Submission ID: 25873

Response to 2.7.1 of Examining Authority's Further Written Questions (ExQ2) 22 January 2024
I have now obtained the permission of the Owen O'Neill to submit the report that he prepared for me to demonstrate that the rail-linking of Magna Park is prima facie viable. (LutterworthLine Freight). Please note that his report is a condensed and revised extract of a paper that he originally prepared for a bid to the Department of Transport 'Restoring Your Railway' fund (Cosby to Lutterworth Line – Ideas Fund 3), which unfortunately was not successful. Further details are given in the summary section of the attached report.

# Magna Park Rail Freight Connectivity



## 1. Introduction

This report examines the potential to connect Europe's largest dedicated logistics park at Magna Park directly to the rail network to minimise the local and national environmental impact of this logistics activity.

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## 2. Summary

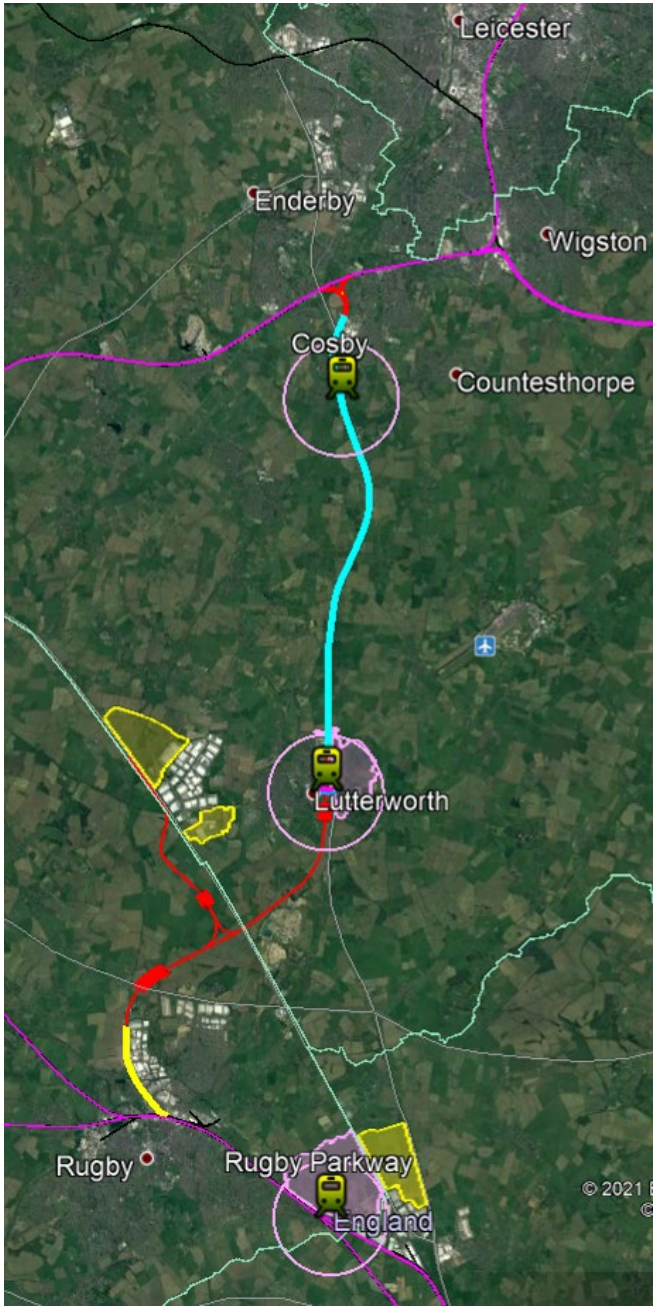
The ‘golden triangle’ lies at the very heart of logistics in the UK. It has a very well developed motorway network, but its extremely well connected rail network was decimated during the Beeching era leaving very poor public transport connectivity for anything other than London-centric routes.

This poor connectivity prevents both passengers and freight from making best use of the rail lines that do exist in the area – limiting rail’s ability to be used for domestic logistics ‘trunking’ activity from the numerous national distribution hubs in the area, outbound to every corner of the country.

The ‘Lutterworth Line’ project developed and submitted a ‘Restoring Your Railway’ bid, supported by Alberto Costa MP and Mark Pawsey MP to the DfT. The project proposed adding a 16 mile section of connectivity between Leicester and Rugby which would serve two major purposes :-

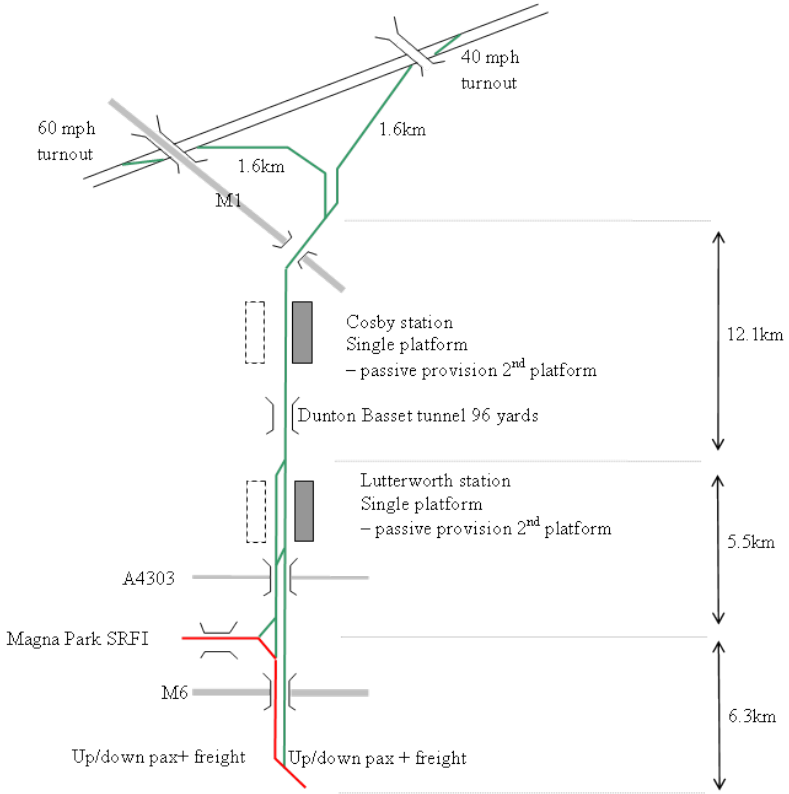
1) Put a population of 650k within a one hour journey of each other, halving the current journey times between those population centres. (HS2 will not improve these, because the problem is connectivity, not capacity, for these journeys)
2) Allow freight from Felixstowe to access the largest RFI in the area (DIRFT) without having to go via London, and provide excellent outbound routeing to every corner of the country, instead of the situation today when far too many outbound routes spend an extra hour travelling through the most congested parts of Birmingham.

Unfortunately the bid was not successful in obtaining DfT funding, however the strong freight demand remains, placing considerable demand on the local road network, so we examine the feasibility of a smaller freight only scheme that would connect the existing Magna Park facility directly to the rail network to improve its sustainability.



The combined freight and passenger scheme had a number of relatively high cost civil engineering features (viaducts) dictated by the topology of the area, and the need to put a passenger station at the heart of the Lutterworth community.

We examine the feasibility to create a freight-only scheme that reduces the scale of the required civil engineering to produce a lower cost project.




## 3. Route options

There are two basic routes :-

Approaching Magna Park from the north.
This would depart the current Wigston-Nuneaton line crossing the M1 on the still existent bridge, then heading south along the historic GCR route immediately adjacent the M1 (light blue), diverging from this historic route north of Lutterworth, and creating a RFI immediately to the North of Magna Park.

Route length 16km

Approaching Magna Park from the south
This route would depart Rugby along the historic Midland Railway route (yellow), crossing the existing masonry viaduct in Rugby, crossing the M6 on a new bridge, and diverging off the historic route close to the southern edge of Magna Park, and create a RFI immediately adjacent to the A5 on the southern edge of Magna Park.

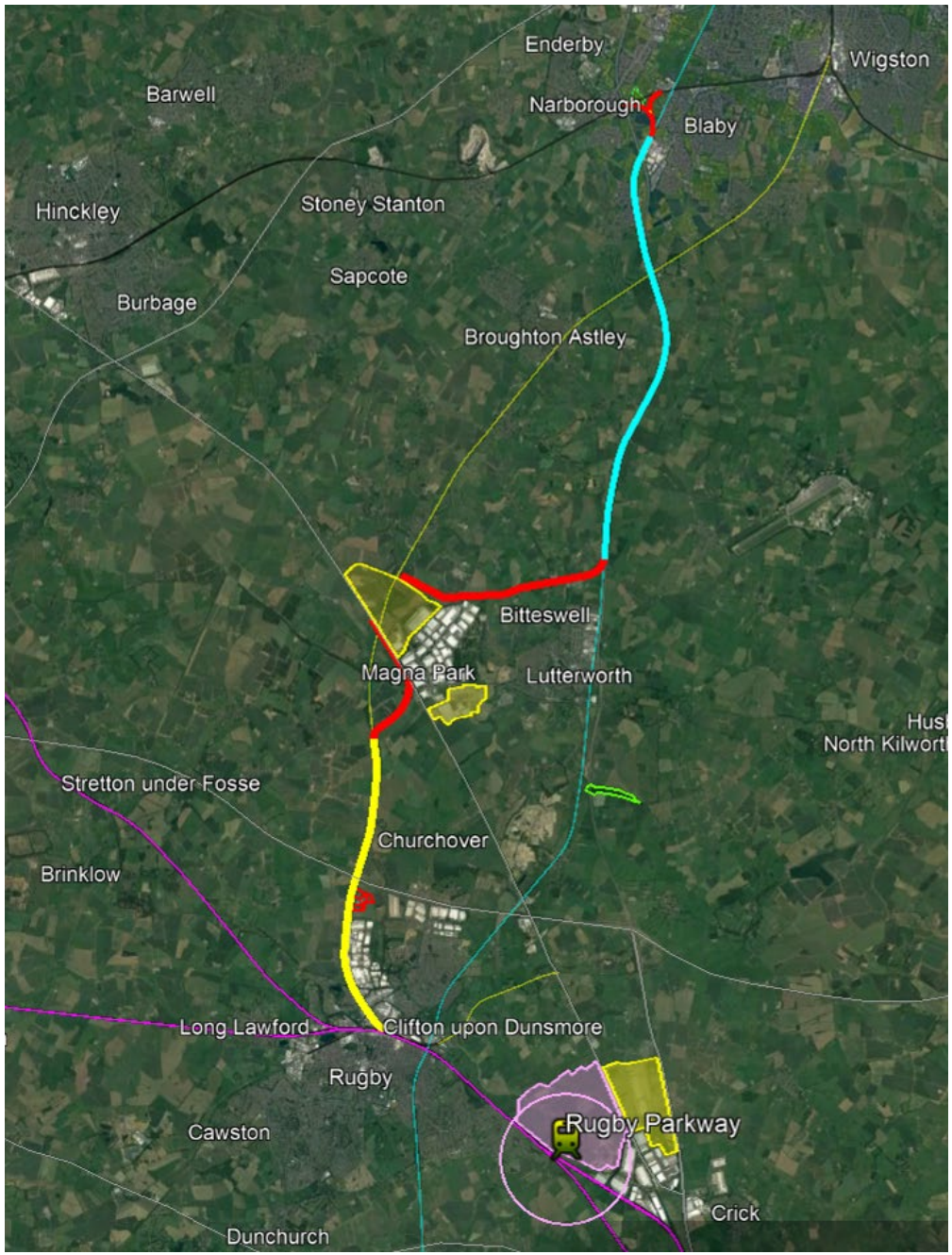
Route length 8.7km

Aside from the motorway crossings neither route requires significant structures.

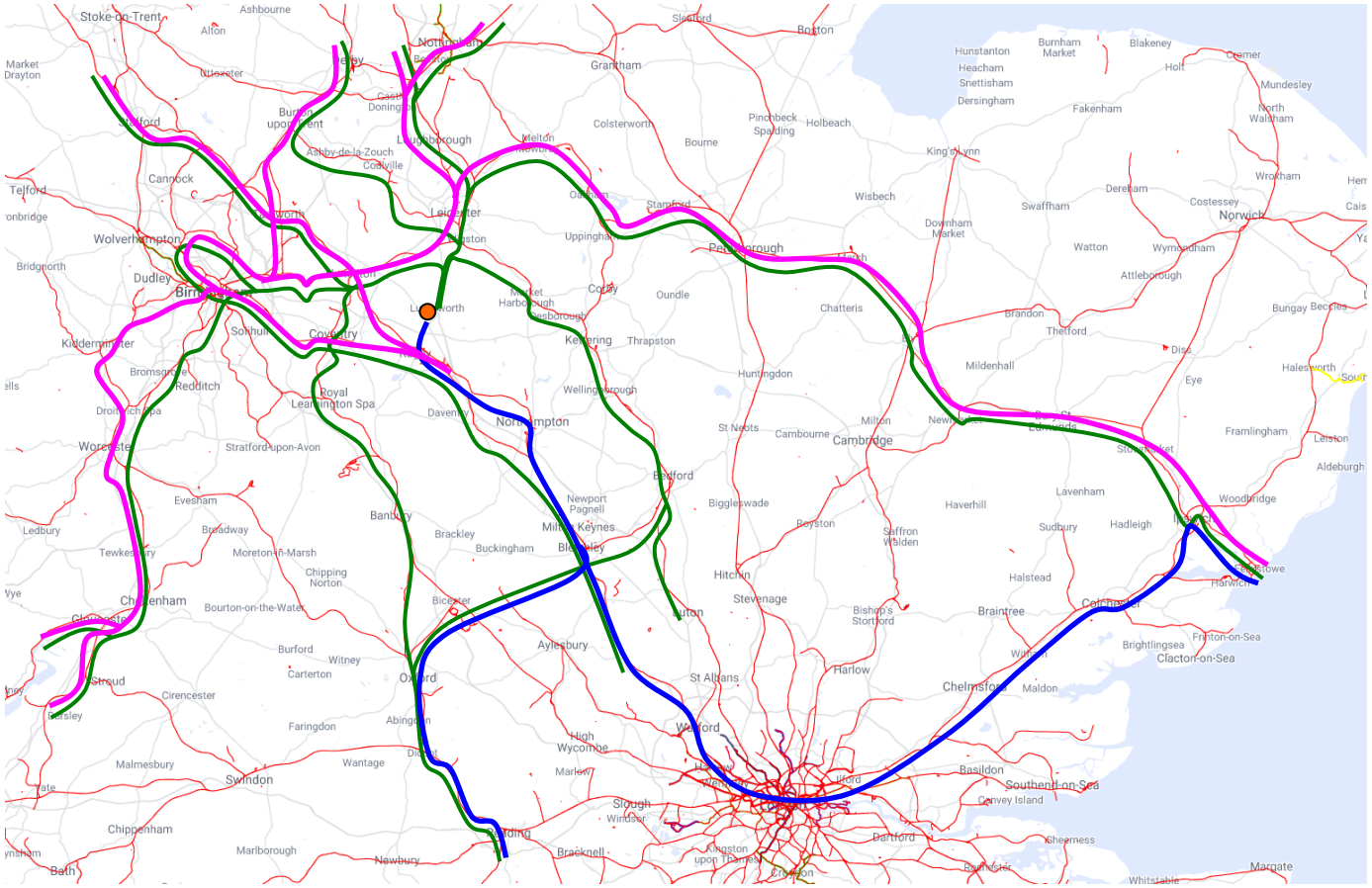
At first glance the southern route appears more attractive due to its shorter length, however the condition of the viaduct within Rugby may effect the cost of this route, and the site of the northern RFI requires greater levelling to create a usable RFI.

Both routes utilise significant historic sections of historic alignments reducing construction costs, social and environmental impact.

The operational utility of the two connections into the rail network would have a significant bearing on which option would be most effective.



## 4. Routeing connectivity




Connection to the Wigston-Nuneaton route allows for a greater variety of direct routing options ( green )

Connection to Rugby (blue) currently requires going via congested London routes to reach Felixstowe, although EWR may open up another route, but this will not be known for another 5 years or so.1

Most other destinations would require a freight service to pull into sidings at DIRFT and perform an engine-run-round to reverse before proceeding to other destinations (pink).
This may require additional infrastructure, sidings in and around DIRFT, which is already a very busy freight location.

The engine run-round would add additional time, and for many destinations require routeing through Birmingham, which is heavily congested making it more difficult to obtain paths. However it would permit assembly of part train loads between consignees at Magna Park and DIRFT. The scale of the expanded Magna Park should permit the ready assembly of full train loads, so this may be of marginal benefit.

Rail network on ‘northern’ approach is currently not electrified, although MML has now been approved for electrification in the recent IRP. WCML on ‘southern’ approach is fully electrified.

These factors make the relative merits of a north / south connection influenced by a range of factors in addition to the cost of provision of infrastructure.


## 5. Market Opportunity

The approved expansion at DIRFT will see its size increase to ≈405ha, and Magna Park expand to ≈530ha. It is essential that logistics super-hubs, can not only receive trainloads from ports, but also send out many more domestic trainloads to every corner of the country, **instead** of sucking in trainloads from ports and spitting them out onto local roads. Allowing Magna Park to do the same would maximise the utility of both these nationally significant facilities, whilst minimising their local impact by using HGVs for only the final (50) miles of many more journeys.

Logistics providers at DIRFT are growing this embryonic 'domestic' market, particularly from the golden triangle to the Scottish central belt, which now has daily freight trains. Logistics is an increasingly cost and time sensitive business where, like the British cycle team – putting marginal gains together can mean the difference between being nowhere and winning environmental 'gold'. https://www.malcolmgroup.co.uk/rail/rail-services/

Haulage is a fiercely competitive marketplace, so it is not enough to just be green, at a time when many retailers are struggling to remain in existence. In order to attract customers rail must equal or better the cost of 'business as usual' hauling by road.

The difference between being 'at' (DIRFT) instead of just 'near' (Magna Park) a railhead has a major impact on the area of the UK where rail freight 'breaks even' compared to road.

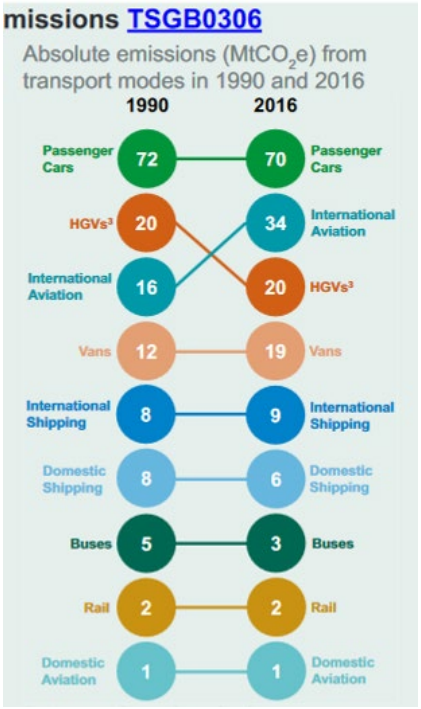
When the warehouse is 'at' the railhead the break even point is ≈100 miles (inner circle). When one end of the distribution chain is just 'near; the railhead this increases to ≈150 miles. (outer circle) http://www.railtex.co.uk/_downloads/presentations/Julian%20Worth_CILT.pdf

In our small country, this is the difference between major population centres such as Liverpool, Manchester, Bristol, Cardiff and Southampton being cheaper to service by rail or road from national distribution hubs in the golden triangle, a difference of 11 million people falling outside the area that is economic to serve by rail.

*The potential is clear when we look forward. Expert forecasts, as a 'base case' rather than using optimistic assumptions, project that there is sufficient demand to double again the amount of freight moved by rail in the next 15 years. That's almost an extra 20 million tonnes of freight removed from the UK's roads annually by 2033/4, equivalent to 450,000HGV journeys saved with the associated emissions reductions and congestion benefits.*

*There is real demand from rail freight users to increase their usage. The problem is that the potential of intermodal rail freight is being constrained.*

*Unless we take steps now to remove constraints and support growth, there is significant risk of missing major potential to increase the efficiency of rail freight transport and the environmental and societal benefits that brings.* *Rail Freight Group – why the UK needs more Intermodal Rail Freight*




In 2017 rail freight to/from DIRFT alone would have required 64 million HGV miles if it had been sent by road. https://bettertransport.org.uk/media/22-May-2017-rail-freight-far-better-at-reducing-congestion

However, at a national level only 9% of 'freight kilometres' are by rail. (NPSNN para 2.28). We are only scratching the surface of rail's capability to reduce GHG emissions, pollution, congestion and accidents.

*Rail freight is delivering economic and environmental outputs valued at around £1.7bn per year through road decongestion, reduced emissions and productivity gains for business. Each train produces 76% less carbon dioxide than the equivalent journey by road and removes 50-80 HGVs from the road network.* Rail Freight Group- priorities for gov.

A 25% modal shift from HGV+LGV to rail would reduce UK GHG transport emissions by 4.5% (even with the current rail freight traction energy mix) (figure left DfT Transport Statistics 2018 )
Shifting ¼ HGV & Van usage (39 $MtCO_2e$) to rail – even without further decarbonisation of rail (carbon intensity 1/4 of road), saves ≈7.3 $MtCO_2e$

*"The scale of floorspace and activity on site is important to maximising the take up of rail for the movement of freight, … as to* ***creating the critical mass of freight needed to sustain the initial network of rail freight services****. In this way, the benefits of scale are progressive. In other words, the more occupiers there are on a site, the greater the likely demand for trains. Trains to and from different destinations then become increasingly frequent and viable and the attractiveness and advantages of using rail are enhanced."*

*Given that rail-served floorspace in the Midlands is relatively small compared to other non rail-served floorspace, more SRFI capacity will be required -whether dispersed or co-located -on major urban centres, or groups of centres, linked to key supply chain routes, to match the changing demands of the market. In this regard, the research and forecasting which underpinned Network Rail's Freight Market Study 2013 (as referenced in the NPSNN and considered to be robust) made provision for some* ***2.5 million sq m*** *of rail-served floorspace being provided in the area between Northamptonshire and Milton Keynes by 2043*

*"Tesco and Eddie Stobart were amongst the first to occupy buildings on DIRFT I following opening in 1994, but did not commence dedicated rail services until 2006."*

> *"Environmental benefits and cost savings go hand in hand. If we had the right opportunity, we would move more product off road and onto rail without hesitation"* – Morrisons

> *"I can see the environmental benefits of rail and intuitively I want to do more. But what's offered by the rail freight industry needs to fit our requirements better"* – Waitrose

Quotes above are extracts from Rail Central planning application – rail operations report

Given the observed historical pattern of the build-up of operations at new facilities when first opened, and the clear need to generate 'critical mass' for rail operations, it would seem highly likely that **a new SRFI would initially be completely road-served until such time as sufficient warehousing was built and occupied to generate critical mass**. During this build-up phase the facility would be likely to generate more emissions (by being completely road-served) and **place significant additional HGV traffic onto the surrounding road network**.

Therefore we should consider the relative costs, benefits and impacts of connecting existing road-served logistics sites which already have 'critical mass' to the rail network vs creating completely new logistics sites.

When fully built out the approved extensions at DIRFT will take the warehousing space at that site to 1.3M m²
https://prologis.co.uk/gathering-momentum-progress-at-dirft/
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR050004/TR050004-002811-7.4.%20Market%20Assessment%20Report.pdf

The currently under construction Northampton Gateway will, when complete provide. 0.6M m²
https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/northampton-gateway-rail-freight-interchange/

Magna Park has had expansion approved which will see its size increase to 1.5M m²
https://www.shdlogistics.com/news/magna-park-logistics-hub-nearly-double-size-16-mn-sq-ft

**total** **3.4M m²**

Rail-connecting Magna Park would provide the identified need for rail-connected warehousing out to the mid 2040s – and not experience any delay in commencement of rail-served operations since it already has critical mass to generate complete train loads.

Further research and long term planning documents related to rail freight forecasting, which we have consulted in the formation of this proposal can be found here :-
https://www.networkrail.co.uk/running-the-railway/long-term-planning/

https://cdn.networkrail.co.uk/wp-content/uploads/2016/11/Freight-Market-Study.pdf
https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf
https://www.networkrail.co.uk/wp-content/uploads/2020/08/Rail-freight-forecasts-Scenarios-for-2033-34-and-2043-44.pdf
https://www.networkrail.co.uk/wp-content/uploads/2020/08/Routeing-of-rail-freight-forecasts.pdf
https://www.arup.com/-/media/arup/files/publications/f/future_potential_for_modal_shift_in_the_uk_rail_freight_market.pdf

## 6. Environmental

Recent research on the ecological impact of transport infrastructure indicates that its impact is felt some distance beyond the footprint of the infrastructure itself.
https://natureconservation.pensoft.net/article/31826/
*e.g. For birds, an extensive meta-analysis has identified an average of 20% density reduction within 1 km from the infrastructure.*

Much of proposed northern route is immediately adjacent the M1, around 10 metres from the hard shoulder of the motorway. This section of motorway carries 90k vehicles per day.
https://roadtraffic.dft.gov.uk/manualcountpoints/46004

A further 10% of the outlined new route section parallels the A426, at most 250m from it (12k vehicles / day https://roadtraffic.dft.gov.uk/manualcountpoints/57146)

The route entering Rugby runs alongside existing industrial development. As a result, the incremental environmental impact created by the proposed route is reduced to a minimum.

Unless reliable, capable and equally performing sustainable transport modes are offered as an alternative to the private care – we can be certain zero modal shift of passenger journeys will occur. Tempro data forecasts a 39% increase in the number of private cars owned by residents of Lutterworth (SOA Harborough 010) between 2020 and 2050. Even if a substantial proportion of these become powered by non-polluting means, the sheer increase in numbers will set back progress towards net-zero, and place increasing demands on both local and strategic roads, calling for further road-building.

Today Rail freight emits 76% less $CO_2$ per tonne payload than road freight, and this can be expected to improve further if the TDNS is implemented. Rail freight strategy

Long range forecasting for domestic intermodal rail freight indicates an extremely wide range of growth scenarios depending on the strength of government action to address climate change - from +110% to + 1013% (2016-2043). We can be certain that the golden triangle will lie at the epicentre of increased domestic intermodal rail freight demand. Without adequate rail network capacity and connectivity in this critical area we will not maximise emission reductions and will fail to achieve net-zero by 2050.

Lutterworth lies at the absolute centre of the logistics ‘golden triangle’, with Magna Park being the largest dedicated logistics park in Europe. If we are to successfully decarbonise just-in-time logistics in the UK then a high performance rail network radiating in every direction from the heart of the ‘golden triangle’ to every part of the UK is essential.

We must evaluate localised environmental impact of proposed infrastructure against global environmental gains to be had from the reduced emissions that this project can enable.

## 7. Costing

Note that this costing **EXCLUDES** the cost of the RFI, and only relates to extension of the rail network up to the point where it would connect to the RFI.

| **Item** | **Capital Cost estimate (inc 66% optimism bias) - 2020 prices** |
|---|---|
| Whole route, vegetation clearance, permanent way, signalling, drainage, land (10.1 route km) (10.1 STK) | 36.4 |
| Historic route assessment/ refurbishment/ replacement/ of structures | 5 |
| Civils new route (viaducts, bridges, earthworks) (6 route km) | 60 |
| **Total** | **101.4 (£ million)** |

| **Item** | **Capital Cost estimate (inc 66% optimism bias) - 2020 prices** |
|---|---|
| Whole route, vegetation clearance, permanent way, signalling, drainage, land (7 route km) (7 STK) | 25.2 |
| Historic route assessment/ refurbishment/ replacement/ of structures | 10 |
| Civils new route (viaducts, bridges, earthworks) (1.7km route km) + 1 motorway bridge @ £20m | 37 |
| Electrification (8.7km) | 8.7 |
| **Total** | **80.9 (£ million)** |

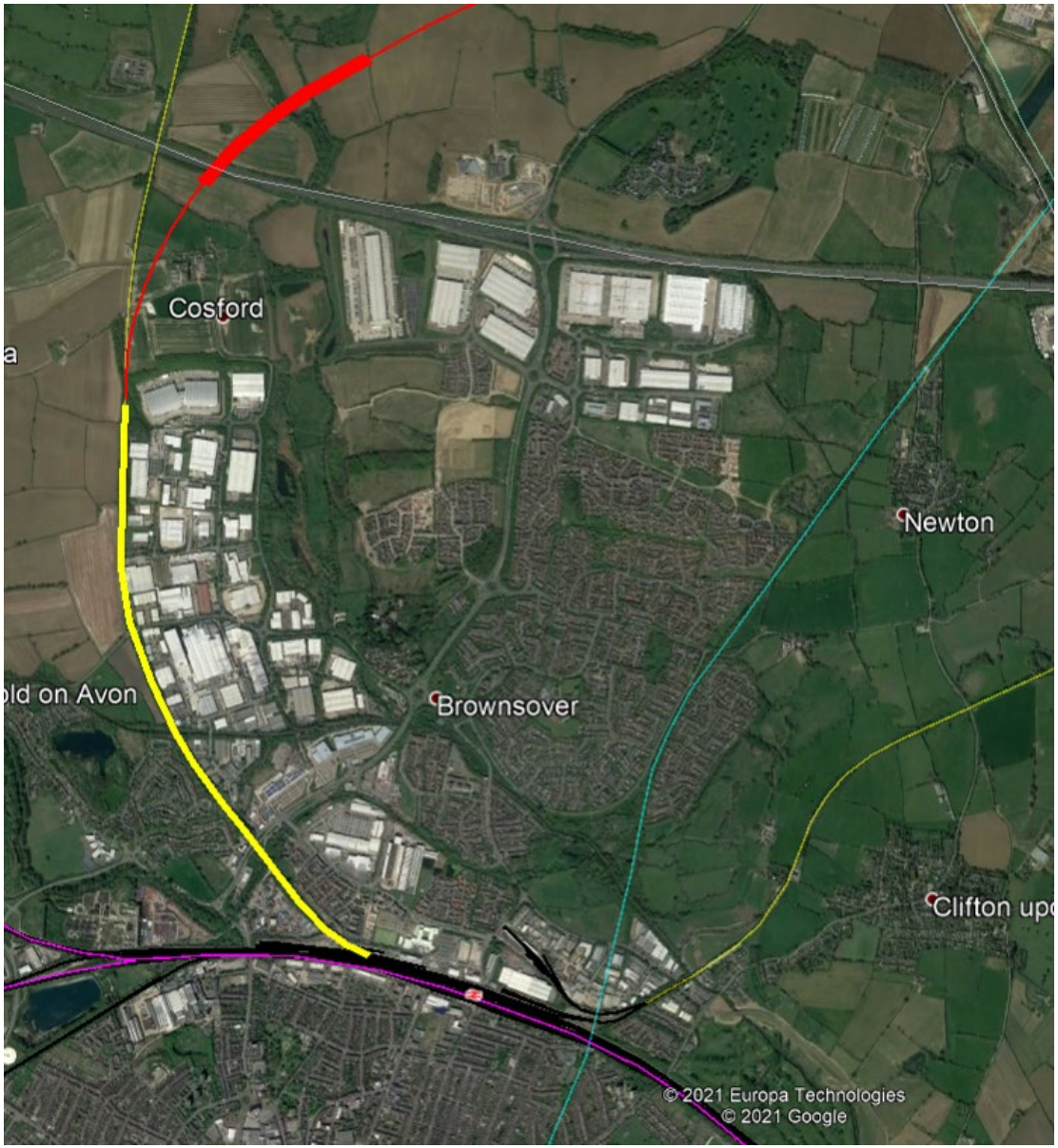
Hybrid approach taken to cost estimating. Civils for new route section based on high speed international benchmarking study
Station and permanent-way signalling drainage etc based on data from Wisbech re-opening studies


## Narborough

Northern chord, connecting to Leicester – Nuneaton line (F2N corridor), deviating at this point also conveniently avoids residential development on historic alignment (orange)

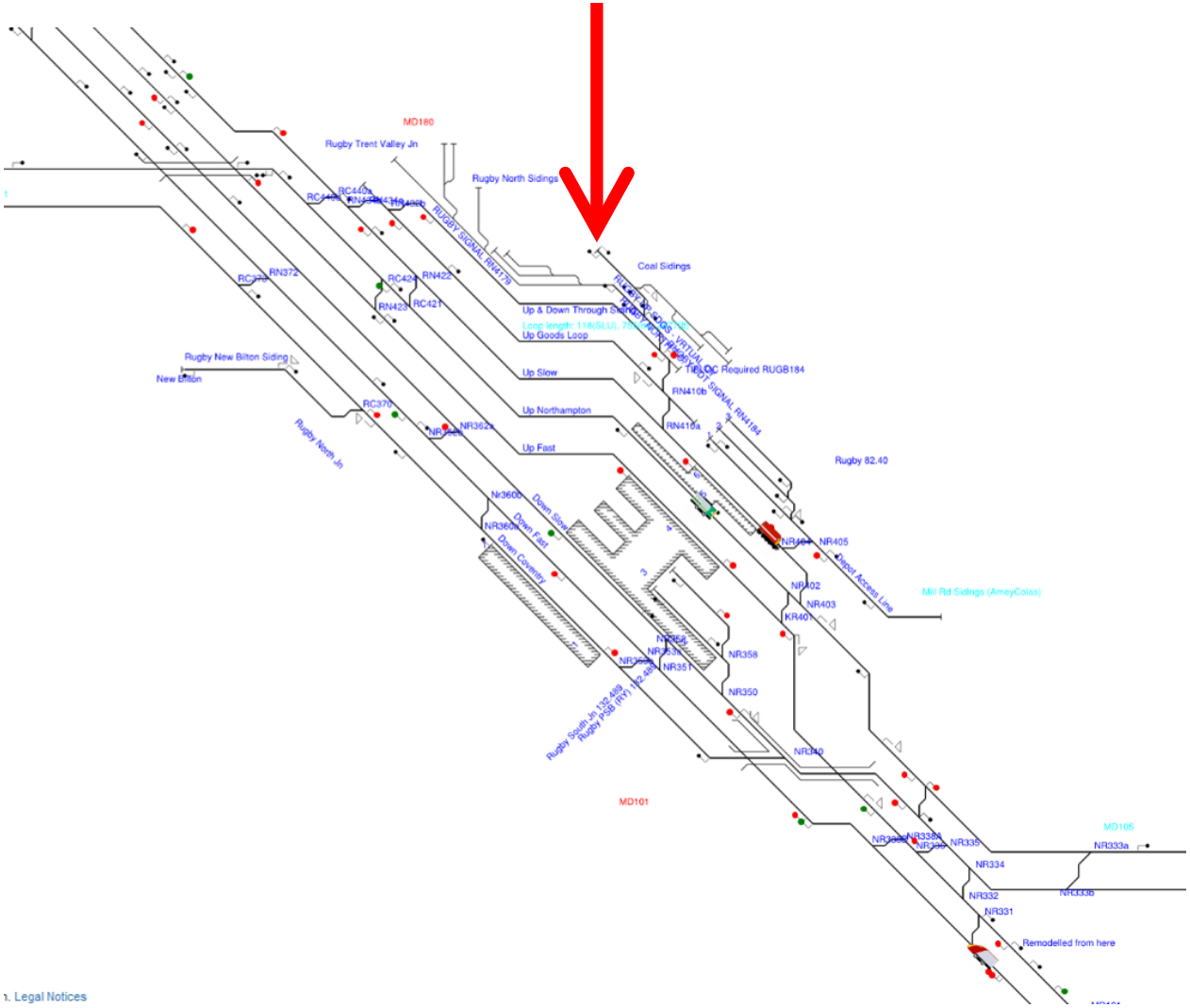
Passenger traffic level on this route is currently 2TPH, with typically another 2TPH freight.

Flat junctions would be adequate for the anticipated level of freight traffic.




## Entering Rugby

At Rugby the Midland alignment (yellow) is unobstructed and passes by considerable logistics locations providing further potential for another future RFI site




## Rugby station

Rugby is a large and complex station, so it is not possible for us to carry out a complete analysis of the available capacity in a simplistic manner.

This would be the subject of further work during the feasibility study.

Connecting at the point indicated by the arrow corresponds to the desired physical location, further work is required to analyse operational impact.

Initial analysis indicates that at-grade junction this point would be a workable solution for the proposed service level.

http://raildar.co.uk/map/RUG

## Copyright / acknowledgments:



Special thanks to RailMapOnline, historic mapping of railway routes being a valuable and accessible data resource.
Railway network map images: Base image: www.railmaponline.com, Map tiles by Stamen Design (http://stamen.com), under CC BY 3.0. Data by OpenStreetMap (http://openstreetmap.org )

We must make a special dedication to fellow RYR campaigner Geoff Bushell, chair of CRIL. Geoff passed away from Covid-19 in November 2020, and gave us great advice on what to do – and mistakes to avoid - when campaigning. The CRIL team have broken down a lot of process barriers that allowed other campaigns such as ourselves to proceed more quickly.

Special thanks to the Rugby Rail Users Group for their assistance in developing the concept to minimise and understand potential impacts, and their great success in engaging with key stakeholders about the social benefits more connectivity would bring to Rugby.

## Revision History:

| Rev | Date | Author | Comment |
|---|---|---|---|
| 1.0 | 4/2/2022 | Owen O'Neill | Initial draft |
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**END**