



# **The County Council of Durham Lane Rental Scheme**

## **Cost Benefit Analysis (CBA)**

## Document Control

### Version History

Date	Version	Comments
17.06.25	1	Initial draft

### Review Control

Reviewer	Date	Section	Comments	Actions Agreed

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## 1 Introduction

The Durham Lane Rental Scheme (DLRS) has been proposed to enable Durham County Council (DCC) to support their duty to co-ordinate and manage all street and road works, also known as activities on the highway, in order to minimise disruption in accordance with the Network Management Duty, a key principle of the Traffic Management Act 2004.

The DLRS will also support the Local Transport Plan (LTP) for an inclusive and safe net-zero Durham transport system that enables all parts of the county to thrive.

The Department for Transport (DfT) is currently developing new guidance for LTPs, and for a linked proposal setting out plans for Quantified Carbon Reduction, these developments will be supported as well.

A lane rental scheme is designed to work in conjunction with a permit scheme to complement the powers provided within this scheme through a charging regime for works taking place on the most congested section of the network at peak times.

The DLRS will also align with the objectives of the Durham Permit Scheme, particularly:

- Encourage a proactive approach to planning and undertaking of works on the highway.
- Ensure parity of treatment for all activity promoters.
- Reduce any unreasonable occupation of the Highway through efficient coordination and to minimise the impact of works on the travelling public.

## 2 Cost Benefit Analysis

A Cost Benefit Analysis (CBA) has been carried out to forecast and report the benefits of the proposed DLRS.

The CBA has been carried out in accordance with the Department for Transport (DfT) Transport Appraisal Guidance TAG Unit A1.1 Cost-Benefit Analysis and the best practice guidance set out in The Green Book (HM Treasury 2022).

The impact of the traffic management works has been modelled using Quadro 2021 (v4.20.0.1). The software models queues and delays at roadworks, and reports the monetary value of the travel time and vehicle operating costs of the works against a free flow baseline situation.

The modelled impacts have been collated and reported using the CBA form provided by the DfT for this purpose.

## 3 CBA Parameters

The following parameters have been applied in the analysis:

- Present Value Base Year (for calculating TM, Staff costs and LR Charges) 2025
- Appraisal Period 10 years
- Opening (Base) Year for Scheme 2026
- Design (Future) Year for Analysis 2035
- Price Base Year reporting costs & benefits (May 2025 Update TAG Unit A1.1) 2023
- Discount Rate (TAG Data Book, November 2024 v2.0 FC) 3.5%
- Optimism Bias (adjustment to costs to account for uncertainty) 23%
- Risk Adjustment (adjustment to capital costs) 10%

- Market Price Factor (to convert operating costs to market prices) 1.19
- Quadro Model Base Year 2010
- Factor to convert modelled costs to Price Base Year (GDP Deflator, TAG Data Book, November 2024 v2.0 FC) – 100 (2023) / 72.37 (2010) 1.38

## **4 Quadro Models**

DCC provided comprehensive traffic flow data for 150 sites across the network. 64 of these sites are located on the Lane Rental Network (LRN).

The data covering a six-month period between January and June 2024 was analysed and reported for each site.

The traffic models have been developed to evaluate the impact of various traffic management measures at each of the three road category types:

- Reinstatement Category 0, up to 25,627 vehicles per day (two-way flow)
- Reinstatement Category 1, up to 21,210 vehicles per day (two-way flow)
- Reinstatement Category 2, up to 16,842 vehicles per day (two-way flow)

The traffic models have been developed to evaluate the impact of various traffic management measures at each of the three road category types. Three sites were selected, representing the average on the three road categories (Figure 1):

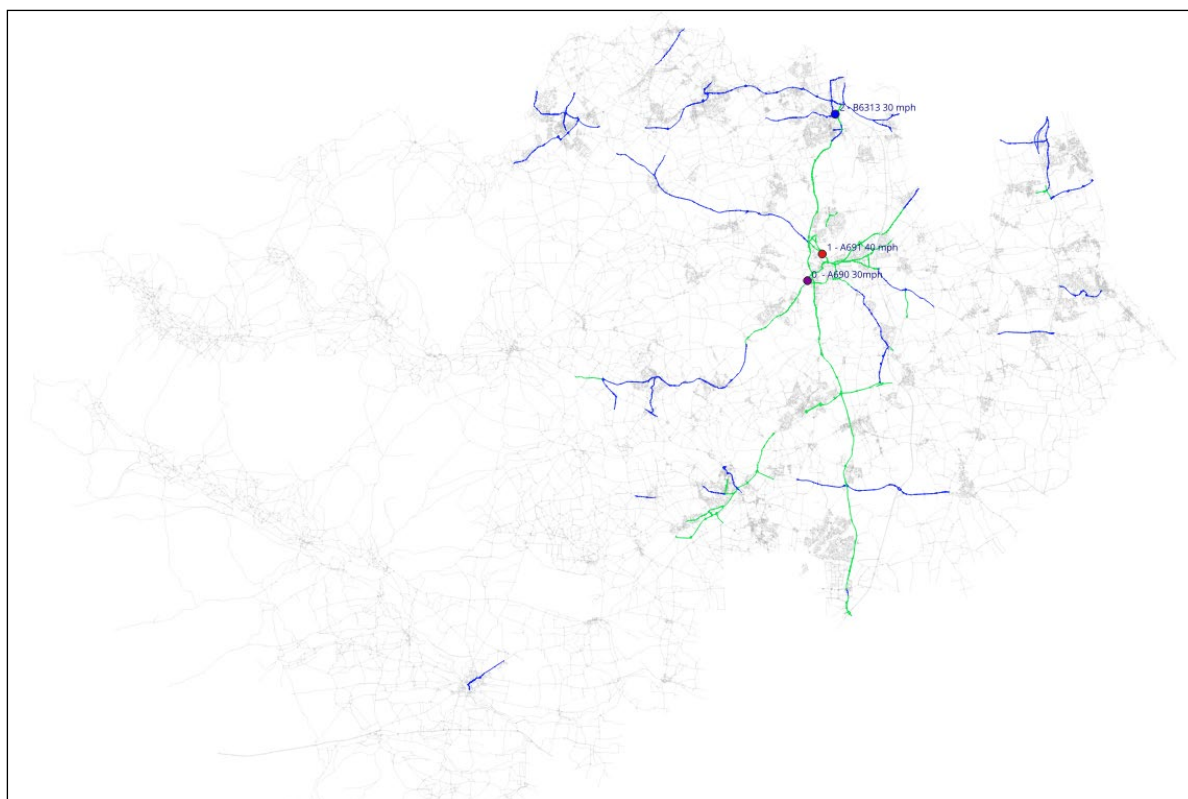
- A690 Nevilles Cross Bank, RC0, 18,362 vehicles per day
- A691 Framwellgate Peth, RC1, 12,120 vehicles per day
- B6313 Picktree Lane, RC2, 12,496 vehicles per day

The traffic flow data has been collated into the four flow groups represented in the Quadro model:

- Flow Group 1, Monday- Thursday average
- Flow Group 2, Friday
- Flow Group 1, Saturday
- Flow Group 1, Sunday

The flow data is provided in hourly intervals for each flow group. This allows the impacts of each traffic management type to be assessed at various times of the day, and days of the week to properly evaluate the impact of the behavioural change in timing and duration of works anticipated as a result of imposing the Lane Rental charges.

The hourly flow profiles for each selected site are shown in Appendix A.



**Figure 1:** Quadro Model Sites

## 5 Baseline Works Completed

The Street Manager full extract has been reviewed to identify the number of works completed on the LR network in each of the last three full calendar years – 2022 to 2024.

Between 1,682 and 1,814 works were recorded as complete in each year. 58% of the works were undertaken on behalf of the highway authority (HA) and 42% by external works promoters (PU).

The number of works completed in each year is shown in Figure 2. Immediate works are shown separately from Major, Standard and Minor works, as the lane rental charge will be waived for the first 48 hours for this works category.

The 2023 Street Manager records have been selected as most representative of the median position and a detailed analysis of all works recorded on the LR network has been carried out with this data set.

This analysis has identified the number of works and average duration of works by traffic management type and by works category group. This provides the baseline against which the benefits of the behavioural change in method and timing of working has been evaluated.

The majority of works completed on the LR network in 2023 were recorded on Category 1 streets, 1,071 of the 1,799 works were recorded as complete. Approximately half of these works were Immediate works carried out on behalf of the HA.

513 (29%) of the works are recorded as being carried out with no carriageway incursion and have been excluded from the analysis.

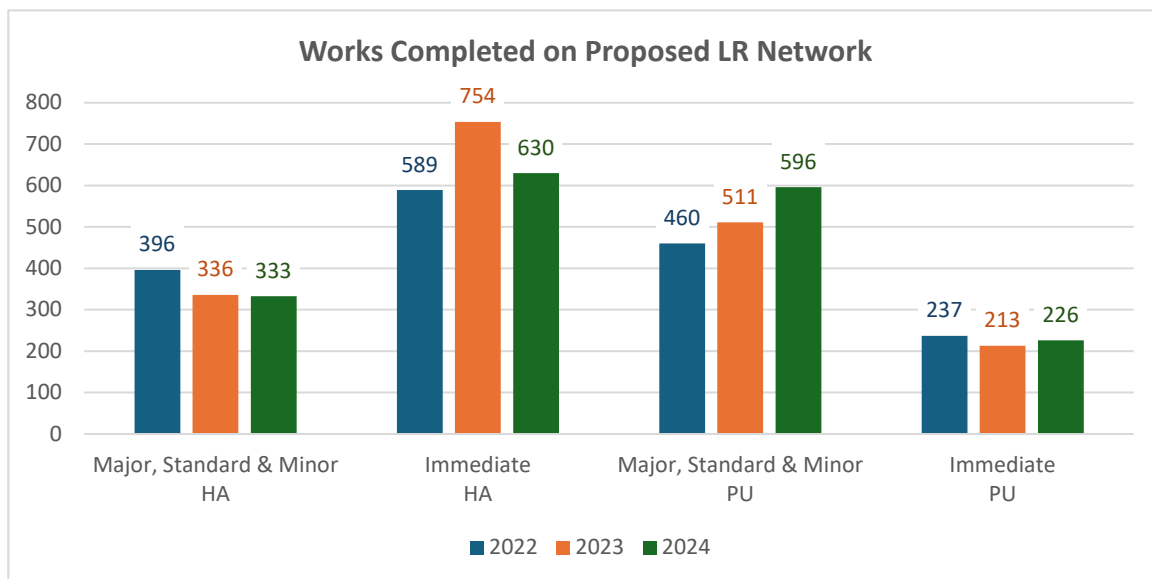


Figure 2: Baseline Works Completed

## 6 Lane Rental Behavioural Change

A sensitivity analysis has been carried out to determine the impact and benefits of the expected behavioural change in method and timing of working by both the HA and PU works promoters as a result of the lane rental charges.

The following scenarios have been analysed:

- Baseline, current situation
- Scenario 1, minimum position (works duration reduces to half of current)
- Scenario 2, mid position (half of current works change to avoid/reduce LR charges)
- Scenario 3, target position (most likely outcome with all works adjusting duration and timing of works to minimise exposure to charges)

The modelling assumptions applied are that for Scenario 3, all works will either reduce the works duration and/or move to periods of the day where no charges are applied.

For works on Category 0 roads this will involve mostly overnight working and the reduction of most Immediate works to less than 48 hours duration (since charges will apply within working hours and at weekends).

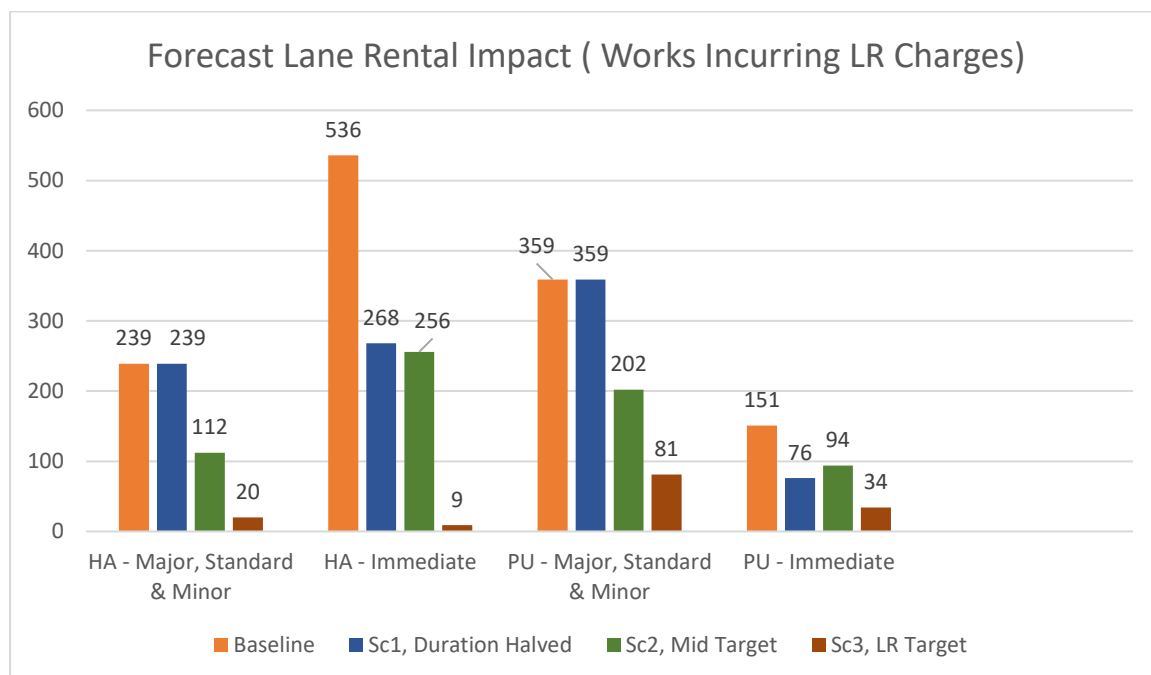
Category 1 roads have a mix of Traffic Sensitivity (TS) 7am-7pm, 7 days a week and peak periods Monday-Friday only. A mix of the above and shorter duration works moving to inter-peak or weekend periods has been applied.

Most Category 2 roads are TS Monday-Friday and peak times only. Therefore, these works have been moved to inter-peak for short duration works or weekend working for longer duration works.

For longer duration works of greater than 10 days (accounting for 6 major projects completed by utilities in 2023), this analysis has applied a 10 day cap on the LR charge to reflect the likely discounting or waiver of charges if innovative methods of working can be found to minimise disruption during the busier peak periods.

The same assumptions have been applied in Scenario 2, with the method and timing of half of the current works changing to avoid LR charges. The remainder would be completed with only a reduction in duration to reduce exposure to the charge.

The number of works incurring a LR charge in each scenario are shown in Figure 3 below.



**Figure 3: Scenario Testing – Works Incurring LR Charge**

Scenario 3 would reduce the number of works in the busy peak periods from 1,285 to 144; 95% of HA works and 77% of PU works would avoid LR charges under this scenario. This compares with the reported performance in the Transport for London (TfL) scheme of 98% TfL and 83% of utility works avoiding the charge (source: Transport for London Lane Rental Scheme, Monitoring Report 1 April 2020 – 31 March 2021).

The above would be achieved by reducing all Immediate works to less than 48 hours duration, and moving almost all other works to overnight, weekend or inter-peak periods.

The effect of Scenarios 1 and 2 are very similar in terms of the number of works incurring a charge.

The impact of each Scenario on the number of days worked across the LR network is shown in Figure 4.

All three scenarios would result in a significant reduction in the number of days worked on the LR network. Scenarios 1 and 2 would also produce similar results in terms of occupancy of the LR network, reducing the number of days worked by 50% to 55%.

Scenario 3 would reduce the occupancy of the LR network from 6,629 days in the baseline situation to 2,175, a saving of almost 4,500 days or 67% fewer days worked.

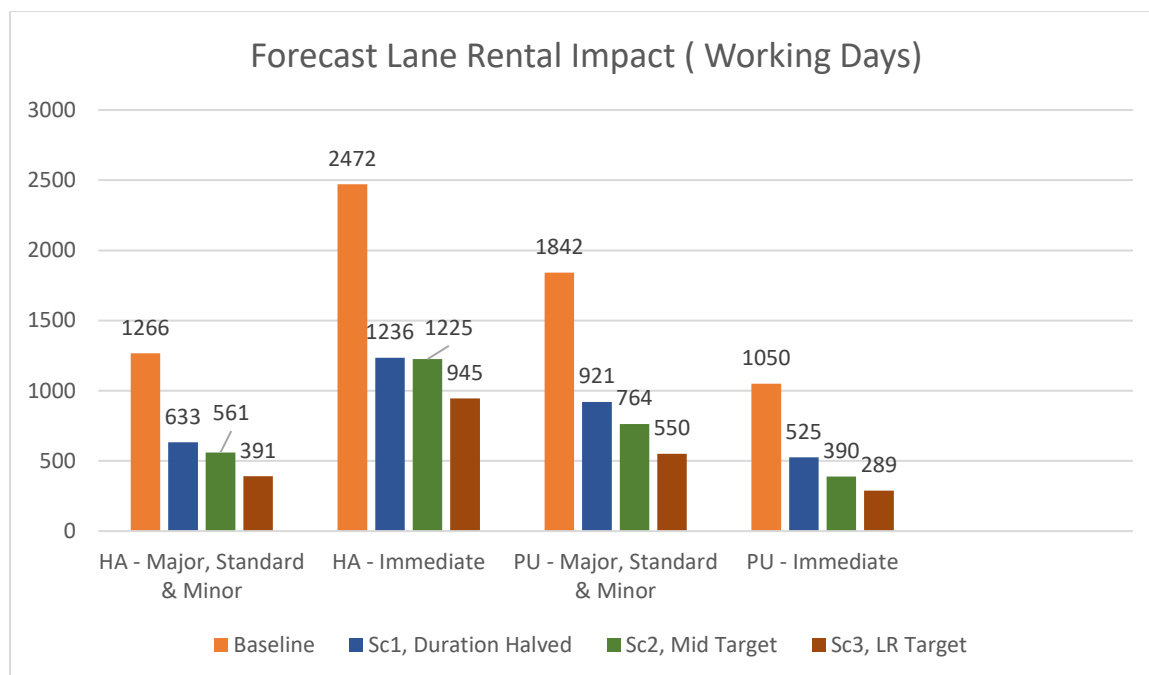


Figure 4: Scenario Testing – Number of Days Worked

## 7 Lane Rental Charges

The potential LR charges has been estimated for each of the scenarios tested:

- Baseline, £12.3M (HA - £6.2M, PU - £6.1M)
- Scenario 1, £4.7M (HA - £1.8M, PU - £2.9M)
- Scenario 2, £2.9M (HA - £1.3M, PU - £1.6M)
- Scenario 3, £0.54M (HA - £0.11M, PU - £0.43M)

The above charges for Scenarios 2 and 3 have been input to the CBA spreadsheet along with the Quadro modelled impacts, to calculate the economic performance of each.

Scenario 1 has not been evaluated as this has a very low-level change in behaviour that has been surpassed in established LR schemes. The cost of changing working practices in Scenarios 2 and 3 is significantly lower than the additional LR charges with this scenario.

## 8 CBA Summary

Scenario 3 is estimated to provide £11.8M of benefits annually during the peak periods. This would be achieved with an annual cost to the transport budget of £0.37M (including LR charges, initial set-up and staff operating costs).

The shifting of works to off-peak periods is estimated to add £1.5M of disbenefit in the off-peak periods. The additional traffic management costs of changing method and timing of works are estimated at £0.4M and the LR charges faced by utilities are estimated at £0.56M.

Scenario 2 is estimated to provide £10.4M of benefits annually during the peak periods. This would be achieved with an annual cost to the transport budget of £2.3M (including LR charges, initial set-up and staff operating costs).

The shifting of works to off-peak periods is estimated to add £0.9M of disbenefit in the off-peak periods. The additional traffic management costs of changing method and timing of works are estimated at £0.3M and the LR charges faced by utilities are estimated at £2.1M.

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All figures are quoted in Market Prices at the 2023 Price Base Year.

The performance of the lane rental scheme under each scenario is summarised below:

### Scenario 2, Mid Position



### Scenario 3, Target Position



The mid position applied in Scenario 2 reports a Benefit to Cost Ratio (BCR) of 3.1 and is only slightly above the DfT value for money threshold of 2.0. This effectively represents the minimum position required to demonstrate value for money from the LR scheme.

The targeted position in Scenario 3 provides significantly higher performance, with the BCR increasing to 27.3. This is achieved by significantly reducing the LR charges faced by the HA and external works promoters, and by increasing the peak time benefits achieved from the forecast behavioural change.

The Scenario 3 position is supported by evidence recorded in other well-run schemes, such as the TfL scheme in London, where 98% and 83% of works (for HA and PU respectively) are reported to avoid LR charges by minimising disruption to the transport network during the busiest congested periods.

Scenario 3 represents the minimum performance benchmark targeted in the early years of the scheme. DCC are committed to working proactively with the other works promoters to further minimise peak period disruption and to reduce the exposure of all to the cost of the lane rental charges.

The operational performance and benefits achieved will be monitored regularly and distributed to all stakeholders annually the scheme progresses.

## Appendix A Hourly Traffic Flow Profiles

The hourly traffic flow profiles for the following selected sites are shown in Figures A.1 to A.3:

- A690 Nevilles Cross Bank, RC0
- A691 Framwellgate Peth, RC1
- B6313 Picktree Lane, RC2

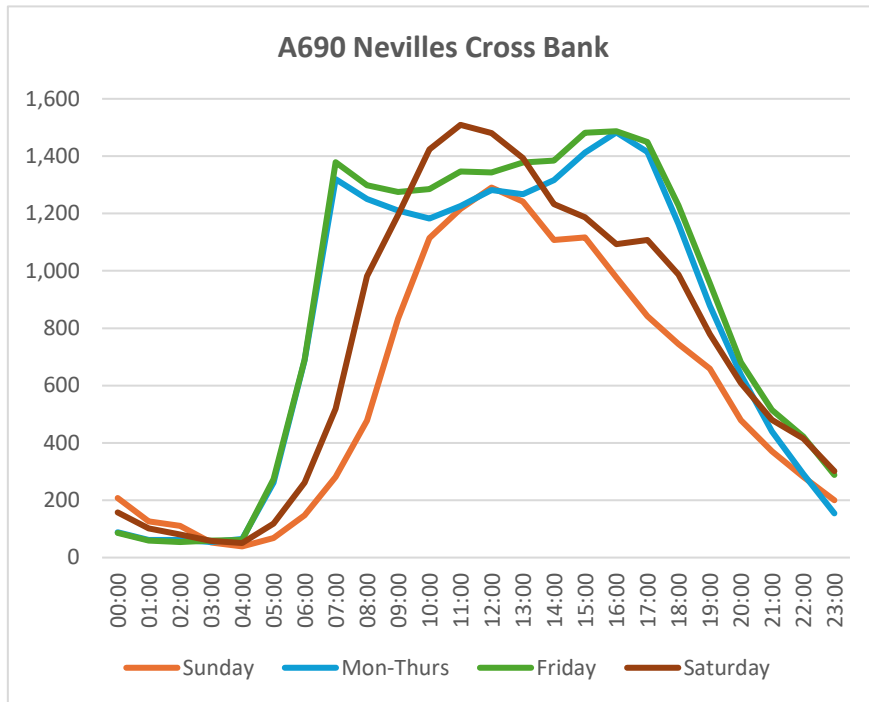


Figure A.1: A690 Nevilles Cross Bank

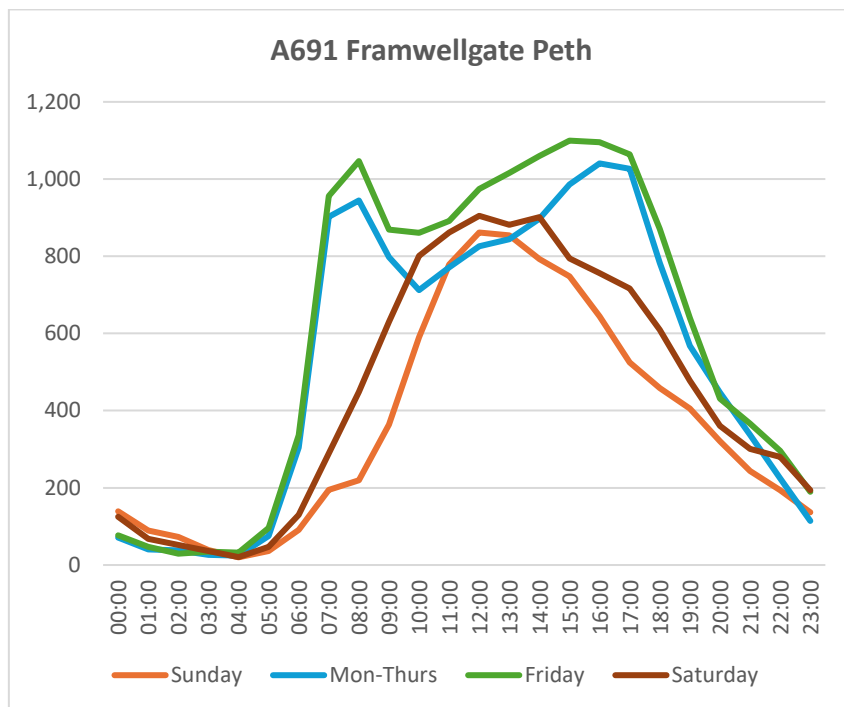


Figure A.2: A693 Framwellgate Peth

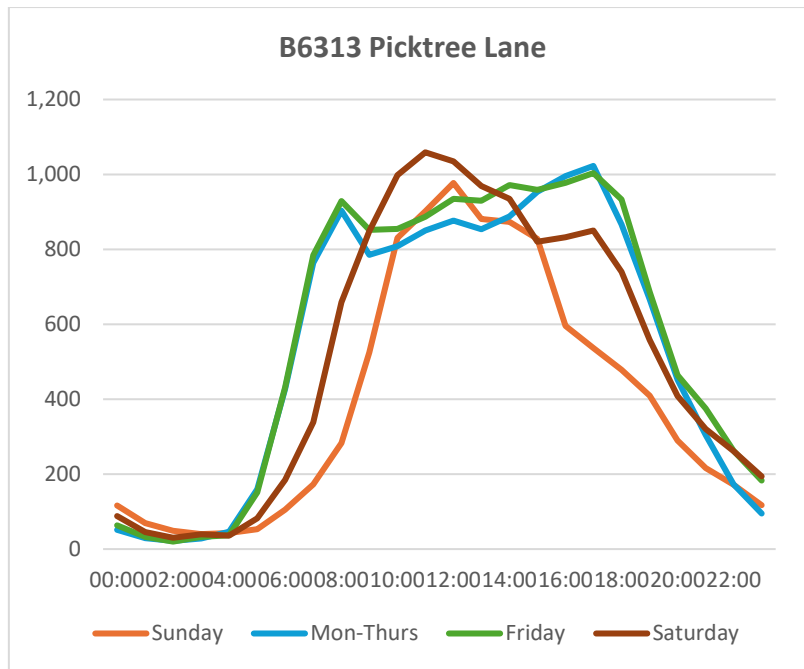


Figure A.3: B6313 Picktree Lane

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