Technical Note on Data Gaps

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Technical Note on Data Gaps

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1. Introduction

Jacobs was recently commissioned by Lancashire County Council (LCC) to upgrade the existing Central Lancashire Highway Traffic Model (CLTM) to a full multi-modal model to support planning and appraisal of sustainable and multi-modal schemes in Central Lancashire. The upgraded model will be used to support Local Plan testing including complementary multi-modal schemes.

The aim of this Technical Note is to identify any possible data gaps in order to update the traffic model, which will be used to create the transport evidence base for the Local Plan. This exercise will also help determine the extent of data collection required for model updates.

1.1 Background

The Central Lancashire Traffic Model (CLTM) was originally calibrated and validated to Autumn 2013 data using 2015 TAG parameters (values of time and vehicle operating costs). In 2018, the model was re-calibrated to 2018 TAG for the purpose of the Preston Western Distributor (PWD) Full Business Case (FBC); nonetheless, the Base Year remained 2013 in the absence of more recent traffic data.

In line with TAG requirements and the feedback received from the Department for Transport (DfT) on the Transforming Cities Fund (TCF) Appraisal Specification Report (July 2019), the CLTM was due for an update since the age of the data used to build the model was reaching six years. For this purpose, a data collection exercise was undertaken to update and re-calibrate the model to Autumn 2019 traffic counts and journey times.

Subsequently, at the request of the DfT as part of the A582 OBC assurance, a Demand Model in Production and Attraction (PA) format was developed to ensure it followed the TAG recommended approach. The CLTM model was upgraded in 2021 to include a Rail (and Rail Park and Ride) Model in EMME and included mode choice between Rail and Car in DIADEM for the purposes of the Cottam Parkway Station Planning Application.

Building on the discussions with LCC about benefits of a Full Demand Model and in view of the ambitions for implementing sustainable travel in Central Lancashire with a focus on bus priority, the model was upgraded to include bus model in EMME. The updated model consists of the following:

- Highway Assignment Model representing vehicle-based movements across the Lancashire area for a 2019 weekday morning peak hour (08:00 - 09:00), an average inter - peak hour (10:00 - 16:00) and an evening peak hour (17:00 - 18:00);
- Public Transport Assignment Model representing bus and rail-based movements across the same area and time periods to include the Park and Ride sub - mode choice; and,
- Multi - modal incremental VDM that forecasts change in choice of main mode and destination in response to changes in generalised costs.

In May 2023, DfT issued new guidelines on how to integrate the effects of Covid-19 into model forecasts. These guidelines are part of the Transport Analysis Guidance Unit M4. In the context of the A582 OBC project, which uses the CLTM traffic model for scheme evaluation, Jacobs has been in discussions with the DfT as part of the approval process for the scheme's funding. In line with the new guidelines and following discussions with the DfT, Jacobs carried out a benchmarking exercise to ensure adherence to the DfT's requirements for transport modelling in the post-Covid-19 period. A technical note summarizing the analysis and findings was submitted to the DfT and shared with the Central Lancashire Local Plan (CLLP) Transport Working Group.

The benchmarking exercise involved a comparison of the traffic flows modelled using 2019 data (base year) with the observed traffic flow data from 2023 in the A582 study area. The aim of this comparison was to identify any significant changes in traffic patterns between the time the traffic matrix was developed and the present. The analysis revealed that, except for a few locations, there are no significant or substantial

differences between the traffic flows modelled using the 2019 data and the observed traffic flows during the specified period. Where notable differences do exist, they can be attributed to recent changes in the network in the scheme area, rather than being solely due to the impact of Covid-19.

The evaluation indicated that the traffic model developed using the 2019 data continues to reasonably represent the current traffic conditions in 2023. However, DfT advised that while the 2019 model provides a reasonable representation of current traffic conditions in 2023, the overall traffic flows were higher than the observed 2023 traffic flows. Therefore, an adjustment was recommended for the purpose of the A582 OBC scheme appraisal. Following discussions with the DfT, a decision was made to develop a future 2023 base model. This model would be based on the traffic growth analysis carried out in the benchmarking exercise. It would be subject to high-level validation using existing traffic survey data and would act as the new reference year for all subsequent years.

1.2 Local Plan Context

Originally, CLHTM (Central Lancashire Highways Traffic Model) was developed to provide support for City Deal schemes in the Central Lancashire area. Consequently, it has a strong focus on Preston and South Ribble and is more robust in these areas compared to Chorley. However, the strategic model's calibration validation, which encompasses screenlines and journey time routes across all three districts, ensures that it offers a good overall representation of traffic movements, volumes on key routes and journey times for vehicles on key routes through the network. Furthermore, the model has been deemed fit for purpose in evaluating the cumulative impact of strategic growth in Preston, South Ribble, and Chorley. This signifies that it can effectively assess the combined effects of various development initiatives across these areas.

In order to better comprehend the required updates for the Chorley model, an additional analysis was conducted using separate datasets (traffic flows and journey times) from those used during the 2019 model update process. This analysis helped identify specific areas in the model that need enhancements or modifications from the perspective of local plan testing.

As part of this exercise, observed traffic flows from a collection of 29 traffic surveys conducted in April 2019, primarily consisting of manual turning movement counts at junctions were considered. The link flows comparison indicated that the model slightly underperforms the TAG criteria for AM (with 80% of the sites meeting the TAG criteria) and PM peak (with 77% of the sites meeting the TAG criteria). However, it's important to note that the count sets mainly cover local roads and considering the strategic nature of the model, the results appear reasonable.

The TrafficMaster data, which was used for the 2019 model validation, was also used for this analysis. Observed data was extracted for both directions of each route for the modelled hours. In terms of the model's performance on the journey time routes, it was observed that the model accurately replicates the observed travel times for most sections. Minor network coding adjustments potentially could improve the journey time results. From the local plan testing perspective, the model in its current state remains an appropriate tool for conducting a high-level assessment. However, in the specific area of interest in Chorley, additional fine-tuning can be undertaken to ensure more accurate representation of traffic levels within the local road network. This will lead to more precise assessment of the traffic generated by proposed development sites.

Traffic data gaps and proposed traffic counts are discussed in the next section.

2. Available datasets

The strategic highway assignment from CLTM has been developed with a base year of 2019 with all observed data based on data collection undertaken in November 2019, which as per TAG Unit M1.2 represents neutral month.

Traffic counts collated after 2019 is summarised below and is shown in Figure 1through Figure 3 :

- 2022 – counts provided by NH/WSP
  - MCC data:
    - Site 1: A59 Preston New Road / Tickled Trout Services
    - Site 2: A59 Preston New Road (eastbound) / Vicarage Lane
    - Site 3: A59 Preston New Road (westbound) / Vicarage Lane
    - Site 4: A59 Preston New Road / Potter Lane
    - Site 5: M6 junction 31a (west)
    - Site 6: B6242 Bluebell Way / car garage
    - Site 7: B6242 Bluebell Way / Premier Inn
    - Site 8: M6 junction 31a (east)
    - Site 9: B6242 / Trefoil Way
    - Site 10: B6242 / Lancashire Way
  - ANPR survey of M6 j31
  - ATCs:
    - Site 1: Fulwood Row (S) / B6242 Bluebell Way
    - Site 2: Glenluce Drive (W) / Preston New Road (E)
- 2022 – Traffic counts provided by LCC for 48 sites
- 2023 – Chorley ATC counts provided by LCC
  - A6 Preston Road, Clayton-le-Woods, July 2023
  - A6 Westhoughton Road, Heath Charnock May 2023
  - B5249 Moor Road, Croston May 2023
  - B5250 Lydiate Lane, Eccleston July 2023
  - B5252 Myles Standish Way, Chorley May 2023
  - Babylon Lane, Heath Charnock July 2023

3. Proposed Approach

The existing traffic model, which is based on 2019 data, does not account for traffic variations resulting from the Covid-19 pandemic. Given the lack of sufficient observed data for calibrating Origin-Destination (O-D) demand, it's not feasible to recalibrate base models annually, as they rely solely on available traffic counts. A more balanced strategy, considering the timelines and available dataset, would be to establish the traffic models for 2023 using the dataset from 2022 to 2024.

The use of older datasets presents a challenge due to network changes that have occurred within these timelines, which could potentially affect traffic flows. The most substantial network update is the Preston Western Distributor Road, necessitating more recent traffic counts in that area. Other significant updates include the opening of John Horrocks Way and The Cawsey. Traffic counts for 2023, covering major roads around these network updates in South Ribble, were gathered for the A582 OBC. Traffic counts from 2022, supplied by NH, are focused around J31 and J31A, which are distant from the network updates and hence, would not be significantly affected, making them usable.

Considering the above, the traffic counts depicted in Figure 2 are proposed, taking into account the impact of the sites on the key impacts on the local road network and the Strategic Road Network (SRN). Turning movement junction counts are suggested at identified SRN junctions to calibrate the traffic models more precisely in these locations and for junction modelling if needed for testing mitigation. SRN traffic counts are in addition to the available National Highways TRIS sites. Due to the extensive data requirements and development timescales, microsimulation models are not proposed.

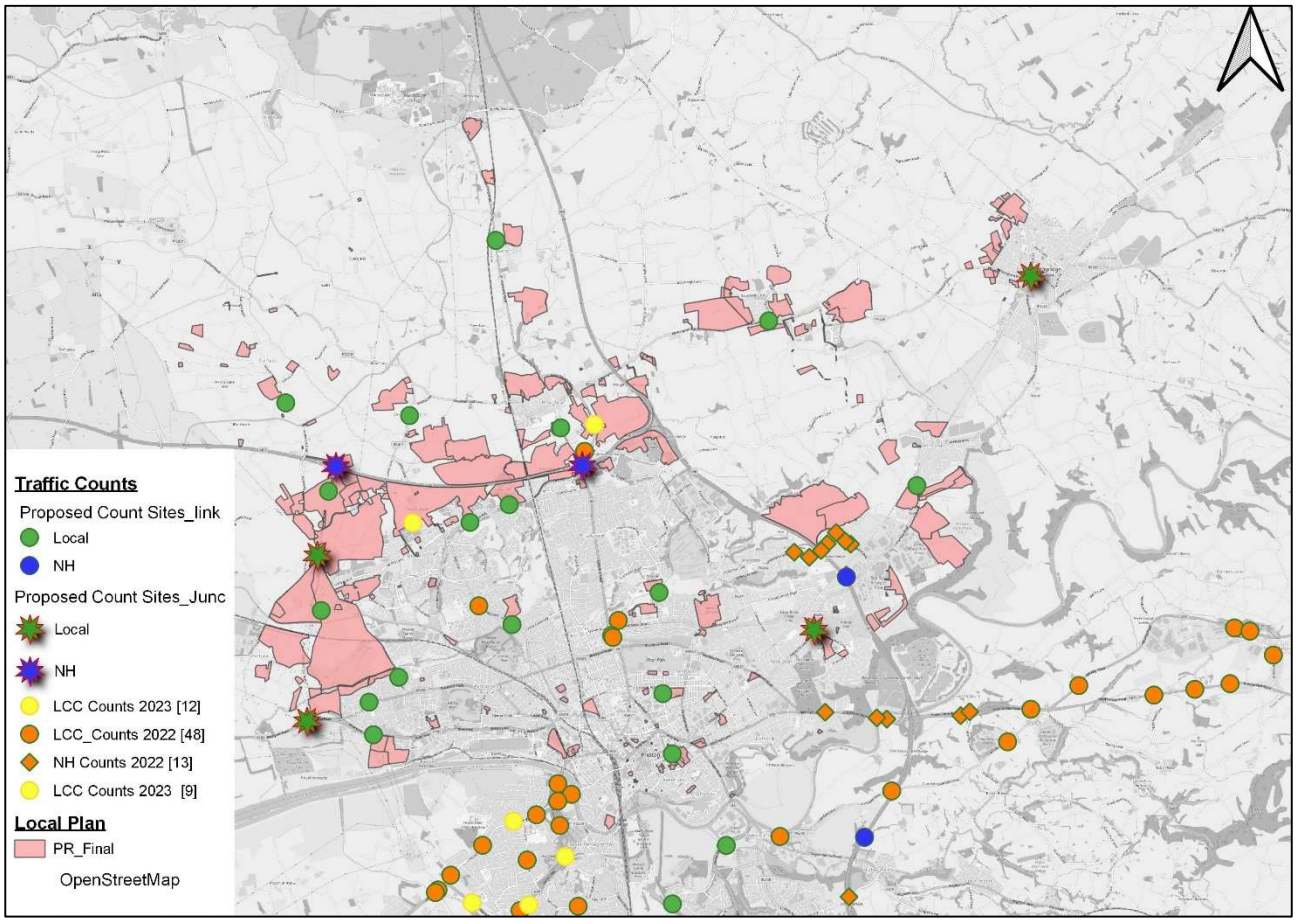

Figure 1. Existing and Proposed Traffic Count Sites - Preston

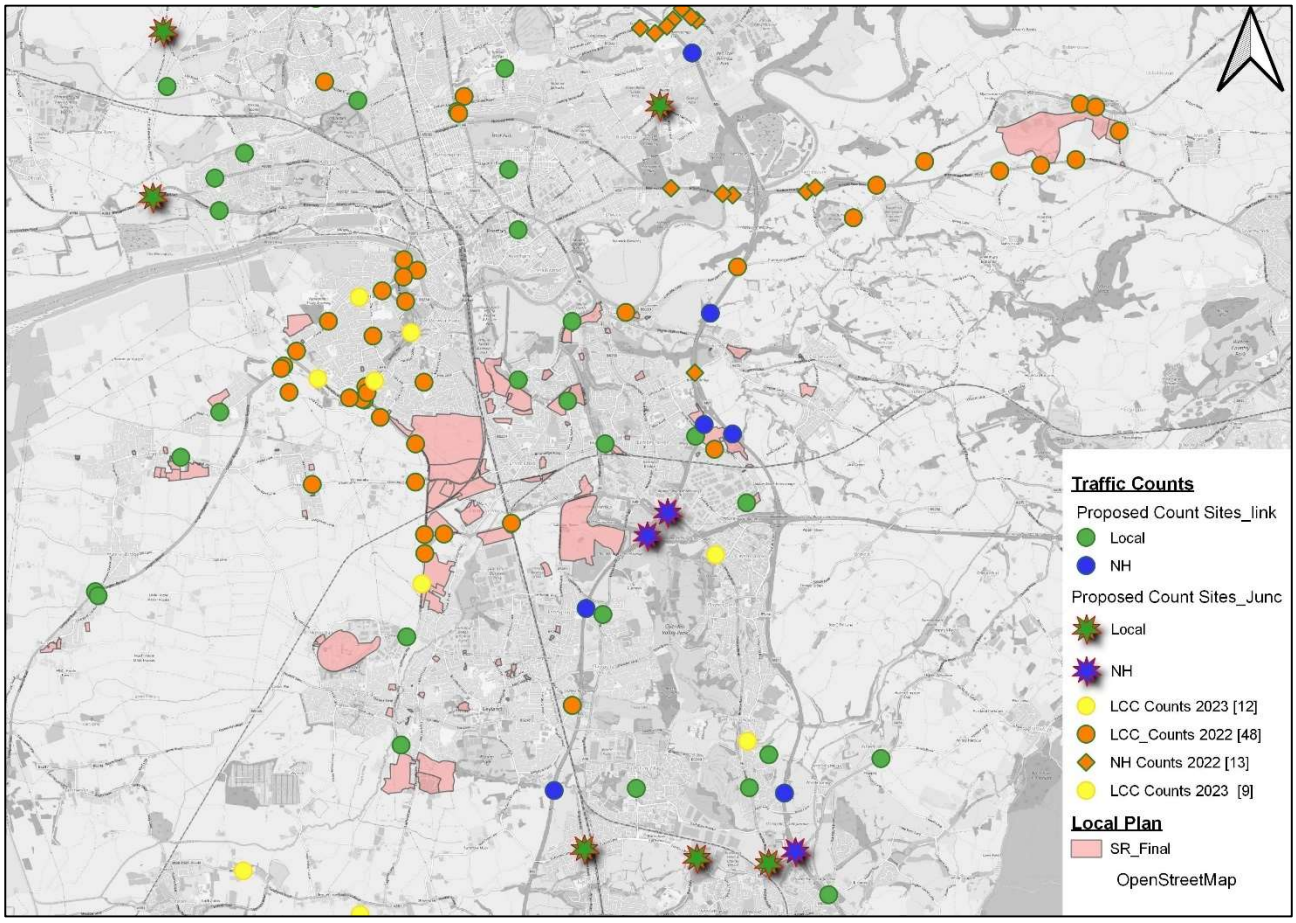

Figure 2. Existing and Proposed Traffic Count Sites – South Ribble

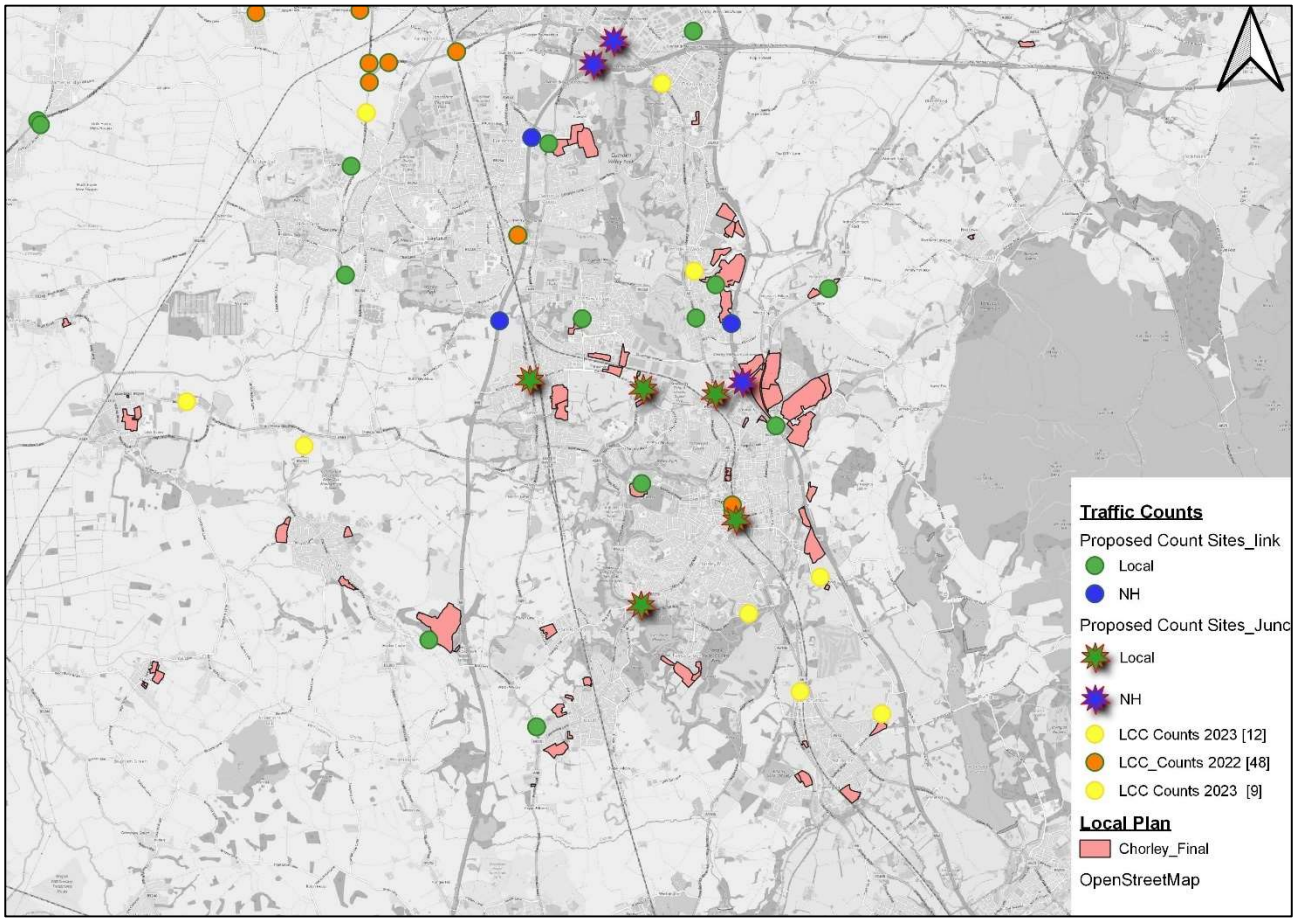

Figure 3. Existing and Proposed Traffic Count Sites - Chorley

4. Program Implications

Originally, the Stage 1A tasks (as shown in figure below), including model updates and baseline assessment, were scheduled to be finished by March 2024, and the Strategic transport assessment (Stage 1 and Stage 2) was expected to be completed by October 2024. However, due to the need for additional data collection, traffic counts can only begin after the Easter break on 15th March 2024, to ensure data is gathered during a neutral period. The analysis of available traffic counts and identified network updates has been completed. The continuation of the work depends on the collection of new data, necessitating a 2-3 week pause, depending on data availability. This will affect subsequent tasks, and although efficiency can be improved once work resumes, it is expected that these delays will push the Stage 2 completion date back by a month to November 2024. Despite this shift, it is not anticipated to cause any delays to the overall program deadlines, with submission due by 30th June 2025 and adoption by December 2026.

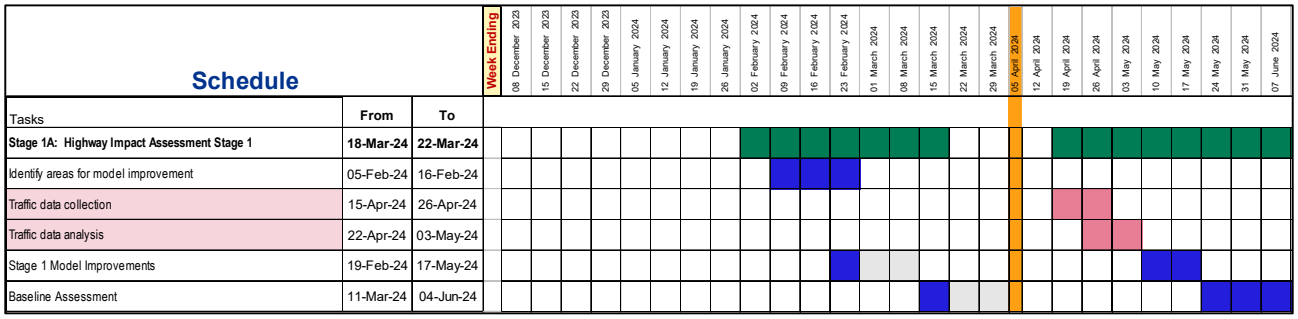

Figure 4. Stage 1A Programme