

Funding Proposal	Lichfield – Alrewas – Burton Passenger Services
Scheme Promoter	Transport for West Midlands in partnership with Staffordshire Council and West Midlands Rail Executive
Local MP Support	Michael Fabricant MP (Lichfield – support confirmed) Kate Griffiths MP (Burton-on-Trent – support confirmed)
Applicant Organisation Name:	Transport for West Midlands
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Total Development Funding	£100,000
Ideas Fund Ask	£50,000
Local Match Funding	£50,000

Brief Description of Proposed Development Work

A Feasibility Study examining the case and options for restoration of passenger train services on existing line between Lichfield and Burton-on-Trent including:

- Confirming the strategic requirement for intervention
- Train service deliverability (including extension of service to Derby)
- Potential and options for new stations (notably at Alrewas / National Memorial Arboretum) including new housing and A38 Park and Ride potential
- Infrastructure enhancement requirements for different service options
- Enhancement of Lichfield Trent Valley Station for southbound services
- Operating Costs of service options
- Capital Costs of infrastructure options
- Revenue / Wider Economic Benefits
- High level business, economic, environmental and wider benefits case

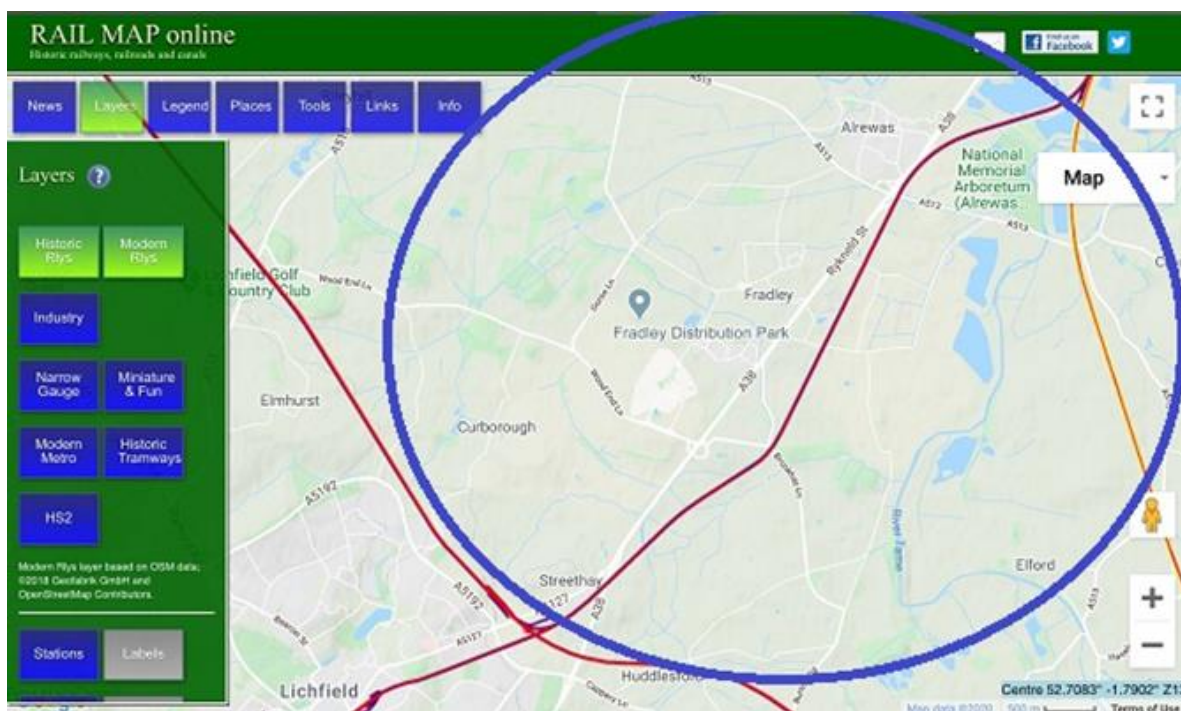
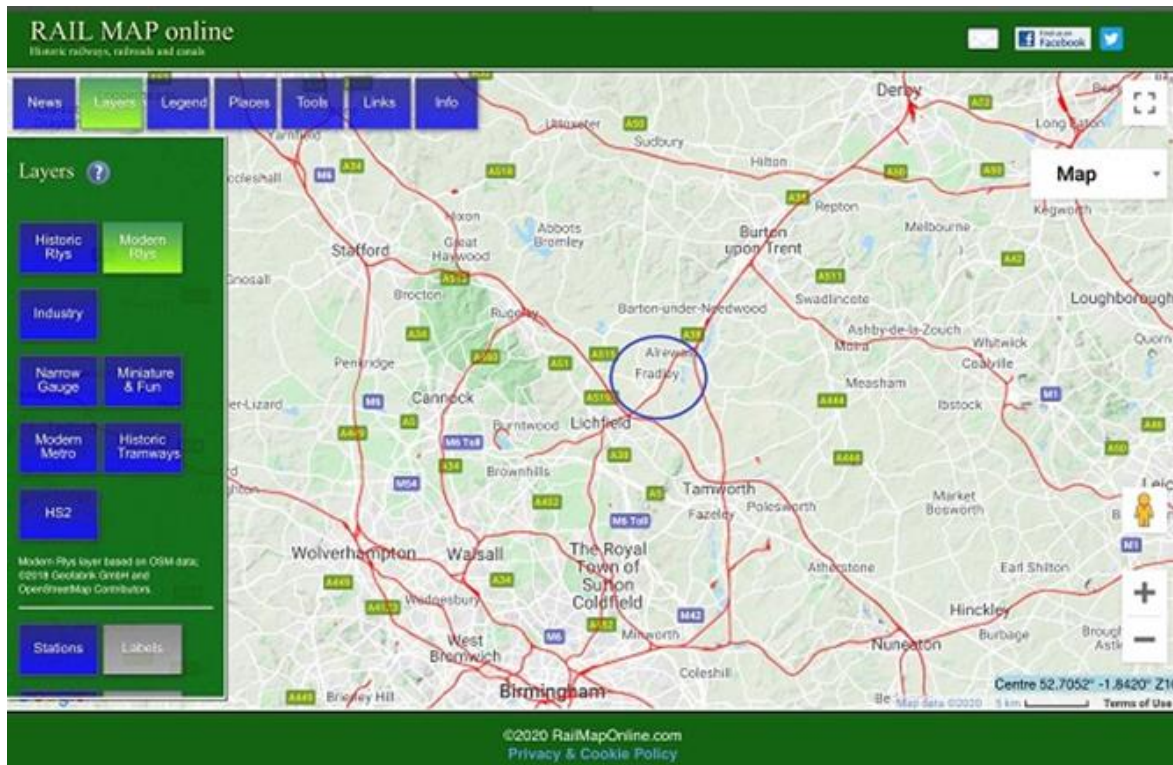
See attached draft Brief (Appendix 1) for further details.



Project Overview

Location:

This six mile section of the Lichfield – Burton line links Birmingham's Cross City suburban line with the main Birmingham – Tamworth Rail line at Wichnor Junction to the south of Burton-on-Trent.

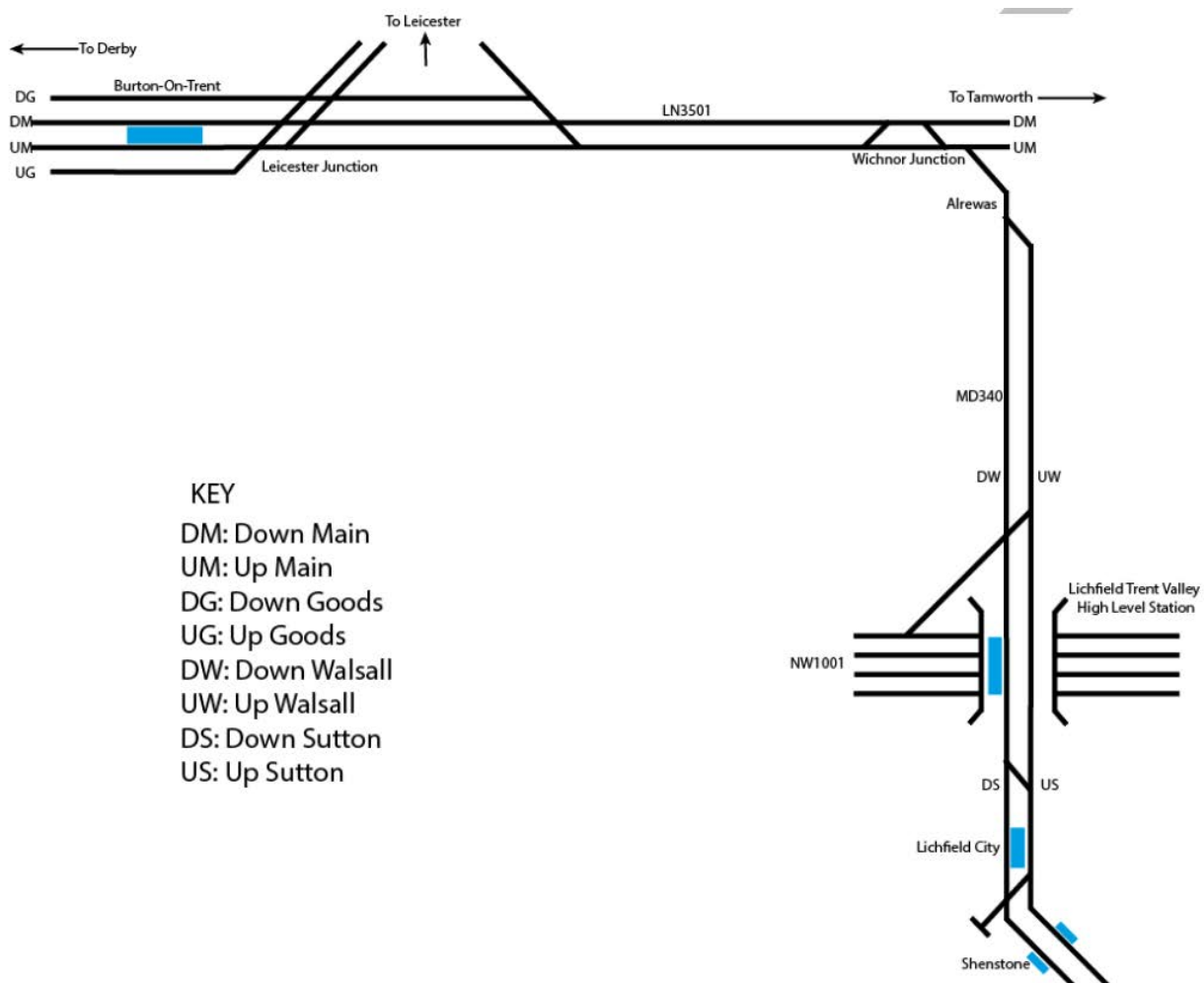




The line is primarily used by freight services to/from the Burton area, which can access the West Coast Main line northbound via a junction to the north of Lichfield Trent Valley Station, and by empty passenger train workings to/from the Bombardier Depot at Barton-under-Needwood which services Voyager trains for both Cross Country and Avanti West Coast.

There is also a single daily southbound Cross Country passenger service which is routed via this line and the Cross City in the late evening.

The line is double track throughout apart from the short section north of the former Alrewas Station site to Wichnor Junction.



Source: Network Rail

Note that the current Lichfield Trent Valley Station only has one high level on the northbound line which is used by terminating Cross City line services. The former southbound platform was removed in 1994.



Train Service Options

Previous work by Network Rail (2019) has identified that it would in principle be possible to extend the 2 existing Cross City line services per hour from Lichfield Trent Valley to a new single platform station on the single track line to the north of the former Alrewas Station site.

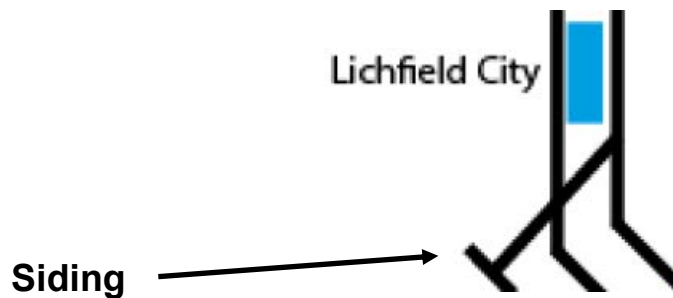
However, whilst it remains a long term ambition this option would:

- require electrification of the line north of Lichfield Trent Valley station (11 single track miles)
- not allow services to be extended to terminate at Burton-on-Trent without additional track and platform capacity at Burton station

and therefore would

- not allow connections to be made at Burton with existing train services to/from Derby/Nottingham and beyond

However, additional work by Network Rail has identified that, subject to further investigate and verification, it might also be possible to operate a non-electric shuttle service between Lichfield City and Alrewas using a siding just south of Lichfield City station. This siding was formerly part of a through route from Lichfield to Walsall which remained open to serve the Anglesea Oil Terminal.



Given the identified constraints which prevent terminating trains at Burton, the **base timetable option** to be analysed by the study will be for:

- an hourly local passenger service from Lichfield City to Derby calling at Lichfield Trent Valley (potentially northbound only) Burton-on-Trent

Sub-options for train service timetabling will also be considered for:

- a half-hourly service

and additional calls at:

- Willington (existing station between Burton and Derby with infrequent 2 hourly service)
- Lichfield Trent Valley (new southbound platform)
- Alrewas / National Memorial Arboretum (new station on A38 corridor)

For timetabling purposes it is assumed that the service would be operated by one of the following types of diesel rolling stock (Class 170, 172, 196, 230).

Infrastructure Requirements

The base option appears to potentially require only minor infrastructure enhancements – to be confirmed by Feasibility Study, specifically:

1: Maintenance/Renovation of existing Anglesea Branch connection south of Lichfield City

The Anglesea branch line the connection to which is located to the south of the Lichfield City Station was last used in 2003 by a Network Rail maintenance train. However, recent information suggests that the branch connection and associated signalling, whilst somewhat overgrown in places, appear to be operational (the signal from the branch onto the Cross City line certainly appears to be in working order).

It is therefore hoped that, if required, the branch connection could be reinstated as a reversing siding for comparatively little. Further work would be required in partnership with Network Rail to identify the exact cost and maintenance implications.

2: Incremental Infrastructure Options to the base option include:

a. Lichfield Trent Valley Reinstatement of High Level Platform 4

The former southbound “High Level” Platform 4 at Lichfield Trent Valley station was removed in 1994 following completion of the Cross City line electrification scheme. A very short section remains on the bridge over two low level platforms and 4 track West Coast Main Line.



www.railaroundbirmingham.co.uk/Stations/lichfield_trent_valley.php



The remaining high level Lichfield Trent Valley Platform 3 is used to turn around up to 4 Cross City line trains per hour. Moreover, the north end of Platform 3 marks the boundary between the Cross City line's modern signalling system and the Victorian era manual signalling on the line to Alrewas.

Given these constraints it is probable that any future new train services north of Lichfield TV would only be able to use Platform 3 in the north bound direction only.

Not serving Lichfield Trent Valley station in the southbound direction would be technically feasible, but would be undesirable and confusing from a passenger perspective. In this scenario, passengers from Alrewas/Burton would have to pass through the site of Lichfield Trent valley Station (and its convenient interchange with services on the West Coast Main line) on to Lichfield City where they would need to alight and then board the next northbound service back to Trent Valley.

The preferred alternative would therefore be to reinstate the southbound High Level Platform 4 to enable any future Alrewas/Burton services to call at Lichfield Trent Valley.

This would present some engineering challenges in designing and constructing a new platform, built to modern standards, which would partially straddle the 4 track West Coast Main Line and low level platforms.

Previous initial feasibility work undertaken for a private developer, indicated that this could be done with high level costs estimated at circa £3m (2013 prices).

However, even allowing for inflation this figure seems a little on the low side especially given that the new "Access for All" project at Trent Valley (which simply provides step-free access to the existing platforms) is costed at £2.4 million (2018).

b) New Station at Alrewas / National Memorial Arboretum

The former station at Alrewas was located immediately to the south east of Croxall Road level crossing.

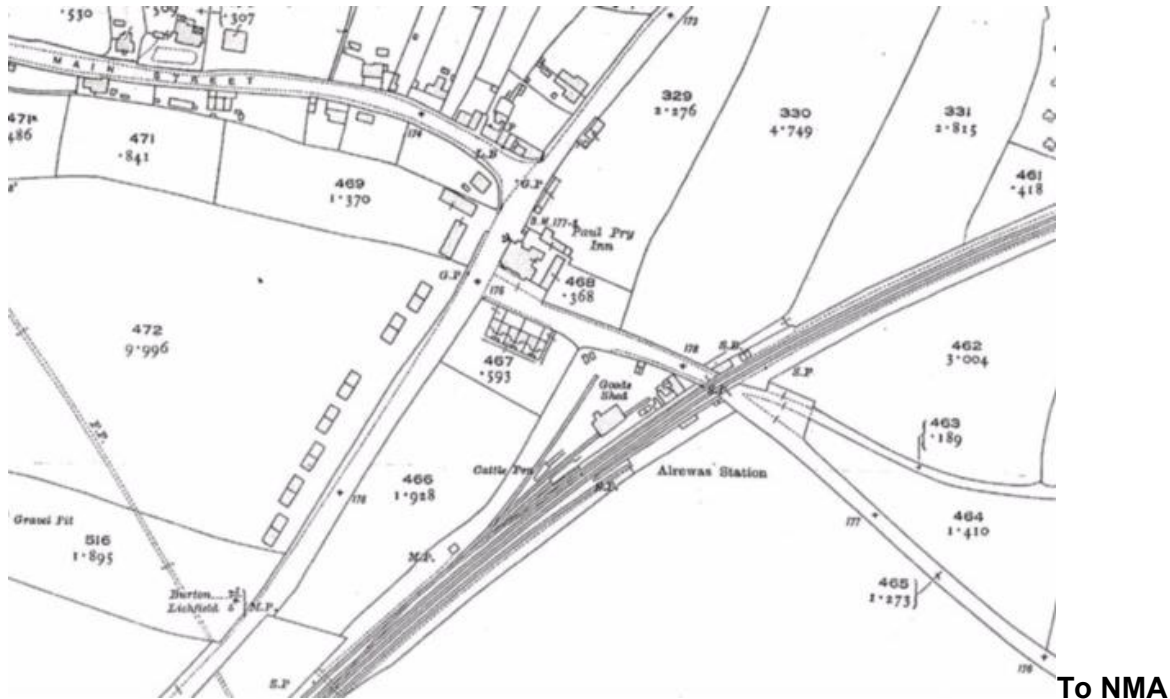
Alrewas Station in 1963 - Courtesy of Ian Pell



Source: Southstaffsrail.webs.com

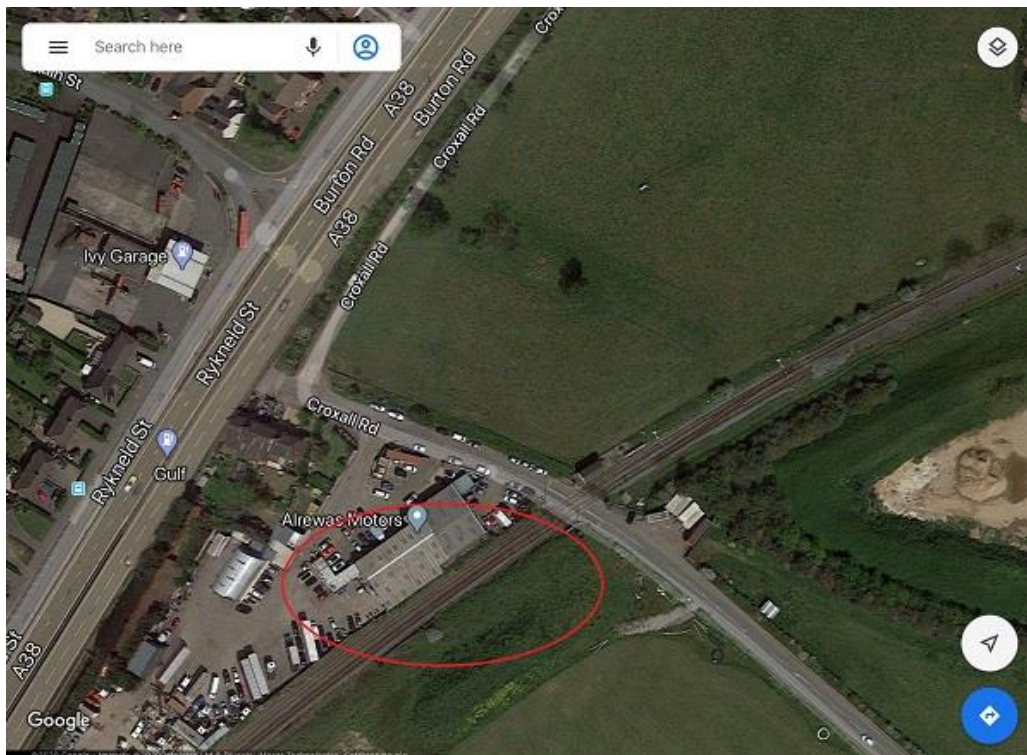


Croxall Rd used to link the station site with Main Street in village of Alrewas, via a junction with the A38.



Southstaffsrail.webs.com: Original Alrewas Station Site

The adjacent former goods yard (in red) is occupied by businesses which would almost certainly be affected by the station re-opening on this site and the link from the former Croxall Road has now been severed for vehicular traffic by the A38 dual carriageway.



Current overview of former station site (Google Maps)

Any future reinstatement of the station near this location would, ideally be accompanied with the creation of a new pedestrian access across the A38 to replace the current, un-signalised, foot crossing (below).

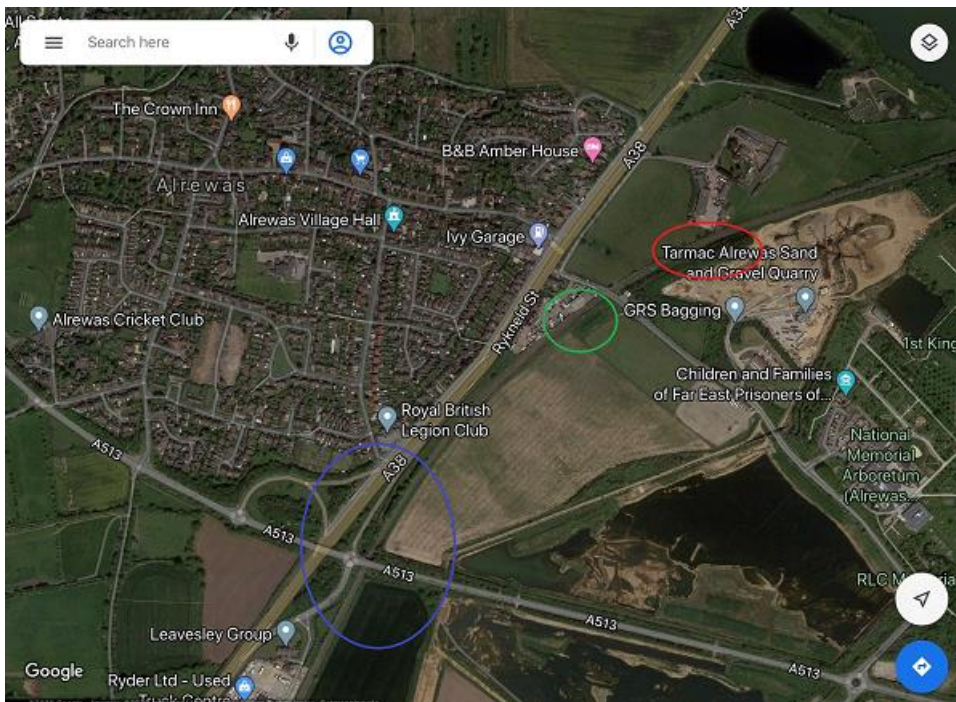


Google Maps: Pedestrian Crossing of A38 at Croxall Road

Alternative Alrewas / National Memorial Arboretum Station Location

One option to reduce costs might be to locate the new Alrewas Station on what is the start of the single track section of railway (at the location in red below) which begins a couple of hundred metres to the north east of the former station site (in green) on the opposite side of the level crossing. However, a station on the single track section could become a potential capacity constraint in future.

A third option would be adjacent to the existing junction of the A38 and A513 (in blue). This would have good road access from a Park and Ride perspective, but would be further from both the village centre and the National Memorial Arboretum entrance, the creation of new dedicated walking routes (especially to the NMA) looks feasible.



Google Maps: Potential New Alrewas Station Locations

The single platform option the one which Network Rail assumed in 2019 when timetabling a future long term extension of Cross City line electrified services. However, it would likely require additional land purchase for the station site and a new walking route to Croxall Road.



Google Maps: Start of Single Line Track Section to North East of Level Crossing

One of the purposes of the study will be to consider which of the identified options is preferable, given the three distinct market requirements and the constraints imposed by the existing railway and highway layouts.

c) Bay platform at Burton-on-Trent

As an alternative to a new Lichfield – Derby service, one option could be to reinstate one or both of the former bay platforms at the south end of Burton-on-Trent station. A bay platform would enable trains from Lichfield to turn back clear of the main through platforms at Burton without blocking these lines.

This forms part of the long term aspirations to extend Cross City line electric services to Burton.

Two bay platforms previously existed at Burton station but have currently been filled in and planted with small trees and shrubs.

From initial observations, it would appear feasible to reinstate one of the former south bay platforms (between the existing Platforms 1 and 2 - above) as a two/three car platform built to modern railway standards.

This would require digging out of the, now heavily planted in-fill between Platforms 1 and 2 and construction of a new platform face for the new bay.



Site of former bay platforms at Burton-on-Trent

It would also appear feasible to construct a longer six car bay platform for future use by an extended Cross City line service, but this would require a full engineering survey to verify and may require some slewing of the existing track alignments.

However, any length of bay platform would require the installation of a degree of new track and signalling to connect the new bay platform to both the “Up” and “Down” main lines south of the station (below).



The reinstatement of both bay platforms could also facilitate the longer term reinstatement of dedicated local train services on the Birmingham New St – Tamworth Burton line (with potential future new stations at Fort Parkway, Castle Bromwich/Vale and Kingsbury) which is also part of the longer term transport strategy of Transport for West Midlands, West Midlands Rail Executive and Birmingham, Staffordshire and Warwickshire councils.

Reinstatement of the bay platforms could also provide terminating facilities for a future Leicester – Coalville – Burton “Ivanhoe Line” service.

d) Electrification Lichfield TV - Burton

As previously stated the longer term ambition for the Lichfield – Burton line is the extension of two of the Cross City line services per hour to Burton-on-Trent. This ideally requires the electrification of the route. However, bi-mode trains might also be a future option but for operational flexibility this would require the entire Cross City line fleet be so equipped which could prove an inefficient use of resources.

Infrastructure Enhancement Options Summary (All Costs are High Level Approximations)

A new service between Lichfield and Alrewas/Burton would almost certainly require one or more of the following interventions (High Level Costs should be treated as purely indicative at this stage) are:

Lichfield - Burton Train Service Options			Infrastructure (Required / Optional)					
Diesel Shuttle from Lichfield City			Anglesea Branch Turnround	Southbound Accessible Platform at Lichfield TV	Station at Alrewas	Bay Platform at Burton	Electrification to Alrewas 2 x 5 miles	Electrification Alrewas to Burton 2 x 6 miles
From	to	Calling at						
Lichfield City	Alrewas	Lichfield TV (Northbound only)	●		●			
Lichfield City	Alrewas	Lichfield TV	●	●	●			
Lichfield City	Burton	Lichfield TV (Northbound only) Alrewas	●		○	●		
Lichfield City	Burton	Lichfield TV Alrewas	●	●	○	●		
Lichfield City	Derby	Lichfield TV (Northbound only) Alrewas, Burton-on-Trent	●		○			
Lichfield City	Derby	Lichfield TV Alrewas, Burton-on-Trent	●	●	○			
Extension of Electric Cross City Services			Infrastructure (Required / Optional)					
Lichfield TV	Alrewas			●	●		●	
Lichfield TV	Burton	Alrewas		●	○	●	●	●
High Level Capital Cost Estimate			Sub £100k?	£3.5-5m	£5-15m	£5-10m	£16m-20m	£19m-£29m

The base Lichfield - Derby shuttle train option requires the fewest infrastructure interventions and an initial hourly trial service could potentially be up and running within a year or two should the feasibility study demonstrate that sufficient infrastructure capacity between Burton and Derby is available.



Service Operating Costs and Potential Existing Funding Support

Any of the service options is likely to incur additional operating costs including rolling stock leasing and maintenance costs, additional track access charges and additional train crew.

In the first few years of operation it is likely that such costs would outweigh the potential revenue benefits of the new service, especially if abstraction from existing services becomes a factor, and that some form of subsidy would be required.

However, work undertaken back in 2015 for a potential housing developer (a scheme which is no longer being progressed) generated more positive results assuming that circa 8,000 new houses (and a water sports facility) were built adjacent to two new stations (with Park and Ride provision) between Lichfield and Burton on Trent.

In this new stations “with housing” scenario, over £4m revenue was estimated to be generated with a 2 train per hour shuttle between Lichfield and Burton.

It was also estimated that the “with housing” scenario could potentially cover its operating costs within three years. Whilst this particular housing scheme is not currently being progressed it is probable that other similar schemes in this area are likely to come forward which could be a driver of future patronage.

Moreover, should a suitable service option be identified and necessary infrastructure approved, it has been identified that any net operating costs of the new service could be covered by an existing funding scheme established within the current West Midlands Trains franchise.

From April 2021 the “Service Option Scheme Fund” requires West Midlands Trains to allocate circa £5m revenue funding per annum towards the provision of new/additional passenger services and it is proposed that part of this funding stream be used to support a new Lichfield – Derby service should it prove feasible.



The Strategic Overview

Poor Connectivity

The population centres of the City of Lichfield and Royal Borough of Sutton Coldfield have no direct rail access towards the East Midlands and North East.

Even local/regional journey rail journeys to Burton-on-Trent or Derby require either:

- a double change of trains at Lichfield Trent Valley and Tamworth (for which only limited connections are available)
- travel south all the way to Birmingham in order to pick up a northbound service via the Tamworth-Burton route

Existing local bus based public transport is also slow and infrequent, even for relatively short journeys.

As a result many typical **journey times by public transport are relatively slow:**

	Alrewas	Burton	Derby	Nottingham
Lichfield City	20	40	55	95
Sutton Coldfield (via Birmingham)		60	75	115
Birmingham NS	65			

Current Typical Public Transport Journey Times

The impact of a new rail service could be considerable:

- cutting journey times from Lichfield to Alrewas and Burton in half
- taking 15-20 minutes off journey times from Sutton Coldfield and Lichfield to Derby and Nottingham (representing a 1/3 reduction in many instances)

Impact on Access to Employment, Leisure and Social Services

This improved connectivity would not only benefit business and long distance leisure passengers, but could also provide people with far greater access to employment opportunities, leisure, healthcare and social services than is currently possible by public transport. This could dramatically reduce social-exclusion for those household or individuals without access to a private car.

National Memorial Arboretum Visitor Attraction

The National Memorial Arboretum (NMA) at Alrewas has become a major tourist attraction seeing over 300,000 visitors per annum and rising. The NMA is located close to the line and site of the former Alrewas Station on Croxall Road but currently has very limited public transport access.

Road Capacity Constraints

The **parallel** A38 Derby – Birmingham road is already congested leading to slow unreliable journey times and there is an urgent requirement for additional transport network capacity on this corridor

Rail Service and Network Capacity Constraints

Existing **train services on the** Derby – Burton – Birmingham route via Tamworth are overcrowded which already leads to “rail-heading” to Cross City line stations south of Lichfield.

The existing rail lines into Birmingham are also at capacity whereas the recently re-modelling Derby Station area has capacity for future growth in services.

If progressed, Midlands Connect’s Midlands Rail Hub proposals will eventually provide vital capacity relief and connectivity improvements for the existing Birmingham – Derby rail corridor via Tamworth. However, these enhancements are, at least, a decade away.

It is also important to note that the short term proposal for Lichfield – Burton – Derby local service is not in conflict with the longer term aims of Midlands Connect or the West Midlands Rail Strategy aspirations to extend Cross City line trains to Burton. Indeed it is recognised that such services may represent an interim state pending the completion of such longer term strategic rail enhancement schemes including Phase 2B of HS2.

New Housing Proposals Market

Proposed new housing in Fradley and Alrewas areas will support the case for re-instating passenger services and one or more new stations.

Economic Benefits

As part of the West Midlands Rail Investment Strategy work, the high level economic benefits of the proposed long term extension of electrified Cross City line were previously estimated at circa £7m GVA per annum based on a model developed for such analysis in the West Midlands region by Systra (below).

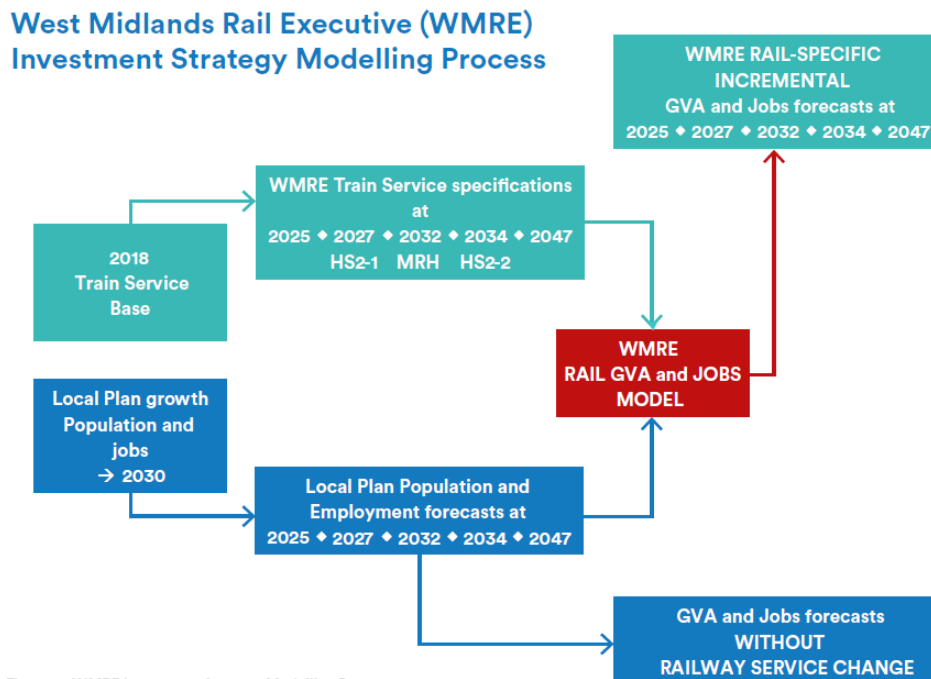


Figure 6 - WMRE Investment Strategy Modelling Process

Subject to further analysis, the options for shorter term solutions are expected to achieve at least a similar magnitude of economic benefits, possibly greater given the lack of interchange to/from the centre of Derby.



Environmental Benefits

Many of the above factors mean that for many, the private car (if available) is the only viable mode of transport for many journeys. Reducing car dependency through the provision of new rail services and associated Park and Ride options could encourage modal shift towards rail with its lower emissions and more efficient use of scarce resources.

Under-utilised Asset

In this context the existing, largely double track, rail line from Lichfield to Wichnor Junction is an under-utilised resource apart from relatively sparse freight movements and empty stock movements to/from Bombardier's train maintenance depot.

Short to Long Term Transition

The standalone Lichfield – Burton/Derby shuttle services would both test and build the market for the longer term extension of Cross City line services and more frequent services on the West Midlands to Derby corridor.



Policy Context

In the broader transport policy context, the long-term reinstatement of passenger train services on the Lichfield – Burton rail line is identified in the West Midlands Combined Authority’s “Movement for Growth Strategy” strategy.

<https://www.tfwm.org.uk/media/1099/movement-for-growth.pdf>.

Similarly, West Midlands Rail Executive’s new 30 year Rail Investment Strategy proposes the extension of 2 Cross City line trains per hour from Lichfield to Burton-on-Trent in the medium term (2026-2034).

<http://wmre.org.uk/strategy/wmris/>

Staffordshire County Council also produced its own Rail Strategy in 2016, which identified the use of the Lichfield – Burton line for passenger services as one of its transport objectives, along with a new station in the Alrewas area, to support faster journeys from South Staffordshire to Birmingham and to improve connectivity to the East Midlands.

www.staffordshire.gov.uk/transport/transportplanning/Rail-strategy/Rail-Strategy.aspx

Regional Commuter/Leisure journeys between Lichfield/Sutton Coldfield and Burton/Derby/Nottingham

Long Distance Business/Leisure trips between Lichfield/Sutton Coldfield and Yorkshire/N. East/Scotland

Potential Markets

- Local/regional commuter, leisure and social trips between towns and cities on Sutton – Lichfield – Derby corridor
- Improved connectivity from Sutton Coldfield and Lichfield to the East Midlands, Yorkshire, North East and Scotland
- A step-change in local public transport for Alrewas
- Direct access to/from the National Rail network for the increasing numbers of National Memorial Arboretum visitors
- Access to the rail network for potential future new housing around Alrewas, Fradley and Wychnor
- Park and Ride modal shift from the congested A38 Derby – Birmingham road corridor
- Capacity relief for congested Cross Country services on existing Birmingham – Derby corridor via Tamworth



Overall Summary

- The introduction of a Lichfield City to Alrewas or Burton-on-Trent would appear to be feasible with appropriate investment in a new station and additional rail network infrastructure at Burton Station.
(This is subject to resolving any potential conflict with existing passenger and freight services and assessment of potential performance impacts).
- More detailed specialist timetabling work will be required to confirm the deliverability of this service (and also whether the option of a service extension to Derby is feasible – taking into account proposed service changes of other train operators)
- There appears to be a potentially strong business, strategic and economic case for the new service as well as a readily available funding stream to support ongoing operating costs.



Appendix 1: Proposed Brief for a Lichfield - Burton – Derby Passenger Service Feasibility Study

Transport for West Midlands are proposing to commission an independent appraisal of the feasibility of introducing a local passenger train service between Lichfield and Burton/Derby.

Requirement

The focus of the feasibility study should build on the 2019 Network Rail and West Midlands Rail Executive pre-feasibility appraisals of the options for a new local service in the short, medium and long term.

The study is expected to take circa 3 months:

Feasibility Study Phase 1A – Assessment of Short-term Deliverability of an Hourly Standalone Lichfield City – Derby Diesel Train service

Including assessment of:

- a. option to use Lichfield South Junction Anglesea Branch stub to turnaround trains starting/terminating Lichfield City (practicality, works required, cost)
- b. ability to path alongside existing passenger/freight services (based on December 2020 timetable) including consideration of
 - i. rolling stock performance characteristics (Class 170, 172, 196, 230)
 - ii. assumed calling pattern of Lichfield City – Burton – Willington (Optional) – Derby
 - iii. option for calling at Lichfield Trent Platform 3 northbound only or both directions
 - iv. option for calling at a new Alrewas / National Memorial Arboretum Station
 - v. platform occupation at Derby
 - vi. planned EMR and Cross Country timetable changes
 - vii. assessment of performance impacts of any deliverable timetable options
 - viii. any additional rail infrastructure enhancements (plus GRIP 1 cost estimate) required to deliver an hourly service
- c. Operating costs / resource requirement of two car Class 170, 172, 196, 230 DMU operation
- d. Demand / Revenue (including potential abstraction)
- e. Wider Economic Benefits
- f. Overall Strategic Transport and Outline Business Case

Feasibility Study Phase 1B – Assessment of Longer-term Extension of Cross City North to Burton

A review of the longer term aspiration to extend a two train per hour Cross City service to Alrewas and Burton-on-Trent (in place of an hourly Lichfield – Derby shuttle) is also required to assess:

- i. ability to path alongside existing passenger/freight services (based on December 2020 timetable) and known Midlands Connect aspirations
- ii. Cost / deliverability of electrification / Burton Bay Platform (GRIP 1)
- iii. any additional rail infrastructure enhancements (plus GRIP 1 cost estimate) required to deliver a half-hourly service



- iv. Operating costs / resource requirement of half-hourly six car Class 730 operation considering;
 - a. Options to split / join 2 x 3 car sets at Lichfield City or TV
 - b. Option for bi-mode operation instead of electrification (base assumption that entire Cross City line fleet would require bi-mode equipment)
- v. Demand / Revenue (including potential abstraction) of through services from Burton to Lichfield, Sutton Coldfield, Birmingham New St University via Cross City line
- vi. Overall Strategic Transport and Outline Business Case

Feasibility Study Phase 2A – Assessment of Case for Lichfield Trent Valley Southbound Platform

(Expected to take no more than 3 months concurrent with Phase 2B):

Including assessment of:

- i. Wider Strategic Transport Case
- ii. 2 / 3 car train capability (with potential 6 car future extension)
- iii. identification of track/signalling constraints
- iv. outline design of base two/three car option
- v. impact on operating costs and revenues for base hourly service
- vi. GRIP 1 capital cost and high level business case appraisal

Feasibility Study Phase 2B – Assessment of Case for new Alrewas Station

(Expected to take no more than 3 months concurrent with Phase 2A):

Including assessment of:

- i. Wider Strategic Transport Case
- ii. Ability to provide sustainable access to National Memorial Arboretum
- iii. Ability to provide sustainable access to Alrewas village
- iv. A38 Park and Ride opportunities
- v. High level assessment of demand with/without P+R
- vi. 2 / 3 car train capability (with potential 6 car future extension)
- vii. identification of track/signalling constraints
- viii. impact on operating costs revenues for base hourly service
- ix. GRIP 1 capital cost and high level business case appraisal

Background Papers Available

- WMRE: Pre-Feasibility Study Lichfield – Burton – Derby (July 2019)
- Network Rail: Cross City Extension Report (April 2019)
- JMP: Brookhay Rail Service Study (2015)