

A report by Thames Valley Forum
with contributions from Stantec

Shaping the Future Transport Network for the Thames Valley

Ideas for a Green, Inclusive
and Vibrant transport network
linking the region together
and with the rest of the world

March 2021

Thames
Valley
Forum

Introduction

- Context and aims
- Geography and transport governance
- Executive summary
- Report structure

Context and aims

Transport requires new ideas given the impact of the Covid-19 epidemic, the rise of working from home, the importance of addressing Climate Change and the levelling up agenda.

We need to create a clean growth vision for the future based on a thriving green economy, which benefits all residents in the region. The transport network needs to be integrated between modes and have the customer at the heart of every journey for it to be a true success.

The Thames Valley region needs particular focus given its complex commuting patterns, connections to the aviation industry, pockets of localised poverty, and economic importance to the UK -all balanced against the need to level up other parts of the country meaning it may not receive the Government attention and investment required to support potential future economic growth.

AIMS

This report seeks to provide a vision for what a green, inclusive and vibrant future might look like with a customer centered integrated transport network.

This report sets out to achieve a shift change in how transport is viewed in the region, taking into account the impact of Covid-19, Climate Change, the need to be inclusive and create an economy and society fit for the future.

The report combines the future vision with real examples of best practice and innovation that are taking place today within the region, and in other centres around the UK.

The report is to introduce new ideas to move innovative thinking to the mainstream and create a series of recommendations which Thames Valley Forum can then take forward as the 'Think and Do Tank' for the region. The ideas put forward here are offered to start a conversation about new ways of thinking and what can be achieved by the region working together.

This report provides a vision of the future and some of the component parts to create the vision. The next challenge will be to develop these component parts and put them together to realise this vision.

We will take this challenge forward in a new initiative 'Thames Valley Transport'.

Geography & transport governance

The Thames Valley is defined by Thames Valley Forum as a western segment coming out from Heathrow covering Berkshire, Buckinghamshire (not including Milton Keynes), Oxfordshire, Swindon and the M3 corridor from Basingstoke to the M25.

This region has naturally evolved over time relating to geography, economic development, cultural ties, transport, and housing. However, in recent years there has been a move away from thinking about the Thames Valley region with either more localised approaches, or by dividing the region between the northern part and the southern part.

This move has been most clearly seen in transport with Berkshire and the M3 corridor becoming part of the 'Transport for the South East' sub-national transport body, while Oxfordshire, Swindon and Buckinghamshire have helped to form 'England's Economic Heartland', which reaches across to Cambridge as part of the Government supported Arc project.

Thames Valley Forum supports the work of these sub-national transport bodies, however it does raise the importance of voices for the region articulating and promoting a Thames Valley perspective to ensure strategies and investments do not end at borders and instead reflect the economic and geographical realities of the region.

METHOD

This report sits alongside other Thames Valley Forum pieces such as on housing and the economy. The better we make places removes the requirement for people to travel further for work or leisure. This report also picks up on Thames Valley Forum's ideas on the economy, for example by connecting towns and ecosystems within the Thames Valley better.

This report was created by research, interviews, original thought, and close collaboration with partners.

An assumption has been made that the Covid-19 crisis ebbs away during 2021, but that many practices such as remote working remain in place.

Executive summary

The report sets out a vision statement around a shared transport network which has sustainability at its core and supports inclusive economic growth.

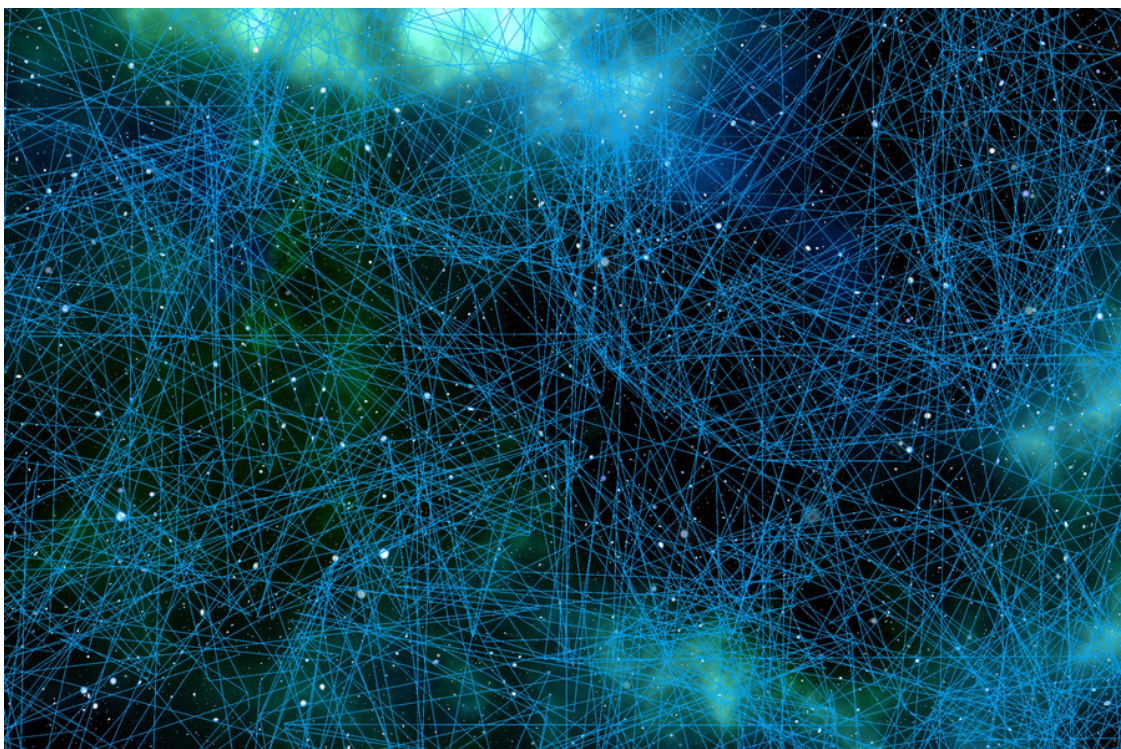
It takes in the key macro-economic trends and issues such as Climate Change, Covid-19 and inclusivity and the need to integrate transport with related areas such as the economy and housing.

It sets out a vision statement of the future network and describes a picture of that vision around the role of shared and integrated transport as a service. This is to help create a green, inclusive and vibrant transport network linked within the region and to the rest of the UK and the world.

It then looks at the latest developments and best practice across three levels:

- Connecting the region to the wider UK/world, such as aviation and major railways routes
- Between the towns of the Thames Valley, such as the local train network and electric vehicles
- Within the towns, looking at aspects such as buses and autonomous vehicles

The report concludes with an initiative, Thames Valley Transport, to take forward the vision and issues raised in this report and in the wider transport arena.



Report structure

V

Vision

1

Strategic, international and national

2

Within the region

3

Within towns

Taking this work forward through 'Thames Valley Transport'

References and interviews



Vision

- Vision of future transport in the region
- Thames Valley Shared Mobility System
- 'A Day in the Life'



Vision

The Thames Valley of the future will look different to the region today. In some ways we can make predictions based on long term patterns and Government investment, for example growth of the Oxford-Cambridge Arc, but in many areas there are great uncertainties around population size and movements and nature of economy due to the impact Covid-19 may have in the long term and the impact of Brexit.

As per Thames Valley Forum's housing and economy reports, it is possible to state a desired future and then break-down the key factors in reaching that vision to seek to understand how we can help to achieve the future we desire.

The vision for the Thames Valley economy as set out in Thames Valley Forum's Charter is 'Green, Inclusive and Vibrant'.

That vision for the overall economy perfectly captures the requirements for the region's future transport network. We need a transport network that is 'Green, Inclusive and Vibrant' and is linked within the region and to the world, i.e:

- Linked within the region including between towns and within towns including to employment areas, cultural and social locations
- To the UK and the world including London, Heathrow and the seaports

We believe shared transport has to play a bigger role in the future if we are to achieve net zero carbon creating a 'Thames Valley Shared Mobility System'.

Seamless interchange will be needed to make travel in the future attractive.

Therefore the report vision statement is to be

VISION STATEMENT

"A green, inclusive and vibrant transport network linking the region together and with the rest of the world. This means a green network that is as low as possible in carbon emissions, which is inclusive for all parts of our society and supports a growing economy. It does this by better joining the region within the area and connecting to London, the rest of the UK and the world. It should be a network that puts the resident at the heart of the network and seamlessly connect between transport forms in a shared mobility system."



Thames Valley Shared Mobility System



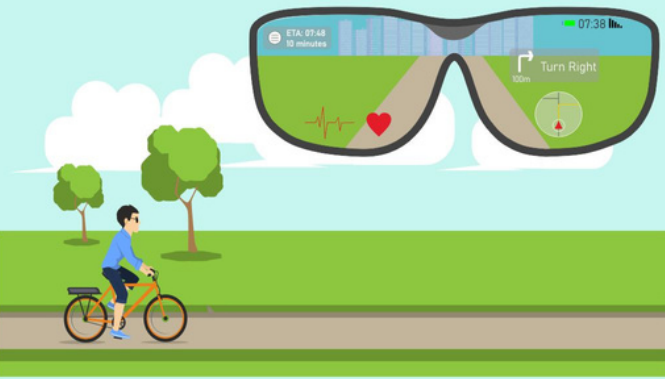
Stantec - thank you to Stantec for their contributions and graphics including the Thames Valley Shared Mobility System, A day in the life series, and 2069 visions.

A day in the life of ...

Jim from Reading

Jim lives in Reading and is meeting the executive of his company at Heathrow Airport. Jim has a lot of business meetings outside of Reading planned, following a splurge of requests from his clients and colleagues to meet face-to-face rather than virtually.

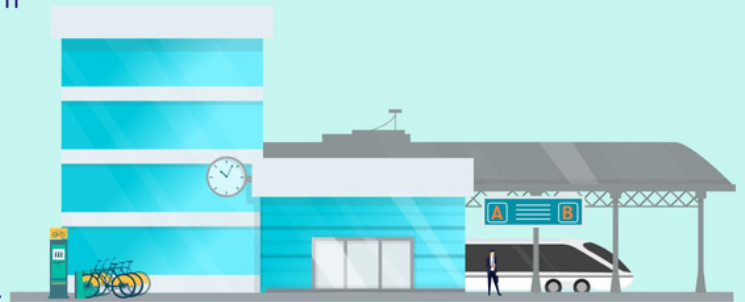
Jim uses the 'Commuter Package' subscription through his Thames Valley Shared Mobility (TVSM) app, via his AR smartglasses. This syncs his work and social schedules to easily plan his travel arrangements around specific engagements. The TVSM app provides him some travel options. He selects the first option, which best meets Jim's preferences he selected when he signed up to the subscription.



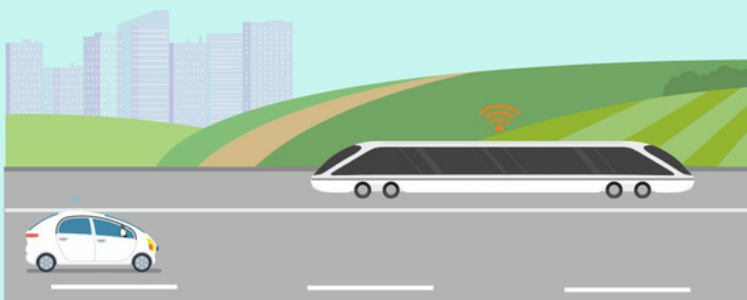
The first leg of his journey is by **E-bike**, which, via the TVSM app, will be ready in a virtual dock at the end of his street. His AR smartglasses unlock the **E-bike** via Bluetooth technology and then he switches them into navigation mode. He cycles to the **Reading Transport Hub**, via the route advised by the TVSM app, based on his selected preferences on route types. The route takes him on a range of well-signed, dedicated cycle routes and quiet streets, avoiding emergency road works due to a burst pipe.

At the **Reading Transport Hub**, Jim is able to leave the E-Bike at a designated charging point where it will then be ready for its' next user.

The second stage of his journey is via the **Advanced Rapid Transit**. Jim chose to arrive early, so he can use the facilities at the hub to change his clothes, freshen up and buy some breakfast (pre-ordered on his AR smartglasses), before boarding his planned Advanced Rapid Transit connection to Heathrow.



The **Advanced Rapid Transit** whizzes him along the M4 corridor to Heathrow in 15 minutes. The onboard 5G provides him a fast and reliable connection to all his documents on the cloud which he is able to view on his AR smartglasses and edit via his hologram keyboard. He arrives prepared and relaxed for his meeting



Jim arrives at his meeting on-time, and although it was long, it was successful. Afterwards he travels home to Reading using the **Advanced Rapid Transit** again and plans tomorrow's journey. He also orders food via voice command through his AR smartglasses to be delivered once he is home and showered. He opts for a **pedal cycle** from the station to home to get his daily exercise, as it is too late for to go to the gym. Dinner is delivered by a delivery bot to his front door on time, but more importantly it is still hot!



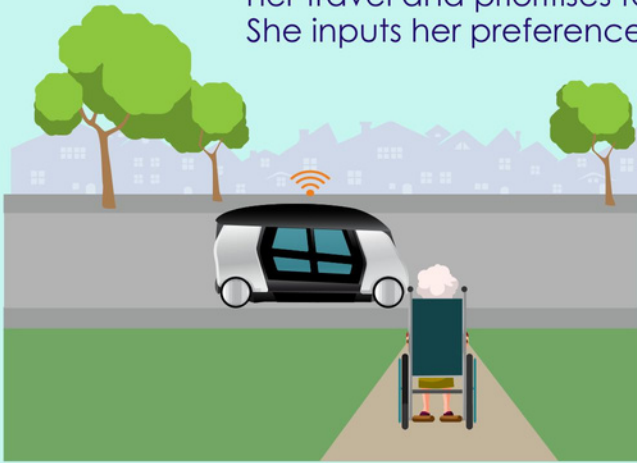
V

A day in the life of ... Janet from Witney

Janet is in her 80s, lives in Witney and is mobility impaired so uses a wheelchair. She wants to visit her son Steve, and his partner Adam who live in Birmingham together. Steve suggests that she downloads the Thames Valley Shared Mobility (TVSM) app via her AR smartglasses he bought for her last Christmas, as it will make it quick and easy to book transport that is accessible and convenient for her. She has reservations as it's new and she is worried that she will be stuck somewhere without his assistance, but Steve convinces her to try it.



She uses the app and registers on a 'pay as you go' basis because she is not sure how often she might use it in the future. She is happy to pay premium for her travel and prioritises factors such as comfort and leisure in a **personal shuttle**. She inputs her preferences, and a journey plan is set up and arranged for her.



Firstly, she is taken to the **Oxford Transport Hub** via a **personal autonomous shuttle**, which picks her up from her house and is capable of comfortably accommodating her in a wheelchair. The shuttle drops her at a dedicated bay directly outside the entrance to the Hub, where she wheels out of the vehicle and into the Hub building. Inside, she selects a virtual magazine to read for the rest of her journey.

The second part of her journey is via the **Maglev** which takes her to the **HS2 Thames Valley interchange** in minutes. **Maglev** trains have step-free access and are spacious inside, so she is able to find a wheelchair space at a table without assistance.

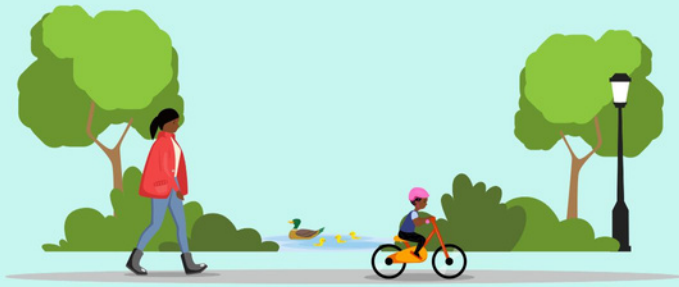


At the **TV HS2 interchange**, she uses her app which directs her via a step-free route, from the **Maglev** train to the **HS2 train** that she needs to board. The app has booked her a wheelchair space in carriage B where there are platform staff nearby for help and a ramp system in the doorways. Her AR smartglasses navigate her to carriage B. Being the newest station on the HS2 line, the platforms are level with the trains, and therefore Janet is able to board with no assistance.

HS2 takes Janet directly to Birmingham in 25 minutes, where she meets Steve and Adam who pick her up and take her back to their home. She doesn't want to admit it to Steve, as she's stubborn, but secretly she thinks that this new transport system is brilliant and is glad that visiting her family can now be really easy.

A day in the life of ...

Melissa from Iffley



Melissa is a doctor who works at the John Radcliffe Hospital in Oxford. She lives in Iffley on the outskirts of the Oxford urban area with her husband Samuel, and two children. Melissa has the Thames Valley Shared Mobility app which she can access on her home hub. She has the monthly 'Family Package' subscription, which includes a **school shuttle** service that takes her eldest child directly to secondary school from their house. She receives an alert when her son arrives at school. She and Samuel will also receive an alert when he leaves school, which might be after football club or after school club.

On her way to work, Melissa walks her youngest child, Bethany, to primary school. Melissa loves walking through the park, where they watch the ducklings on the pond and other wildlife. Bethany is also collecting points on her 'Street Tag' game, so she runs off ahead to play in the playground to increase her score. Bethany is hoping to have collected the most points in the class this week to win a prize.

After dropping Bethany at school, Melissa walks to the **local centre transport hub** nearby, where she grabs a cup of coffee and boards the **Metro**, which takes her directly to the John Radcliffe. She makes use of the on-board 5G network and catches up on some emails via her AR smartglasses before starting her day at the hospital. Her app warns her to prepare to alight at the next stop, so she packs her things away.



The **Metro** stops just outside the hospital, with a short walk into the entrance, she is on time for her first appointments and ready to see what challenges the day brings.



That morning, a patient takes a turn for the worst and emergency surgery is needed. Melissa is rushed into action, she needs a blood delivery, NOW! She uses the hospital system to order the blood she needs from another hospital. The blood is quickly delivered by emergency **drone**, taking half the time that a motorbike would, and in this case helps to save a life. Melissa counts her blessings that she is fortunate enough to be a doctor in this time where technology enables her to work super efficiently.

Not long after the successful surgery, the school contacts her to say that Bethany is unwell and needs collecting to go home. Samuel is out on site working in Bristol and so would not be able to collect Bethany as quickly as Melissa. She uses the TVSM app and books a **personal shuttle** to quickly leave work and pick Bethany up. The shuttle waits outside school and takes Melissa and Bethany home.



V

A day in the life of ... Raj from Swindon

Raj lives in Swindon with his parents and is about to leave for university in Edinburgh. He subscribes to the 'Student Travel Package' that provides discounted fees and doesn't have a set monthly cost. He has prioritised cheaper options of travel to get him on his way to Edinburgh, as he not fussed what time he arrives. He also confirms via the app that he has two suitcases with him.

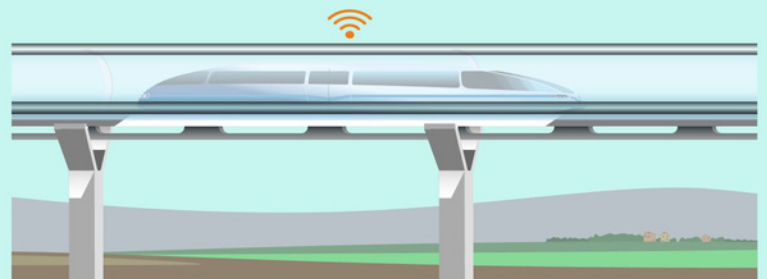
For the first leg of his journey, the TVSM app books a **shared autonomous shuttle** to travel to **Swindon Transport Hub**. The shuttle picks Raj up from his house, along with three other passengers along the route, who all share the cost of the journey.



At the **Swindon Transport Hub**, Raj is directed via a step-free route to help with his luggage, to board the **Maglev**. He was offered the option to use a **bot** to transfer his luggage to the **Maglev**, but he opts to take it himself. He is directed via his AR smartglasses to a carriage where there is plenty of luggage space, the flush access makes it easy to wheel the cases inside. He locks the suitcases in the store using the facial recognition system and takes the seat which has been allocated to him.

Maglev takes him to the **Oxford Transport Hub** where he has arranged to meet his friend Jennifer, who is also going to Edinburgh University. He is alerted a few minutes before arrival, so that he can retrieve his luggage and alight. The app directs him to a café, where he and Jennifer agreed to meet. They have a coffee and a bite to eat before they continue their journey.

The final leg of the journey is via the **Hyperloop** which they can board at the **Oxford Transport Hub**. This time they elect to use a **bot**, as they have so much luggage between the two of them. The **bot** takes the luggage to a secure carriage, where they can retrieve it later. They find their pre-booked seats and get comfortable. They arrive in Edinburgh in around an hour and half, having had a really good catch up about their holidays.



A **shared autonomous shuttle** takes them and a few other passengers to various stops on the way to their student accommodation.

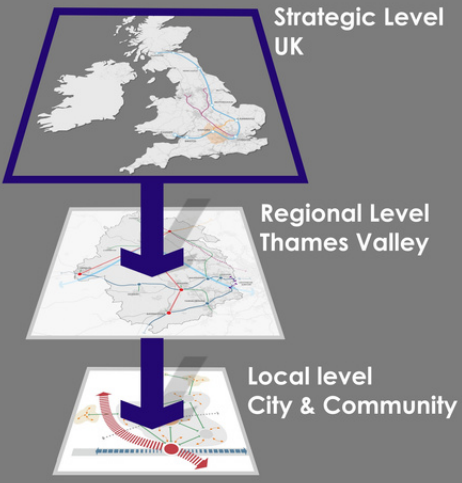
Raj has been known to get a little homesick, however he knows that although he is far away, it will not take him long to get back home if he needs to, using his TVSM Student package. This gives him boosted confidence and helps him to enjoy his time at University just that little bit more.



1. Strategic international and national links

- 1.0 2069 Strategic Connections to Thames Valley
- 1.1 Aviation
- 1.2 Rail links to airports
- 1.3 Rail links to the rest of the UK
- 1.4 Freight and logistics

2069 Vision for Strategic Transport Connections to Thames Valley



- Thames Valley
- Scotland-Wales Hyperloop
- HS2
- East West Rail
- Railway
- Motorway

Aviation

The aviation industry has connected the Thames Valley with the world and brought the world to the region. These links form a key part of the region's successful economic future, but in order to support a thriving aviation sector it needs to be as sustainable as possible.

For aviation to be a viable and desirable method of transport in the future it needs to improve its carbon footprint. We need to support Heathrow and the Airlines in becoming as environmentally friendly as possible.



Heathrow's sustainability agenda

Heathrow 2.0 contained the aspiration for growth from the new runway to be carbon neutral. Having already focused on making the airport itself carbon zero, the roadmap sets out the four core areas Heathrow will pursue to improve the footprint of the airlines:

- 1 Accelerating the arrival of new aircraft technology
- 2 Modernising airspace and making ground operations more efficient
- 3 Encouraging the production and take up of sustainable alternative fuels
- 4 Promoting the right carbon pricing to support innovation and developing best practice for offsetting in the UK

Green fuels for airlines

International Airlines Group, the parent company of British Airways, has set out the following commitments to be the leading airline group on sustainability:

- 1 Clear and ambitious targets on climate and noise
- 2 Integrating sustainability into our business strategy
- 3 Maintaining leadership in our non-financial and carbon disclosures
- 4 Excellence in operational efficiency
- 5 Innovating and investing in future fuels, aircraft and carbon technologies

1.2

Rail links to airports

The Thames Valley is close to the two largest international airports in the UK and therefore good access via public transport is critical for both the future economy of the region and also to remove polluting vehicles off the road.

The region needs to support rail access to Heathrow from both the West and the South as well as improvements to the North Downs Line between Reading and Gatwick.

There could also be a case made for buses to play a greater role in providing direct links from railway stations to airports such as Reading's RailAir service.

WESTERN RAIL ACCESS TO HEATHROW

A proposed new direct rail link from the West to Heathrow would improve journeys to Britain's busiest airport.

Western rail link is the proposal to create a direct train line from Reading and Slough to Heathrow providing environmental benefits and supporting economic growth for the Thames Valley, South West, West Midlands and South Wales.

This would dramatically reduce the time to reach Heathrow and encourage people to use the train rather than the car to reach the airport, particularly easing congesting around the busy M4, M3, M25 pinch point.

SOUTHERN ACCESS TO HEATHROW

Heathrow Southern Railway (HSR) is a proposal to access Heathrow from the South Western network.

It would involve the construction of 8 miles of new railway. The organisation behind the project state that "HSR would open up access to and through Heathrow from the south west and south east of England by enabling trains to operate between Heathrow and Waterloo via Clapham Junction, Putney, Hounslow, Twickenham, Richmond, Staines and other intermediate stations; and between Heathrow, Woking, Guildford, Farnborough and Basingstoke."

1.3

Rail links to the rest of the UK

Rail will have a key role in taking people from the Thames Valley to key destinations around the UK.

While commuting patterns may change, it is still of great importance that residents will be able to travel to London in a regular, frequent and quick way to maintain the benefits of having a major global capital city on our doorstep.

Crossrail's introduction puts many towns of the Thames Valley literally on the map as they become part of London's public transport network. Crossrail will provide direct access from many towns to central London, the City and Canary Wharf.

HS2 is the next major national rail project and there is a concern that the region will be bypassed between London and Birmingham. There is potential for Old Oak Common to act as an interchange between the Great Western line, Crossrail and HS2 to provide easier access to the routes and benefits for part of the region.

East West Rail is the major transport development taking place within the region to support the ambitious Arc plans.

EAST WEST RAIL

This is a proposed rail link between Oxford and Cambridge with key stops in-between. This will provide a means to connect these communities and economies in a sustainable and affordable manner.

UK Government recently committed funding for the part of the line between Oxford and Bletchley/Milton Keynes

1.3

cont...

There are new ideas for how to move people from one part of the country to other parts several hundreds of miles away. We should always be open minded to these potential solutions.

HYPERLOOP

The Hyperloop concept associated with Elon Musk may be nearer to becoming a reality than many realise. The first passengers recently travelled on a hyperloop testbed that Virgin Hyperloop have created. The test took place at Virgin Hyperloop's 500 metre DevLoop test site in Las Vegas, where the company has previously run over 400 un-occupied tests.

This test run in November 2020 came as a regulatory path for Hyperloop has become clear with guidance from US transport bodies which also allow for hyperloop to become eligible for federal funding for projects.

MAGLEV

Maglev is trainlike in appearance but runs on magnets to achieve high speeds by removing friction. The technology is currently only used in Asia including achieving speeds of 270mph between Chinese cities.

There is a history in the UK of Maglev with a system operating between Birmingham Airport and Birmingham International Railway Station from 1984-1995.

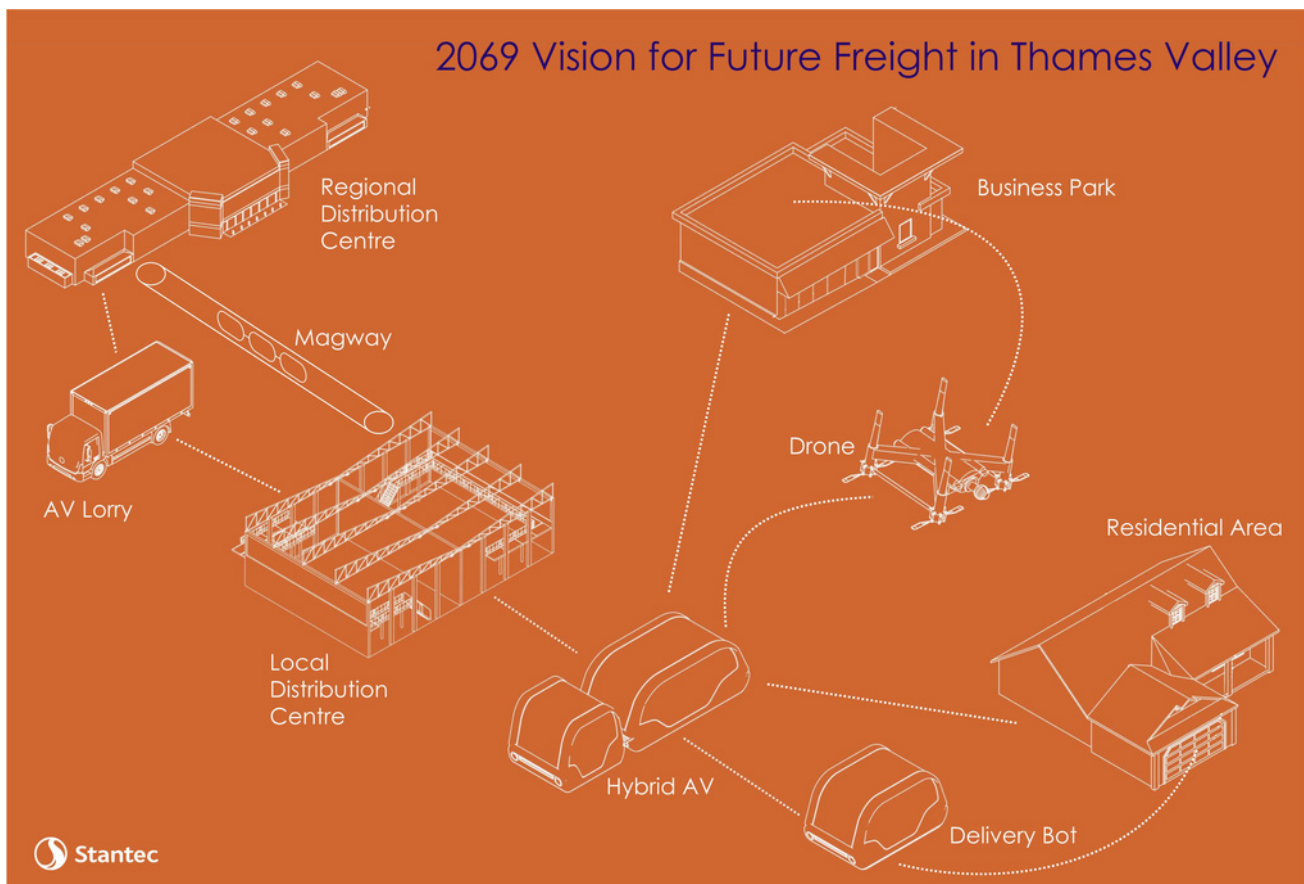
1.4

Freight and logistics

Transport and logistics is likely to be a major growth area in the future. We need to ensure it is as environmentally friendly as possible.

A future integrated freight network could reimagine how we move goods around.

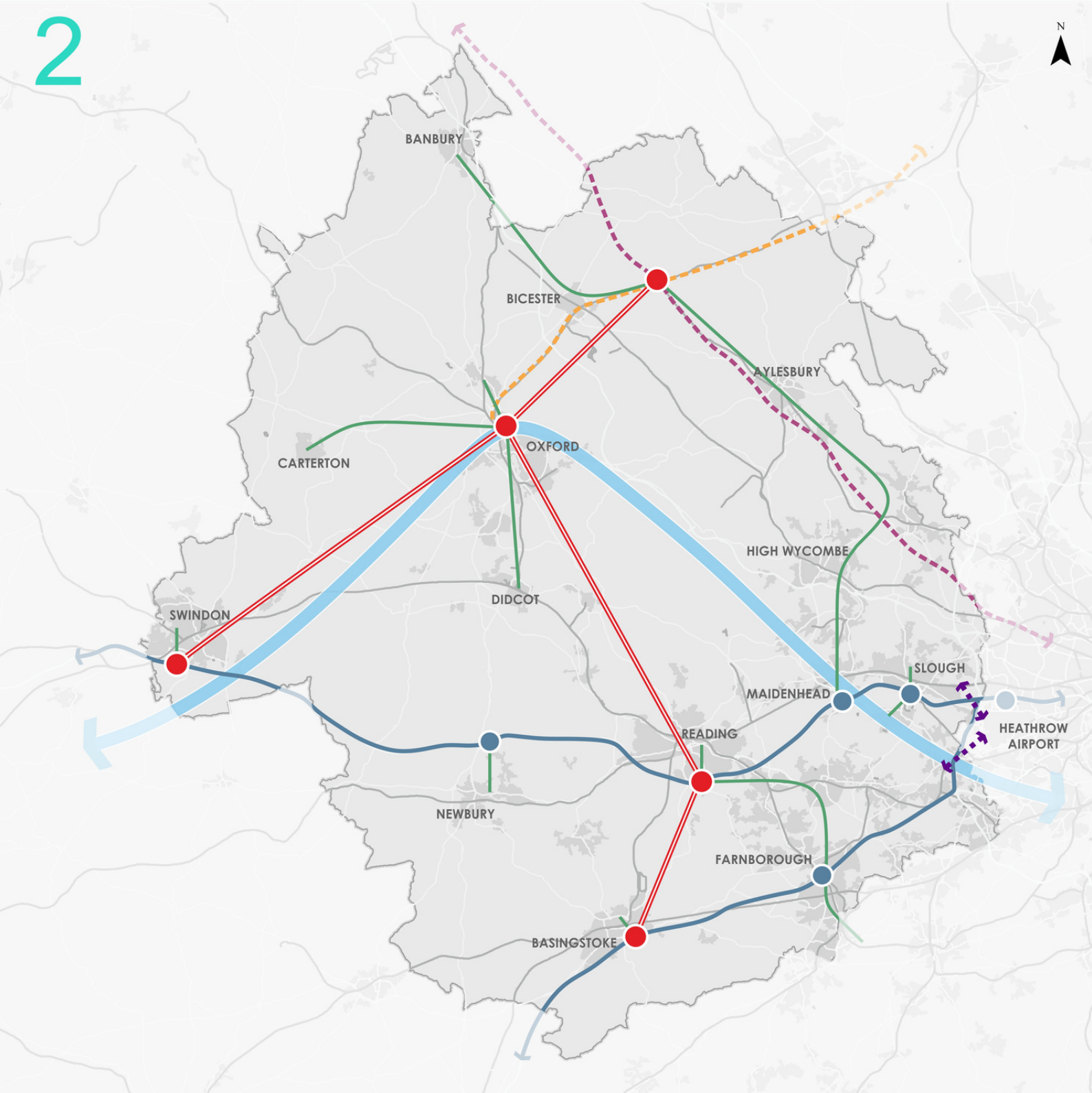
This is explored further in sections two and three focusing on transit between our towns and within our towns.



2.

Connecting within the region

- 2.0 2069 Vision for Regional Future Transport in Thames Valley
- 2.1 An integrated Thames Valley transport network
- 2.2 Railway and public transport
- 2.3 Electric Vehicles
- 2.4 Freight



2069 Vision for Regional Future Transport in Thames Valley



- Thames Valley
- Scotland-Wales Hyperloop
- Maglev system
- Advanced rapid transit
- Autonomous metro
- HS2
- East West Rail
- Western and Southern rail links to Heathrow
- Railway
- Motorway and A roads

2.0

Connections within the region will be as important as to the rest of the UK. Existing routes will need to be enhanced to allow for technological improvements and new forms of transit should create new connections between different towns and cities within the region. This could include:

Advanced Rapid Transit

This system would potentially use fixed prioritised routes and could operate along the outer smart motorway lanes and serve key junctions/interchanges along the route, allowing passengers switch to another mode of transport.

Autonomous Metro

This would potentially be a fixed route system, operating similar to a tram or bus rapid transit service, offering high frequency services within the cities and major towns and out to surrounding settlements.

Shared Autonomous Vehicles

This would be a demand responsive system. Vehicles would range in size depending upon demand. These vehicles can mix with traffic or operate on segregated route. The smaller shuttles can operate at low speeds on residential roads, within business parks, and/or within other types of campuses/centres, and could potentially share segregated cycle infrastructure.

Note: **Hyperloop** and **Maglev** are discussed previously in section 1.3

2.1

An integrated Thames Valley network

The towns of the Thames Valley need to be better connected to each other rather than focusing on links into London.

Just as the Northern Powerhouse seeks to add value by connecting the cities of the North, the Thames Valley region can become much more than the sum of its parts by connecting better within the region.

SOLENT TRANSPORT CASE STUDY

Solent Transport runs two products to improve travel in the region which have had high usage:

My Journey, a one stop shop for all travel information about different travel choices available to the public for journeys in Southampton, Portsmouth and Hampshire

Solent Go, a multi-operator public transport smartcard/mobile app, allowing seamless journeys across the Solent area by bus and ferry

Ideas

1

[A tube map for the Thames Valley.](#)

A map of the major towns in the region and how they are connected to each other by public transport could be created. This will help create the feel of one interconnected region as well as highlight the gaps that remain between certain towns.

2

[An app for travel in the region](#)

To go alongside the regional transport map there could be a Thames Valley travel website and app, similar to the Transport for London website, which helps people identify how to make their journey by public transport.

2.2

Railway and public transport

Railway connections between our towns are currently well provided, but there remains some areas that would make a difference such as improvements to branch lines and stations such as Bourne End and Marlow plus electrification continuing to Bedwyn. Improvements in train wifi have taken place in recent years, but with the rise of remote working and laptop provision there could be even greater wins with further enhancements.

The electrification that has taken place has improved the carbon footprint of the trains on the Great Western Railway and these are due to further improve with Hitachi Rail offering innovative battery solutions to be trialed on the network.

The Cowley branch line in Oxfordshire would help connect the centre of Oxford with key parts of the economy and housing in the City.

There could also be a greater role for buses in connecting our towns better together where new rail links are not possible.

FLEXIBLE SEASON TICKETS

The idea of flexible season tickets has gained prominence due to the rise of remote working since the first lockdown. Previous rigid ticketing approaches meant that routines such as two or three days travelling into the office per week were less cost effective. Flexible season tickets that take a per usage approach could in future be used as the basis for a 'mobility as a service' approach.

2.3

Electric vehicles

The Government has set out that diesel and petrol car sales will be banned from 2030. This goal can be supported but practical requirement is needed to ensure that electric cars are practical to use in every sense.

Green tech has been identified as one of the key future growth areas for the Thames Valley. This can range from the production of electric Minis in Oxford and include the range of tech required for electric vehicles as well as other aspects such as Hydrogen.

The region, as with the whole UK, needs a step change in electric vehicle charging infrastructure.

Electric charging provision needs to consider where people can not easily charge their vehicles at home. Land is key to the roll out of charging points and there is need for an improved dialogue between providers and Local Authorities.

Electric cars need to be more affordable to take their usage into the mainstream ahead of legislation. There are private companies offering a range of products and solutions such as 'Drive Electric' and Carverter which may help in some instances.

Electric car clubs

E-Car clubs act like regular car sharing services, but specialise in electric cars which means their parking point is at a charging unit. There was an e-car club in Oxford from 2013 until 2020.

ELECTRIC VEHICLE CHARGING IN OXFORD

"Go Ultra Low Oxford is a government-funded project which provides on-street electric car charging solutions for residents who are considering buying an electric vehicle or own an electric vehicle and need access to electric charging points to charge their vehicles but have no driveway.

Part of the Office for Low Emission Vehicles funding has been used in the now concluded pilot phase, where six charging technologies were trialled around the city."

The project now moves to stage two on delivering and installing around 100 chargers over the next two years.

2.3

cont...

HYDROGEN

There is a case for Hydrogen playing a role, especially for larger vehicles or those with high usage. There is a view that hydrogen should even be the dominant technology for cars in the future too.

The Hydrogen Hub works to support the development of the technology in the UK and has a key relationship with Swindon.

“The Swindon Hydrogen Hub has over 30 organisations working together to develop projects to deploy hydrogen and fuel cell technology. Working Groups meet quarterly and are focused on the deployment of different technologies: cars, buses, material handling vehicles and stationary power.

Hydrogen presents the UK with strong prospects for clean and sustainable growth. Its use across a range of energy functions will be fundamental to the future low carbon energy mix the UK requires as it implements its climate change obligations.

The Swindon and Wiltshire Local Enterprise Partnership is a member of the Hydrogen Hub which plans and encourages investment and deployment of hydrogen technologies in the area. With Swindon being home to some of the leading businesses in the hydrogen sector, this deep and specialised knowledge of hydrogen technologies and investments presents the area with a unique advantage.”

2.4

Freight

The transport and logistics sector is becoming increasingly sophisticated driven by the growth in the sector due to internet purchasing.

We have already considered an holistic approach to freight in section 1.4 and Drones are covered in section 3.5.

Other innovations that are likely to play a role include Autonomous lorries and delivery robots.

AUTONOMOUS LORRIES

Self driving trucks may be one of the main adopters of autonomous technology.

The benefits include potentially safer roads by removing the human error factor. The aspiration is for Level 4 and Level 5 autonomy by 2030 with potentially earlier dates for off-peak hour use.

DELIVERY ROBOTS

Delivery robots have been in operation in the UK for the past year. Milton Keynes and Northampton have already begun to receive grocery deliveries from robots.

They are small autonomous vehicles operated by a partnership between Starship Technologies and Co-op stores.

2.4

cont...

Moving goods from town to town is a major growth area, but with an impact on congestion and emissions and therefore innovative areas need to be considered such as Magway.

MAGWAY: HIGH CAPACITY DELIVERY SYSTEM

Magway is an innovative e-commerce delivery system in which individual 'tote' sized loads are transported from origin to destination by linear-motor powered vehicles in tunnels of approximately 1m diameter. Innovate UK funding has enabled significant progress to be made in the development of the Magway technology, identifying potential use cases, engaging with stakeholders and development methods for planning routes and quantifying the economic benefits.

Although the Magway system is very flexible and suited for a wide range of potential uses, its load capacity (size and weight) makes it more suited to particular types of load. It is also particularly attractive to locations where access by road is constrained in some way since Magway has the ability to transfer a large number of items through a very narrow corridor.

3.

Connecting within local areas

3.0 2069 Vision for Local Future Transport in Thames Valley

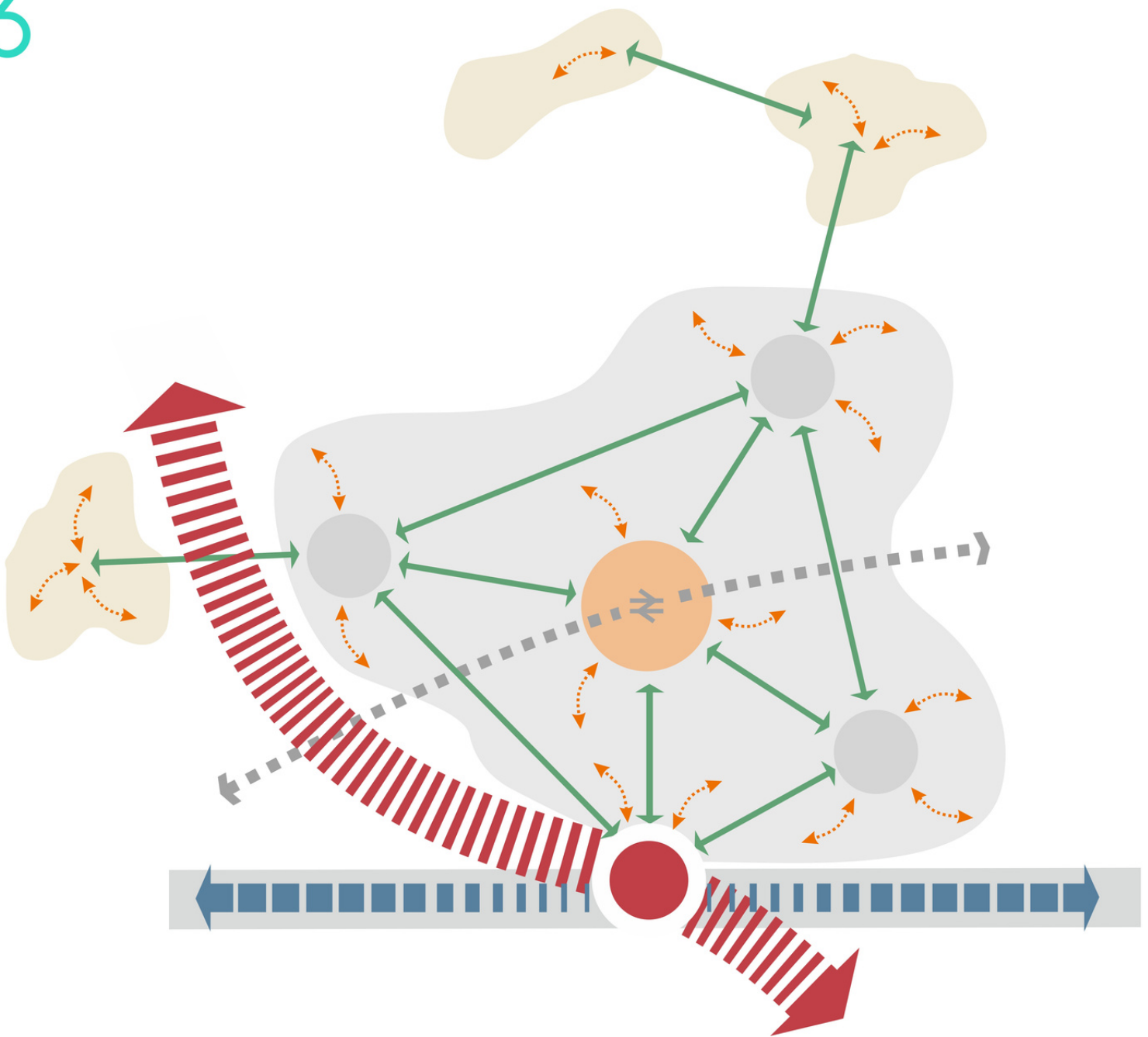
3.1 Active travel – walking and cycling

3.2 Buses

3.3 Autonomous Vehicles

3.4 Micromobility

3.5 Drones



2069 Vision for Regional Local Transport in Thames Valley



3.0

An integrated local transport network including active travel will be an important aspect to the future success of transport including enabling the national and regional links.

We have spent many decades planning for the private car and have created a reliance on this means of transport – resulting in congestion, poor air quality, poor quality places for people to live, work and play. There is now growing acknowledgement of this and many cities and some towns are seeking to create better places for people including reallocating road space and planning for active modes, as well as planning comprehensive public transport systems.

There is risk with the uprising of electric cars, that people perceive that these are ‘clean and green’ and travel more, as result, with the added impact of people potentially not returning to public/shared transport following the pandemic. Private electric cars means a high demand for energy in manufacturing and operation; congestion; and therefore a need for highway and charging infrastructure. Electricity is not fully decarbonised yet and is not capable of accommodating this demand, along with other rising demands for energy. Significant investment is needed to support an electrified future, and we are also at risk of continuing to planning for the car rather than for people.

As we move to electric vehicles, the government will see reducing revenue from fuel tax. It is expected that this will need to be replaced with a road user charge or mobility charge.

Many existing households park their vehicles on-street, and therefore could not install private charging infrastructure. On street chargers could clutter our streets, although induction loops are also being considered. Societal refill stations could be created which could be combined with facilities such as a café and refilling for other household needs.

A seamless shared mobility system is needed, where whilst travelling, our time can either be productive or relaxing. Our total energy demands per person are lower when shared, including manufacturing, operation, and delivery of supporting infrastructure. Similarly, all of us working at home in separately heated homes requires more energy, so there is a balance on reducing on travel and working/studying/socialising in a shared facility.

3.1

Active travel (walking and cycling)

Walking and cycling are excellent modes of transport within towns. Cycling can also be used to join up nearby towns if more dedicated well surfaced off road routes were available.

We need to encourage uptake of walking and cycling as the healthiest and most environmentally friendly forms of travel.

Walking and cycling should be the most inclusive of modes of transport; however cycling needs to have improved infrastructure to encourage more people to choose to cycle. Safer and better lit walking pathways would encourage more people to walk around towns.

Uptakes goes beyond affordability and includes safety, disability and culture. Walking and cycling for practical purposes can be made fun and exciting and made to feel like a formal mode of transport.

There are great examples taking place around the UK with Oxford leading the way in the Thames Valley. Unfortunately the cycle hire scheme in Reading closed in recent years.

MANCHESTER'S ACTIVE TRAVEL NETWORK

Greater Manchester has announced a 1,000-mile £160m walking and cycling grid, including 1,400 safer road crossings and improved footways. This will create the UK's biggest connected walking and cycling network – known as Beelines.

3.1

cont...

OXFORD - A CYCLING CITY

Oxford City Council's Vision 2050 – is to create safe and accessible cycling routes across the city. The plans include to increase cycling as a form of commuting including improved signage and routes.

STREETSPACE FOR LONDON

Streetspace has emerged during the pandemic to help authorities manage the implications. Temporary cycle lanes and wider pavements are among the changes which also include: Adding to the cycle network; Creating new walking, cycling and bus-only; corridors in central London; Widening pavements so people can safely walk or roll wheelchairs past queues outside shops or stations

ELECTRIC BIKE SHARING

Freebike is an electric bike sharing system in the City of London. The advanced system not only includes a motor but also software to allow it to be located at all times and 'paused' by a user while parked.

3.2

Buses

All parts of our towns and counties should have excellent and accessible transport links within their own local communities to involve all parts of community in the economy and society of our towns and encourage sustainable travel.

This local requirement includes the 'first and last mile' of longer journeys ensuring that there are good options available to people to connect between transport modes as part of their travel.

MAKING BUSES GREENER

Reading Buses have always been innovative with their use of fuel including environmentally friendly bio-gas buses which reduce CO2 emissions by up to 84% compared to an equivalent brand new diesel double deck bus.

Oxford, along with Coventry is set to be the UK's first all-electric bus city working alongside the Department for Transport on a bid. Subject to successful business cases, each area could be awarded up to £50 million to not only replace its entire fleet of buses with all-electric versions, but to also install new infrastructure, such as charging stations, and pay for electric grid updates.

The change to a cleaner and greener bus fleet will help improve air quality and reduce emissions, helping further deliver on the government's efforts to decarbonise the transport network, as well as support local businesses and jobs in the UK developing green buses.

THE USE OF APPS AND DATA

Reading Buses has led the way in sharing open data and using innovative apps. It has a 'Tech Lab', which to invite innovators and technology start-ups to test their new ideas in a simulated operational environment.

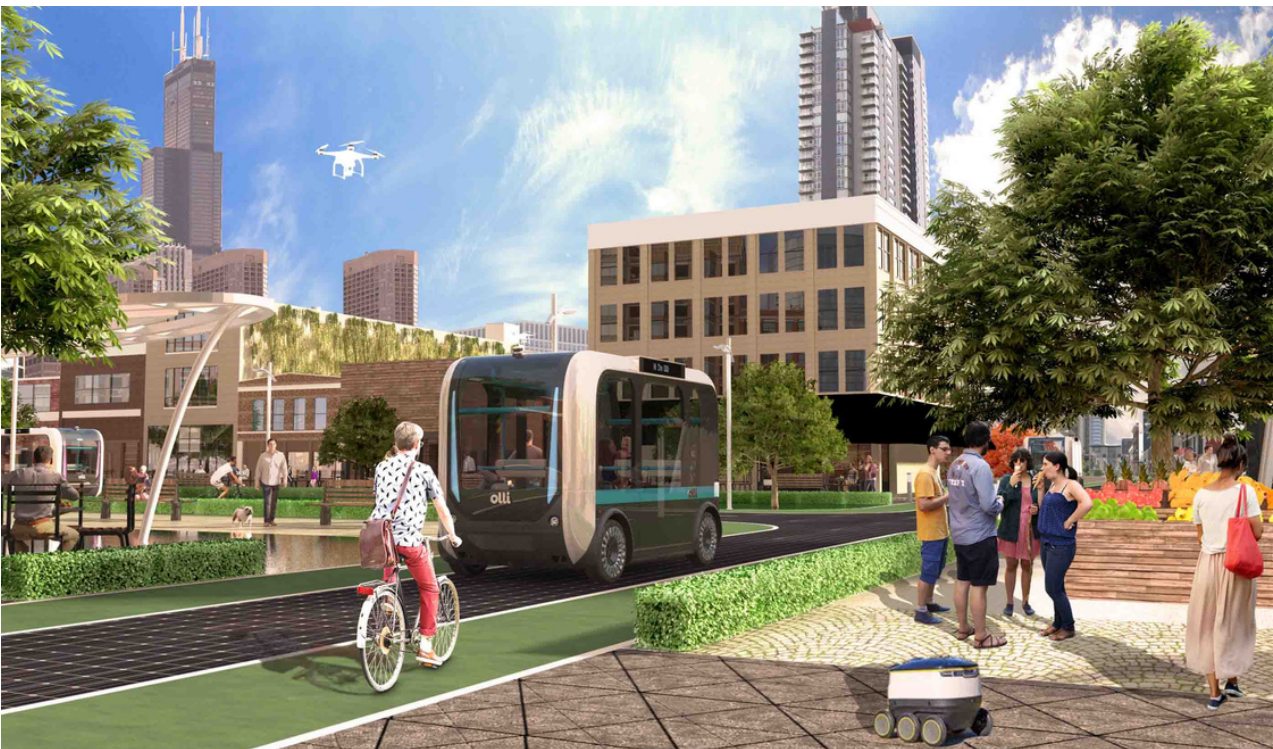
The lab features a bus stop with a real-time information display, a bus arriving including the front of a bus, a ticket machine and a destination display, and the interior of a bus with seating, flooring and screens for visual and audio announcements.

3.3

Autonomous vehicles

Another area for a vibrant economy is Autonomous Vehicles which is an exciting area for innovation. It is also one where the region is world leading with the presence of Oxbotica – the rapid growth company specialising in Autonomous Vehicles and trial areas.

Milton Park is home to an innovative trial of fully connected and autonomous vehicles on public roads. The vehicles are shared electric pods. The County is also home to the Project Endeavour scheme which sees a fleet of six vehicles enabled by Oxbotica to complete a nine mile round trip from Oxford Parkway Station to Oxford’s main train station.



AUTONOMOUS BUS SERVICES

There is a project underway in Cambridge to develop an Autonomous Busway. This will include a Level 5 autonomous 15 seater bus and demonstrate a real transport system for fare-paying passengers during out-of-hours periods.

3.4

Micromobility

Electric Scooters and other forms of micromobility could play a key role as they offer green movement around towns. Given the 'micro' nature these can potentially be affordable if produced in large numbers.

Electric wheelchairs and mobility scooters have had the accessibility agenda at their core from the beginning.

There is the potential for new industries and technology to emerge as we embrace innovative ideas around micromobility. These modes of transport are ideal for travel within towns.

LONDON AND MICROMOBILITY

The London Micromobility Alliance

The London Micromobility Alliance is a new and growing group that seeks to research and promote micromobility (bikes, e-bikes, e-scooters, cargo bikes) in London as a solution to many of the capital's most pressing challenges. They took part in an open letter to the Government asking for more support in the rollout of micromobility vehicles across London.

In October 2020 Centre for London and 18 other organisations published an open letter calling on the government to support the rollout of micromobility vehicles – e-scooters, e-cargo bikes and e-bikes – across the capital.

E-scooters trial in London

London Boroughs are to take part in a ground-breaking trial of electric scooters coordinated by Transport for London and London Councils.

To maximise safety during the trial, the Department for Transport has confirmed that the use of e-scooters on pavements will not be allowed, speeds will not exceed 15.5 mph, and a driver's license will be required – this latter requirement effectively setting a minimum age of 16 to rent one.

Participating boroughs have been granted the power to designate specific areas as 'no go' areas through use of cutting-edge geofencing technology. Scooters will be unable to enter these areas, automatically coming to a safe stop. Scooter speed will automatically reduce to 8mph in 'go slow' areas.

3.5

Drones

Drones have the potential to reduce congestion and pollution by being used to deliver the increasing number of online purchases to residencies.

DRONES IN READING

Reading is taking part in a demonstration on the future of drones for medical reasons. Project XCelebrate is in co-ordination with UK Government, BT and a number of innovative companies and use an 8km corridor to show how drones can operate safely.



Thames Valley Transport

Taking this work forward: Launch of Thames Valley Transport

The work and issues outlined here need to be addressed by a combination of:

- Lobbying UK Government
- Joining up dots locally between different areas
- Encouraging best practice and adoptions of innovation

Thames Valley Transport will focus its initial work on bringing together groups of like-minded partners across private and public sector from around the Thames Valley to discuss best practice and practical solutions in a number of areas such as:

- Electric Vehicle charging
- Encouraging active travel (walking and cycling)
- Better integrating between modes of transport
- Innovative solutions such as:
 - Drones
 - Micromobility
 - Tunnels for hyperloop or Magway systems
 - Autonomous Vehicles
 - Uses of Apps and data

Therefore this report is launching 'Thames Valley Transport' – an initiative to bring together all regional stakeholders, private sector and residents to ensure a transport network fit for the future.

The group's terms of reference, make up and detailed activity will be scoped out in the coming weeks.



References and interviews

References

The following items have been referenced in the report or indirectly helped to inform understanding of issues involved.

Organisation and Topic (hyperlinked)

Basildon Standard - [Gridserve](#)
BBC News - [Reading bike scheme](#) - [Robot deliveries](#)
Carverter - [Carverter](#)
Centre for London - [Micromobility](#)
CIHT - [Better planning](#)
Drive Electric - [Drive Electric](#)
East West Rail - [About the project](#)
England's Economic Heartland - [Transport Strategy](#)
Fleet News - [Autonomous Vehicles](#)
Global Railway Review - [Timetables](#) - [Battery Trains](#)
Go Ultra Low Oxford - [Go Ultra Low Oxford](#)
Gridserve - [Gridserve](#)
Heathrow Airport - [Sustainability agenda](#)
Hydrogen Hub - [Swindon Hydrogen Hub](#)
IAG - [Sustainable fuels](#)
ITS International - [Autonomous Vehicles](#)
Living Reading - [Discussion on sustainability](#)
London Free Bike - [London Free Bike](#)
Network Rail - [Western Rail Link to Heathrow](#)
Oxbotica - [Autonomous Vehicles](#)
Oxford City Council - [Cycling](#)
Oxford Mail - [Mini](#) - [Cowley branch](#)
RAC - [Impact of Covid 19](#)
Railway Technology - [Maglev](#)
Reading Buses - [Environment](#)
Reading Chronicle - [Drones](#)
Smart Transport - [AV Trucks](#)
SMMT - [Apps and buses](#)
Solent Transport - [Solent Transport](#)
Southern Rail Access to Heathrow- [Southern Rail Access to Heathrow](#)
Stantec - [EV](#) - [AV](#) - [Shared AV](#) - [Planning Transport & Development](#) - [Places First 1](#) - [2](#)
Sustrans - [Bike life](#)
Swindon and Wiltshire LEP - [Hydrogen Hub](#)
Transport for London - [Streetspace](#) - [E-Scooters](#)
Transport for New Homes - [Garden Towns](#)
Thames Valley Berkshire LEP - [Smart Cities](#)
The Guardian - [Impact of Covid 19](#) - [Walkable cities](#)
Travel Weekly - [Hyperloop](#)
TVAI - [Urban planning event](#)
UK Government - [Electric buses](#)
UK Research & Innovation - [Autonomous Buses](#)
Virgin Hyperloop - [Passenger testing](#)
World Economic Forum - [Electric trucks](#)

Interviews

Thank you to the following people for speaking to Thames Valley Forum during the creation of this report.

They were part of a wider pool of public, private and third sector leaders that were consulted during this process.

Their inclusion does not mean that they necessarily endorse this report.

NAME	ROLE	ORGANISATION
William Knighton	Stakeholder & Integrated Transport Manager	Chiltern Railways
Kevin Travers	Head of Transport & Infrastructure	Enterprise M3 LEP
Jane Jones	Head of Public Affairs	Great Western Railway
Bob Mountain	Head of Supply Chain & Logistics	Honda Motor Europe
Clare Jackson	Hydrogen Hub Manager	Hydrogen Hub
Robert Williams	Chief Executive	Reading Buses
Conrad Haigh	Solent Transport Manager	Solent Transport
Rachel White	Head of Public Affairs	Sustrans
Bill Hicks	Head of Infrastructure	Thames Valley Berkshire LEP
Dr Hannah Budnitz	Research Associate in Urban Mobility	Transport Studies Unit

Partners

Thames Valley Forum

Thames Valley Forum is known as 'The Think and Do Tank' for the region.

Thames Valley Forum is passionate about the region having a successful future economy that is 'Green, Inclusive and Vibrant' as set out in the New Thames Valley Economy Charter.

We exist to help to address thematic and cross boundary issues by joining up dots between local areas and ecosystems to support their growth and development in both policy and practical ways.

The logo for Thames Valley Forum, consisting of the text "Thames Valley Forum" in white, stacked vertically, on a solid blue rectangular background.

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Stantec UK

We have been working with our clients and communities in the UK for over 150 years. With over 1,700 people working in integrated regional teams across the UK, we plan, design, deliver and manage the development and infrastructure needed to support the creation of sustainable, healthy and prosperous communities.

Our work begins at the intersection of client relationships, creativity and community - providing effective and relevant solutions, translating our client's vision into valued consents, deliverable plans for projects and programmes, and efficient designs for delivery, based on technical excellence and deep market insight.



Thames Valley Forum
www.thamesvalleyforum.org
Company number 12009156

Contact

Ian Binns

Director

ian@thamesvalleyforum.org

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