railfuture

# A NEW GEOGRAPHY FOR EAST ANGLIA


**A set of proposals by Railfuture East Anglia for an enhanced railway in the region, based on the conclusions commissioned from Jonathan Roberts Consulting (JRC) in 2022/23.**

# A NEW GEOGRAPHY FOR EAST ANGLIA

## INTRODUCTION – MAKING RAIL RELEVANT FOR THE FUTURE

Railfuture has worked with JRC transport consultants to produce a vision for the railways in East Anglia. Our work, summarised in the report, is more than a simple shopping list of projects and "nice to haves". The study is intended to understand the ways in which East Anglia is shaping itself, its demography, its economic and human geography. This is an exercise in building the case for why rail is key to a sustainable future for a rapidly urbanising and fast-growing sub-region.

There is a need for a major change in how the region approaches its land use planning and transport planning. This involves taking the two together in terms of a strategic framework to secure a radically different approach to the regional discussions about place shaping, sustainable growth agendas and transport investment. Within this discussion there is an important question to be asked: how can the railways be more fit for purpose to help shape this future?

Whilst the majority of journeys are local, and therefore rail is not appropriate, rail remains the cleanest, most space and energy efficient means of fast and frequent transport between towns and cities and for accessing those conurbations. However, data shows that rail currently carries only around 6% of this long distance traffic, although it is much higher on some corridors. Since the mid-1990s and until the pandemic, rail ridership had been increasing by 40% *more than* the GDP growth per annum whilst the increase in car traffic has lagged at 70% of GDP growth until 2010 and by 90% in the last decade. Since the pandemic, rail commuter traffic has dropped, but leisure rail journeys have bounced back and on some routes volumes are now greater than before COVID.

The Transport Strategy produced by Transport East, the regional transport body, suggests that current strategies will not get transport to net zero by 2025, therefore a new approach is required.

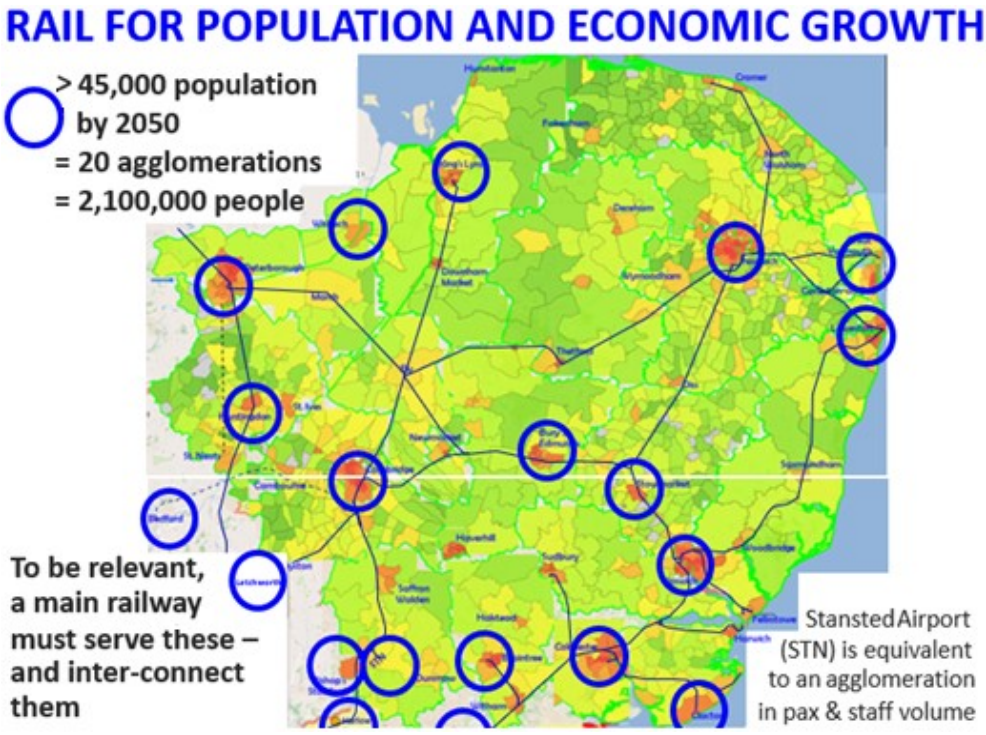
Electric vehicles (EVs) offer the appearance of 'guilt free' motoring, despite the high embedded carbon in their construction. There is a real prospect of increased car traffic if the rail offer is not improved. This is significant when regional hubs such as Cambridge are growing but running out of development land. Victims of their own success, they are experiencing over heated housing markets, traffic congestion and air pollution hazards which greater reliance on EVs will only worsen. This also applies to freight, where growth in online shopping has resulted in an increase in delivery vehicles.

## A CHANGING REGION

The regional geography is changing – from being largely deeply rural to becoming a very significant part of 21st century Britain's economy. Key factors include:

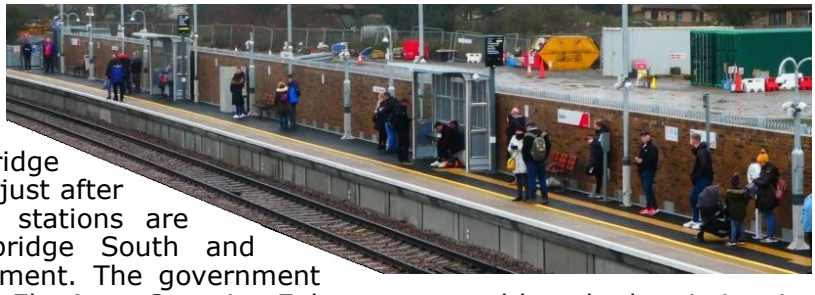
- Acting as an international gateway to the country through its ports and airports
- Becoming a centre for leading research and science based knowledge
- Expanding population and new housing
- Being a net contributor to the national economy
- Reduced dependency on London

The map shows population density across the region. Green indicates low density, red the highest density. Population data shows that the majority of the population, around 80%, live in 43 towns and cities with more than 15,000 people. Of these only four are not on the national rail network (Wisbech, Haverhill, Dereham and Mildenhall). Significant new housing is planned for the region, with most areas growing between 0.5 and 1% per year. There is an opportunity for new developments to bring people within easy access of public transport hubs, rather than disperse them across car dependent small village developments.



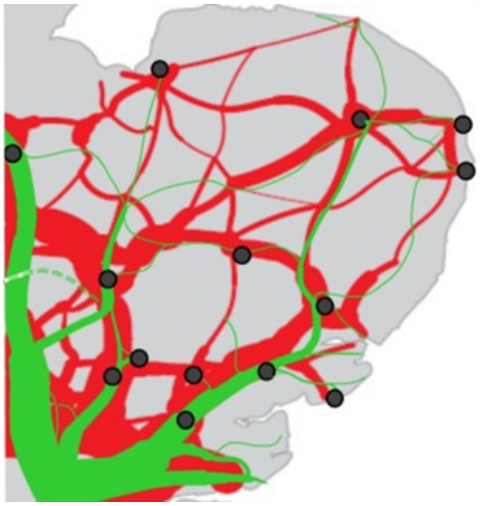

Map 1 – East Anglia Population Centres and existing railway lines.

# THE CURRENT PASSENGER RAIL NETWORK



Map 1 (previous page) shows the existing rail network in East Anglia. In recent years, new rolling stock has been introduced on the majority of routes and many stations have seen improvements. New stations have opened at Cambridge North (2017) and Soham (pictured right, just after opening in December 2021) and new stations are currently under construction at Cambridge South and Beaulieu Park to serve ongoing development. The government has recently announced funding for the Ely Area Capacity Enhancement, although the timing is unclear. Development work continues on East West Rail to link Cambridge with Bedford and Oxford.

Map 2 - Road (red) and Rail (green) traffic flows in East Anglia



There are also studies underway into restoring passenger services to Wisbech and Haverhill. Railfuture supports these schemes and considers that a tram-train system would be the best solution.

Apart from the main routes to London, most routes in East Anglia have an hourly service, with the exception of Ipswich to Peterborough that is every two hours. Other than Cambridge, the main agglomerations have only one station, often away from the main centre. This can make it difficult to access the station and adds to overall journey times. These factors combine to make rail travel less attractive to people.

Department for Transport data on road usage and rail station usage data from the Office of Road and Rail for East Anglia are shown in the map, left. It demonstrates that rail carries only a small percentage of traffic between centres. The table below shows the estimated percentage rail share on the key corridors. The current rail share is small and therefore it is not surprising that planners are hesitant to consider rail as part of their development plans.

| Road Corridor | Journey | 2019 AADT | | Rail % of AADT |
|---|---|---|---|---|
| | | Road | Rail | |
| A11 | Cambridge – Norwich | 21,069 | 1,621 | 7% |
| A12 (N) | Ipswich – Lowestoft | 5,038 | 372 | 7% |
| A14 | Ipswich – Cambridge | 24,446 | 1,333 | 5% |
| A47 | Norwich – King's Lynn | 9,600 | 33 | 0% |
| A47 | Norwich – Peterborough | 6,400 | 1,007 | 14% |
| A120 | Colchester – Cambridge | 14,743 | 467 | 3% |
| A140 | Norwich – Ipswich | 9,521 | 1,774 | 16% |
| A140 | Norwich – Bury St Edmunds | 1,334 | 140 | 9% |

Table 1 – Road and Rail Share on key corridors (AADT: Annual Average Daily Traffic)

# A STRATEGIC FOCUS ON SOME SIMPLE BASIC PRINCIPLES

In looking to the future Railfuture has adopted a new approach to transport modelling, one that is based on comparing and contrasting with volumes of road traffic to a view of what should happen in a more sustainable future with improved transport connections for our rural and coastal communities. The focus is on reducing rail journey times between the main centres. This can be achieved by a number of interventions which include:

- Increased line speeds
- Increased access to the railway
- New direct services linking key centres
- A limited number of new routes

Examples of these interventions are detailed in the sections on the following pages.

# GENERALISED JOURNEY TIME (GJT) REDUCTION AND CUMULATIVE GROWTH OF RAIL PASSENGER NUMBERS

Railfuture has looked at typical journey times – in minutes – by road and rail between some of the major centres as shown in the table below. The rail times shown include the time to get to and from the station at each end of the journey.

| Journey | Road | | Rail | | Rail GJT Reduction 2022-2054 |
|---|---|---|---|---|---|
| | Off-Peak | Peak | Now | Faster | |
| Norwich – Cambridge | 109 | 123 | 118 | 99 | 19 minutes |
| Norwich – Peterborough | 126 | 156 | 132 | 112 | 20 minutes |
| Cambridge – Ipswich | 90 | 108 | 118 | 97 | 21 minutes |
| Cambridge – Colchester | 90 | 109 | 148 | 89 | 59 minutes |

Table 2 – Potential for reducing Generalised Journey Time (GJT) in minutes

As an example, a new parkway station at Hethersett, on the Norwich to Cambridge/Peterborough route and accessed from the A47/A11, provides an average saving of 11 – 19 minutes from parts of Norwich compared to accessing the city centre station for rail journeys. This makes rail more accessible to a wider catchment without bringing even more traffic into the city centre.

Journey time savings can be achieved by increasing line speeds at junctions and level crossings. However, the significant journey time reduction between Cambridge and Colchester in the table (almost an hour) requires a new railway route described later in the report.

# IMPACT OF THE DEVELOPMENT OF INTER-URBAN RAIL

- **Best times reduce by ~25% and resolving some key bottlenecks** gives scope for frequency upgrade to 2+ trains per hour (tph), alternate fast and semi-fast services.
- **Aim towards 90-100 mph line speed on all regional main lines –** this may need digital re-signalling, fewer level crossings and a stronger substructure for lines across the Fens.
- **Achieving a 70-75 mph average speed** for limited stop trains between the main population centres will deliver large gains for competitive rail journey times.

# INTER-URBAN RAIL TRAVEL CUMULATIVE GROWTH

| Road Corridor | Journey | 2019 AADT | | Rail % of AADT | 2051 AADT | | Rail Use Growth | Rail % of AADT |
|---|---|---|---|---|---|---|---|---|
| | | Road | Rail | | Road | Rail | | |
| A11 | Cambridge – Norwich | 21,069 | 1,621 | 7% | 23,723 | 11,525 | 9,904 | 13% |
| A12 (N) | Ipswich – Lowestoft | 5,038 | 372 | 7% | 5,452 | 3,167 | 2,795 | 37% |
| A14 | Ipswich – Cambridge | 24,446 | 1,333 | 5% | 26,727 | 13,627 | 12,294 | 34% |
| A47 | Norwich – King's Lynn | 9,600 | 33 | 0% | 10,196 | 4,226 | 4,193 | 29% |
| A47 | Norwich – Peterborough | 6,400 | 1,007 | 14% | 6,856 | 5,881 | 4,874 | 46% |
| A120 | Colchester – Cambridge | 14,743 | 467 | 3% | 13,792 | 12,172 | 11,705 | 47% |
| A140 | Norwich – Ipswich | 9,521 | 1,774 | 16% | 11,543 | 6,240 | 4,466 | 35% |
| A140 | Norwich – Bury St Edmunds | 1,334 | 140 | 9% | 1,426 | 974 | 834 | 41% |

Table 3 – Projected cumulative transport growth 2019 - 2051

The table above shows what might be possible in terms of rail travel if journey times between main centres are reduced. There will be growth in road traffic but rail can take the brunt of the growth.

Railfuture has estimated the baseline for rail passengers by interpolating flow volumes from the ORR Station Footfall figures. Recalibrating the baseline figures for rail will change the absolute figures but it will not change the overall trends and the main conclusion about the efficacy of more frequent and faster rail journeys attracting sufficient people out of their cars to reduce the demand for further Road Investment Schemes.

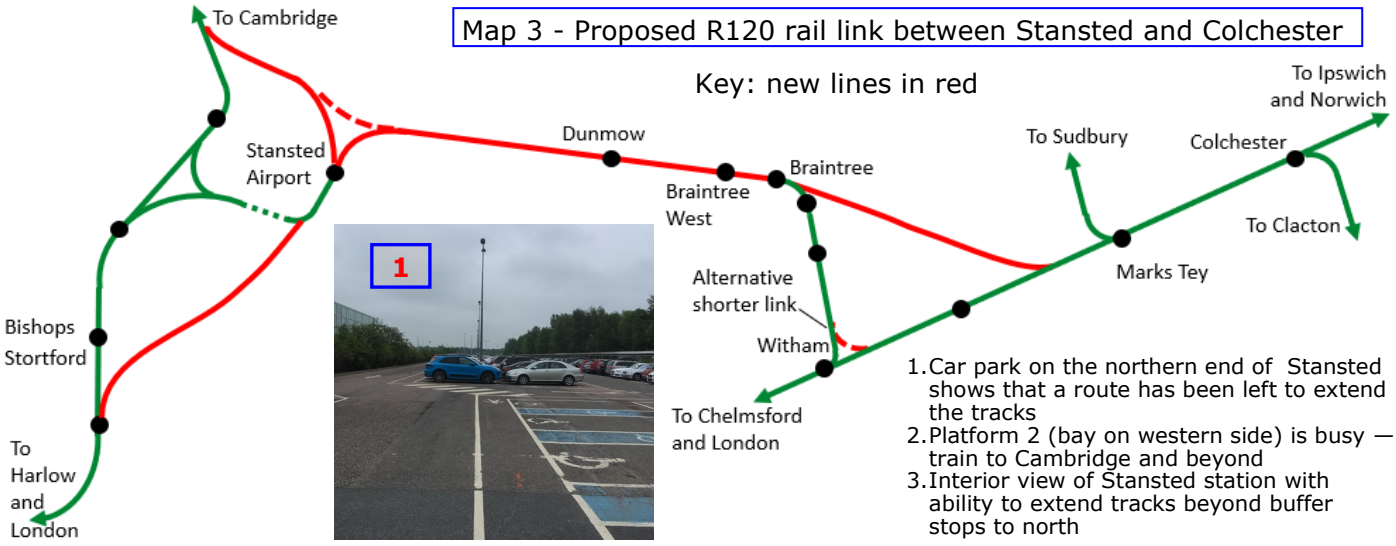
Unlike traditional Park & Ride schemes, a new generation of parkway stations will reverse the proportion of car mileage in an overall journey. Using the existing road network can support the growth in rail travel without encouraging growth in city centre or built up area car traffic to access the trains. Equally rural railhead or parkway stations will allow the concentration of public transport catchments onto existing or potentially re-opened rail corridors, thereby supporting a minimal two trains per hour service frequency that Devon Metro has demonstrated can be very successful for regional hubs such as Exeter.

## A CASE STUDY – BENEFITS OF BUILDING R120

To be relevant a main railway must serve and inter-connect these blue circles shown on Map 1 above. The biggest transport and housing pressure is along the southern edge of East Anglia, which has eight agglomerations within or close to the end of the A120 corridor, an area with no current rail link. There is great potential to link the Mid and North Essex housing markets to the booming Cambridge jobs market without adding further pressure on local roads or the already stressed M11 motorway. A new rail link would deliver many benefits, including:

- Reduced journey times between Mid & North Essex and Cambridge
- Direct connections to Stansted Airport from many parts of Essex
- Better utilisation of existing routes into London
- Reduced need for extra lanes on the M11 and A120
- Access to a wider jobs market for local people
- Expansion and attraction of inward investment associated with better connectivity
- Reduced overheating of various housing markets with faster connections to the rapidly growing regional economic engine around Cambridge
- Reducing the volume of road journeys at critical times, so that those people who have no choice will enjoy more reliable car journeys.

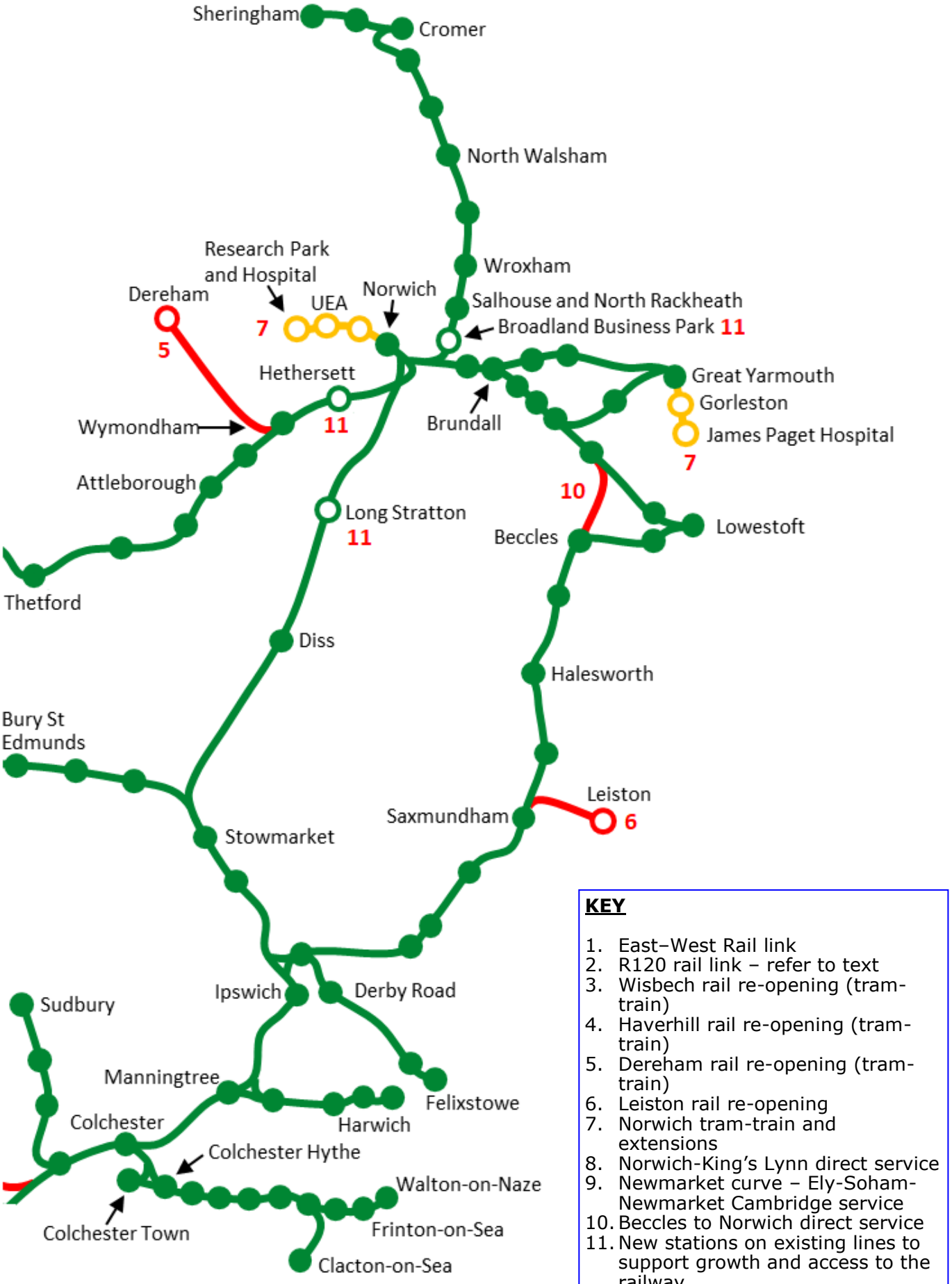
Map 3 - Proposed R120 rail link between Stansted and Colchester




1. Car park on the northern end of Stansted shows that a route has been left to extend the tracks
2. Platform 2 (bay on western side) is busy — train to Cambridge and beyond
3. Interior view of Stansted station with ability to extend tracks beyond buffer stops to north


# RAILFUTURE'S VISION FOR 2050

# AN EAST ANGLIAN RAIL NETWORK TO SUPPORT FUTURE GROWTH




**KEY**

1. East–West Rail link
2. R120 rail link – refer to text
3. Wisbech rail re-opening (tram-train)
4. Haverhill rail re-opening (tram-train)
5. Dereham rail re-opening (tram-train)
6. Leiston rail re-opening
7. Norwich tram-train and extensions
8. Norwich-King's Lynn direct service
9. Newmarket curve – Ely-Soham-Newmarket Cambridge service
10. Beccles to Norwich direct service
11. New stations on existing lines to support growth and access to the railway

Map drawn by Paul Hollinghurst, Railfuture

# A NEW GEOGRAPHY FOR EAST ANGLIA

## THE CHALLENGES FOR RAIL WITHIN EAST ANGLIAN CITIES

There is a perception that metro style services are not feasible in low population density areas. The perception is compounded in East Anglia because:

- Most cities and large towns have only one station – one point of access and distribution for these large urban areas
- Few local stations within the wider agglomeration areas and poor accessibility to some stations
- Hourly interval services are the norm
- Lack of integration with bus services.


The Devon metro shows what can be done in a regional city – new stations, two trains per hour and doubling the rail travel volumes.

Development Planners need to collaborate with Transport Planners to identify core routes and develop public transport that provides a real choice.

- EVs are part of the solution but not the whole answer, particularly in large towns and cities because of air pollution and space constraints
- Buses and Active Travel will be an important part of the solution – freeing up road space and allowing the agglomeration to function better
- If Development Planners define high volume corridors, further benefits can be secured from better public transport
- Tram services are the most efficient people movers on high volume travel corridors – perceived as more reliable than buses and taking up less road space per passenger whilst needing fewer drivers means they are very cost effective over a whole life-time
- Will help meet decarbonisation, congestion and air quality targets.

## GROWING DEMAND FOR TRAVEL WITHIN CITIES AND LARGE TOWNS

Norwich and four other cities can all support and develop a heavy rail metro service. In the case of Norwich and Cambridge there is a strong case for running tram-train services that can penetrate into the heart of the city with on street running, given the distance of existing main stations from the historical city centres. Norwich could achieve a 12-minute time saving to the city centre by enabling through running.

Colchester and Ipswich (which has a maritime tradition that attracts tourists today, pictured, right) could see the development of joint metro services with through running from the southern end of the East Suffolk Line to Harwich and Clacton branches as well as to Braintree on a new R120 line.

## DIRECTING GROWTH TO EXISTING TRANSPORT CORRIDORS

The study looked at the idea of managed development along existing transport corridors — because this is a way the region can achieve growth without further dispersed village development adding to car dependency. By containing the growth of road traffic, rail can improve connectivity and produce wider economic and social benefits whose value outweighs the costs of initial investment.

Developing and linking communities along specific transport corridors makes sense for protecting the wider rural environment. It helps the large agglomerations to disperse their growth to the surrounding areas – provided they have access to sustainable public transport. This is particularly true in Cambridge, where the government has indicated that it would like to see significant development in the area to create a "Silicon Fen" equivalent to Silicon Valley in the USA.

We encourage development planning to move in lock step with devolved regional transport planning to deliver this agenda. We recognise that finance is tight and will remain so for some time, but there is no good "do nothing" option for a region threatened with large scale sea incursion. The funding shortage applies to road investment as much as rail.

## A DIFFERENT FUTURE IS POSSIBLE FOR THE NORWICH AREA

A series of railway interventions similar to the Devon Metro concept can make a real difference around Norwich. These include:

- A new parkway station at Hethersett
- Reopening the line to Dereham
- New stations at Long Stratton and Broadland Business Park
- Faster inter-urban services to Cambridge, Peterborough and King's Lynn to avoid major upgrades to the A11 and A47
- Converting rural routes to tram-train with extension into Norwich centre and university.

# FREIGHT

Rail freight already plays an important role in the region. A single freight train can take 50 lorries off the road and deliver a 75% energy saving, essential to achieving net zero. Existing rail freight is focused on containers to and from ports, aggregates for the construction industry and sand from King's Lynn used in glass making.

Concerns regarding the effective range of electric lorries mean there is a need for local rail-road interchanges in the region to serve each of the main centres. Such centres need to handle containers and parcels (online shopping) for local distribution. To deliver this change there is a need to:

- Identify sites and protect from other development
- Include freight capacity in rail upgrade plans

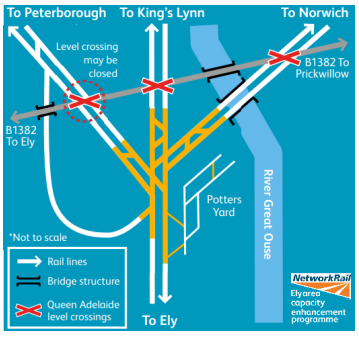
Most freight trains in East Anglia are moving containers originating from (or returning to) Felixstowe. The photo on the left shows a Freightliner train on the new double-track section at Trimley, which was completed in 2019. On the right an aggregates train is being unloaded at Hitchin in 2019. There is a need to protect rail land to allow for future rail to road distribution.

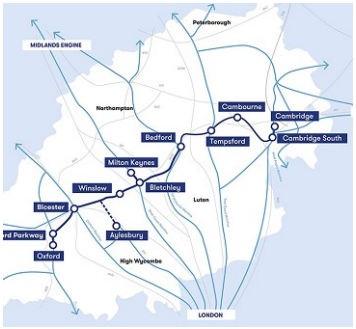
# A LONGER-TERM PERSPECTIVE ON DELIVERING SUSTAINED GROWTH

Transport investment is a long-term business but decisions often appear influenced by short-termism. It is good that the highly visible priorities to deliver economic growth and improved connectivity have moved transport up the agenda.

This is not about lines on maps but being clear about what we want a railway to deliver and accentuating the benefits that will accrue. It is about the impact that a targeted programme of infrastructure interventions can make. Our suggestions are modest in scale, compared to the investment in roads over the past 40 years. They will help to contain the growth in road traffic, particularly at peak times and thereby reduce the need for future road enhancements.

# RAILFUTURE'S TOP FIVE ASKS OF LOCAL AND REGIONAL BODIES



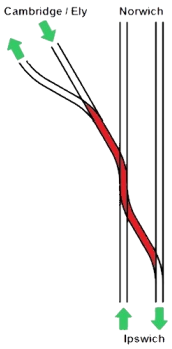




- **Deliver Ely Area Capacity Enhancement** (graphic, right)**, Soham doubling, Haughley Junction and Trowse Swing Bridge –** these are urgent and critical to securing HGV modal shift off the A14 and A12, plus adding much needed capacity for additional Norwich and Ipswich to Cambridge services
- **Deliver East West Rail and east of Cambridge services** (bottom image) **–** new layer of additional fast, limited-stop services – Cambridge in 60 for both Norwich and Ipswich
- **Commission a study with Network Rail and Highways England of the case for a Hethersett Parkway**
- **Commission a study of the case for an R120 in the A120 corridor and remodelling the West Anglia Main Line link to Stansted Airport –** the most transformative intervention that needs careful planning and phasing
- **Examine the case for a Norwich metro service with potential for on-street running to link local Norfolk tram-train services into the city centre and eventually onto the University of East Anglia, Norfolk & Norwich Hospital and the Research Parks.**

**Ely is picturesque and attracts many tourists. Turn 90 degrees from this view and the Cutter Bridge (inset) is one of two rail bridges in Ely that are life-expired and desperately need replacing to raise the line speed for passenger and, especially, freight trains.**

The delivery of these schemes will inevitably be scheduled over many years. Railfuture envisages three phases:

**EARLY – FIRST TEN YEARS (BY 2033)**




- Deliver the existing pipeline priorities at Ely, Haughley junction (current single lead is shown in the graphic, right) and Trowse
- Timetable improvements – review of existing line speed restrictions
- Commission studies to define, design and safeguard key enhancements

**MEDIUM TERM – WITHIN 10-15 YEARS**

- Line speed upgrades and removal of level crossings
- Doubling of Soham to Ely Dock Junction, building the Thetford cut-off
- Run an additional layer of regional, limited stop express services
- Open new parkway stations to attract people to rail from agglomeration and rural railhead areas
- Introduce "Devon Metro" style services, tram-trains serving new Metro stations
- New inward bulk volume freight flows with supporting terminals
- Start first phases of the West Anglia Mainline (WAML) loop via Stansted Airport and a delta junction with an R120 between Stansted and Braintree

**LONGER TERM – WITHIN 25-30 YEARS**

- Complete the pipeline of priority infrastructure interventions – complete R120 and build the new Ely North avoiding chords, to deliver the needed capacity gains and journey time reductions
- Electrification of Felixstowe to Peterborough, Ely to Norwich and R120 Lines

**Not so much definitive answers but a different way of looking at securing sustainable economic prosperity across East Anglia**

Railfuture **is** asking the railway to deliver a focus on the principal inter-urban corridors, improved local rail services to reconnect rural and coastal communities to their regional hubs, new freight and logistic opportunities and a look ahead at the likely adequacy of the government's current proposals to upgrade the known network pinch points. Will these plans be sufficiently ambitious if rail is going to deliver at scale the role it is perfectly capable of playing?

**Our high-level review shows how East Anglia's fast-growing population and economy can be served better, post-Brexit, post-Covid, and with greater benefit and value, by co-ordination of investment in road, mass transit and rail links.**

## OUR RAIL STRATEGY SUMMARY

- **Need to base future development and housing growth on rail corridors**
- **Make rail the trusted method of inter-urban travel**
- **Integration with other modes is more cost-effective**
- **New local terminals are key to a bigger modal share for rail freight into the region**
- **Development planning and protecting rail assets vital for a sustainable future**

- **Network capacity issue needs careful planning** to balance the competing demands for freight modal switch and fast limited stop inter-urban expresses and frequent metro services
- **Careful planning to optimise pathing and invest in additional capacity** – new chords offer faster, direct passenger services and freight avoiding lines past existing pinch points.
- **Our vision is that we want the region to succeed sustainably**

# CONCLUSION

Railfuture has illustrated a few strategically chosen examples for the Great British Railways Transition Team (GBRTT), Transport East and England's Economic Heartlands to pick up and start running with.

There will still be capital spend on transport – we fully support local authorities and regional bodies that want to reframe the criteria for spending to achieve net zero, sustainability and improved functioning of the rapidly urbanising region with better access to the agglomerations from rural and coastal communities. Investment should be focussed on managed corridors to achieve higher density developments and high-volume transport corridors served by rail.

Railfuture believes that we can have growth of high value jobs, more affordable housing and public transport developed in lock step through Planning Conditions and Land Value Capture.

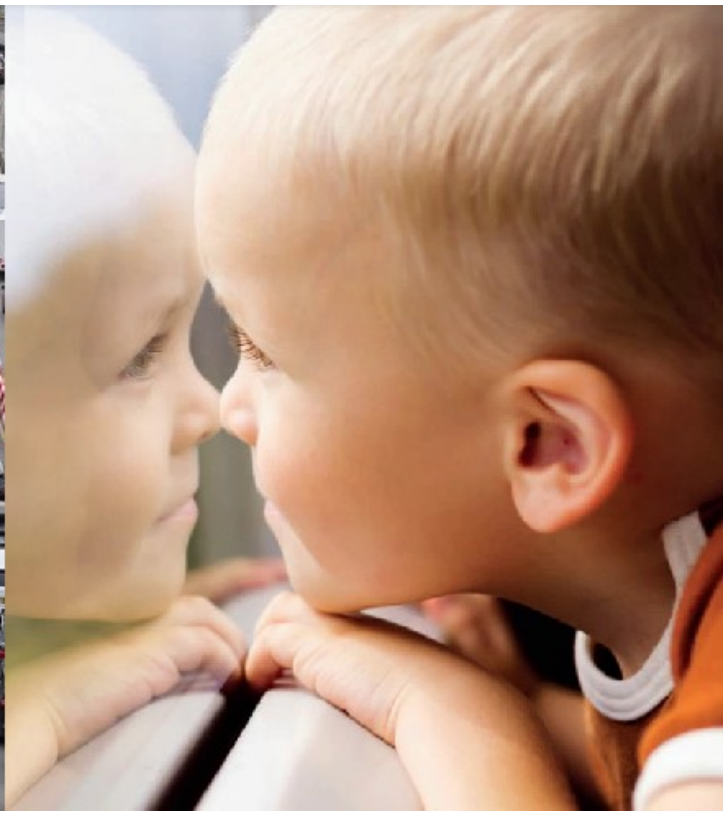
There's been a lot of talk of line reopenings because it's 60 years since "Reshaping Britain's Railways" was published. We're not thinking of reversing the Beeching axe – there is no question of recreating a branch line to Melton Constable or anything like that.

Simply by asking our questions and finding answers which are more relevant, we've already begun to start making the railways more relevant because we now have a far better idea, and so will others as a result of our research, of what it is possible for the railway to do to make the critical difference to a sustainable future.

This approach is different and is important because it's an exercise in trying to make the railway more relevant and fit to sustain a rapidly changing East Anglia for the next 60 years.

**What do we as a society want for our future and our children's future?**

**Gridlocked roads or a generation brought up with the pleasant and relaxing experience of train travel, being productive or just gazing out of the window?**



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# Cambridge South — A major new station for a rapidly growing city at the heart of East Anglia's economy

Cambridge South (a Railfuture campaign since the 1980s) is one of two major stations under construction between 2023 and 2025 in East Anglia. The other is Beaulieu Park, near Chelmsford. To the west, the East West Rail route between Bicester and Bletchley is close to completion with proposals for the link to Cambridge being actively developed.

Contributors: Nick Dibben, Martin Cooper, Ian Couzens, Peter Wakefield, Paul Hollinghurst.


Views of 21st Century Cambridge (Biomedical Campus) and its iconic city centre.

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