Long Term Midlands Motorway Hub Study

Summary Report

Midlands Connect
Powering the Midlands Engine

Contents

1. OVERVIEW 1
   - Background 1
   - The Opportunity 2
2. THE MOTORWAY HUB STRATEGY 3
   - Making best use of existing networks 4
   - Creating Modal Shift 6
   - Major investment in the Hub 6
   - Investing in Strategic Alternatives to the Hub 6
3. TRANSPORT INVESTMENT WILL POWER THE MIDLANDS ENGINE 7
   - Nationally Significant Sectors Dependent on the SRN 7
4. HEADLINE OUTCOMES 9
5. NEXT STEPS 13

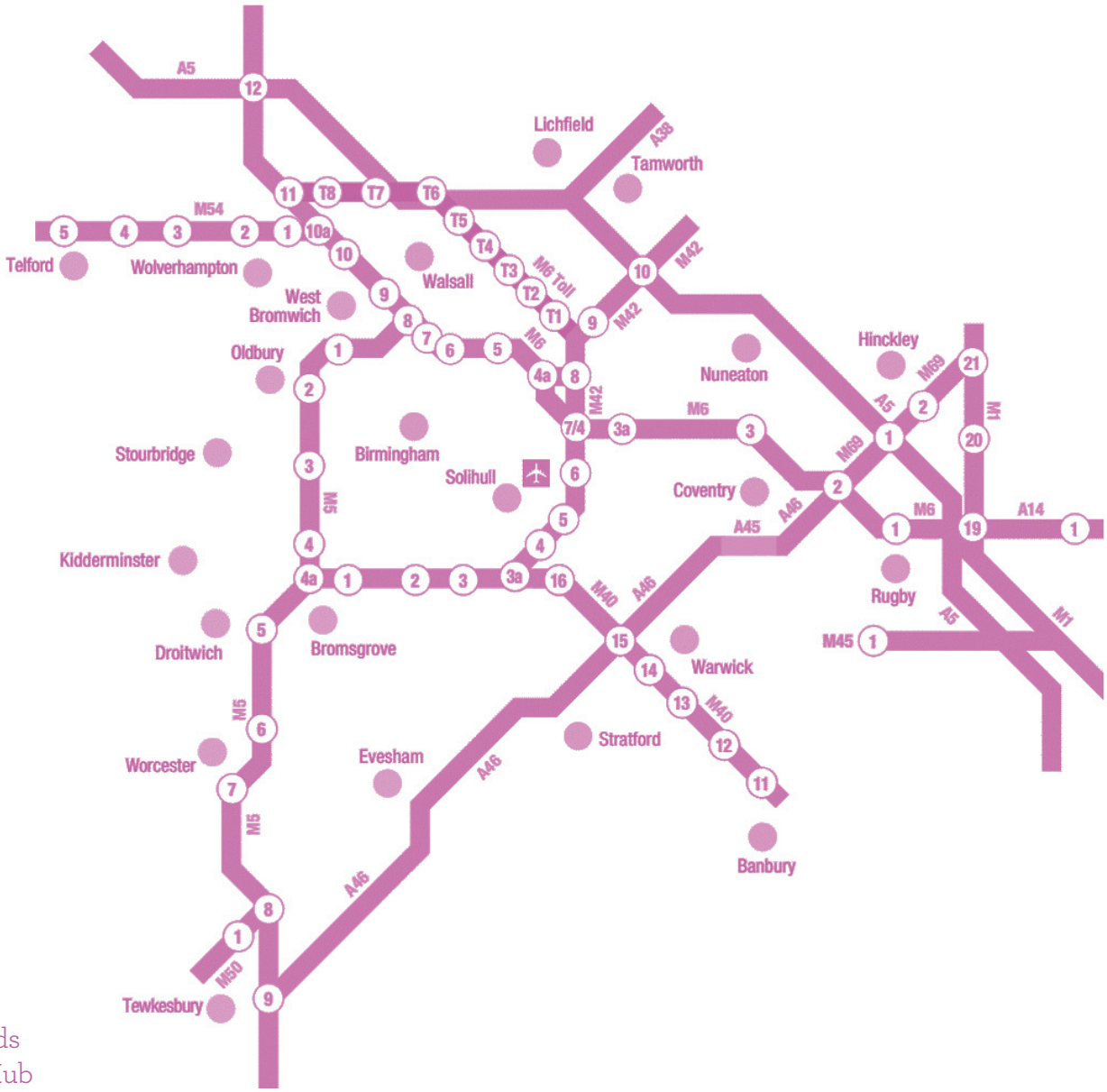
1 Overview

Background

This report was developed by Midlands Connect and Highways England to build on the momentum of the Midlands Connect Strategy published in March 2017. It sets out a strategy to harness the full economic potential that a reliable and resilient Midlands Motorway Hub can unlock for the UK economy.

The Midlands Motorway Hub (known hereafter as 'the Hub'), spans key sections of the M42, M5 and M6 and lies at the heart of the regional and national Strategic Road Network (SRN).

A resilient and reliable Hub will support business to business interactions by reducing travel costs and lost time for delays and improving the productivity of our key sectors.



The Midlands Motorway Hub

The opportunity

This strategy sets out how transport investment in the Hub will provide a much-needed boost to our industries in the face of Brexit. In parallel, investors will gain confidence from longer term planning, ensuring we pick up the pace of economic growth.

The Midlands is already the country's leading exporter, trading with 178 countries and is better placed than anywhere else to lead the UK in a post-Brexit global marketplace.

The Hub provides direct access to Birmingham Airport that handles 13 million passengers a year, and facilitates access from the South and West to East Midlands Airport as the largest freight operation outside of the South East.

Wider afield the Hub, in the centre of the country, forms a critical part of national connectivity to ports and airports including Bristol, Liverpool, Manchester, Southampton and the South East.

Making the Midlands stronger will help rebalance national economic activity in line with the Government's Industrial Strategy.

Investing in transport is translated into economic growth - business costs driven down, labour and customer markets opened up, business-to-business interaction improved, and all contributing towards closing the productivity gap of the Midlands with the UK and the UK with Europe.

Conservative estimates place the **benefits of increased economic activity at over £1.1bn** over 60 years. Over half of these being for areas outside the Midlands, demonstrating the importance of the Hub to national economic activity.

Key growth sites located near the Hub have the potential to **deliver almost**

200,000

new jobs

These could be **worth over**

£10bn to the economy in GVA

In terms of housing, the recommendations in this report tie in with major growth sites across the study area that could support more than **50,000 new homes** being delivered and unlock further new housing opportunities. Poor and unreliable road connections are a threat to this growth being realised.

Even though the schemes within this report are only at an early stage of development they already show strong potential to achieve **benefits exceeding £2 for each £1 investment.**

2 The Motorway Hub Strategy

In developing the strategy, we have drawn on a range of information and evidence from stakeholders. This has been supplemented by primary data collection in the form of origin-destination surveys and traffic counts. For example, from our data we are able to demonstrate the importance of the Hub to the national economy; around half of the trips entering the core part of the Hub travel all the way through it. This shows that although the roads support the economy of the West Midlands Metropolitan area, they are equally important to the economies north, south, east and west of the Hub.

There are four intervention approaches to the Hub Strategy:

- Making best use of existing networks – maximise the potential of our existing infrastructure to improve travel conditions
- Creating modal shift – encourage the use of public transport modes to reduce congestion on the Hub
- Major investment in the Hub – significantly improve key infrastructure to provide additional capacity
- Invest in strategic alternatives to the Hub – identify alternative routes to provide relief and resilience to the Hub

Making best use of existing networks

Further smart motorway – Smart motorways use technology to actively manage the flow of traffic during busy times and incidents. Further smart motorway includes filling the remaining gaps in Smart Motorways (once existing commitments are delivered) on the M40, Junction 12 to 16 and M6 between Junction 2 and the M1. The case for extending the smart motorway network to include the M6 east of Junction 2 is reinforced by the traffic counts data collected that suggests there are a similar number of trips travelling towards the box, west of Junction 3 and west of Junction 1. Additionally, as part of Phase 4 for the Birmingham Box Smart Motorway programme, consideration should be given to upgrading the existing Managed Motorway on the M42 to the newer All Lane Running standard (where the hard shoulder is permanently converted into a running lane). A completed network across the Hub will provide holistic management and maximise capacity of the existing assets.

Making best use of M6 Toll – Additional signage, smart information and strengthened governance arrangements to encourage greater use of the M6 Toll at any time, but particularly during incidents on the M6. This will reduce the volume of traffic re-routing through urban areas with associated air quality, noise and safety impacts. Our data collection suggests that there is still a market for some people to shift from using the M6 to the M6 Toll if the benefit of doing so is better understood.

Improvements to M6 junctions 2 and 3 – Investigate additional capacity to complement the planned Smart Motorway upgrades between M6 Junctions 2 and 4 alongside the planned Junction 4 improvements supporting key growth sites north of Coventry.

Coordinated traffic management – Piloting the linking of local authority and Highways England traffic control centres to provide fully integrated management during heavy congestion and incidents such as the deployment of Urban Traffic Management Control.
This integrated approach to network management enables the existing capacity to be used more efficiently, reducing congestion levels.

Smart digital information – Harness digital data to provide people with sufficient information to make decisions on when, how and where to travel. This will provide people with the opportunity to avoid incidents on the network which will also reduce the impact of congestion arising from incidents.

Testing HGV and resilience strategies – The Midlands is already leading trials into the potential for HGV platooning using driverless car technology. Given the volumes of freight on the Hub we should develop modelling tools to test the potential for 'real life' trials for HGV platooning alongside a range of other possible management strategies such as freight only lanes, junction alterations and changing priorities during major incidents.

Creating modal shift

Strategic Park and Ride – We know from the data we've collected that almost a quarter of all trips which enter the junctions on the 'Birmingham Box' part of the Hub travel only one or two junctions on the Motorway. By taking forward feasibility work to identify where rail, Metro and road based Park and Ride could intercept trips earlier in their journey, we could reduce trips travelling on the most congested part of the Hub.

New mass transit routes – There are opportunities for public transport schemes identified by Transport for the West Midlands to support the operation of the Hub by providing better non-car choice for people who are currently using the Hub to make short distance trips.

Demand management – The study has identified the potential benefits of managing demand to/from the Hub but it is also recognised that wider mitigation measures are needed. It is recommended that demand management be considered alongside public transport improvements, combined traffic control and potential roads managed by local authorities improvements to develop a balanced package that will strengthen the resilience of the whole road network without adverse effects on local air quality, safety and noise.

Major investment in the Hub

M42 widening and junction enhancements between Junctions 3a to 7 – The eastern side of the Hub already suffers from some of the highest levels of congestion and delay. This has been proven through the results of real data collected at M42 Junction 7 which infer a great deal of activity when compared to other junctions along the box. Junctions 4, 5 and 6 have all been identified, through the origin and destination surveys, as hot spots for short distance trips along the box. A significant proportion of trips use the box to travel one or two junctions along the network before exiting. Widening the M42 provides additional capacity and will significantly improve reliability, supporting growth around UK Central and the ongoing role of the M42 in supporting national and regional economic activity. In the shorter term, the upgrading of the existing Managed Motorway to All Lanes Running Smart Motorway should be considered as this ensures shorter trips cause minimal impact to the performance of the network

Investing in strategic alternatives to the Hub

A46 to expressway standard – Expressway standard involves upgrading the route to two lanes (or three where required) to an all-purpose standard with all junctions grade separated. Transforming this route will provide a significantly faster and reliable route acting as a viable alternative to the M42 for trips between the South West and Humberside. This corridor has the potential to fulfil a significant national and regional economic function, unlocking employment and housing growth sites.

Western Strategic Route - A route that will support long distance movements from the North West to the South West through the Midlands, reducing congestion on the M5 and the north-western section of the Hub where conditions on the M6 are some of the worst in the country. Evidenced by a comprehensive origin-destination survey carried out around the box, there are a significant proportion of trips travelling between the network southwest of the box and the network northwest of the box. Transforming connectivity will unlock housing and employment growth in locations such as the Black Country.

3 Transport Investment will power the Midlands Engine

Nationally significant sectors dependent on the SRN

The Midlands Engine area is the largest economic area outside of the South East. Several of the Midlands' key industrial sectors which are dependent on the Hub are shown below.

Automotive Sector

- Coventry and Warwickshire is the driving force behind the UK's automotive sector.
- Over 40% of the country's production.

Agri - Food and Drink

- 132,000 people in the Midlands work in this sector, across 33,000 companies.
- Extensive fruit and vegetable production and a strong meat and dairy industry.

Advanced Manufacturing

- Advanced manufacturing, particularly in the Black Country and Derbyshire.
- The Midlands accounts for over 21% of UK manufacturing output.

Logistics

- Over 70 million road freight movements each year.
- One third of all movements in the country.

Despite its strengths, productivity in the Midlands still lags the national average. GVA per employee in the Midlands is **£44,447** compared to the UK average of **£50,830.** This is true even in areas of comparative strength – GVA per employee in manufacturing in the Midlands is 23.90% below the UK average.

Highways England's Strategic Economic Growth Plan highlights that SRN dependent sectors are important for national output and employment and combined are estimated to account for 24% of all GVA across England. **There is potential for significant growth in these sectors - potentially by over £110 billion between 2015 and 2030, with 20% of this growth directly in the Midlands** (based on Cambridge Econometrics). The Hub is critical to unlocking this regionally and nationally – providing the confidence to investors that a phased strategy of investment will match the future needs of our economy. The Hub is critical to national economic connectivity and yet its performance is unreliable and without action the national economy will suffer.

The Hub, and surrounding parts of the SRN, has a critical role in unlocking and enabling economic growth by:

- **improving connectivity and reducing journey times for freight** to support business productivity – bringing suppliers and markets closer to businesses;
- **improving connectivity and reducing journey times for people** to expand travel to work areas, attract skilled labour to the region through enhanced quality of life and make business to business interaction easier and cheaper (supporting agglomeration benefits);
- **reducing the variability of journey times** so that businesses can minimise costs associated with building in additional time into schedules and ensure goods are delivered on time;
- providing additional **capacity** to enable growth in jobs and homes, including providing capacity for, and **access** to, key growth sites; and
- raising the **resilience** of the network to planned maintenance, incidents and events so that businesses can continue to operate normally during periods of disruption

The Strategic Economic Growth Plan highlights two specific parts of the Hub as two of the most economically critical links in the UK - the M42 on the east of the Hub and the M6 on the north of the hub.

These two sections link the South and the North to the Midlands and each other, power our key national economic sectors and provide access to ports and airports.

In addition, the M42 is the focal point for HS2, which opens in 2026. UK Central, located near M42 Junction 6, is one of the largest national growth sites with the potential for up to 100,000 new jobs. Investment in the Hub will be critical to ensure this potential is realised.

4 Headline Outcomes

The main elements of the strategy we are recommending taking forward for further work are shown in the table alongside a summary of their impacts against the study objectives.

Summary of Study Recommendations for Further Investigation

Type of Intervention	Components	Improved Journey times	Reducing journey time variability	Providing additional capacity	Raising resilience	Supporting economic growth
Making best use of existing networks	• Further Smart Motorway • Use of M6 Toll as diversionary route • Improvements to M6 junctions	●●	●●	●	●●	●●
Harnessing technology	• Coordinated traffic management • Smart digital information • Testing HGV and demand management strategies	●	●●	●	●●●	●●
Creating modal Shift	• Strategic Park and Ride • New mass transit routes • Demand management	●	●	●	●●	●●●
Major investment in the Hub	• M42 widening and junction enhancements between Junctions 3a to 7	●●	●●●	●●●	●●●	●●●●
Investing in Strategic Alternatives to the Hub	• A46 to expressway standard • Western Strategic Route – M5 to M6	●●●●	●●●	●●●●	●●●●	●●●●

Number of circles shows strength of impact against the study objective

In economic terms, the package of interventions will support employment and GVA growth in these key sectors through the following mechanisms:

- Improvements to the M42, M6 and M1, and the M40 would enhance access to **Birmingham Airport,** supporting economic activity in other key growth sectors. For example, the manufacturing, rail, motorsport and automotive industries are international in their reach and global business travel and trade is an essential component of their success.
- Due to the spatial distribution of the **freight and logistics** sector all the interventions would drive economic gains through reducing costs, improving efficiency and leading to an uplift of GVA and jobs growth in key locations across the study area. Through journey time and reliability improvements the Hub would **benefit long distance and internal movements**.
- The Western Strategic Route would potentially have a transformational impact on the economic performance of the **Black Country**. It would significantly improve connectivity from areas that are currently less well connected, including Stourbridge, Dudley and the southern parts of Wolverhampton. It will support long distance freight movements from the North West to the South West through the Midlands. Wider impacts indicate it could change future growth dynamics in **Worcestershire, Telford and Shropshire**. We know from the data that we've collected that around 20% of the traffic entering the Hub from either the M6 north or M5 south could shift to a strategic route to the West.
- The **A46 Expressway** will support the growth of the **freight industry** in the south east of the study area **around Coventry**. With journey times potentially 20 minutes faster (between M5 Junction 9 and M6 Junction 2) it has the potential to provide a role as the main strategic corridor for movements on the South West-North East axis, supporting the key growth sites on the corridor with wider benefits for the M42 through the decongestion it provides by longer distance traffic sifting to the A46.
- By enhancing connectivity, the package of measures will improve access to **local labour markets**, support **clustering** and significantly improve access to **supply chains** and markets for businesses in this area.
- Improvements to the operation of the M42 would support future growth in **Solihull**. This would include future manufacturing activity (e.g. Jaguar Land Rover), logistics activity associated with Birmingham Airport and the transformational growth planned at UK Central, including the proposed HS2 Interchange. Widening of the M42 to Junction 10 will also significantly support the competitiveness of the area around **Tamworth** as a major logistics hub.

Unlocking housing growth is a core outcome objective for the study and our recommendations support the strategic access needs of several key growth sites:

A Western Strategic Route could transform the connectivity of the proposed garden **villages in the Black Country.** These would deliver up to

new homes

45,000

The **M42** and **M6** support significant growth sites at

- **Greater Icknield** (5,000 homes)
- **North Solihull** (4,000 homes)
- **Perry Barr** (1,000 homes)

The

A46

corridor (incl. M69) supports many growth sites off the corridor including key sites around **Rugby, Coventry, Warwick** and up to **Leicester** such as Anstey Park & Phase 2 and Whitley South

Key growth sites located near the Hub have the potential to deliver almost

200,000 new jobs

These could be worth over £10bn to the economy in GVA, even more if potential national supply chains are factored in. It is estimated that somewhere in the region of **40,000 to 50,000** of these jobs could be unlocked by delivering the recommendations of this study.

Over

200% return on investment

Even at their early stage of development the schemes already show strong potential to achieve benefits exceeding £2 for each £1 investment.

£1.1bn

of agglomeration benefits.

Half of the agglomeration benefits arising from the scheme are for areas outside the Midlands, demonstrating **the importance of the Hub to national economic activity.**

5 Next Steps

Given the critical importance of the Hub to the UK economy we now need to start planning.

This strategy contains shorter term measures that can be progressed along with a limited number of longer-term interventions that will need to be developed further to ensure there is a robust business case for investment.

Underpinning our thinking on phasing is the need to avoid further disruption over the next 7-8 years whilst existing commitments are delivered alongside HS2 which has significant construction impacts on the Hub.

Immediate Priorities 2017-2020

Midlands Connect has already secured the support from government through the 2017 Autumn Budget announcement of an additional £4m to support the development and delivery of short term measures from this study. This is complemented by existing planned work by Midlands Connect alongside match funding from partners to achieve maximum impacts.

Coordinated traffic management – Transport for West Midlands has already allocated funding and is working with Midlands Connect and Highways England to develop the business case for a pilot project. The intention is to commence implementation during 2018/19, subject to the business case. As part of this workstream, Midlands Connect will build on its work on Smart information and seek to take the information available from the combined centre and provide much improved 'real-time' information on journey time and route choice to both those travelling and yet to commence journeys.

Testing HGV and resilience strategies – Midlands Connect will coordinate a review of the available modelling tools and develop a scope to build on these to provide a platform for testing a range of future technology and resilience strategies can be taken forward as business cases.

A46 Corridor Study – Midlands Connect is taking forward a corridor specific study in partnership with local authorities and Highways England to develop the business case and priorities with investment on the A46. A further study on the A5 is also due to commence that could have interactions and identify resilience benefits to the Hub. It is anticipated that these studies could generate interventions for further development with implementation commencing during the RIS2 period from April 2020 to March 2025.

Making Best Use of the M6 Toll – Midlands Connect, Highways England, Midland Expressway and partners will work together to develop a package of measures to encourage greater use of the M6 Toll to relieve the M6 on its most congested sections between junction 4 and 11. The focus will be both during 'regular' conditions and when there are incidents on the network. This will include additional signage, smart information and strengthened governance arrangements.

Strategic Park and Ride – Midlands Connect and partners will progress with study work to better understand the role, locations and business case for Strategic Park and Ride sites to intercept and remove traffic from the Hub.

New Mass Transits Routes – Midlands Connect will support Transport for West Midlands with the wider economic impact assessment of new routes connecting into Birmingham from the Black Country and into UK Central from Birmingham and Solihull.

Western Strategic Route – Midlands Connect will work with stakeholders to further explore the recommendations of the Hub study and the economic benefits for a strategic route to the West of the M5. At this stage we will not be considering alignments of any potential route; merely seeking to better understand the economic benefits which could be realised if it came forward. As part of this, the potential options for financing the scheme will be considered and the environmental and delivery risks will be set out explicitly for future work to consider in further detail.

Priorities for further development work 2020 to 2025

It is recognised that during the RIS2 period up to March 2025 there will be considerable disruption across the Midlands due to the construction of HS2 and other, committed schemes on the road network. For this reason alone, the areas identified for implementation within this period have been kept to an absolute minimum; focussing on Smart Motorway, technology and resilience measures.

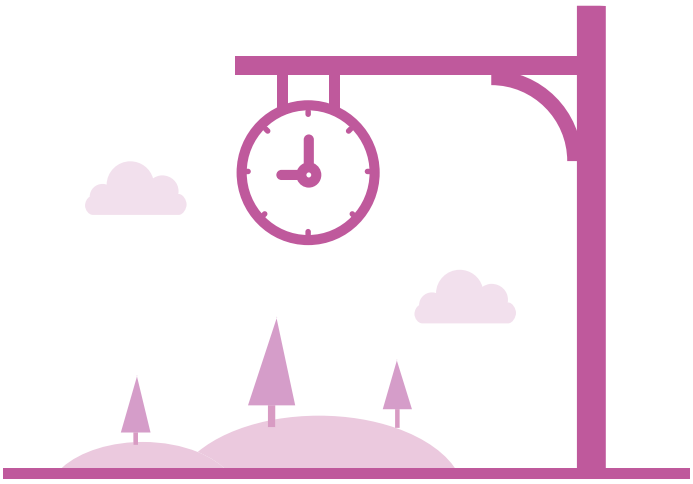
There is the possibility of the first phase of measures on both the A46 and the A5 (subject to separate studies by Midlands Connect in 2018) but very limited infrastructure recommendations on the Hub itself.

The focus, however, **should be on starting to advance the option development and business case work for some of the larger interventions** given the long lead and complex issues that need to be considered. **This includes advancing work on the potential for M42 Widening,** a **Western Strategic Route** and longer-term interventions for the **A46 corridor.**

Longer term priorities

Recognising the lead in times, scale and cost of some of the longer-term concepts identified within this study we suggest that development from **concept to design could take place during the RIS2 period with financial provision for construction should be made during RIS3 (2025-2030) and RIS4 (2030-2035).** The limitations on national funding are recognised, and wider options for financing large infrastructure measures will need to be explored, such as land value capture.

The longer-term timescales for these schemes will allow greater clarity around the build out timescales for major development sites, the impacts of HS2 and allow space to evaluate the impacts of the existing and proposed shorter term measures. This can then inform the development of the business case work and investment decisions for these interventions.



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