M6 to A1 (M) Central Pennines Strategic Highway Improvement Study

Analytical Requirements Report

Stage 0 Study

Version 2.1 February 2019

Document Control

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Document Sign-off

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[redacted]	[redacted]	Analytical Requirements Committee	26/06/19	2.1

Contents

1 Introduction

1.1 Purpose

The purpose of the Analytic Requirements Report is to present the analysis required within PCF Stage 0. The necessary areas of analysis for this stage have been identified:

- The economic narrative;
- Scope of traffic modelling;
- The environmental requirements.

1.2 Background and Defined Scope

This Analytical Requirements Report (ARR) seeks formal approval from the Analytical Requirements Committee to agree the requirements for the M6 to A1(M) Central Pennines Study via a strategic level (PCF Stage 0) study through the SPATS Lot 1 Framework.

A smaller desktop based 'phase 1' study is currently being undertaken via the GED Spatial Planning Framework (SPF) which will feed into the specification of this more detailed Stage 0 work.

Strategic context | strategic objectives summary

1. The key aims of the M6 to A1 (M) Central Pennines Strategic Highway Improvement Study (which has been requested by DfT) are to explore the strategic options and feasibility for the completion of a trans-Pennine link in the Central Pennines corridor. As this is a strategic level long term study, the contribution to the key performance indicators will not be immediate however long-term contributions are expected in the areas of Economic Growth (better East/west connectivity for the North), User Satisfaction (congestion relief on the M62) and Network Safety.

2. The study is aligned to the Highways England license requirements setting out the need to keep the network under review.

Figure 1 – Trans Pennine Corridors

1.3 Description of the Local Transport System and the Identified Problems

3. The key drivers for considering this investment are economic growth in the North of England which is a key government driver in rebalancing the UK economy. This is also a key driver within Transport for the North's Strategic Transport Plan [STP];

North Headline Facts:

The North of England;

- has a £**317bn** GVA;
- has a **16** million population;
- **£50bn** of UK exports come from the North;

…yet the North is still underperforming compared to similar economic/population clusters, leading to a £**25bn** productivity gap to the UK.

4. This corridor is already considered to be a significant economic driver within the North, and is home to globally significant businesses, supply chains and economic assets – the largest aerospace cluster in the UK (BAE Systems, Rolls Royce etc) is based here, with major sector representation and internationally competitive advantages in sectors such as automotive and other advanced manufacturing, digital, health/life sciences and low carbon/energy. These are at the heart of north's prime capabilities, as articulated in the Northern Powerhouse Independent Economic Review.

5. The Pennines act as a barrier between the east and west of the North of England, restricting trade and commuting by road to a limited number of corridors. The M62, the only full motorway crossing of the Pennines, is at capacity with only limited alternative routes within a suitable geographic distance (see Figure 1 and below). There is considered to be significant ambition and 'untapped' economic growth potential in the M65 corridor and existing businesses suffer from economic characteristics more often associated with peninsulas or other disconnected locations.

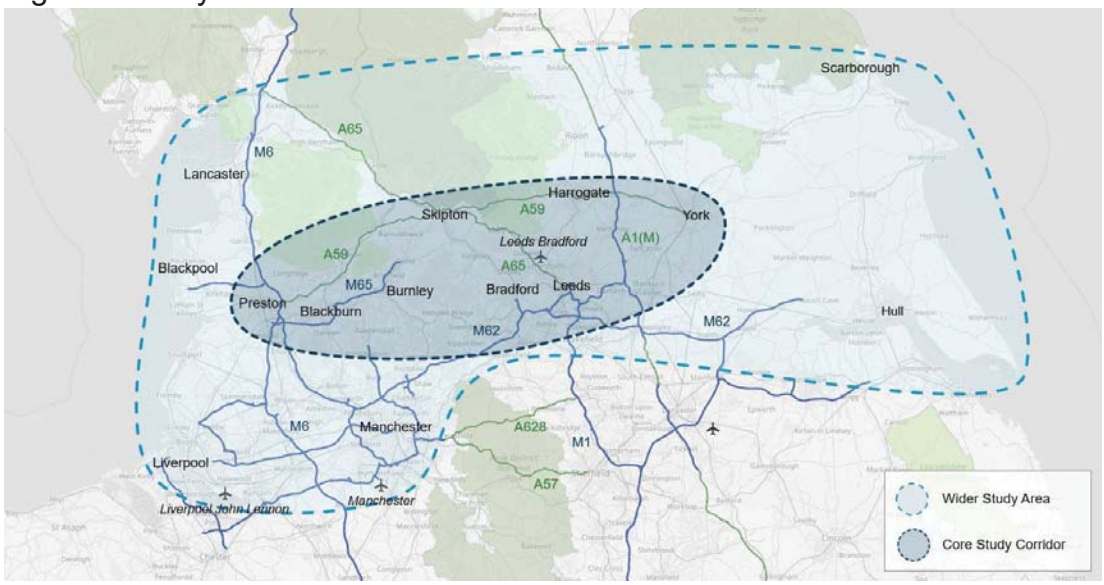
Corridor Headline Facts:

- The corridor is estimated to have an annual GVA output of around £70bn[1], representing around 22% of the overall Northern economy.
- The population of the corridor area is ~1-million; population of east Lancashire is some **500k**; West Yorkshire[2] some **500k**; there is no strategic route connecting these two populations other than the indirect M62. e.g.
    - Preston to Burnley – **26** miles - **36** min due to existing M65
    - Bradford to Burnley – **29** miles - **58** minutes.
- Poor rail connectivity which is subject of other DfT work;

[1] Based on ONS GVA NUTS 3 data (2015 estimates) where applicable although in some instances (Harrogate/Craven/Calderdale) estimates are based on other local sources (such as the Regional Econometric Model) with assumptions applied as necessary as ONS data is not readily available at this spatial scale.

[2] Principally Bradford, where the corridor first extends.

Figure 2 Study Corridor



1.4 Study Objectives

The objectives of this scheme are as follows:

Economic Growth

- Support the economic growth of the Northern Economy in particular high value manufacturing, by providing better connections, allowing them greater access to international gateways.
- Support the growth aspirations of the East Lancashire-West/North Yorkshire areas, and the wider geography by proving high quality connections linking areas of strategic growth currently supressed by access issues.
- Improve connections from the economically inactive areas in the corridor (East Lancashire and West Yorkshire) to centres of employment.

Connectivity

- Ensure the improvement of the Trans-Pennine east-west connectivity, including for freight.
- Reduce journey times between east and west of the Pennines
- Maintain and improve access for tourism in the AONBs of Bowland and Nidderdale.
- Improve access to international transport hubs such as Leeds Bradford Airport.

Network Performance

- Improve journey time reliability for road users;
- Improve road safety, including NMUs;
- Reduce trans-Pennine congestion;
- Improve the resilience of other routes, in particular the M62 corridor, to the impacts of events and incidents such as accidents and severe weather.

Environment

- Minimise adverse impacts on the environment
- Optimise environmental improvement opportunities.
- Reduce the impact of traffic on local communities

1.5 Analytic Assurance Risk Assessment Tool

The impact and likelihood of risks, in Appendix A in the Analytical Assurance Framework, have been considered.

For the Analysis Impacts Matrix, areas where the project scored "Major" were;

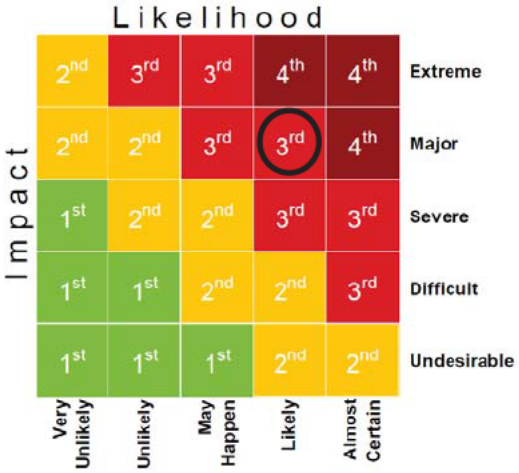
- Role of analysis (in factors affecting the initial and adjusted BCR and Value for Money category) in the final decision as the modelling will be the primary assessment tool for the value for money of the scheme. Given the scheme's location and extents, value for money and wider economic benefits will be the key driver for this scheme along with the strategic case.
- Level of reputational risk as this scheme is subject to a high level of local scrutiny, ministerial (even Secretary of State) interest, interest from the local MP and Transport for the North.

All other areas scored difficult or undesirable.

For the Analysis Likelihood Matrix, areas that scored "May happen" were;

- Uncertainty of scheme affordability due to scale,
- Uncertainty of project delivery given the scale of difficult terrain OR its scale and the amount of difficult terrain?
- Uncertainty of tools and systems required to deliver the analysis

An assessment has been made of the impact and likelihood of risks and assurance will be provided to the 3rd Line of Assurance.



The named project roles are as follows:

Role	Name	Organisation
Project Lead	[redacted]	Strategy and Planning
Assurer	[redacted]	Transport Planning Group

Subject Matter Advisors: • Environment • Cost • Traffic • Economics	[redacted]	Environment Group Commercial Transport Planning Group Economics Group

2 Transport Modelling and Economic Appraisal

2.1 Key Risks

In general, the transport planning issues in the area are well known and well understood however given the scale of the corridor there are limited options for assessing the route in its entirety other than the suite of Regional Transport Models (RTM). Given this is a Stage 0 (Strategy Shaping and Prioritisation) level study it is thought that the latest version of the Trans-Pennine (South) TPS RTM should be sufficient for shaping the strategic case for the corridor.

2.2 Economic Narrative and Requirements

The current route is essentially a strategic cul-de-sac, with the high capacity motorway route terminating at Colne in east Lancashire. From there eastward the route is local in nature, being mostly single carriageway. The most coherent trans-Pennine route is the A59 which does serve the corridor further to the north but is not directly linked to the M65.

The corridor is home to number of high level and prominent manufacturing companies as such as Rolls Royce (Barnoldswick) and Silentnight; businesses that rely on good, just-in-time connections.

Some economic drivers are shown in Figure 3.

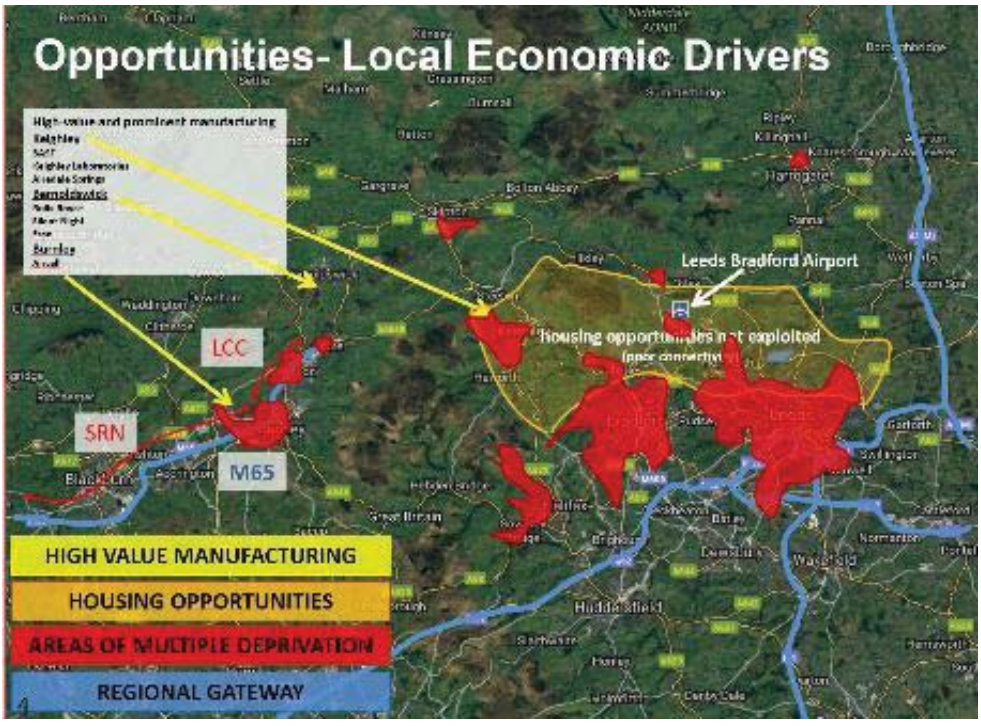


Figure 3 – Economic Drivers

The road would support businesses in road-reliant sectors found in the corridor and would connect them to Leeds Bradford Airport as well as the A59 and the A1(M).

- Complementary sectors (bold – broadly seen as road reliant):
  - **Advanced/High Value Manufacturing and Engineering (particularly aerospace, automotive and advanced/technical textiles)**
  - Health/Med-tech/Life Sciences
  - Digital
  - Low carbon/energy
  - **Logistics/distribution**
  - Food and drink
- Leeds Bradford Airport suffers from poor access to the SRN. It is currently the 15th busiest in UK with 4m passengers per annum (2016 – DfT Statistics), but would likely benefit from better road connectivity.

As shown in Figure 4, congestion in the area is generally confined to the alternative trans-Pennine route to the south (M62 in the Manchester and Leeds/Bradford area), to the north of Bradford (local roads) and isolated pockets through village/town centres such as Colne, Keighley, Skipton and Harrogate and north of Leeds and Bradford. A route extending the M65 would allow for congestion relief on the M62 (and potentially the A66 to the north) and to the local areas and would be expected to reduce journey times, increase resilience and possibly improve safety of these roads. Poor rail access means the car is the predominant mobility mode, exacerbating the congestion issues.

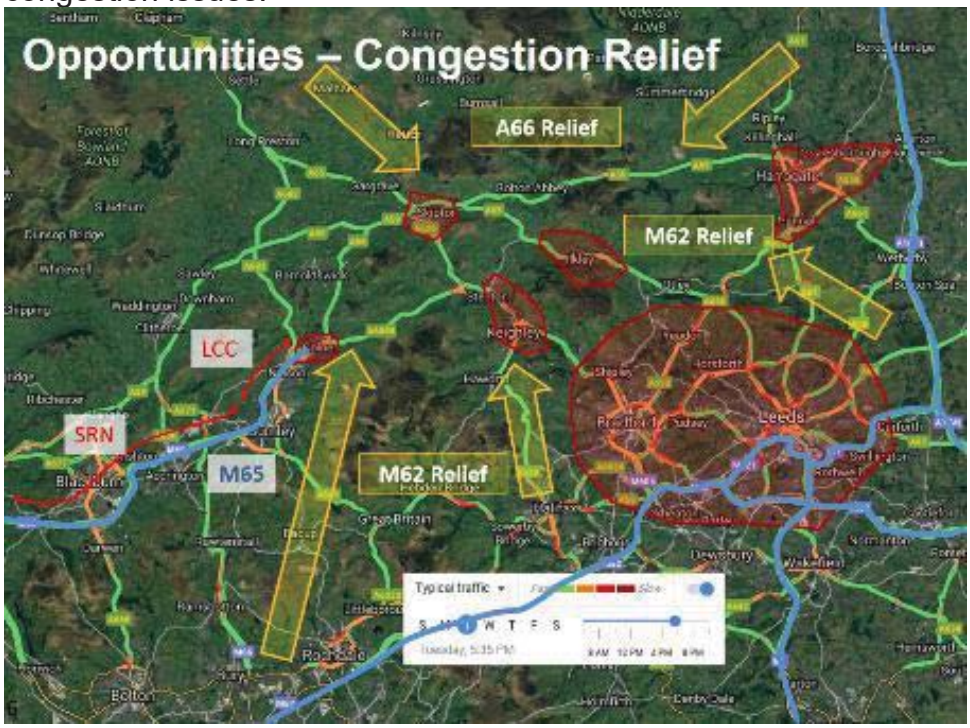


Figure 4 Congestion

At PCF stage 0, it is not considered proportionate to undertake any modelling or quantification of Wider Economic Impacts, however, some initial consideration has been given to the economic background of the area that will direct the scheme assessment and modelling approach in subsequent PCF stages.

The extension of the M65 is estimated to deliver significant time savings between Colne (end of the M65 near Burnley) and the A1, indeed it could have a 'transformational' impact on land use. This means that it might have a significant impact on location decisions for both people and businesses.

It is considered that the main impacts that should be considered qualitatively at this stage are;

- Effects on business and freight, as improvements in travel times can reduce costs of transporting goods and raw materials, particularly for those in road-reliant sectors.
- Agglomeration benefits - of better connected businesses as they share knowledge and a better matching of jobs and skills – but this appears strongest when connecting two urban centres in under 45 minutes driving time. The extent to which the M6 to A1 (M) Central Pennines Strategic Improvement Study might deliver agglomeration benefits is as yet uncertain.
- Employment effects, i.e. labour supply impacts, and move to more productive jobs as a result of improved connectivity.
- The scheme may also generate welfare benefits from businesses expanding production, known as 'output change in imperfectly competitive markets', particularly as a number of the businesses are in the Health/Med-tech/Life Sciences or Digital sectors.
- The road may encourage more housing development as the housing opportunities in the fringes of Leeds and Bradford hinterland have not been exploited due to poor road connectivity. Whether this development is considered dependent or not will have to be assessed..

It has been agreed tha the HE economy model will be used to estimate how the road might impact the location of jobs but further study is necessary at later PCF stages to consider the scale of these effects, and the methodology adopted to assess the impacts.

The economic impacts that will be assessed in PCF Stage 0 are broken down into the standard economic measures and additional optional economic measures which are planned to be assessed and reported (level 1 and level 2 Analysis):

- Standard Economic Impacts
    - Transport Economic Efficiency (journey time savings, journey time reliability (qualitative), vehicle operating costs benefits/dis-benefits, accidents)
    - Safety benefits
    - Qualitative assessments for delays during Construction

- Wider Economic Impacts will be considered qualitatively

The methodology for assessing each of these impacts will be agreed in the Appraisal Specification Report (ASR) and will be proportionate to PCF0. r.

2.2 Modelling Requirements

The transport model utilised is likely to be the Trans-Pennine South Regional Transport model (TPS RTM) which will be able to capture the impacts on the M62 but in a less robust way the A66. The TPS will;

- Be sufficiently robust such that its results withstand scrutiny, taking into account the age of underlying data and the political interest;
- Ensure a wide enough geographic area to explore impacts upon the M65, M6, A1(M), M62, and other roads around the A59 and Leeds Bradford area;
- Provide outputs that assist in understanding environmental impacts;
- Provide analysis that should link back to the economic narrative;
- Identify and report on longer term issues,
- Assess the impacts on journey time and congestion, safety, resilience, analysis of agglomeration, if proportionate.

3 Environmental Appraisal

3.1 Strategic Overview of Existing Knowledge

WebTAG Unit A3: Environmental Impact Appraisal and DMRB Volume 11 set out the types of receptors, and the extent of the study area that should be adopted for the purpose of the appraisal.

The following resources / documents should be used to identify the environmental receptors relevant to the project:

PCF Stage being entered	PCF Product
0	EnVIS
1	• Stage 0 Appraisal Summary Tables • Preliminary Environmental Risk Assessment
2	• Stage 1 Appraisal Summary Tables • Stage 1 Environmental Scoping Report • Stage 1 Environmental Assessment Report
3	• Stage 2 Appraisal Summary Tables • Stage 2 Environmental Scoping Report • Stage 2 Environmental Assessment Report • Technical Appraisal Report
4	• Stage 3 Appraisal Summary Table • Stage 3 Environmental Scoping Report • Stage 3 Environmental Assessment Report / Environmental Statement • Scheme Assessment Report
5 – 7	• Subsequent Appraisal Summary Tables

3.2 Environmental Requirements

The environmental appraisal should be undertaken in accordance with WebTAG Unit A3 and DMRB Volume 11 as appropriate. The environmental appraisal of noise, air quality and greenhouse gases should be undertaken on a qualitative basis only. Any deviation from this approach should be justified within the Appraisal Specification Report (ASR).

An Appraisal Summary Table (AST) should be produced. Where variances in the scheme have been acknowledged, the need to produce separate ASTs should be considered and justified within the ASR.

Mitigation measures should be factored into the appraisal to reduce the significance of the effects where there is confidence in the effectiveness and the implementation of the measures.

The accuracy of the information outlined in section 3.2 above should be confirmed by the project team during the appraisal process. Where further information obtained at the next stage indicates that there are additional environmental receptors with the potential to be affected by the project, these should be included in the appraisal following agreement with the HE Project Manager.

In consultation with the HE Project Manager and the SES Environment Group Environmental Advisor, the supplier should consider whether any supplementary work is required to inform the appraisal process. Examples may include an appraisal of natural capital and landscape monetisation (in accordance with DfT guidance). Such work should be carried out on a by-exception basis, and the need / scope should be fully justified within the ASR.

In line with PCF Stage 0 requirements, the Preliminary Environmental Risk Assessment (PERA) product will also need to be produced.

4 Evaluation requirements

4.1 Scope

This section details the evaluation requirements for the project and will support the scoping of the proposed evaluation approach.

4.2 Area of Influence

The area of influence for the various evaluation requirements can be found in Figure 2.

4.3 Baseline Surveys

It is not expected that surveys will be required for this study. Where surveys (traffic, Environmental etc) have been undertaken, the raw data from these may be requested and should be retained for evaluation purposes. The extends of these surveys are outlines in the Traffic Data Package and various Environment PCF products as appropriate.

4.4 Planned Timescale of Works

As this is a Stage 0 Study, the current timescale of works is unknown (except that any interventions will be post the second Road Investment Period at the earliest given the scale) and will form a part of the output to the study:

4.5 Proposed Stage Dates

The current proposed SGAR dates are unknown and will be informed by the study itself:

4.6 Documents to support Evaluation

The following documents/packages are required to support the scoping of the evaluation approach:

Area of Evaluation	Product
Traffic and Economics	ASR
	Traffic Data and Model Packages
	Traffic Forecasting Package
	Economic Appraisal Package
	ComMA
	AST
	SOBC (including AAS and VfM)
Environment	PERA