city,

without the level of investment or disruption caused by something like a light rail system or a dual carriageway ring road.

The radical project would tunnel under Cambridge to create a network of dedicated roads that use what would likely be linked autonomous electric pods to transport commuters from an initial four locations by 2030, to an expanded 23-stop route in the future.

Palmer wants to eventually link the whole of Cambridgeshire, including Peterborough with CAM.

These pods would be driverless, run 24 hours a day and would use dedicated tarmac roads, rather than any kind of rail system to provide transport, initially for 7,000 passengers an hour.

Cambridge has a population of around 130,000 and so creating a public transport system that works for what is a relatively small population, that also has the ability to scale for future growth has been one of the key challenges facing the scheme.

Palmer says: "The traditional thinking is that you

need half a million people or more to enable a world class public transit system.

"We think through technology, drive and ambition we can challenge that and make something uniquely suited to Cambridge that can stand up to Berlin, Tokyo or San Francisco."

Given CAM is unique and there is no precedent for this kind of transport system, Palmer says that can make it difficult for sceptics to understand.

The combined authority has formed a Special Purpose Vehicle (SPV) called One CAM to help deliver the scheme and this is chaired by renowned civil engineer Lord Robert Mair.

Lord Mair's experience includes being involved in the design and construction of London's Jubilee Line Extension, HS1 and Crossrail.

He is currently advising on design and construction aspects of HS2 and has worked on metro projects in Amsterdam, Barcelona, Bologna, Florence, Hong Kong, Istanbul, Rome, Singapore and Warsaw.



Palmer says: "If you free up the centre of town from commuters, the opportunity to introduce further cycle lanes and pedestrian routes opens up significantly."

"We know the majority of people driving in Cambridge are trying to get across the city, rather than wanting to visit the centre."

Palmer also links delivering a net zero Cambridge with CAM too, citing that it will only be possible with a clean transport network that can help deliver significant decarbonisation.

He says: "Without CAM, Cambridge will be piling the same old transport solutions through the same corridors that can't cope with it."

"Yes, you can deliver electric or hydrogen buses, but it's not going to solve the problems of congestion."

One CAM is also currently recruiting a chief executive to join the scheme.

One of the additional challenges about a driverless public transport system is that, as it stands, UK law would currently prohibit this system.

The success of CAM is also based on the assumption that the Government will progress with introducing new legislation to allow the testing and operation of fully autonomous vehicle technology within the next 10 years.

Palmer says: "If we get this right, it could be a catalyst for similar schemes all over the UK and the world."

DESIGN AND INVESTMENT

The combined authority has recently issued a call for ideas to find creative and feasible conceptual designs for the whole CAM scheme, including the pod vehicles, infrastructure and autonomous technology.

The winning ideas and high-level concept designs are planned to be shared in February 2021 and this will then kickstart the statutory and business case process, which will lead to future consultations.

Based on the business case modelling and inputs so far, it's expected CAM will cost between £2 billion and £4bn, but Palmer says further work on the scheme would refine this estimate.

Palmer adds: "I never set about delivering this scheme with the Treasury to fund the entirety of it."

"We've looked at how other parts of the world fund transport networks, including tax incremental funding and business growth facilitated by CAM."

"There is the opportunity to raise several billion pounds within the Cambridgeshire economy."

One CAM has already had discussions with investors in the UK and globally and Palmer is expecting seed funding from the Government.

One CAM is in regular talks with the Department for Transport (DfT) from a technical and business case perspective.

Palmer says: "We're happy for the Government to fund the whole thing and that's entirely achievable, but we're also comfortable with attracting private investment."

He added that the benefit-to-cost ratio is also dependent on delivering the entire scheme, which is what inspired the name for One CAM.

LINKING TO ACTIVE TRAVEL AND NET ZERO

A future where CAM is fully realised could have a bus network outside of Cambridge that would feed the metro stations on the city outskirts.

Cambridge is currently trialling e-scooters with provider Voi and Palmer expects to link e-mobility hubs and cycle routes with main CAM stations.

THE BIGGEST CHALLENGES TO PROGRESS

Challenging conventional thinking and winning political battles will be two challenges that need to be met to deliver CAM.

The University of Cambridge, which owns a lot of the property surrounding the city centre will also need to come on board if CAM is to come to fruition.

The university has so far not shown a preference for CAM, but Palmer is hoping that having Lord Mair, a Clare College alumni, on board may help open some doors and he expects its support as the scheme progresses.

Palmer believes the success of CAM is intrinsically linked to continuing to attract large science and technology businesses to Cambridge in the future and without it, these companies will instead head to Shanghai or Silicon Valley.

From Palmer's perspective, the skeptics of CAM are not coming up with a long-term alternative



Lord Mair might help open doors

that would solve Cambridge's transport problems.

Opposing ideas come in the form of improved bus networks and expanded park-and-ride services.

Palmer believes park and ride systems "just move the problem somewhere else".

He contends that expanded park-and-ride services will still require costly road and infrastructure upgrades.

Palmer says: "If you're going to deliver a scheme of this size and ambition into somewhere that's not had any significant transport investment for a generation, there is going to be significant skepticism."

"The politicians will come and go, but the challenge will not. If we don't solve this, it's clear that the £5bn the Cambridge economy generates each year faces being set back 20 or 30 years."

"That's not something the Government can risk and it's not something I want to see happen."



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Cambridge and Peterborough Mayor James Palmer