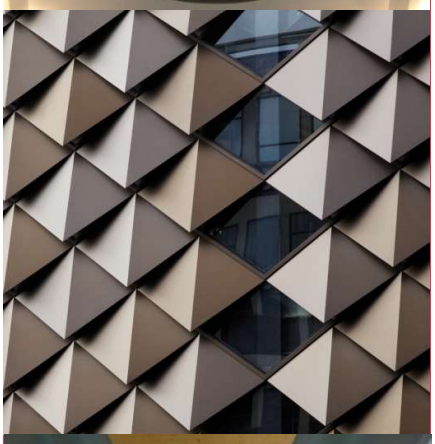

# West Cumberland Hospital Phase 2

## Transport Assessment

Curtins Ref: 073096

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Client Name: North Cumbria University Hospital NHS Trust

Curtins
10 Oxford Court, Bishopsgate,
Manchester, M2 3WQ.
Tel: 0161 236 2394
www.curtins.com

# Control Sheet

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| Author | Signature | Date |
|---|---|---|
| **Jonathan Ashcroft**<br>BSc (Hons) LLM<br>Senior Transport Planner | | 18 June 2021 |

| Reviewed | Signature | Date |
|---|---|---|
| **Danny Jones**<br>MPlan MRTPI<br>Principal Transport Planner | | 18 June 2021 |

| Authorised | Signature | Date |
|---|---|---|
| **Alex Vogt**<br>BSc (Hons) MSc FCIHT TPP<br>Director of Transport Planning | | 18 June 2021 |

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# Appendices

# 1.0 Introduction

## 1.1 Introduction

1.1.1 Curtins has been appointed on behalf of North Cumbria University Hospital NHS Trust to provide traffic and transportation advice in relation to a proposed development at West Cumberland Hospital (WCH). The development consists of refurbishing the existing hospital buildings. Included within the development proposals is the addition of further formal parking spaces on the WCH site. The above works are known as Phase 2 re-development of WCH.

## 1.2 Purpose and Scope of this Report

1.2.1 This Transport Assessment (TA) has been prepared to inform Highways Officers at Cumbria County Council (CCC) on all traffic and transportation matters associated with the application. On the above basis, this TA contains the following:

- A description of the highway network in the vicinity of the site;
- A review of the accident record in the vicinity of the site (over the most recent three-year period);
- A summary of the development proposals, including access and parking arrangements;
- A summary of local and national transport planning policy;
- A review of accessibility of the site by sustainable modes of travel;
- Details of the calculated trip generation for the new proposed development at the site;
- Details of the distribution of the development traffic; and,
- An assessment of the potential impact of the development traffic on local junctions.

1.2.2 This TA has been prepared in broad accordance with the Ministry of Housing, Communities and Local Government's National Planning Policy Framework (NPPF) and Planning Practice Guidance for TAs.

## 1.3 Background

1.3.1 The initial WCH site was constructed between 1959 and 1964, with a number of smaller extensions and reconfigurations carried out over the ensuing years. WCH was the first new hospital in England to be built following the inception of the National Health Service (NHS). It was officially opened in 1964 with a gross internal floor area of approximately 55,500m$^2$ on a site of 11.2 hectares. It is a general hospital providing 24-hour A&E, a consultant-led maternity unit and special baby unit, a range of specialist clinical services and several outpatient clinics.

## 1.4 Pre-Application and Scoping Discussions

1.4.1 Scoping discussions where held with Development Management Officers at CCC in 2019 regarding the development proposals. These discussions have been taken into consideration in the formation of this TA. In summary the following topics have been discussed to date:

- The proposed methodology for traffic distribution and trip generation;
- Existing operation of the local highway network;
- Committed developments; and,
- Highway safety.

## 1.5 Structure of the Report

1.5.1 Following this introduction, **Section 2** of the report provides a comprehensive description of the existing site and its location. This includes the local highway network and facilities for pedestrians, cyclists and public transport users.

1.5.2 **Section 3** contains an analysis of the local area in terms of highways safety, whereas **Section 4** contains details of the development proposals. **Section 5** contains an assessment of the site by non-car modes of transport.

1.5.3 **Section 6** outlines the traffic forecasting methodology used and the likely traffic generation associated with the development proposals. **Section 6** also analyses the likely highway impact of the proposals by presenting results of the junction capacity assessments undertaken to determine the impact of the development on the existing highway network.

1.5.4 A review of local and national transport planning policy is included in **Section 7**, and the report is summarised and concluded in **Section 8**.

# 2.0 Existing Situation

## 2.1 Site Location

2.1.1 The development is located upon the existing WCH site, approximately 2.5km south-east of Whitehaven in Cumbria. The Phase 2 site currently comprise of existing hospital buildings, some of which will be demolished/re-furbished as part of the new development. Phase 1 of the WCH works were completed in October 2015 and will be linked with Phase 2 (when complete).

2.1.2 WCH is bound to the north by residential properties fronting onto Homewood Road and industrial buildings associated with Sneckyeat Road Industrial Estate, to the east by agricultural land, to the south by further residential properties and to the west by Homewood Road itself. **Figure 2.1** below shows the site location:


**Figure 2.1** – Site Location Plan

## 2.2 Existing Access Arrangements

2.2.1 WCH will maintain the majority of the existing access arrangements which are located around the perimeter of the hospital site. There will however be a revised access onto Homewood Road to the north-west of the development which is discussed in greater detail within **Section 3** of this report.

## 2.3 Surrounding Highway Network

***Homewood Road***

2.3.1 Forming the northern boundary of the site, Homewood Road extends on a general north-to-south alignment for approximately 1.5km. Homewood Road is a single carriageway road typically 7m wide, with 3m footway provisions and street lighting present along both sides of the road for the majority of its length. Homewood Road is subject to a 30mph speed limit.

2.3.2 At its southern end Homewood Road connects with the B5292 Egremont Road and A595 via a roundabout arrangement. There are pedestrian guardrails in place at this location to enhance highway safety and across the A595(S) approach arm there are pedestrian crossing facilities in place in the form of a refuge island complete with dropped kerbs and tactile paving.

2.3.3 At its northern end Homewood Road connects with Cleator Moor Road via a priority junction arrangement. Similarly, there are pedestrian crossing facilities present at this location in the form of dropped kerbs.

2.3.4 Bus stops are provided at various points along Homewood Road with the closest located immediately adjacent to the existing hospital entrance. Both stops provide shelters, timetable information and level access provisions for passengers. The northbound stop is located in a layby arrangement. The accessibility section of this TA (**Section 5**) discusses the bus services calling at the stops on Homewood Road in greater detail.

***B2595 Cleator Moor Road***

2.3.5 Cleator Moor Road is located to the north-east of the development site. From its priority junction arrangement with Homewood Road, Cleator Moor Road runs in western direction for approximately 400m until a mini-roundabout junction with Main Street and Moresby Road, and in a eastern direction for 600m until a priority junction arrangement with Keekle Terrace.

2.3.6 Along this section Cleator Moor Road operates as a single carriageway road typically 7m wide, with footway present along at least one side of the road. When transecting the surrounding residential areas street lighting is also provided. To the north Cleator Moor Road is subject to a 30mph speed limit, which increases to 40mph in the south as the road becomes more rural in nature.

2.3.7 There are pedestrian crossing facilities in place at the mini-roundabout junction with Main Street and Moresby Road, in the form of pedestrian refuge islands complete with dropped kerbs and tactile paving.

***B5295 Egremont Road***

2.3.8 From the roundabout junction with Homewood Road, the B5295 Egremont Road runs in a northern direction through the residential areas of Hensingham, before terminating at the mini-roundabout junction with Main Street. For the entirety of its length Egremont Road operates as a single carriageway road, approximately 7m wide and is subject to a 30mph speed limit.

2.3.9 Egremont Road is street lit, and along its length has a number of priority junction arrangements which serve the surrounding residential area. Footways are present along both sides of the carriageway.

***A595***

2.3.10 A short distance west of the development, the A595 can be reached. From its roundabout junction with Homewood Road the A595 provides journeys north towards Whitehaven and Workington. In a southern direction the A595 provides journeys through Egremont towards south-west Cumbria.

2.3.11 The A595 forms part of the Strategic Road Network (SRN) and is therefore managed by Highways England (HE). The SRN is shown as the red line on **Figure 2.2** below and demonstrates how the site is well situated to benefit from the excellent transportation links nearby.

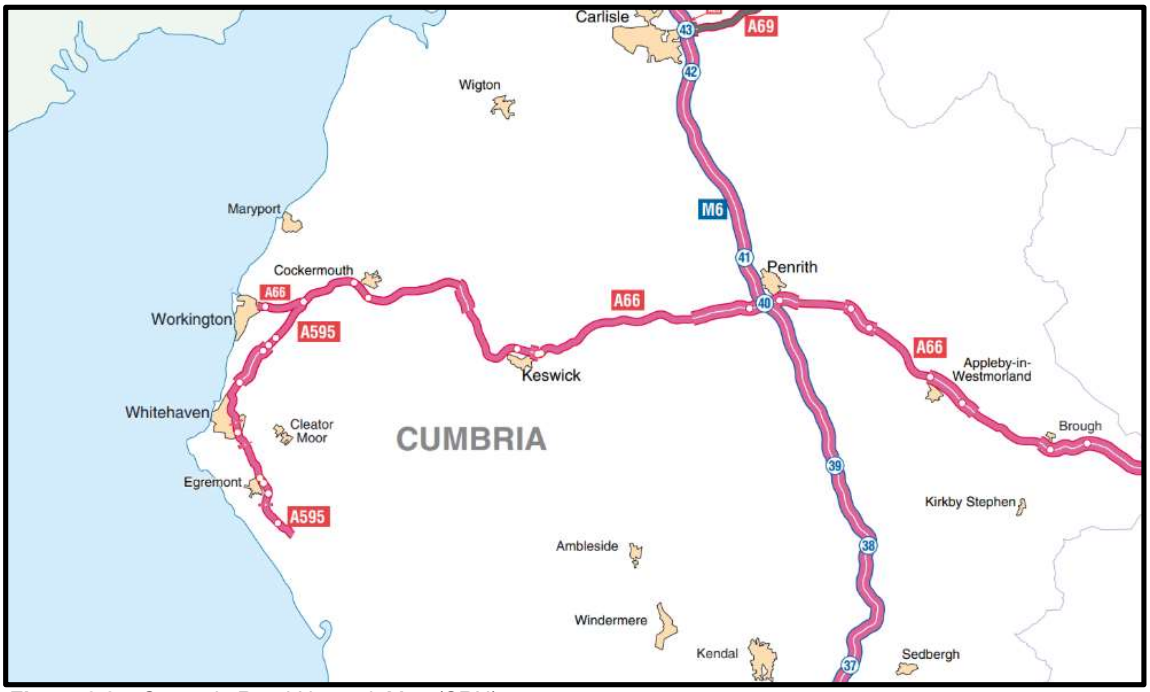


**Figure 2.2** – Strategic Road Network Map (SRN)

# 3.0 Highway Safety

## 3.1 Highway Safety Records Review

3.1.1 The study area considered for the Personal Injury Accident (PIA) review is shown on the plan in **Figure 3.1** below. As shown on the plan the extents include the following junctions (those also considered for capacity assessments):

- A595/Homewood Road/Egremont Road;
- Homewood Road/B5295 Cleator Moor Road; and,
- A595/Mirehouse Road.

3.1.2 The accident data review covers a 3-year time period (2018 to 2020 inclusive) using the online Crashmap resource.

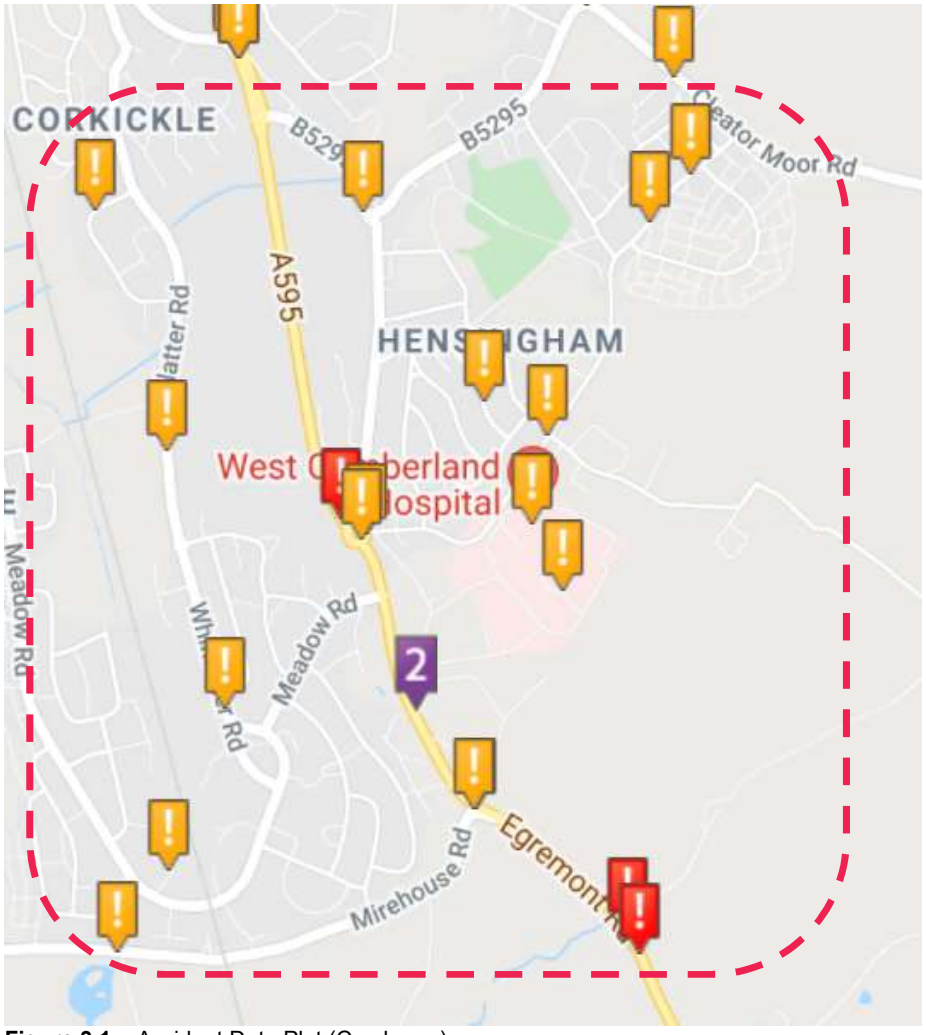


**Figure 3.1** – Accident Data Plot (Crashmap)

3.1.3 In total there were 21 accidents within the large study area over the 3-year time period. These comprised 3 serious accidents and 18 slight accidents, with no fatal accidents recorded. The annual breakdown of the accidents is shown in **Table 3.1** below.

| Severity | Recorded Collisions | | | |
|---|---|---|---|---|
| | 2018 | 2019 | 2020 | Total |
| Fatal | 0 | 0 | 0 | **0** |
| Serious | 2 | 1 | 0 | **3** |
| Slight | 7 | 6 | 5 | **18** |
| **Total** | **9** | **7** | **5** | **21** |

**Table 3.1** – Recorded Collisions (Severity)

3.1.4 A review of the plans shows that the above accidents are generally disbursed across the junctions within the study area, with no clear identifiable clusters. No accidents were recorded at the existing hospital main entrance junction on Homewood Road. The pre-existing residential area surrounding the site ensures that the development is situated adjacent to good levels of pedestrian/cycling infrastructure, which is reflected within the accident data records shown in **Table 3.1**.

## 3.2 Summary

3.2.1 Following a review of recent accident records, there were a total of 21accidents recorded in the time period across the study area. This includes 18 slight accidents and 3 serious accidents, with no fatal accidents recorded.

3.2.2 No significant correlations have been identified to suggest that highway condition, layout or design were significant contributory factors in any of the collisions. It is not considered that there is an existing safety issue that is likely to be exacerbated by the proposed development. It can therefore be considered that the development would not have a significant effect on highway safety.

# 4.0 Development Proposals

## 4.1 Proposed Development

4.1.1 This TA has been produced in support of Phase 2 of the re-development of WCH. As discussed previously Phase 1 was completed in 2015 and comprised a £90million redevelopment to the eastern side of the hospital, in which various facilities such as ophthalmology and retinal, were improved. The works associated with Phases 2 are summarised as follows:

***Phase 2***

4.1.2 Phase 2 of the WCH redevelopment consists of 3 stages, 2A, 2B and 2C. In order to facilitate the expansion of Phase 2 –substantial areas of the existing hospital will be demolished. Demolition will be undertaken across two distinct phases in order to maintain a fully operating facility during the construction process.

4.1.3 Phase 2A involves the construction of a three-storey extension to the existing Phase 1 scheme, comprising of a new main entrance on Level 3 joining into Phase 1 and the replacement of accommodation for services currently in the existing hospital across Blocks F, H and M. It is shown **Figure 4.1** below as the green area, containing a hatched building that represents the new build of the hospital. **Figure 4.1** also represents the extents of the phase 2b refurbishments, and the phase 2C external demolition works.

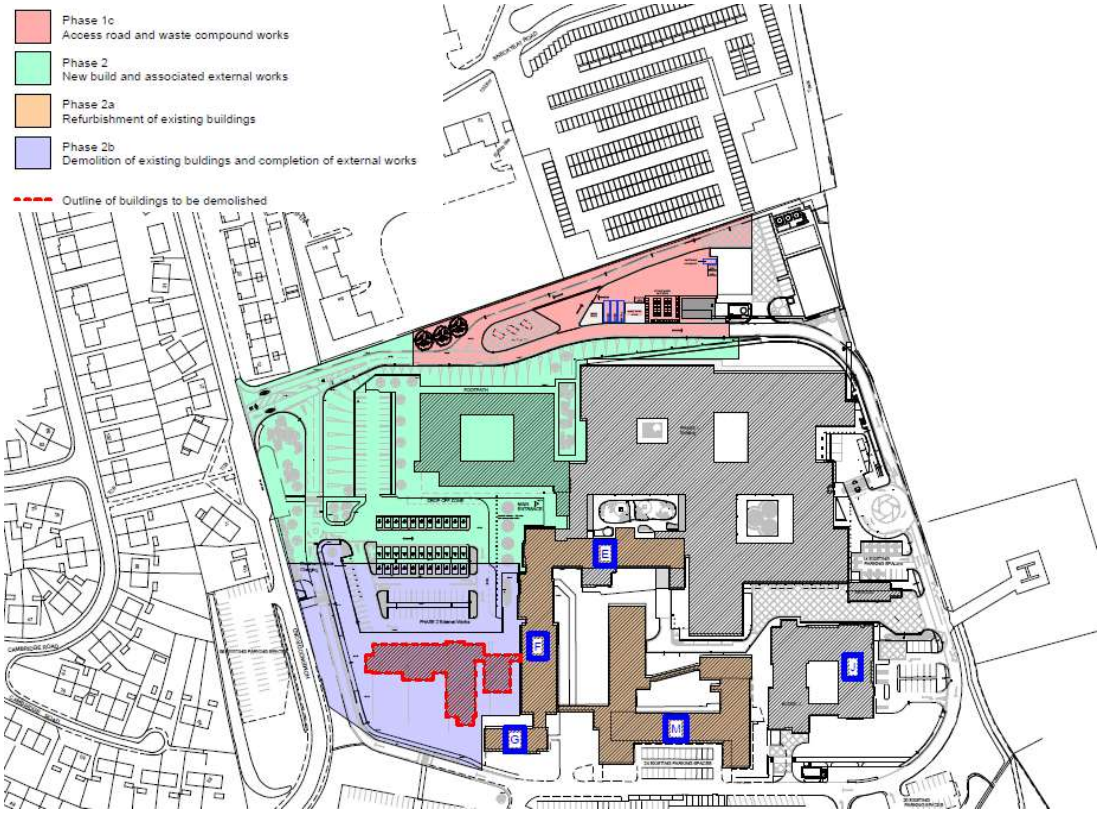


**Figure 4.1** – Phase 2 extents

## 4.2 Vehicular Access

4.2.1 WCH will maintain the majority of the existing access arrangements which are located around the perimeter of the hospital site. There will however be a revised access onto Homewood Road to the north-west of the development which is discussed in greater detail below.

4.2.2 The proposed site layout aims to minimise patient travel distances by adding an additional 166 standard parking bays as well as an additional 33 accessible bays close to the primary WCH entrance point off Homewood Road.

4.2.3 Through the formation of a one-way traffic stream around the perimeter of the hospital; staff and facility management are diverted away from the busy entrance area to a separate standalone parking area utilising the existing bays to the south of the site.

4.2.4 Reference should be made to **Figure 4.5** overleaf which shows the proposed internal site traffic routing, with the yellow areas denoting the proposed (clockwise) one-way system.

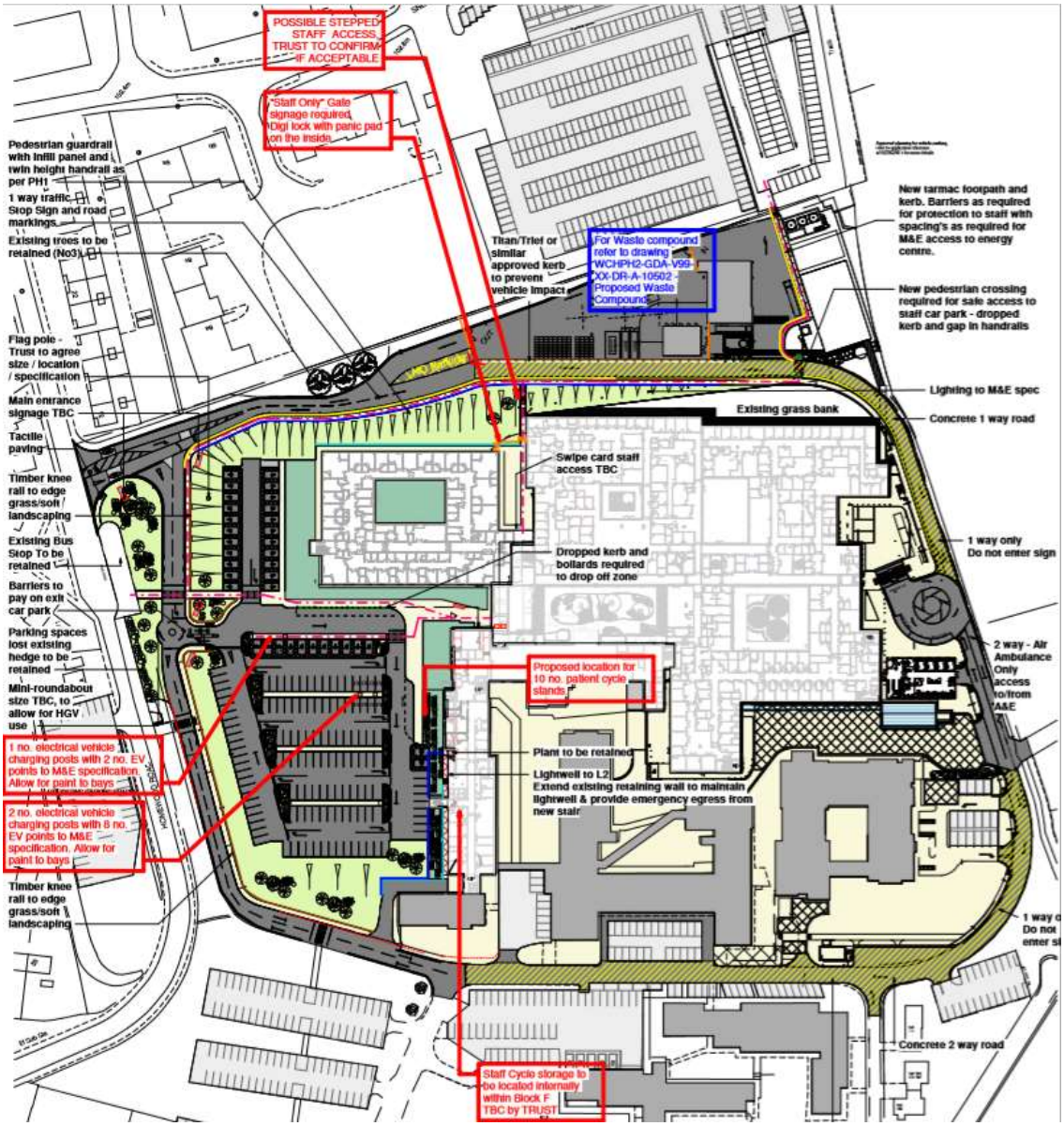


**Figure 4.5** – Proposed Internal Traffic Routing

4.2.5 As demonstrated on the proposed site layout, the proposed site access junction on Homewood Road is to serve the majority of the proposed hospital redevelopment. The access will be upgraded and widened include a pedestrian refuge island (to assist with pedestrian movements north/south on Homewood Road) and a ghost island right turn lane for traffic wishing to turn in the direction of the main car park. Reference should be made to **072419-CUR-00-XX-DR-TP-75001-P01** for proposed access arrangement on Homewood Road.

4.2.6 Visibility splays in excess of the existing 30 mph speed limit (2.4m x 43m) can be provided in both directions from the upgrade site access in line with the prevailing standards found within the Department for Transport's (DfT) Manual for Streets (MfS) Guidance.

## 4.3 Pedestrian/Cycle Access

4.3.1 It is envisaged that pedestrians and cyclists would access the site by utilising the aforementioned access point on Homewood Road, as well as the existing infrastructure surrounding the development site.

4.3.2 As demonstrated on the site layout, the internal layout has been designed to provide multiple direct and convenient connections for pedestrians and cyclists to support the creation of a sustainable development site. This includes wide footways on all the internal roads with dropped kerbs and zebra crossings provided at the key pedestrian desire lines.

## 4.4 Parking

4.4.1 Car parking is to be provided in broad accordance with the maximum standards set out by CCC, in their Supplementary Planning Document (SPD). These are set out in Appendix 1 of the Development Design Guide and have been included at **Figure 4.6** for ease of reference.

| Type of development | Essential Operational Parking | Disabled Parking | Cars | Motorcycles | Pedal Cycles |
|---|---|---|---|---|---|
| **C2 Residential institutions** | | | | | |
| **Residential care homes** | 1 delivery / ambulance space Plus 1 space per resident staff | 1 space or number equivalent to 5% of car requirement whichever is greater | 1 space per 4 bed spaces PLUS 1 space per 3 non-resident staff ( working at one time ) | 1 space or number equivalent to 5% of car requirement when more than 20 car spaces needed | 1 space per 5 staff PLUS minimum of 2 spaces |
| **Hospitals** | 50m2 of usable service space per 250m2 gross floor area Plus turning space PLUS access to ambulance | As above | 2 spaces per 3 bed spaces PLUS 3 spaces per consulting room PLUS 1 space per 2 staff | As above | 1 space per 5 staff PLUS number equivalent to 10 % of car requirement (minimum of 2 spaces) |
| **Residential schools / Colleges / Training centres** | 1 coach space Plus 1 space per resident staff | As above | | As above | 1 space per 5 staff PLUS 14 space per 4 students |

**Figure 4.6** – CCC Parking Standards

4.4.2 Whilst due accordance has been made with regards to the maximum parking standards for hospital uses set out by CCC. It is also appropriate to ensure that developer end user requirements are met to guarantee that no overspill parking occurs onto the internal site access road, or wider network. This is considered of particular importance given the nature of the proposals (with ambulance and emergency vehicle movements). It is considered that there is adequate onsite parking for staff and visitors to support the necessary functions on site, based upon the previous operations on site.

4.4.3 The proposed parking changes as a result of Phase 2 is presented at **Figure 4.7** below:

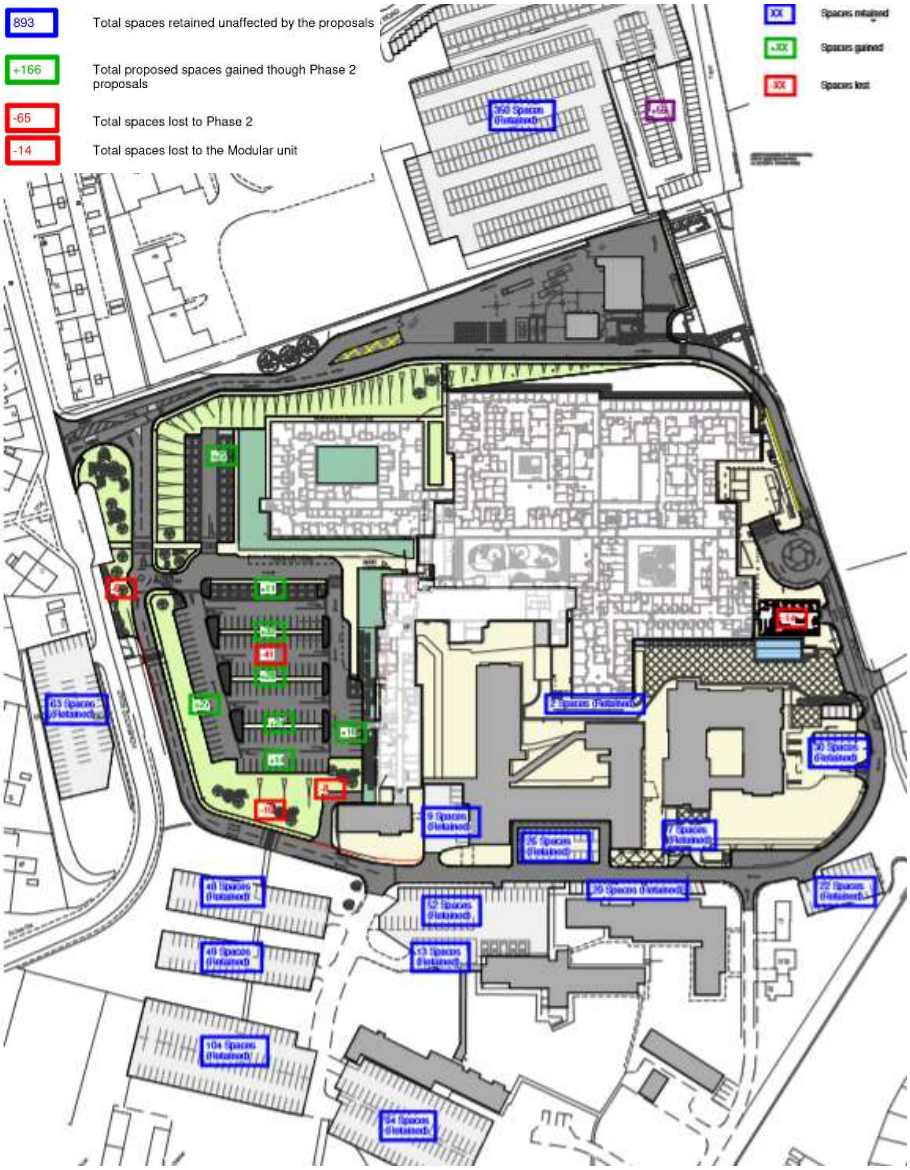


**Figure 4.7** – Proposed Parking Changes

4.4.4 As demonstrated on **Figure 4.7** above the existing WCH site has 958 parking spaces currently. There will be a total of 65 spaces lost due to buildings being developed on site, however as part of the wider site proposals there will be gain of 166 parking spaces, resulting in a net gain of 101 spaces. Therefore, following completion of the Phase 2 proposals there will be a total of 1,059 parking spaces on site.

# 5.0 Accessibility by Sustainable Modes of Transport

## 5.1 Introduction

5.1.1 A key element of national and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

5.1.2 The accessibility of the proposed development is considered in this context for the following modes of travel:

- Pedestrian accessibility;
- Cycle accessibility; and,
- Public transport.

## 5.2 Pedestrian Accessibility

5.2.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution of Highways and Transportation (CIHT) document entitled 'Providing for Journeys on Foot' suggests walking distances which are relevant to this planning application. These are reproduced in **Table 5.1**.

| CIHT Classification | Town Centres (m) | Commuting/School/ Sightseeing (m) | Elsewhere/Local Services (m) |
|---|---|---|---|
| **Desirable** | 200 | **500** | 400 |
| **Acceptable** | 400 | **1,000** | 800 |
| **Preferred Maximum** | 800 | **2,000** | 1,200 |

**Table 5.1** – CIHT Recommended Walking Distances

5.2.2 To assist in summarising, the accessibility of the site by foot, an indicative pedestrian catchment plan has been produced. Distances of 500m, 1,000m and 2,000m have been considered which are termed *'Desirable'*, *'Acceptable'* and the *'Preferred Maximum'* by the CIHT for commuting trips. The plan is shown at **Figure 5.1** overleaf for ease of reference.

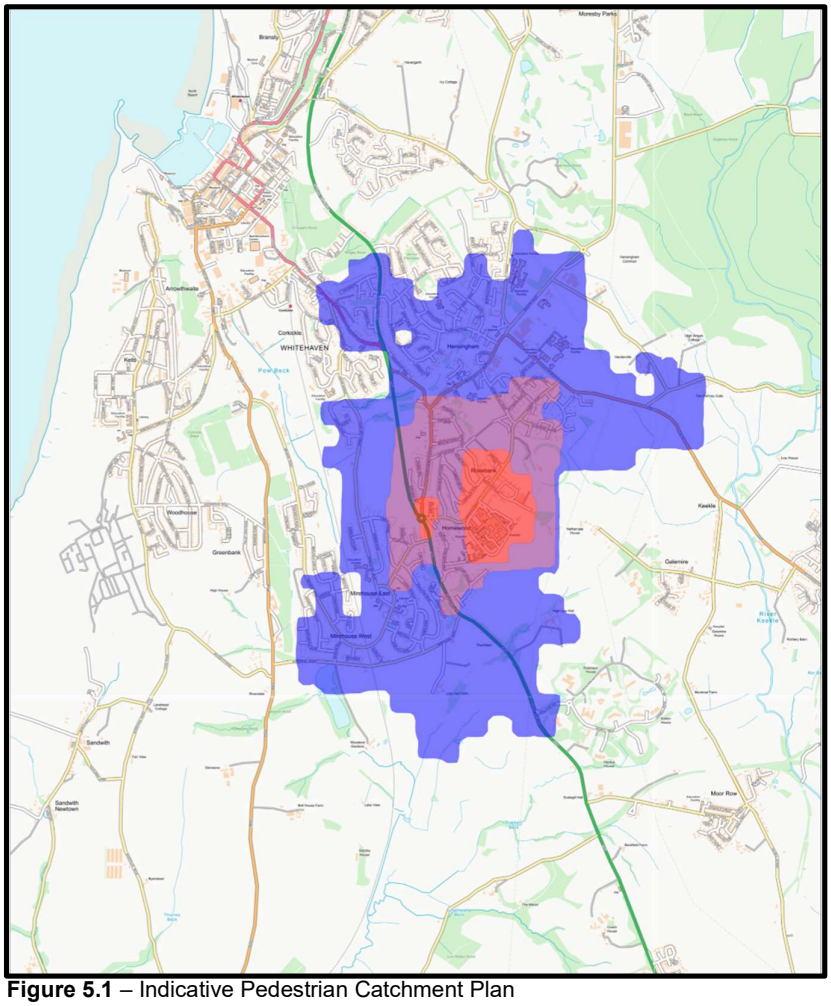


**Figure 5.1** – Indicative Pedestrian Catchment Plan

5.2.3 The surrounding land uses around the development location, and the pre-existing residential areas surrounding Whitehaven, ensures that the site is situated adjacent to nearby facilities and there are good levels of pedestrian infrastructure in place. It is therefore considered from an accessibility perspective, that the development location is highly suitable.

5.2.4 As mentioned in **Section 4**, the internal site layout has been designed to provide wide footways on all the internal roads. After which, pedestrians will be able to access wider residential areas surrounding Whitehaven where pedestrian facilities already exist and are generally of a high standard.

5.2.5 The site is located within an acceptable walk distance of the majority of Hensingham and Mirehouse, two established residential areas. There are a row of shops located due west of the site on Meadow Road in Mirehouse which provides a Post Office, newsagent, takeaway food establishments, amongst many others. This coupled with the existing hospital facilities will reduce the use of cars by staff members as they will not need to travel elsewhere during breaks/ lunchtime.

5.2.6 The nearest bus stops to the proposed development are located as a pair on Homewood Road, in the vicinity of the site access. Corkickle Rail Station is located approximately 2km walk distance from the centre of the site. The public transport section of this Chapter discusses the available bus and rail services in further detail.

5.2.7 In summary, in light of the site's location close to existing pre-existing residential areas around Whitehaven it has been demonstrated that the site is accessible for pedestrians.

## 5.3 Accessibility by Cycle

5.3.1 In order to assist in assessing the accessibility of the site by cycle an 8km cycle catchment for the site has been considered. The 8km cycling distance refers to a recommendation by Cycling England in the document 'Integrating Cycling into Development Proposals' (2009). This equates to a journey time of around 40 minutes, cycling at a speed of 12kph. The catchment extends as far as Lowca in the north, Frizington to the east, Thornhill in the south and St Bees to the west. The plan is shown at **Figure 5.2** below for ease of reference.

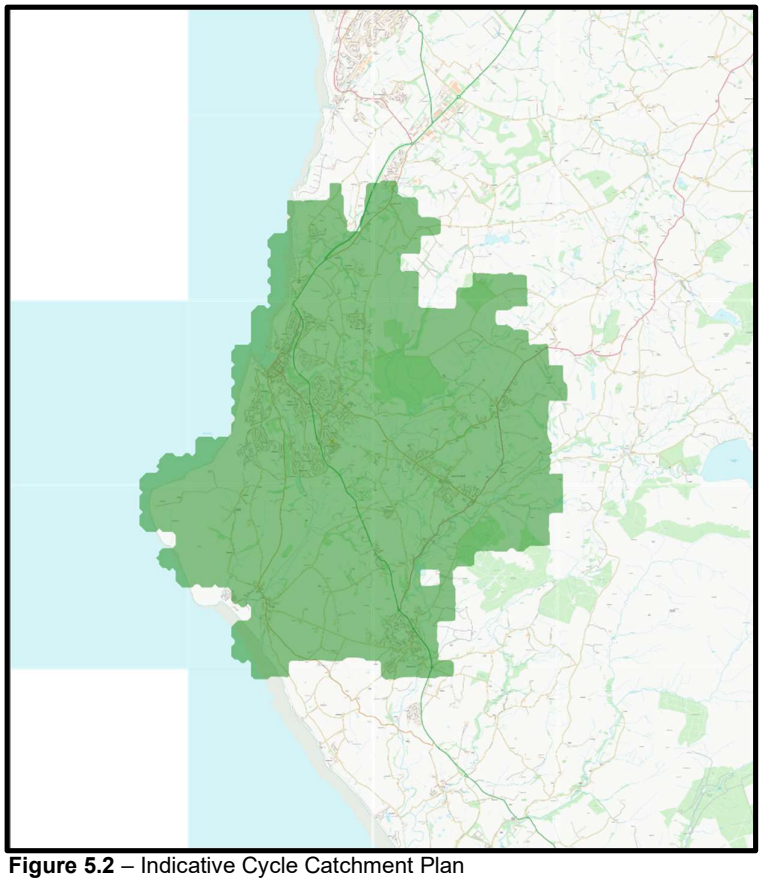

**Figure 5.2** – Indicative Cycle Catchment Plan

5.3.2 Of the immediate roads surrounding the site, a number are considered suitable for cycling on carriageway due to the existing low volumes of traffic and slow vehicle speeds. In addition to this, National Cycle Network (NCN) Route 72 is located 1.2km west of the proposed development (in the vicinity of Mirehouse East). Locally, NCN Route 72 connects Whitehaven and Egremont, utilising a mixture of quiet roads and traffic free paths throughout western Cumbria.

5.3.3 Reference should be made to **Figure 5.3** below which details the NCN in the vicinity of the site.

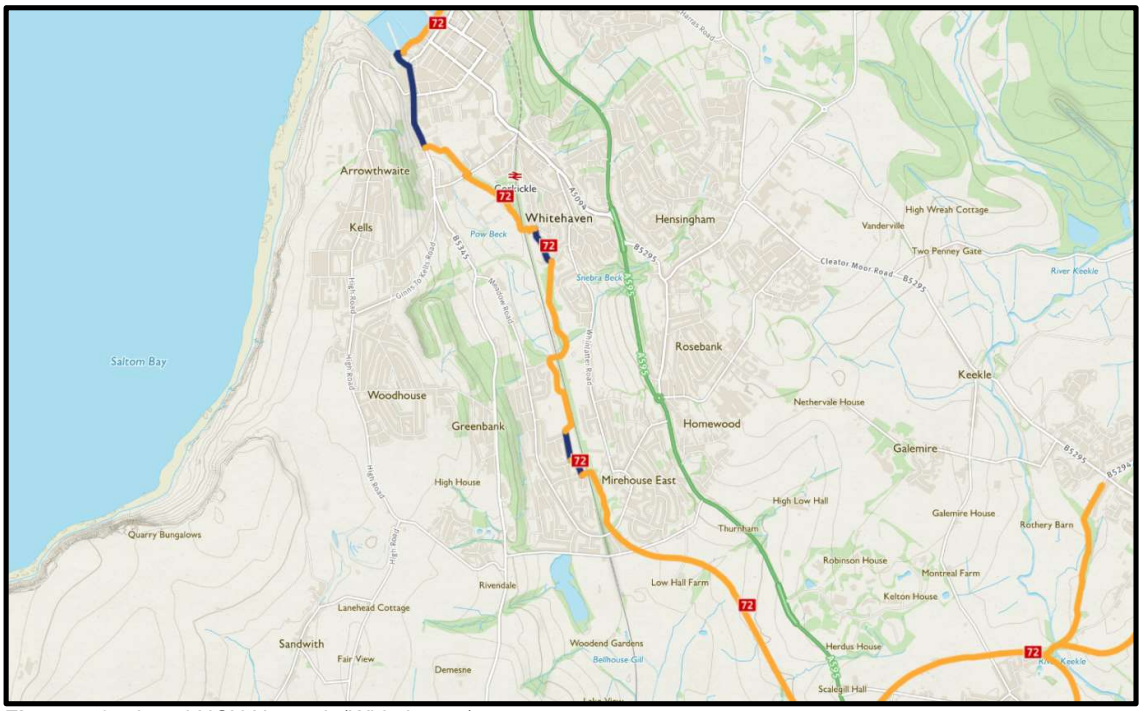


**Figure 5.3** – Local NCN Network (Whitehaven)

5.3.4 All of the previously described residential, leisure and employment opportunities found within an accessible walk distance, can be reached within 10-minute cycle journey. The 8km catchment covers the entirety of Whitehaven, as well as a number of key residential areas such as Cleator Moor and Egremont.

5.3.5 Therefore, in summary, it is considered that cycling is a realistic mode of travel for future employees and residents at the development site.

## 5.4 Public Transport Accessibility

***Bus***

5.4.1 The CIHT document, 'Planning for Public Transport in Developments' recommends that developments should ideally be located within 400m of a bus stop.

5.4.2 The nearest pair of bus stops to the site are located on Homewood Road immediately adjacent to the WCH site access and well within an 400m walk from the site. Both stops provided shelters, timetable information, level access for pedestrians and the northbound stop is situated in a layby arrangement. **Table 5.2** details the regular bus services that call at the stops on Homewood Road and their associated frequencies:

| Bus Service | Journey | Frequency | | |
|---|---|---|---|---|
| | | Monday to Friday | Saturday | Sunday |
| **21** | Frizington - Cleator Moor - W.C. Hospital - Whitehaven | 30 mins | - | - |
| **30** | Maryport- Thornhill via Workington, Whitehaven & Egremont | 30 mins | 30 mins | 60 mins |
| **32** | Whitehaven• Cleator Moor • Wath Brow • Egremont • Frizington | 60 mins | 60 mins | 120 mins |

**Table 5.2** – Homewood Road Bus Service Summary

5.4.3 In summary, in light of the site's location close to a number of existing services on Homewood Road, it has been demonstrated that the site is highly accessible by bus.

***Rail***

5.4.4 The CIHT document, 'Planning for Public Transport in Developments' notes that visitors travelling to a site by rail will typically be prepared to walk further to the site than visitors travelling by bus, with a preferred distance of 800m. Corkickle Railway Station is located on Bedford Road, approximately 2km walk/ cycle distance from the centre of the site.

5.4.5 Whilst the walking distance from the site to the railway station is above the desired maximum, it may still be viable for some rail users, particularly those who cycle or 'park and ride'. Furthermore, there are bus stops located on Inkerman Terrace adjacent to the railway station, which are also served by the No.30 and 32 buses.

5.4.6 It is therefore considered that a multi-modal journey would be viable for staff and residents at the site to who are unable or unwilling to walk/cycle the distance.

5.4.7 The Northern service operates from Corkickle and the station provides regular and frequent trains (hourly) northbound towards Carlisle and southbound towards Barrow-in-Furness, as well as many of the nearby local stations across western Cumbria. At the station itself there is CCTV coverage, payphones and ramps for mobility access.

5.4.8 In view of the availability of connecting bus services to access Corkickle Railway Station, and the level of service available at the station, it is considered that the site is accessible for travel by rail.

## 5.5 Summary

5.5.1 In summary, the site is located such as to benefit from existing walking, cycling and public transport opportunities. The site is located in close proximity to a variety of key services and facilities as well as a number of pre-existing residential areas. The site is therefore considered to be accessible from sustainable modes of travel in line with national and local transport planning policy outlined in **Section 7** of this TA.

# 6.0 Highway Impact

## 6.1 Introduction

6.1.1 As the proposed development predominantly involves the demolition and refurbishment of existing/redundant hospital facilities at WCH. It is considered that there is negligible net impact on the local highway network, when comparing the existing trip generation potential of the hospital and proposed facilities coming forward as Phase 2.

6.1.2 Notwithstanding the above, this section of the report details the methodology used to predict the demand associated with the proposed development and describes the results of the junction impact assessments that have been undertaken as part of a ***sensitivity test*** of the local highway network.

## 6.2 Baseline Traffic Data

6.2.1 Manual classified turning count traffic surveys were undertaken in July 2019 at nearby junctions on the highway network. Additionally, an Automatic Traffic Counter (ATC) was installed in the vicinity of the proposed access on Homewood Road, which collected 7 complete days of data. The raw survey data can be provided upon request.

6.2.2 The surveyed flows have been converted to Passenger Car Units (PCUs) and shown in **Figures 1** and **2** in **Appendix A**.

6.2.3 The traffic flows surveyed in 2019 scenarios have been projected to 2026 by applying factors extracted from the DfT's TEMPRO 7.2 program, using the definitive NTEM v7.2 database and the current NTM AF09 dataset in line with TAG Unit M4: Forecasting and Uncertainty. Copeland (003) has been selected as the defined area. Reference should be made to **Table 6.1** which shows the growth factors applied to the base flows.

| Scenarios | Time Period | |
|---|---|---|
| | AM Peak | PM Peak |
| 2019 - 2026 | 1.0691 | 1.0649 |

**Table 6.1** – TEMPRO Growth Factors in Copeland.

6.2.4 Reference should be made to **Figures 3** and **4** in **Appendix A** which show the 2026 'No Development' scenarios for the weekday AM and PM peak periods.

## 6.3 Traffic Generation

6.3.1 The TRICS database has been interrogated for weekday surveys for hospital developments. TRICS is the industry recognised tool for calculating the anticipated future trip demand of a proposed development. The database contains multi-modal surveys of varying land uses in multiple destinations across the UK, including health care and educational uses.

6.3.2 As described in **Section 3** it is envisaged that the proposed development would comprise of the following new build uses (Phase 2B involves a refurbishment of existing building and 2C is associated parking):

- 3,986m$^2$ hospital buildings (Phase 2A).

6.3.3 The full TRICS outputs are included within **Appendix B** to the rear of this report. After reviewing the data, the following peak hours were obtained:

- AM Peak: 08:00 – 09:00; and,
- PM Peak: 17:00 – 18:00.

6.3.4 The peak hour trip rates and subsequent vehicular trips associated with Phase 2 are provided in **Tables 6.2** - **6.6** below.

| TRICS – General Hospital | Average TRICS Trip Rates | | | Proposed Development Trips | | |
|---|---|---|---|---|---|---|
| | Arrive | Depart | Total | Arrive | Depart | Total |
| AM (08:00 – 09:00) | 0.994 | 0.335 | 1.329 | 40 | 13 | 53 |
| PM (17:00 – 18:00) | 0.315 | 0.792 | 1.107 | 13 | 32 | 44 |

**Table 6.2 –** Proposed Development Trip Rates and Trip Generation (Phase 2 Hospital Buildings) Per 100m$^2$ GFA

6.3.5 However, it should also be noted that the former uses of the site is likely to have generated similar (or more) levels of traffic when in operation, and that the re-use of this previously–developed land should be encouraged from a planning and sustainability perspective.

6.3.6 It is considered that a large proportion of the traffic flows shown at **Table 6.2** are already on the local highway network and would be utilising the existing/previous WCH site. Based on an understanding of the current development proposals it is considered suitable and robust to assume that 50% of trips would already be on site and therefore 'not new' trips to the network. The values shown above have been amended accordingly and presented in **Table 6.6** below.

| | Proposed Development Trips | | |
|---|---|---|---|
| | Arrive | Depart | Total |
| AM (08:00 – 09:00) | 20 | 7 | 27 |
| PM (17:00 – 18:00) | 7 | 16 | 22 |

**Table 6.6 –** Total Trip Generation (Phase 2)

6.3.7 The above table demonstrate that the scheme could potentially generate approximately 27 and 22 two-way trips in the AM and PM peaks respectively. This has been used to inform the junction capacity analysis in **Section 6.6** below.

## 6.4 Traffic Assignment

6.4.1 The above traffic generation has been assigned onto the local highway network using the observed turning flow proportions from the recent 2019 survey data. The resultant traffic distribution is shown at **Figures 5** and **6** in **Appendix A**.

6.4.2 The predicted peak hour vehicle trips shown in **Tables 6.6** above have been assigned on the surrounding network using this trip distribution. The resultant development traffic flows are shown at **Figures 7** – **8** in **Appendix A**.

6.4.3 The development generated flows have been added to the flows shown on **Figures 1** - **4** to create the 2019 and 2026 'With Development' scenarios, which are shown as **Figure 9** - **12** in **Appendix A**.

## 6.5 Junction Assessments

6.5.1 Capacity assessments have been undertaken at the following junctions surrounding the development proposals:

- Homewood Road/site access junction
- A595/Homewood Road/Egremont Road;
- Homewood Road/B5295 Cleator Moor Road; and,
- A595/Mirehouse Road.

6.5.2 The above junctions operating under priority control have been modelled utilising TRL's JUNCTIONS programme and those under signal control via JCT Consultancy's LinSig programme.

6.5.3 LinSig allows traffic engineers to model traffic signals and their effect on traffic capacities and queuing. As well as modelling the effects of traffic signals LinSig also optimises signal timings to reduce delay or increase capacity at a junction or group of interlinked junctions.

6.5.4 LinSig results refer to the Degree of Saturation (DoS) and Mean Maximum Queue (MMQ) predicted in each lane of the junction. A DoS of 100% indicates that the lane in question is operating at its theoretical capacity (point of saturation), whilst a DoS of 90% or less indicates that the lane is operating within its practical capacity.

6.5.5 JUNCTIONS results refer to the Ratio of Flow to Capacity (RFC), delay and queue length predicted on each arm of the junction. An RFC of 1.00 indicates that the arm in question is operating at its theoretical capacity, whilst an RFC of 0.85 or less indicates that the arm is operating within its practical capacity.

6.5.6 The results from the junction assessments are shown in the following section and the relevant junction modelling output reports are attached in **Appendix C** to the rear of this report.

## 6.6 Junction Modelling Results

***Homewood Road/Site Access Junction***

6.6.1 As shown on the proposed site layout the site access junction for WCH on Homewood Road is to serve the majority of the development and has been redesigned as part of the proposals. The JUNCTIONS 8 results of the future year assessments at the site access on Homewood Road are summarised below.

| Approach | Movement | AM 2019 With Dev | | | PM 2019 With Dev | | |
|---|---|---|---|---|---|---|---|
| | | Queue (Vehs) | Delay | RFC | Queue (Vehs) | Delay | RFC |
| Homewood Road | Ahead/Right | 0 | 6 secs | 0.02 | 0 | 7 secs | 0.01 |
| Site Access | Right | 0 | 9 secs | 0.01 | 0 | 11 secs | 0.01 |
| Site Access | Left/ | 0 | 6 secs | 0.01 | 0 | 7 secs | 0.02 |

**Table 6.7** – Homewood Road/Site Access: 2019 Scenarios

| Approach | Movement | AM 2026 With Dev | | | PM 2026 With Dev | | |
|---|---|---|---|---|---|---|---|
| | | Queue (Vehs) | Delay | RFC | Queue (Vehs) | Delay | RFC |
| Homewood Road | Ahead/Right | 0 | 6 secs | 0.02 | 0 | 7 secs | 0.01 |
| Site Access | Right | 0 | 9 secs | 0.01 | 0 | 11 secs | 0.01 |
| Site Access | Left/t | 0 | 6 secs | 0.01 | 0 | 7 secs | 0.02 |

**Table 6.8** – Homewood Road/Site Access: 2026 Scenarios

6.6.2 It is clear from the results shown in **Table 6.8** that the proposed Homewood Road/Site Access priority junction is predicted to operate well within capacity in the 2026 future year scenarios.

***A595/Homewood Road/Egremont Road***

6.6.3 The results of the existing A595/Homewood Road/Egremont Road roundabout junction are summarised below.

| Lane Description | 2019 Base | | | | 2019 With Dev | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | RFC | MMQ | RFC | MMQ | RFC | MMQ | RFC | MMQ |
| Egremont Road-N | 0.78 | 4 | 0.69 | 2 | 0.79 | 4 | 0.70 | 2 |
| B5295 | 0.23 | 0 | 0.17 | 0 | 0.23 | 0 | 0.18 | 0 |
| Homewood Rd | 0.58 | 1 | 0.88 | 6 | 0.59 | 1 | 0.90 | 7 |
| Egremont Rd-S | 0.90 | 8 | 1.03 | 37 | 0.90 | 8 | 1.04 | 39 |

**Table 6.9** – A595/Homewood Road/Egremont Road: '2019 Base' Scenarios

| Lane Description | 2026 No Development | | | | 2026 With Development | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | RFC | MMQ | RFC | MMQ | RFC | MMQ | RFC | MMQ |
| Egremont Road-N | 0.87 | 5 | 0.74 | 3 | 0.87 | 5 | 0.74 | 3 |
| B5295 | 0.26 | 0 | 0.19 | 0 | 0.26 | 0 | 0.19 | 0 |
| Homewood Rd | 0.65 | 2 | 0.99 | 14 | 0.67 | 2 | 1.01 | 17 |
| Egremont Rd-S | 0.96 | 15 | 1.11 | 73 | 0.97 | 16 | 1.11 | 77 |

**Table 6.10** – A595/Homewood Road/Egremont Road: 2026 Scenarios

6.6.4 The results shown in **Tables 6.9** and **6.10** demonstrate that the existing A595/Homewood Road/Egremont Road roundabout junction is predicted to operate over capacity in the baseline scenarios. However, with the proposed development in place there are minimal increases in the RFC and queue lengths of the junction approaches. It should be noted that once over theoretical capacity, JUNCTIONS results increase exponentially with even very minor increases in traffic flows.

***Homewood Road/Cleator Moor Road***

6.6.5 The results of the existing Homewood Road/Cleator Moor Road priority junction are summarised below.

| Lane Description | 2019 Base | | | | 2019 With Dev | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | RFC | MMQ | RFC | MMQ | RFC | MMQ | RFC | MMQ |
| Overend Rd- Left | 0.17 | 0 | 0.29 | 0 | 0.18 | 0 | 0.30 | 0 |
| Overend Rd- Right | 0.37 | 1 | 0.49 | 1 | 0.38 | 1 | 0.50 | 1 |
| Cleator Moor Rd- Ahead/Right | 0.77 | 3 | 0.21 | 0 | 0.78 | 3 | 0.21 | 0 |

**Table 6.11** – Overend Road/Cleator Moor Road: '2019 Base' Scenarios

| Lane Description | 2026 No Development | | | | 2026 With Development | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | RFC | MMQ | RFC | MMQ | RFC | MMQ | RFC | MMQ |
| **Overend Rd- Left** | 0.19 | 0 | 0.34 | 1 | 0.20 | 0 | 0.35 | 1 |
| **Overend Rd- Right** | 0.43 | 1 | 0.56 | 1 | 0.44 | 1 | 0.58 | 1 |
| **Cleator Moor Rd- Ahead/Right** | 0.85 | 4 | 0.23 | 0 | 0.86 | 5 | 0.24 | 0 |

**Table 6.12** – Overend Road/Cleator Moor Road: 2026 Scenarios

6.6.6 The results shown in **Tables 6.11** and **6.12** demonstrate that the existing Homewood Road/Cleator Moor Road priority junction is predicted to operate close to theoretical capacity in the 2026 future year scenarios. However, with the proposed development in place there are minimal increases in RFC and queue lengths at the junction.

***A595/Mirehouse Road***

6.6.7 The results of the existing A595/Mirehouse Road traffic signal junction are summarised below.

| Lane Description | 2019 Base | | | | 2019 With Dev | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | Dos | MMQ | Dos | MMQ | Dos | MMQ | Dos | MMQ |
| Egremont Road West Ahead Right | 66.4% | 12 | 56.0% | 7 | 66.5% | 12 | 56.4% | 7 |
| Mirehouse Road Right Left | 74.0% | 6 | 98.4% | 14 | 74.0% | 6 | 98.4% | 14 |
| Egremont Road East Ahead Left | 77.0% | 15 | 102.2% | 46 | 77.5% | 15 | 102.6% | 48 |

**Table 6.13** – A595/Mirehouse Road: '2019 Base' Scenarios

| Lane Description | 2026 No Development | | | | 2026 With Development | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | DoS | MMQ | DoS | MMQ | DoS | MMQ | DoS | MMQ |
| Egremont Road West Ahead Right | 71.0% | 14 | 59.6% | 8 | 71.1% | 14 | 60.0% | 8 |
| Mirehouse Road Right Left | 78.9% | 6 | 104.7% | 22 | 78.9% | 6 | 104.7% | 22 |
| Egremont Road East Ahead Left | 82.3% | 17 | 108.8% | 76 | 82.9% | 17 | 109.3% | 78 |

**Table 6.14** – A595/Mirehouse Road: 2026 Scenarios

6.6.8 The results shown in **Tables 6.13** and **6.14** demonstrate that the existing A595/Mirehouse Road traffic signals are predicted to operate over capacity in the baseline scenarios. However, with the proposed development in place there are minimal increases in the RFC and queue lengths of the junction approaches. It should be noted that once over theoretical capacity, LINSIG results increase exponentially with even very minor increases in traffic flows.

## 6.7 Highway Impact Summary

6.7.1 The highway impacts of the traffic predicted to be generated by the proposed development have been properly assessed at key junctions on the road network as part of a sensitivity test.

6.7.2 Those impacts have been demonstrated to be immaterial and are far from being able to be categorised as severe. Therefore, no highway capacity mitigation measures are proposed in order to make the development proposals acceptable in planning terms.

6.7.3 It should also be noted that the former uses of the site is likely to have generated similar levels of traffic when in operation, and that the re-use of this previously–developed land should be encouraged from a planning and sustainability perspective.

6.7.4 As the proposed development predominantly involves the demolition and refurbishment of existing/redundant hospital facilities at WCH. It is considered that there is negligible net impact on the local highway network, when comparing the existing trip generation potential of the hospital and proposed facilities coming forward as Phase 2. Notwithstanding the above this section of the report seeks to provide a sensitivity test of the local highway network for information purposes.

# 7.0 Transport Planning Policy

## 7.1 Introduction

7.1.1 The following section sets out key national and local Transport Planning policies and how the proposals accord with these.

## 7.2 National Planning Policy Framework

7.2.1 NPPF sets out the current national transport planning policy and outlines the important role that transport policies have to play in facilitating sustainable development. From the outset, the Minister for Planning's Foreword lays the foundations for current policy thinking;

"The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs".

7.2.2 Paragraph 11 states that at the heart of NPPF is a "presumption in favour of sustainable development". For decision making this means granting permission unless:

*"…any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."*

7.2.3 Section 9 of the NPPF is entitled Promoting Sustainable Transport, and outlines the important role that transport policies have to play in facilitating sustainable development. The section states that:

*"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making".*

7.2.4 Paragraph 108 of the NPPF states that:

*"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

*a) Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location".*

*b) Safe and suitable access to the site can be achieved for all users, and,*

*c) Any significant impacts from the development of the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree".*

7.2.5 Paragraph 109 of the NPPF states that:

*"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe".*

7.2.6 It has been demonstrated throughout this TA that the proposed development is situated in an accessible location and the residual cumulative impacts of the proposed development would not be 'severe' from a highways and transportation perspective. Therefore, proposed development accords with the NPPF.

## 7.3 National Planning Policy Guidance (NPPG)

7.3.1 In addition to the NPPF, a National Planning Policy Guidance (NPPG) document has also been developed by the government. Within this document there is a specific section that clarifies the over-arching principles on Travel Plans, Transport Assessments and Transport Statements.

7.3.2 The guidance on Transport Assessments and Statements re-iterates the circumstances in which either document would usually be required. It also clarifies the process for establishing a scope for the assessment, and what the document should contain.

7.3.3 The NPPG has been considered in the production of this TA.

## 7.4 Cumbria County Council Local Transport Plan 3 (LTP3)

7.4.1 The Local Transport Plan for Cumbria sets out the vision and objectives for transport in the County over the next 15 years and the approach to be taken to achieve these objectives. It sets out the County Council's strategic policies for transport and measures that will be needed to tackle the transport priorities for the county.

7.4.2 The key transport priorities within the LTP3 are as follows:

- To develop transport infrastructure to support improvements to the Cumbrian economy;
- To improve accessibility to jobs, education and training, health and other key services;
- To reduce the high level of road casualties;
- To maintain the extensive road network to a high standard; and,

- Reduce the need to travel and help people to get to where they need to go safely and with reduced environmental impact.

7.4.3 The proposed development is in accordance with the above key transport priorities of CCC's LTP3.

## 7.5 Conclusions

7.5.1 It is considered that the proposed development is in accordance with national and local transport policies and guidance. The site is located within an area which has a range of existing local facilities and plenty of sustainable travel choices.

# 8.0 Summary and Conclusion

## 8.1 Summary

8.1.1 Curtins has been appointed on behalf of North Cumbria University Hospital NHS Trust to provide traffic and transportation advice in relation to a proposed development at WCH. The development consists of refurbishing the existing hospital buildings, Included within the development proposals is the addition of further formal parking spaces on the WCH site. The above works are known as Phase 2 of the wider re-development of WCH.

8.1.2 As demonstrated on the proposed site layout, the previous site access junction on Homewood Road is to serve the majority of the proposed hospital redevelopment. The access will be upgraded and widened include a pedestrian refuge island (to assist with pedestrian movements north/south on Homewood Road) and a ghost island right turn lane for traffic wishing to turn in the direction of the main car park.

8.1.3 It is envisaged that pedestrians and cyclists would access the site by utilising the aforementioned access points on Homewood Road. The site is adjacent to an existing residential area where pedestrian facilities already exist and are of a high standard with well-lit, well-used and well-defined footway networks close to the site.

8.1.4 The internal layout has been designed to provide multiple direct and convenient connections for pedestrians and cyclists to support the creation of a sustainable development site.

8.1.5 A review of accidents on the local highway network does not indicate any correlations that would suggest that highway condition, layout or design were significant contributory factors in the accidents.

8.1.6 The walking, cycling and public transport opportunities at the site constitute alternative modes of travel to the car which are considered to be realistic modes of travel for a range of different journey types. The site is therefore considered to be accessible from sustainable modes of travel in line with national and local transport planning policy.

8.1.7 The highway impacts of the traffic predicted to be generated by the proposed development have been properly assessed at key junctions on the road network.

8.1.8 Those impacts have been demonstrated to be immaterial and are far from being able to be categorised as severe. Therefore, no highway capacity mitigation measures are proposed in order to make the development proposals acceptable in planning terms.

8.1.9 It should also be noted that the former uses of the site is likely to have generated similar (or more) levels of traffic when in operation, and that the re-use of this previously–developed land should be encouraged from a planning and sustainability perspective.

8.1.10 As the proposed development predominantly involves the demolition and refurbishment of existing/redundant hospital facilities at WCH. It is considered that there is negligible net impact on the local highway network, when comparing the existing trip generation potential of the hospital and proposed facilities coming forward as Phase 2.

8.1.11 A review of relevant local and national transport planning guidance has been undertaken. It is considered that the proposed development conforms with such policy.

## 8.2 Conclusion

8.2.1 The proposed development meets the sustainable objectives of the National Planning Policy Framework and its residual traffic impacts are not severe. From a traffic and transportation perspective there are no reasons why the development proposals should not be granted planning approval.

# Drawings


## GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.

KEY:
- PROPOSED KERB LINE
- PROPOSED FOOTPATH
- PROPOSED ROAD MARKINGS

| Rev: | Description: | Date: | By: | Chkd: |
|---|---|---|---|---|


curtins

Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com

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Status:
PRELIMINARY

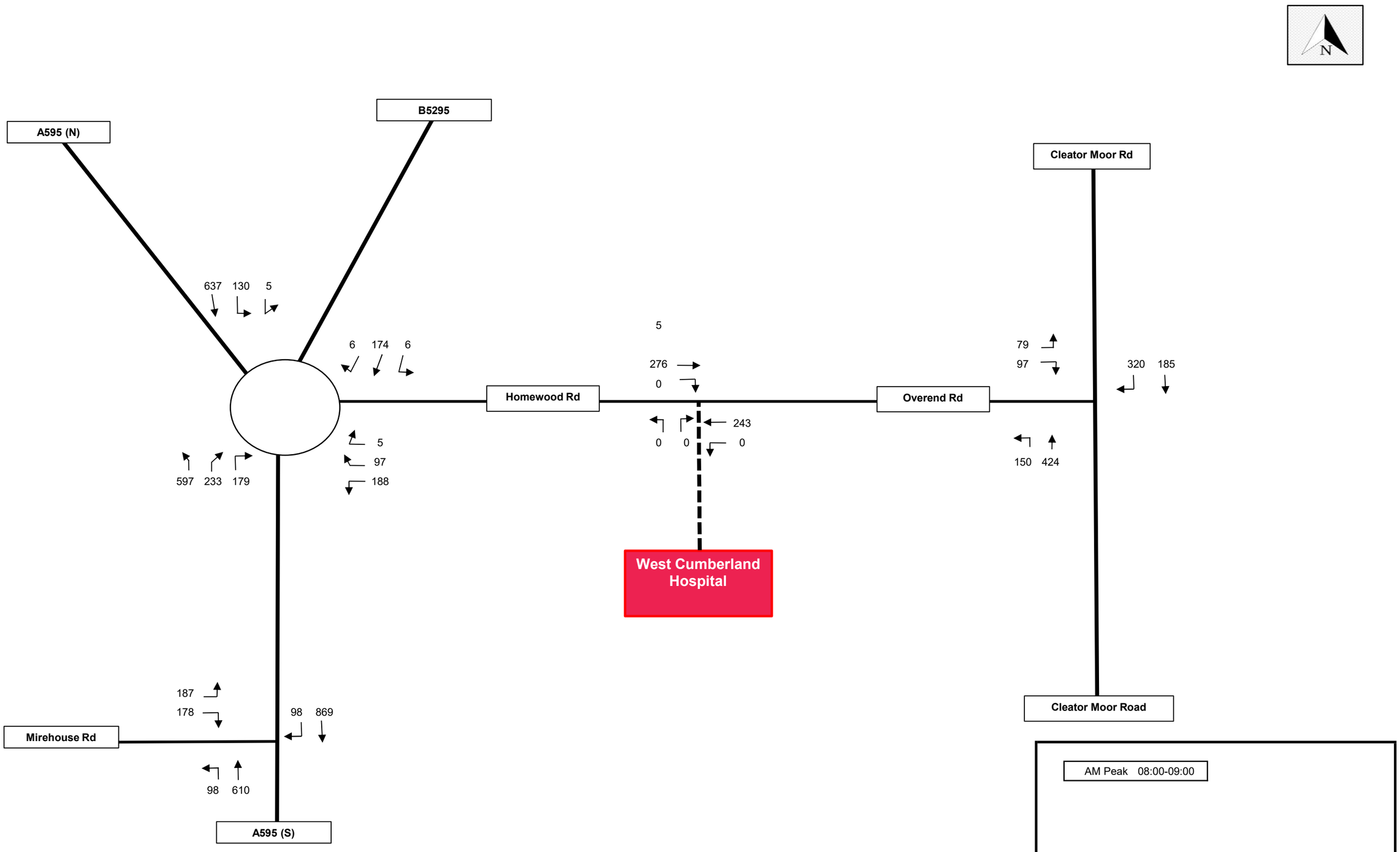
Project:
WEST CUMBERLAND HOSPITAL
RESUBMISSION

Drg Title:
ACCESS ARRANGEMENT

| Project No: | Size: | Date: | Drawn By: | Designed By: | Checked By: |
|---|---|---|---|---|---|
| 072419 | A1 | 17/06/21 | HD | HD | DJ |
| | Scale: 1:250 | | | | |

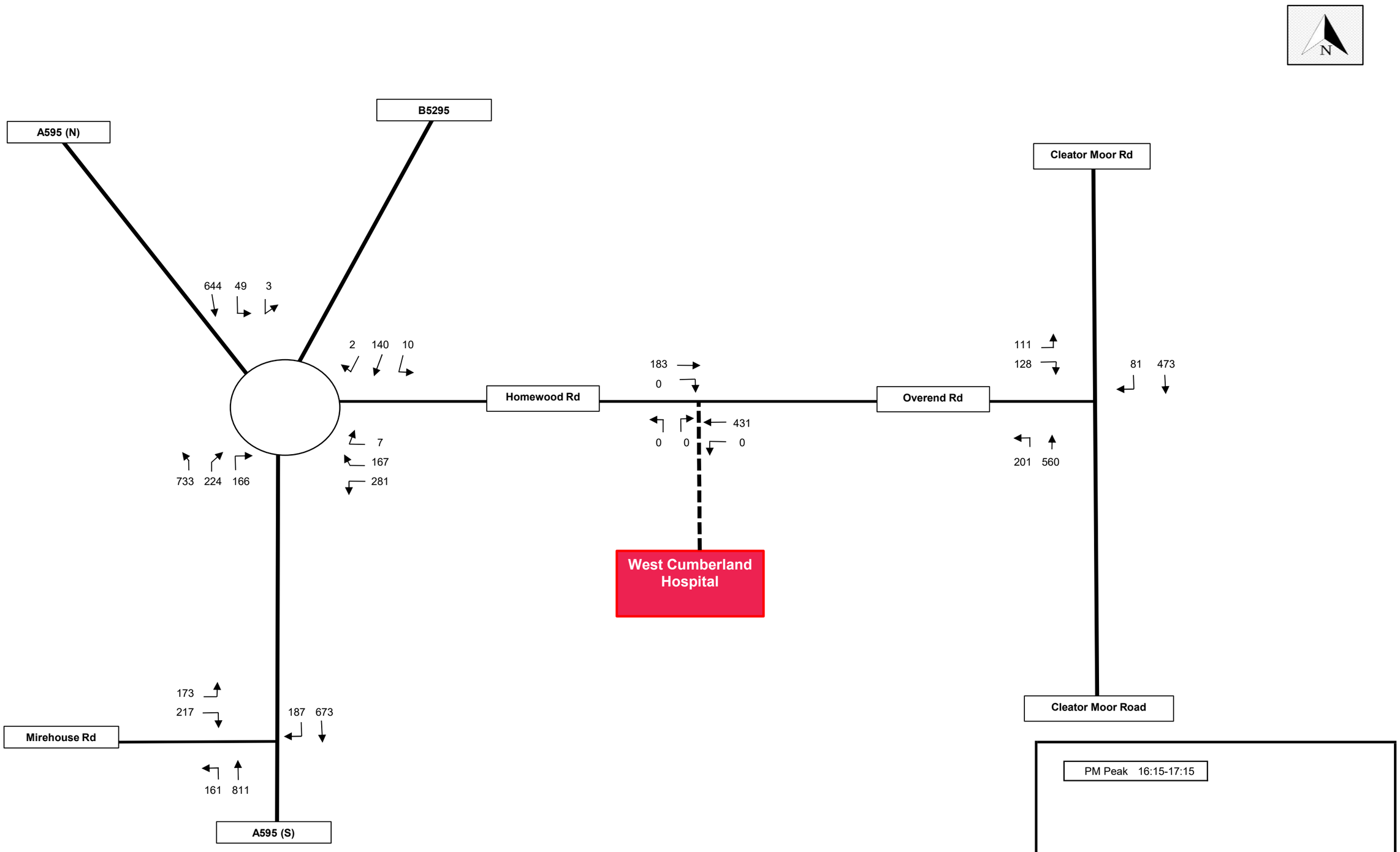
| Project Code: | Originator: | Volume: | Level: | Type: | Role: | Category / Number: | Rev: |
|---|---|---|---|---|---|---|---|
| 072419 | - CUR - | 00 | - XX - | DR | - TP - | 75001 | - P01 |

# Appendix A – Network Figures




| | | | |
|---|---|---|---|
| curtins | Surveyed Flows AM Peak 2019 (PCU) | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 1 |

\\mafs02\Projects\073001 - 074000\073096 - West Cumberland Hospital\Q3-Design\3A-Calculations\TP\Network Diagram\073096 - Traffic WCH 50 percent




| | | | |
|---|---|---|---|
| curtins | Surveyed Flows PM Peak 2019 (PCU) | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 2 |

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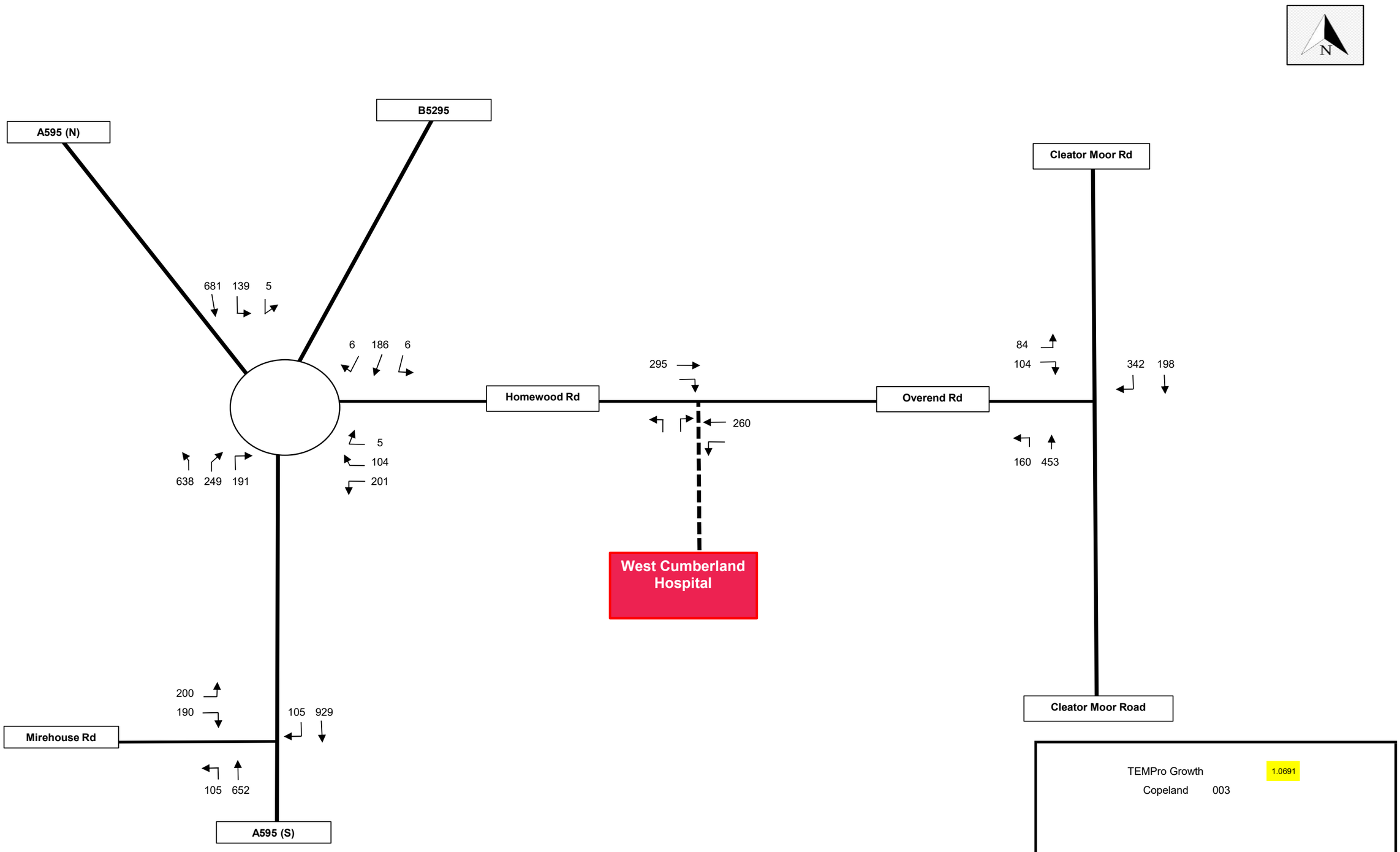
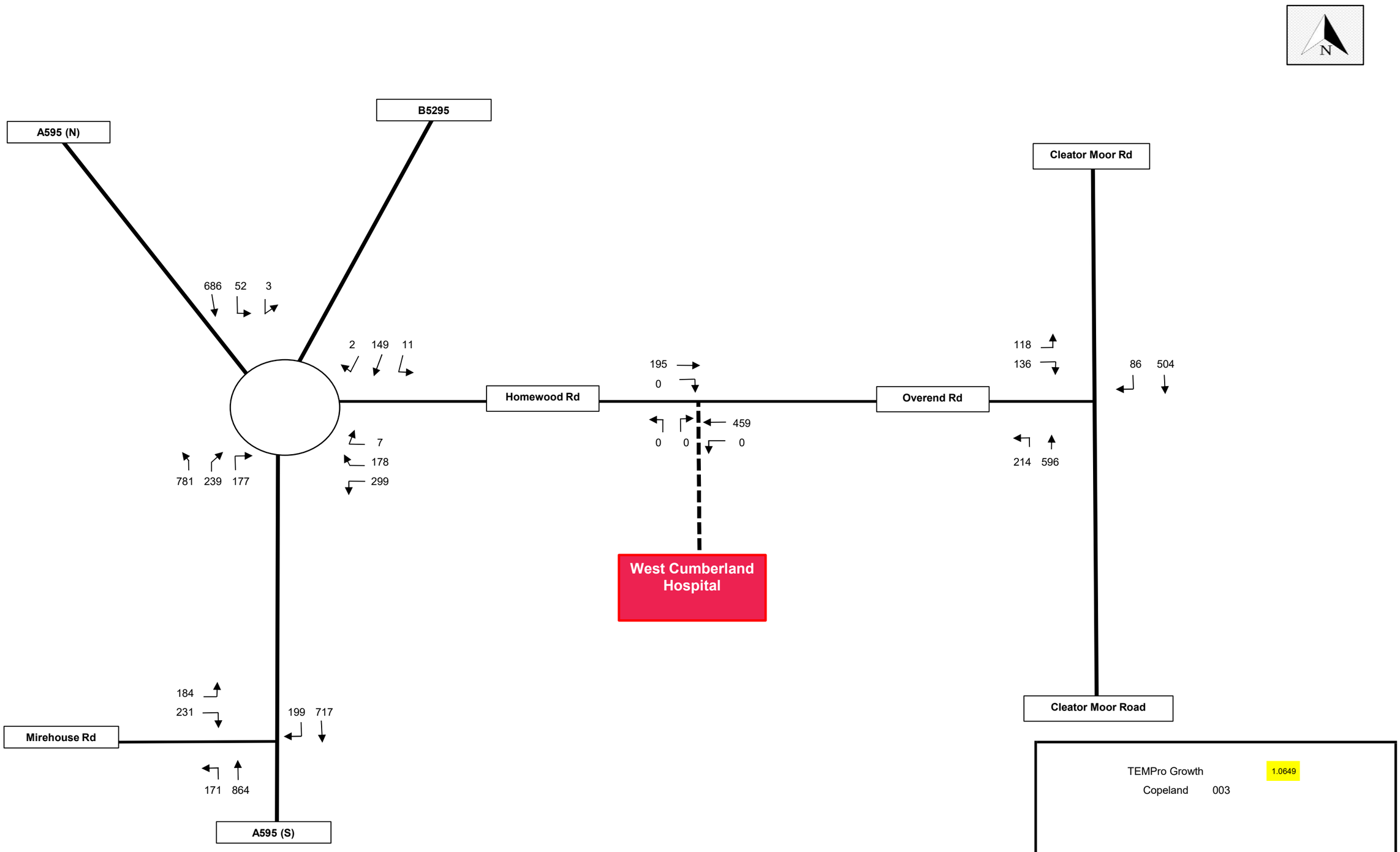
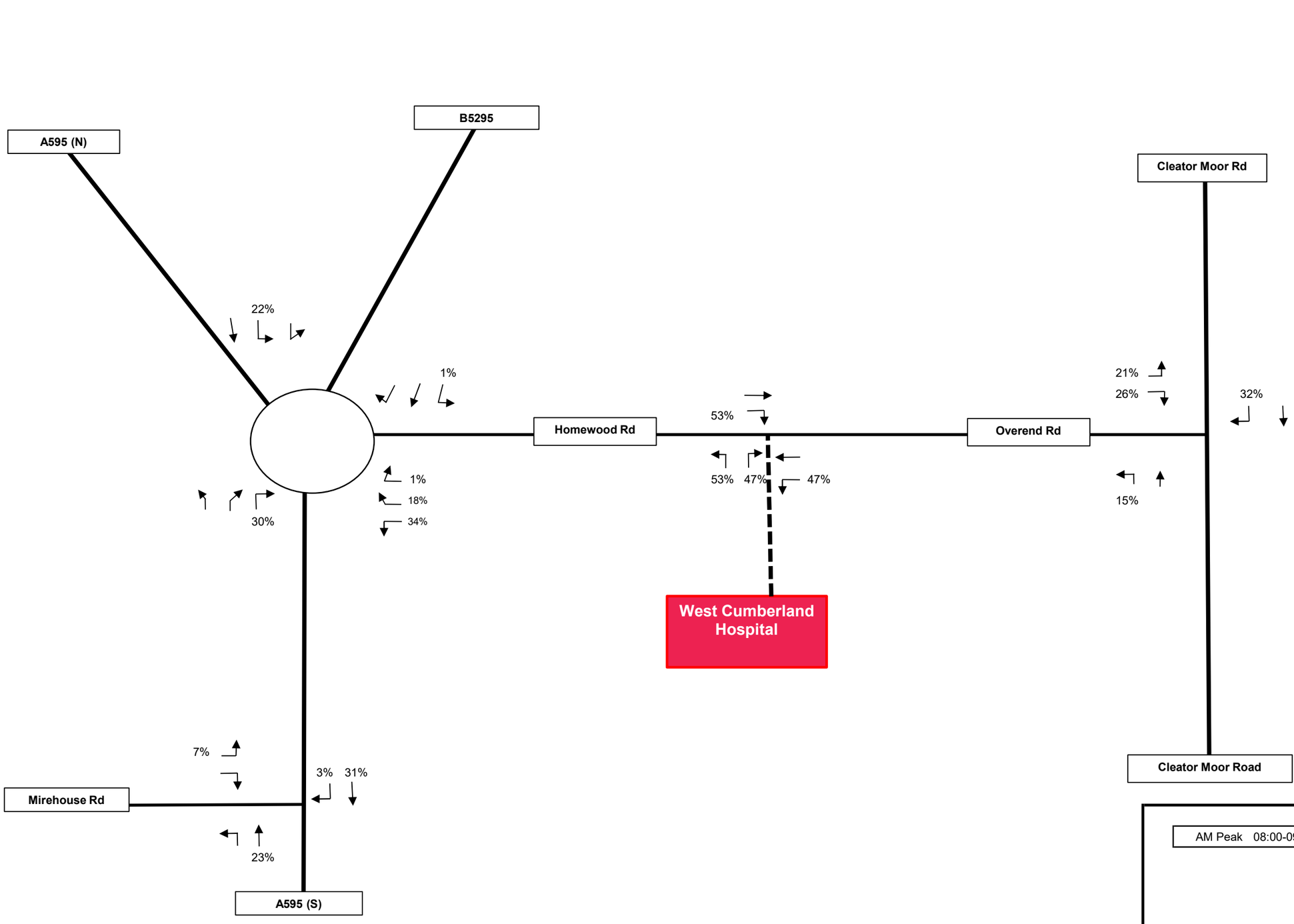



| curtins | Base Flows 2026 AM | 17 October 2019 | 073096 |
|---|---|---|---|
| | West Cumberland Hospital | | Figure 3 |

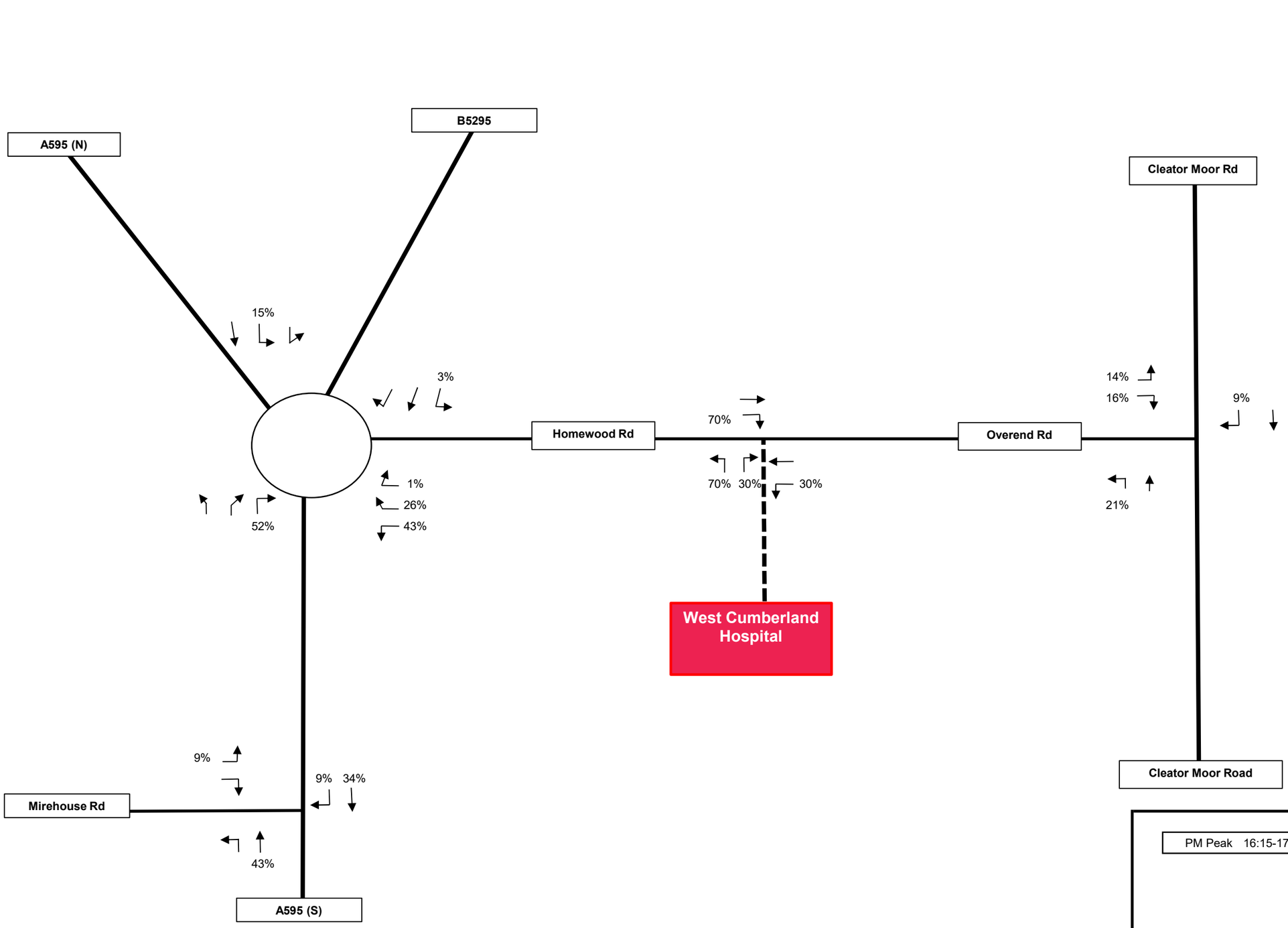
\\mafs02\Projects\073001 - 074000\073096 - West Cumberland Hospital\Q3-Design\3A-Calculations\TP\Network Diagram\073096 - Traffic WCH 50 percent



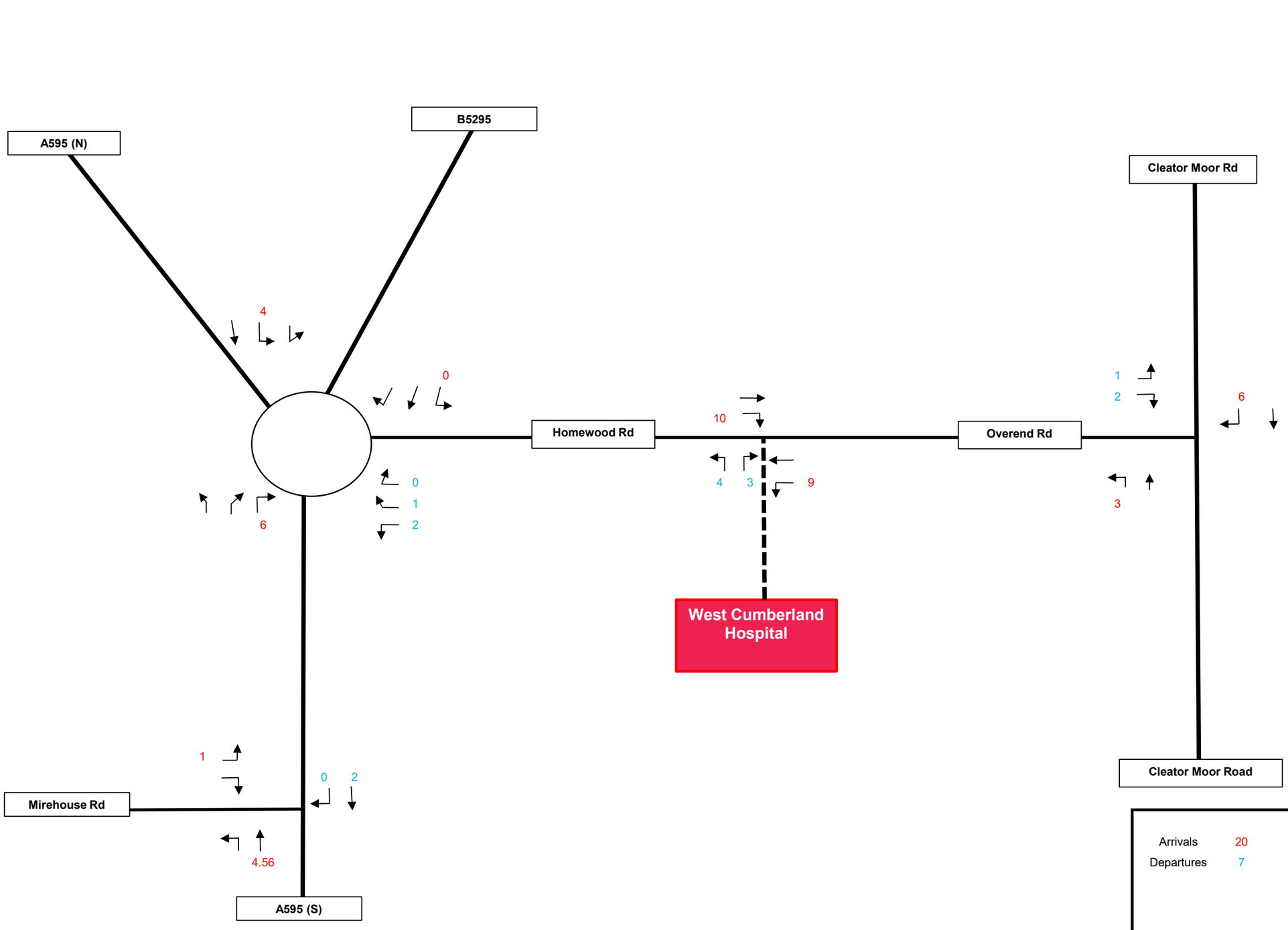

| | | | |
|---|---|---|---|
| curtins | Base Flows 2026 PM | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 4 |



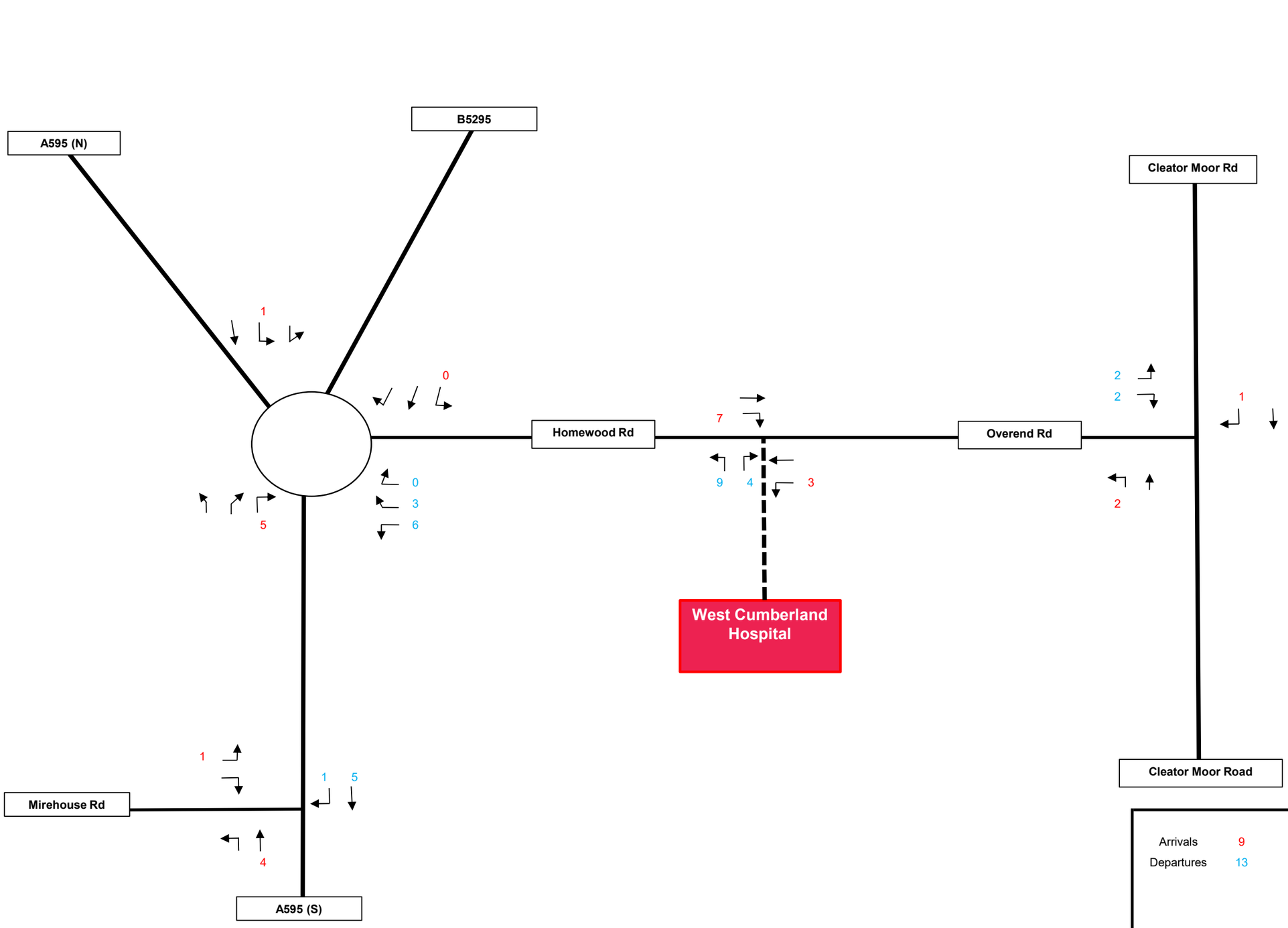

| | | | |
|---|---|---|---|
| curtins | Traffic Distribution AM Peak | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 5 |



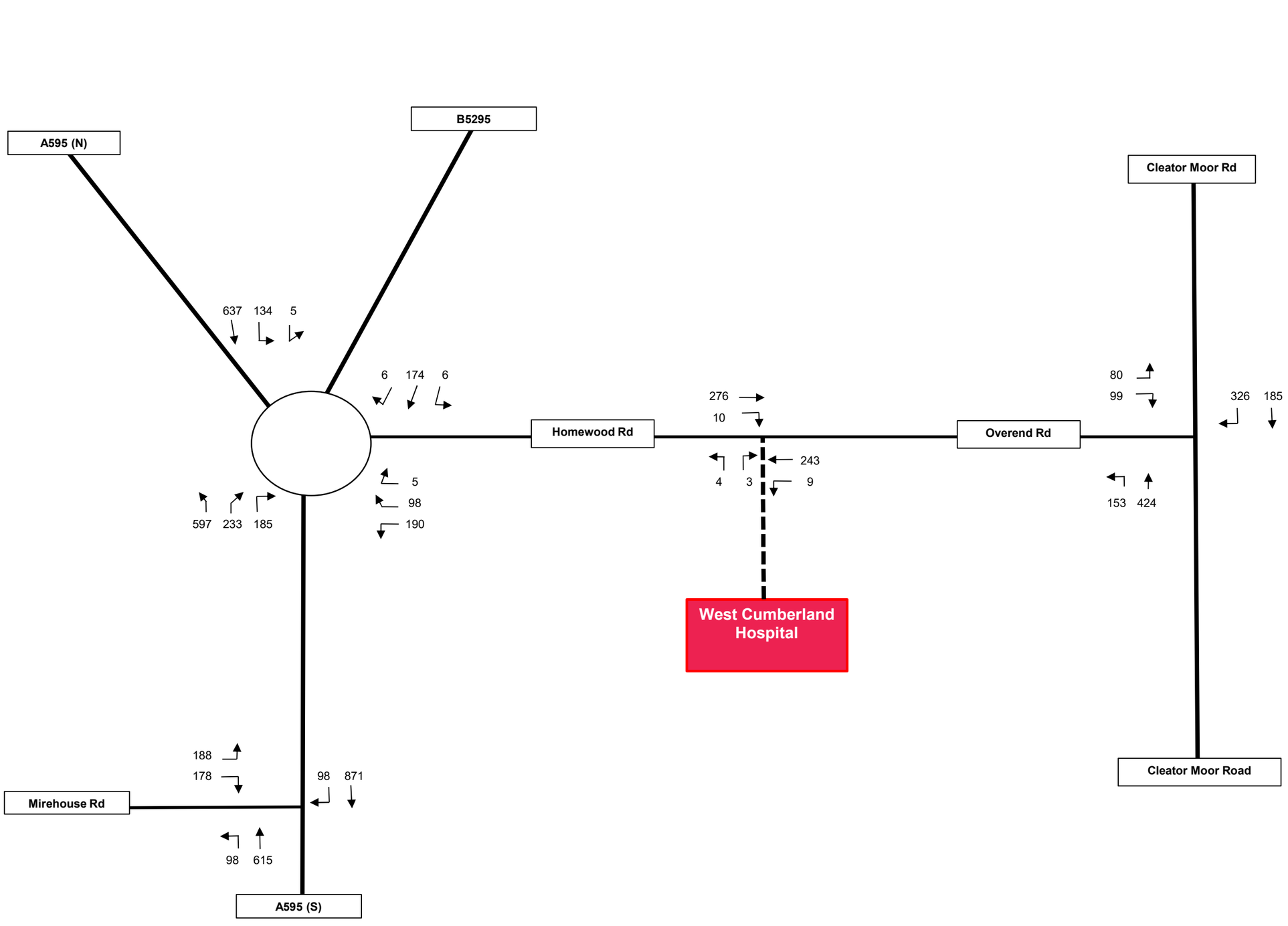

| | | | |
|---|---|---|---|
| curtins | Traffic Distribution PM Peak | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 6 |




| | | | |
|---|---|---|---|
| curtins | Trip Generation AM Peak Phase 2 | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 7 |

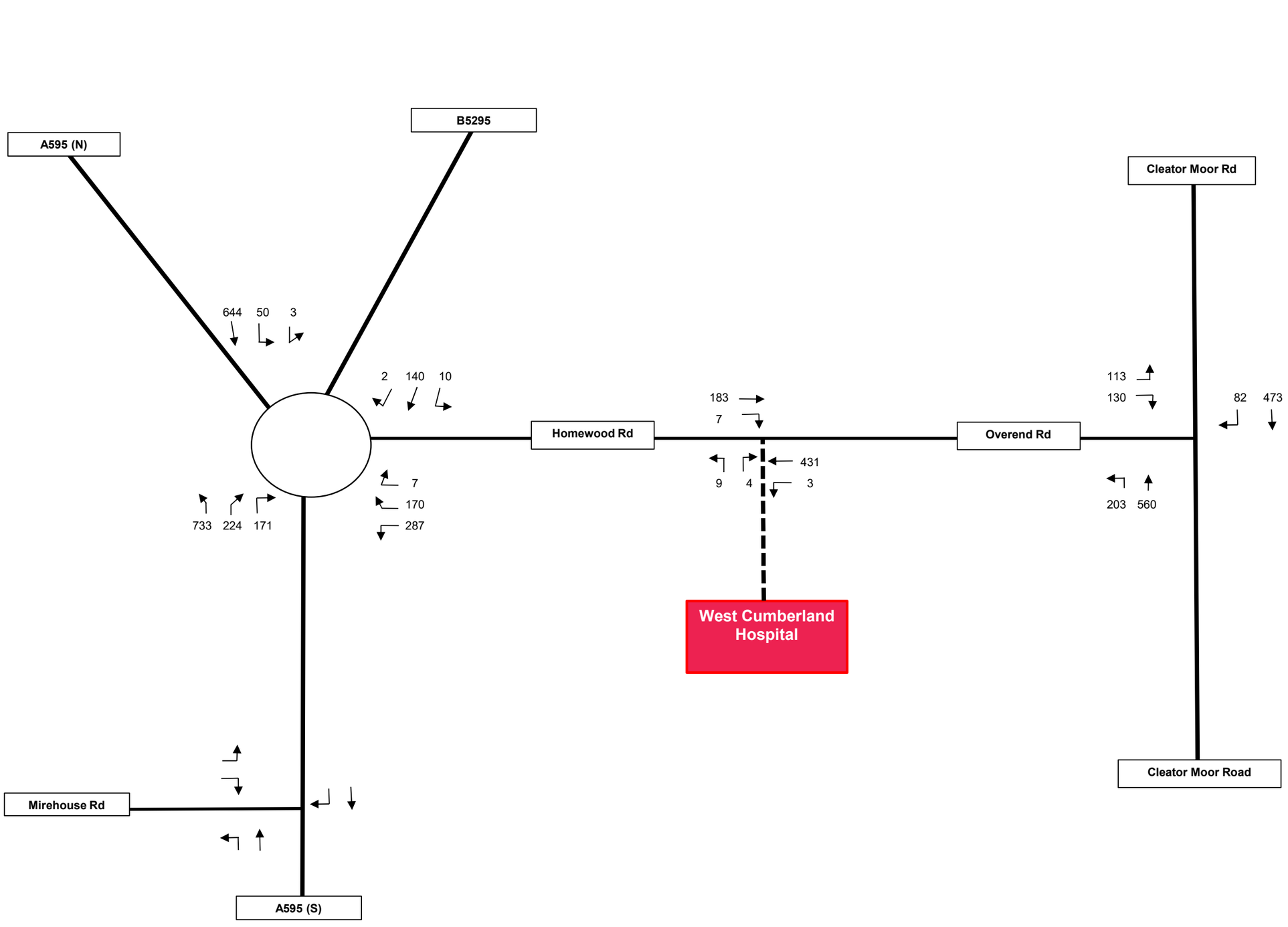



| | | | |
|---|---|---|---|
| curtins | Trip Generation PM Peak Phase 2 | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 8 |

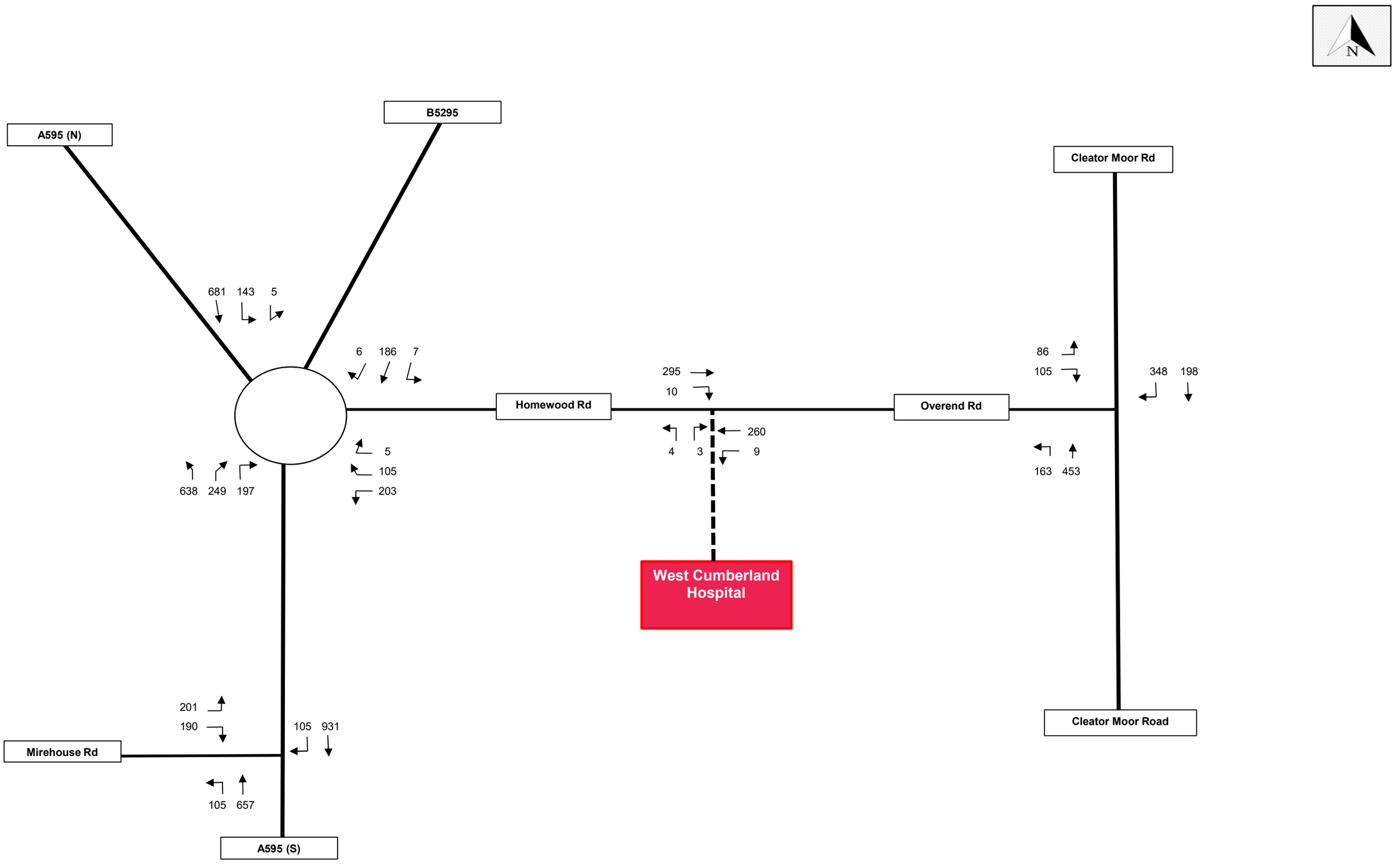



| | | | |
|---|---|---|---|
| curtins | Base Flows 2019 + Phase 2 Flows AM | 17 October 2019 | 073096 |
| | West Cumberland Hospital | | Figure 9 |

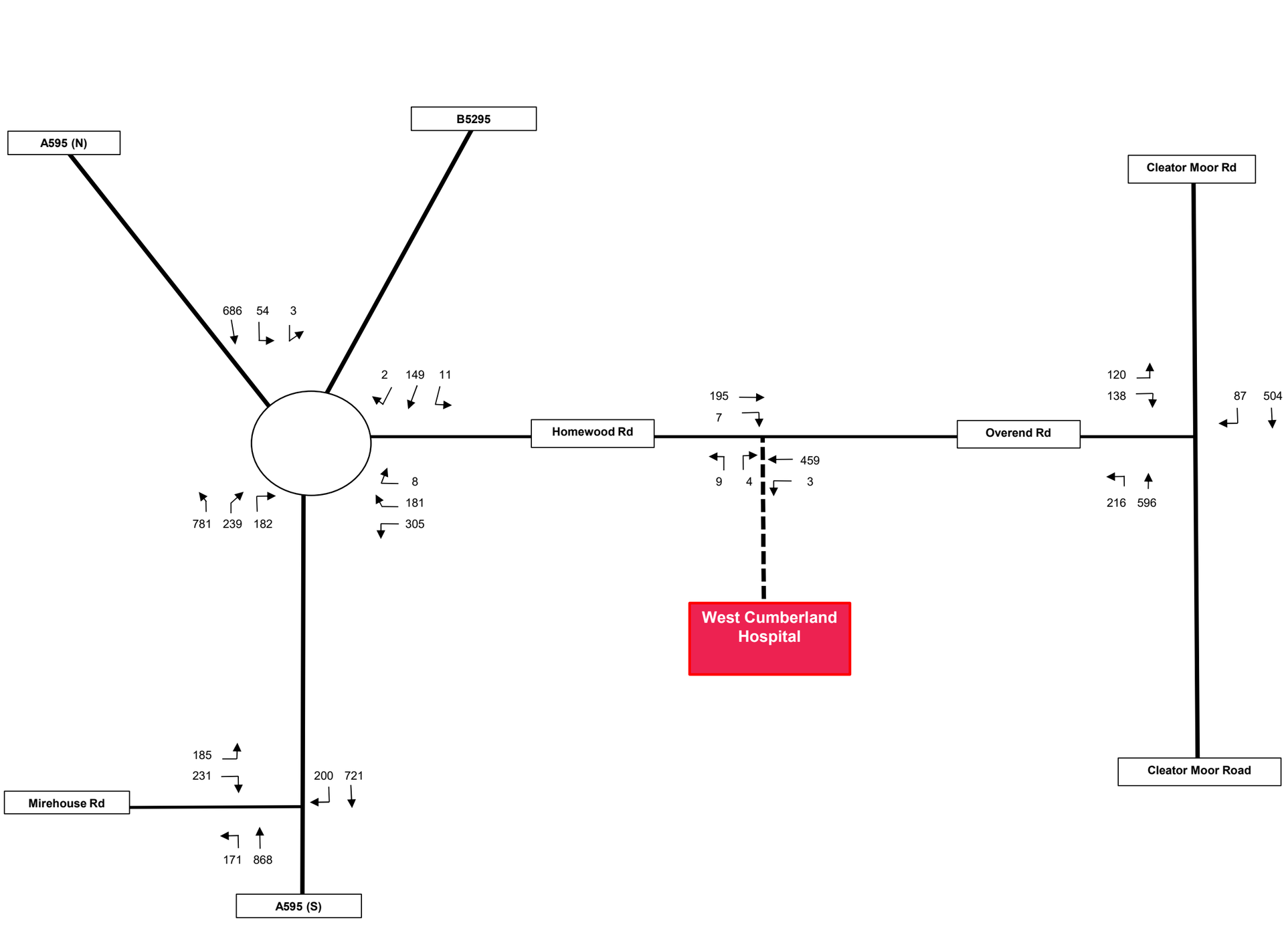
\\mafs02\Projects\073001 - 074000\073096 - West Cumberland Hospital\Q3-Design\3A-Calculations\TP\Network Diagram\073096 - Traffic WCH 50 percent




| | | | |
|---|---|---|---|
| curtins | Base Flows 2019 + Phase 2 Flows PM | 17 October 2019 | 073096 |
| | West Cumberland Hospital | Figure 10 | |




| | | | |
|---|---|---|---|
| curtins | Base Flows 2026+ Phase 2 AM | 17 October 2019 | 073096 |
| | West Cumberland Hospital | Figure 11 | |




| curtins | Base Flows 2026+ Phase 2 PM | 17 October 2019 | 073096 |
|---|---|---|---|
| | West Cumberland Hospital | Figure 12 | |

# Appendix B – TRICS Report

TRICS 7.6.3
Trip Rate P Gross floor area

TRIP RATE for Land Use 05 - HEALTH/A - GENERAL HOSPITAL - WITH CASUALTY
Calculation Factor: 100 sqm
Count Type: VEHICLES

| | ARRIVALS | | | DEPARTURES | | | TOTALS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Time Rang | No. Days | Ave. GFA | Trip Rate | No. Days | Ave. GFA | Trip Rate | No. Days | Ave. GFA | Trip Rate | |
| 00:00-01:00 | | | | | | | | | | |
| 01:00-02:00 | | | | | | | | | | |
| 02:00-03:00 | | | | | | | | | | |
| 03:00-04:00 | | | | | | | | | | |
| 04:00-05:00 | | | | | | | | | | |
| 05:00-06:00 | | | | | | | | | | |
| 06:00-07:0 | 3 | 53215 | 0.318 | 13 | 3 | 53215 | 0.095 | 4 | 3 | 53215 | 0.413 | 16 |
| 07:00-08:0 | 8 | 87180 | 0.84 | 33 | 8 | 87180 | 0.307 | 12 | 8 | 87180 | 1.147 | 46 |
| 08:00-09:0 | 8 | 87180 | 0.994 | 40 | 8 | 87180 | 0.335 | 13 | 8 | 87180 | 1.329 | 53 |
| 09:00-10:0 | 8 | 87180 | 0.715 | 28 | 8 | 87180 | 0.36 | 14 | 8 | 87180 | 1.075 | 43 |
| 10:00-11:0 | 8 | 87180 | 0.515 | 21 | 8 | 87180 | 0.392 | 16 | 8 | 87180 | 0.907 | 36 |
| 11:00-12:0 | 8 | 87180 | 0.434 | 17 | 8 | 87180 | 0.44 | 18 | 8 | 87180 | 0.874 | 35 |
| 12:00-13:0 | 8 | 87180 | 0.398 | 16 | 8 | 87180 | 0.475 | 19 | 8 | 87180 | 0.873 | 35 |
| 13:00-14:0 | 8 | 87180 | 0.554 | 22 | 8 | 87180 | 0.474 | 19 | 8 | 87180 | 1.028 | 41 |
| 14:00-15:0 | 8 | 87180 | 0.547 | 22 | 8 | 87180 | 0.546 | 22 | 8 | 87180 | 1.093 | 44 |
| 15:00-16:0 | 8 | 87180 | 0.468 | 19 | 8 | 87180 | 0.673 | 27 | 8 | 87180 | 1.141 | 45 |
| 16:00-17:0 | 8 | 87180 | 0.368 | 15 | 8 | 87180 | 0.893 | 36 | 8 | 87180 | 1.261 | 50 |
| 17:00-18:0 | 8 | 87180 | 0.315 | 13 | 8 | 87180 | 0.792 | 32 | 8 | 87180 | 1.107 | 44 |
| 18:00-19:0 | 8 | 87180 | 0.409 | 16 | 8 | 87180 | 0.518 | 21 | 8 | 87180 | 0.927 | 37 |
| 19:00-20:0 | 7 | 64367 | 0.308 | 12 | 7 | 64367 | 0.504 | 20 | 7 | 64367 | 0.812 | 32 |
| 20:00-21:0 | 5 | 68813 | 0.185 | 7 | 5 | 68813 | 0.473 | 19 | 5 | 68813 | 0.658 | 26 |
| 21:00-22:0 | 3 | 75349 | 0.086 | 3 | 3 | 75349 | 0.16 | 6 | 3 | 75349 | 0.246 | 10 |
| 22:00-23:00 | | | | | | | | | | | | 594 |
| 23:00-24:00 | | | | | | | | | | | | |
| Daily Trip Rates: | | | 7.454 | | | 7.437 | | | | 14.891 | | |

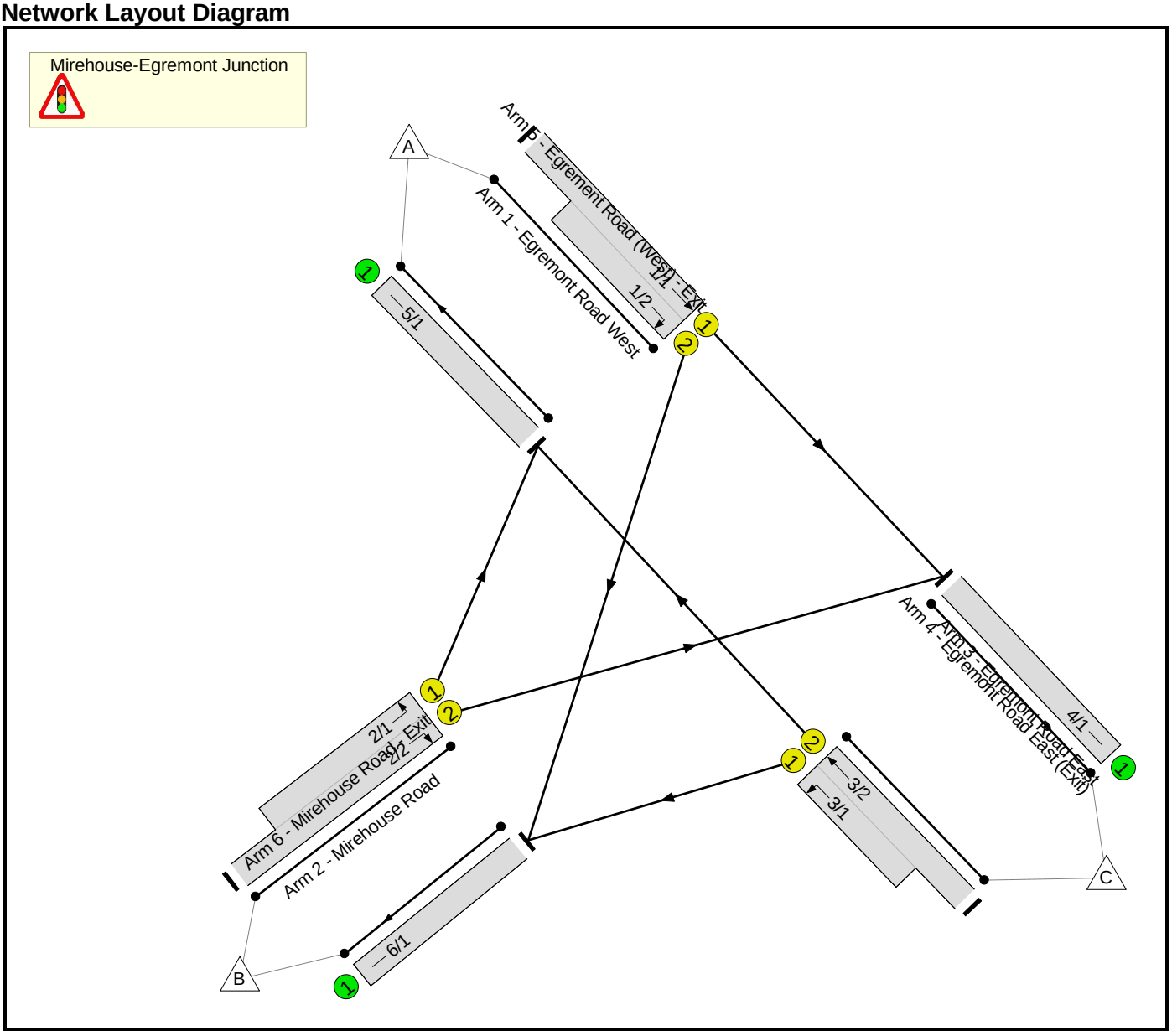
# Appendix C – Junction Output Files

# Full Input Data And Results

## User and Project Details

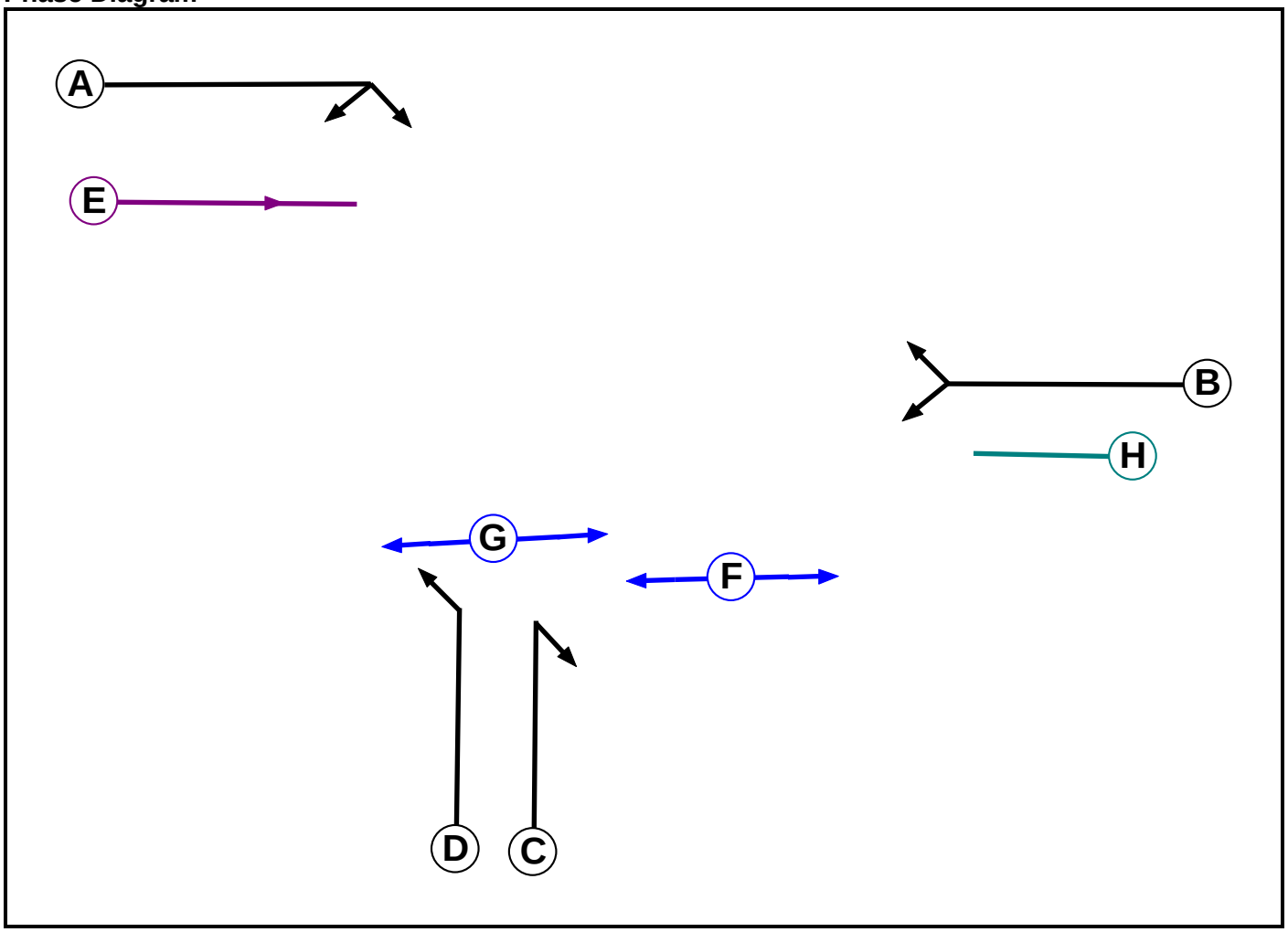
| | |
|---|---|
| **Project:** | **WCH** |
| **Title:** | |
| **Location:** | |
| **Date Started:** | September 2019 |
| **Model Purpose:** | Transport Assessment |
| **Additional detail:** | |
| **File name:** | Traffic Signals Mirehouse Road - Egremont Road.lsg3x |
| **Author:** | Jonathan Ashcroft |
| **Company:** | Curtins |
| **Address:** | 51-55 Tithebarn Street |

## Network Layout Diagram



Full Input Data And Results

## Phase Diagram




## Phase Input Data

| Phase Name | Phase Type | Assoc. Phase | Street Min | Cont Min |
|---|---|---|---|---|
| A | Traffic | | 7 | 7 |
| B | Traffic | | 7 | 7 |
| C | Traffic | | 7 | 7 |
| D | Traffic | | 7 | 7 |
| E | Ind. Arrow | A | 4 | 4 |
| F | Pedestrian | | 7 | 7 |
| G | Pedestrian | | 7 | 7 |
| H | Dummy | | 7 | 7 |

Full Input Data And Results

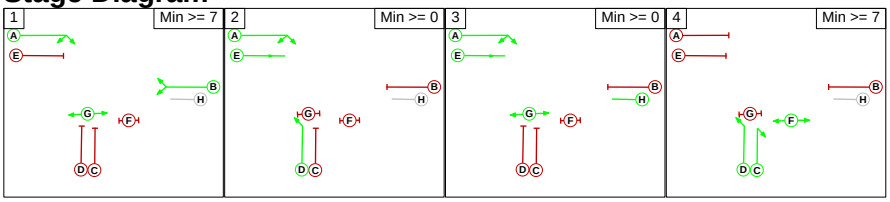
## Phase Intergreens Matrix

| Terminating Phase | Starting Phase | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H |
| A | | - | 7 | - | - | - | - | - |
| B | - | | 7 | 7 | 7 | 7 | - | - |
| C | 7 | 7 | | - | 7 | - | - | - |
| D | - | 7 | - | | - | - | 5 | - |
| E | - | 7 | 7 | - | | 7 | - | - |
| F | - | 7 | - | - | 7 | | - | - |
| G | - | - | - | 7 | - | - | | - |
| H | - | - | - | - | - | - | - | |

## Phases in Stage

| Stage No. | Phases in Stage |
|---|---|
| 1 | A B G |
| 2 | A D E |
| 3 | A E G H |
| 4 | C D F |

## Stage Diagram




## Phase Delays

| Term. Stage | Start Stage | Phase | Type | Value | Cont value |
|---|---|---|---|---|---|
| There are no Phase Delays defined | | | | | |

## Prohibited Stage Change

| From Stage | To Stage | | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| | 1 | | 7 | 7 | 7 |
| | 2 | 7 | | 5 | 7 |
| | 3 | 7 | 7 | | 7 |
| | 4 | 7 | 7 | 7 | |

Full Input Data And Results

## Give-Way Lane Input Data

| Junction: Mirehouse-Egremont Junction |
| --- |
| There are no Opposed Lanes in this Junction |

Full Input Data And Results

## Lane Input Data

| Junction: Mirehouse-Egremont Junction | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Type** | **Phases** | **Start Disp.** | **End Disp.** | **Physical Length (PCU)** | **Sat Flow Type** | **Def User Saturation Flow (PCU/Hr)** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Turns** | **Turning Radius (m)** |
| 1/1 (Egremont Road West) | U | A | 2 | 3 | 60.0 | Geom | - | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf |
| 1/2 (Egremont Road West) | U | A | 2 | 3 | 9.0 | Geom | - | 3.25 | 0.00 | N | Arm 6 Right | 19.00 |
| 2/1 (Mirehouse Road) | U | D | 2 | 3 | 10.4 | Geom | - | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 |
| 2/2 (Mirehouse Road) | U | C | 2 | 3 | 60.0 | Geom | - | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 |
| 3/1 (Egremont Road East) | U | B | 2 | 3 | 7.8 | Geom | - | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 |
| 3/2 (Egremont Road East) | U | B | 2 | 3 | 60.0 | Geom | - | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf |
| 4/1 (Egremont Road East (Exit)) | U | | 2 | 3 | 60.0 | Inf | - | - | - | - | - | - |
| 5/1 (Egrement Road (West) - Exit) | U | | 2 | 3 | 60.0 | Inf | - | - | - | - | - | - |
| 6/1 (Mirehouse Road - Exit) | U | | 2 | 3 | 60.0 | Inf | - | - | - | - | - | - |

## Traffic Flow Groups

| Flow Group | Start Time | End Time | Duration | Formula |
|---|---|---|---|---|
| 1: '2019 AM Base' | 08:00 | 09:00 | 01:00 | |
| 2: '2019 PM Base' | 17:00 | 18:00 | 01:00 | |
| 3: '2019 AM Base + Dev' | 08:00 | 09:00 | 01:00 | |
| 4: '2019 PM Base + Dev' | 17:00 | 18:00 | 01:00 | |
| 5: '2026 AM Base' | 08:00 | 09:00 | 01:00 | |
| 6: '2026 PM Base' | 17:00 | 18:00 | 01:00 | |
| 7: '2026 AM Base + Dev' | 08:00 | 09:00 | 01:00 | |
| 8: '2026 PM Base + Dev' | 17:00 | 18:00 | 01:00 | |

**Scenario 1: '2019 AM Base'** (FG1: '2019 AM Base', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 98 | 869 | 967 |
| | B | 187 | 0 | 178 | 365 |
| | C | 610 | 98 | 0 | 708 |
| | Tot. | 797 | 196 | 1047 | 2040 |

## Traffic Lane Flows

| Lane | Scenario 1: 2019 AM Base |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 967(In)<br>869(Out) |
| 1/2 (short) | 98 |
| 2/1 (short) | 187 |
| 2/2 (with short) | 365(In)<br>178(Out) |
| 3/1 (short) | 98 |
| 3/2 (with short) | 708(In)<br>610(Out) |
| 4/1 | 1047 |
| 5/1 | 797 |
| 6/1 | 196 |

Full Input Data And Results

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

**Scenario 2: '2019 PM Base'** (FG2: '2019 PM Base', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 187 | 673 | 860 |
| | B | 173 | 0 | 217 | 390 |
| | C | 811 | 161 | 0 | 972 |
| | Tot. | 984 | 348 | 890 | 2222 |

Full Input Data And Results

## Traffic Lane Flows

| Lane | Scenario 2: 2019 PM Base |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 860(In)<br>673(Out) |
| 1/2 (short) | 187 |
| 2/1 (short) | 173 |
| 2/2 (with short) | 390(In)<br>217(Out) |
| 3/1 (short) | 161 |
| 3/2 (with short) | 972(In)<br>811(Out) |
| 4/1 | 890 |
| 5/1 | 984 |
| 6/1 | 348 |

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

Full Input Data And Results

**Scenario 3: '2019 AM Base + Dev'** (FG3: '2019 AM Base + Dev', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 98 | 871 | 969 |
| | B | 188 | 0 | 178 | 366 |
| | C | 615 | 98 | 0 | 713 |
| | Tot. | 803 | 196 | 1049 | 2048 |

## Traffic Lane Flows

| Lane | Scenario 3: 2019 AM Base + Dev |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 969(In)<br>871(Out) |
| 1/2 (short) | 98 |
| 2/1 (short) | 188 |
| 2/2 (with short) | 366(In)<br>178(Out) |
| 3/1 (short) | 98 |
| 3/2 (with short) | 713(In)<br>615(Out) |
| 4/1 | 1049 |
| 5/1 | 803 |
| 6/1 | 196 |

Full Input Data And Results

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

**Scenario 4: '2019 PM Base + Dev'** (FG4: '2019 PM Base + Dev', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 188 | 678 | 866 |
| | B | 174 | 0 | 217 | 391 |
| | C | 815 | 161 | 0 | 976 |
| | Tot. | 989 | 349 | 895 | 2233 |

Full Input Data And Results

## Traffic Lane Flows

| Lane | Scenario 4: 2019 PM Base + Dev |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 866(In)<br>678(Out) |
| 1/2 (short) | 188 |
| 2/1 (short) | 174 |
| 2/2 (with short) | 391(In)<br>217(Out) |
| 3/1 (short) | 161 |
| 3/2 (with short) | 976(In)<br>815(Out) |
| 4/1 | 895 |
| 5/1 | 989 |
| 6/1 | 349 |

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

Full Input Data And Results

**Scenario 5: '2026 AM Base'** (FG5: '2026 AM Base', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 105 | 929 | 1034 |
| | B | 200 | 0 | 190 | 390 |
| | C | 652 | 105 | 0 | 757 |
| | Tot. | 852 | 210 | 1119 | 2181 |

## Traffic Lane Flows

| Lane | Scenario 5: 2026 AM Base |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 1034(In)<br>929(Out) |
| 1/2 (short) | 105 |
| 2/1 (short) | 200 |
| 2/2 (with short) | 390(In)<br>190(Out) |
| 3/1 (short) | 105 |
| 3/2 (with short) | 757(In)<br>652(Out) |
| 4/1 | 1119 |
| 5/1 | 852 |
| 6/1 | 210 |

Full Input Data And Results

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

**Scenario 6: '2026 PM Base'** (FG6: '2026 PM Base', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 199 | 717 | 916 |
| | B | 184 | 0 | 231 | 415 |
| | C | 864 | 171 | 0 | 1035 |
| | Tot. | 1048 | 370 | 948 | 2366 |

Full Input Data And Results

## Traffic Lane Flows

| Lane | Scenario 6: 2026 PM Base |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 916(In) 717(Out) |
| 1/2 (short) | 199 |
| 2/1 (short) | 184 |
| 2/2 (with short) | 415(In) 231(Out) |
| 3/1 (short) | 171 |
| 3/2 (with short) | 1035(In) 864(Out) |
| 4/1 | 948 |
| 5/1 | 1048 |
| 6/1 | 370 |

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

Full Input Data And Results

**Scenario 7: '2026 AM Base + Dev'** (FG7: '2026 AM Base + Dev', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 105 | 931 | 1036 |
| | B | 201 | 0 | 190 | 391 |
| | C | 657 | 105 | 0 | 762 |
| | Tot. | 858 | 210 | 1121 | 2189 |

## Traffic Lane Flows

| Lane | Scenario 7: 2026 AM Base + Dev |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 1036(In)<br>931(Out) |
| 1/2 (short) | 105 |
| 2/1 (short) | 201 |
| 2/2 (with short) | 391(In)<br>190(Out) |
| 3/1 (short) | 105 |
| 3/2 (with short) | 762(In)<br>657(Out) |
| 4/1 | 1121 |
| 5/1 | 858 |
| 6/1 | 210 |

Full Input Data And Results

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

**Scenario 8: '2026 PM Base + Dev'** (FG8: '2026 PM Base + Dev', Plan 1: 'Network Control Plan 1')

## Traffic Flows, Desired

**Desired Flow :**

| | | Destination | | | |
|---|---|---|---|---|---|
| | | A | B | C | Tot. |
| Origin | A | 0 | 200 | 721 | 921 |
| | B | 185 | 0 | 231 | 416 |
| | C | 868 | 171 | 0 | 1039 |
| | Tot. | 1053 | 371 | 952 | 2376 |

Full Input Data And Results

## Traffic Lane Flows

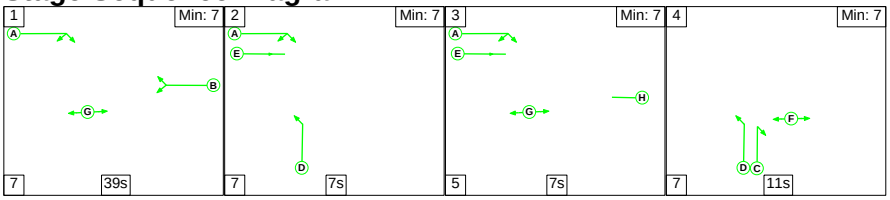
| Lane | Scenario 8: 2026 PM Base + Dev |
|---|---|
| **Junction: Mirehouse-Egremont Junction** | |
| 1/1 (with short) | 921(In)<br>721(Out) |
| 1/2 (short) | 200 |
| 2/1 (short) | 185 |
| 2/2 (with short) | 416(In)<br>231(Out) |
| 3/1 (short) | 171 |
| 3/2 (with short) | 1039(In)<br>868(Out) |
| 4/1 | 952 |
| 5/1 | 1053 |
| 6/1 | 371 |

## Lane Saturation Flows

| Junction: Mirehouse-Egremont Junction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lane** | **Lane Width (m)** | **Gradient** | **Nearside Lane** | **Allowed Turns** | **Turning Radius (m)** | **Turning Prop.** | **Sat Flow (PCU/Hr)** | **Flared Sat Flow (PCU/Hr)** |
| 1/1 (Egremont Road West) | 3.25 | 0.00 | Y | Arm 4 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 1/2 (Egremont Road West) | 3.25 | 0.00 | N | Arm 6 Right | 19.00 | 100.0 % | 1928 | 1928 |
| 2/1 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 5 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 2/2 (Mirehouse Road) | 3.25 | 0.00 | Y | Arm 4 Right | 20.00 | 100.0 % | 1805 | 1805 |
| 3/1 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 6 Left | 15.00 | 100.0 % | 1764 | 1764 |
| 3/2 (Egremont Road East) | 3.25 | 0.00 | Y | Arm 5 Ahead | Inf | 100.0 % | 1940 | 1940 |
| 4/1 (Egremont Road East (Exit) Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 5/1 (Egrement Road (West) - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |
| 6/1 (Mirehouse Road - Exit Lane 1) | Infinite Saturation Flow | | | | | | Inf | Inf |

**Scenario 1: '2019 AM Base'** (FG1: '2019 AM Base', Plan 1: 'Network Control Plan 1')

## Stage Sequence Diagram

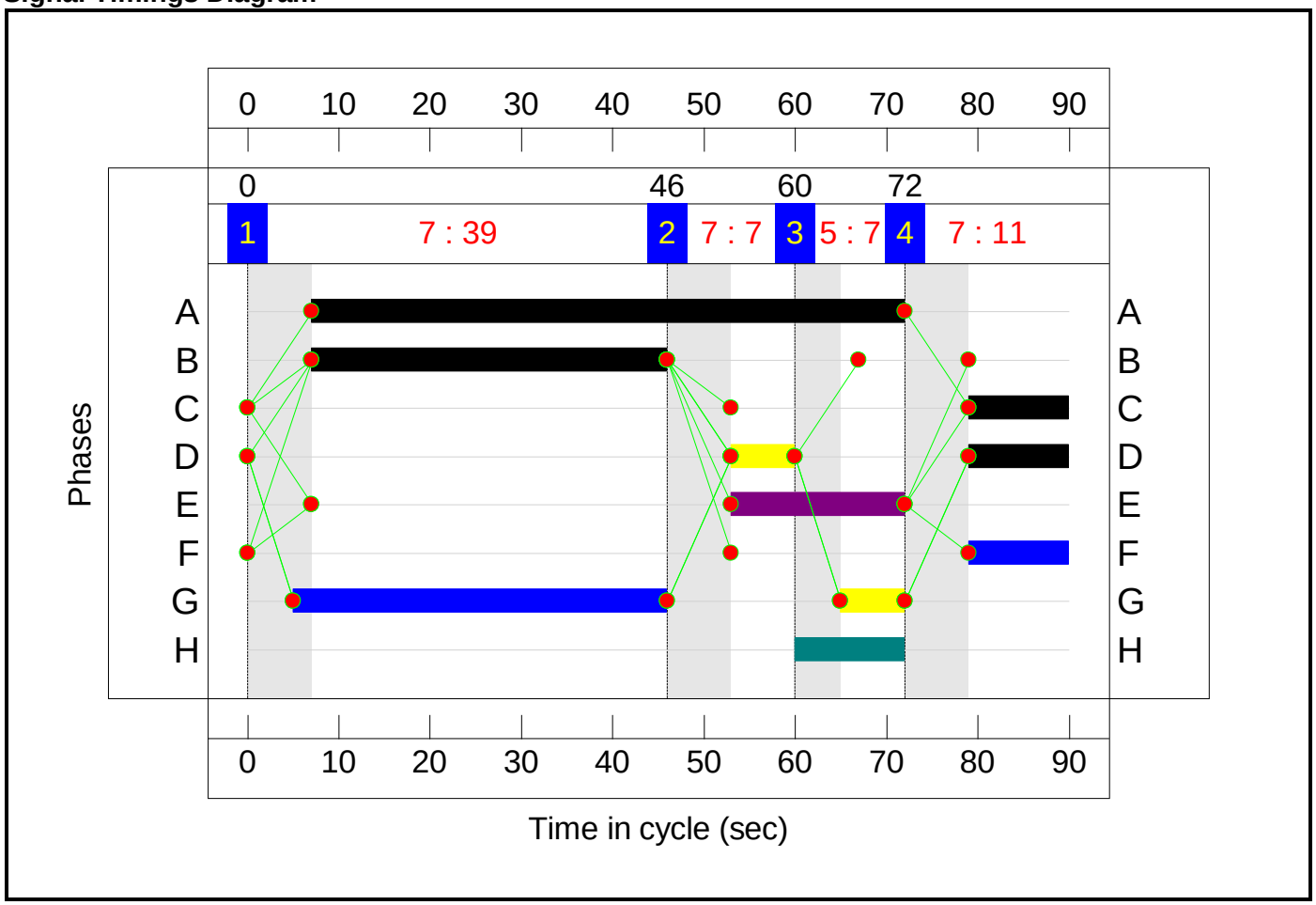


Full Input Data And Results

## Stage Timings

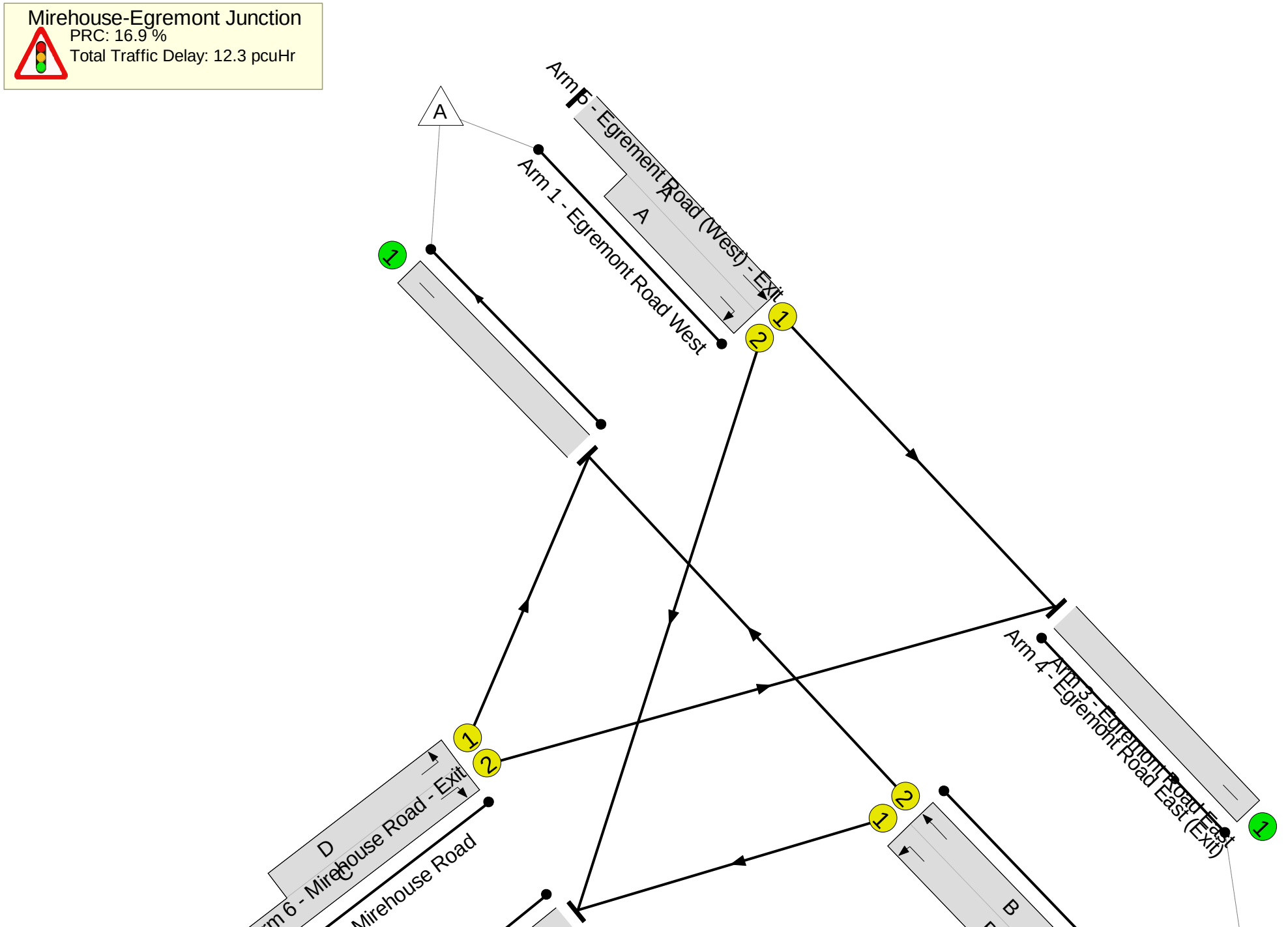
| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 39 | 7 | 7 | 11 |
| Change Point | 0 | 46 | 60 | 72 |

## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**


Mirehouse-Egremont Junction
PRC: 16.9 %
Total Traffic Delay: 12.3 pcuHr
A
Arm 1 - Egremont Road West
Arm 2 - Egrement Road (West) - Exit
Arm 3 - Egremont Road East (Exit)
Arm 4 - Egremont Road East
Arm 6 - Mirehouse Road - Exit
Mirehouse Road
1
2

Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **77.0%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **77.0%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 65 | - | 967 | 1940:1928 | 1309+148 | 66.4 : 66.4% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 11:18 | - | 365 | 1805:1764 | 241+253 | 74.0 : 74.0% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 39 | - | 708 | 1940:1764 | 792+127 | 77.0 : 77.0% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 1047 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 797 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 196 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **8.3** | **4.0** | **0.0** | **12.3** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **8.3** | **4.0** | **0.0** | **12.3** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 967 | 967 | - | - | - | 1.5 | 1.0 | - | 2.5 | 9.3 | 10.9 | 1.0 | 11.9 |
| 2/2+2/1 | 365 | 365 | - | - | - | 2.8 | 1.4 | - | 4.2 | 41.7 | 4.3 | 1.4 | 5.6 |
| 3/2+3/1 | 708 | 708 | - | - | - | 3.9 | 1.6 | - | 5.6 | 28.3 | 13.3 | 1.6 | 14.9 |
| 4/1 | 1047 | 1047 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 797 | 797 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 196 | 196 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

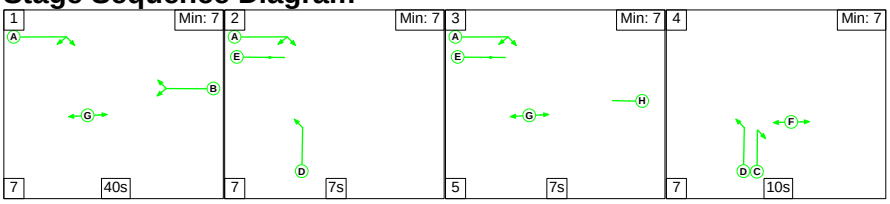
C1 PRC for Signalled Lanes (%): 16.9 Total Delay for Signalled Lanes (pcuHr): 12.27 Cycle Time (s): 90
PRC Over All Lanes (%): 16.9 Total Delay Over All Lanes(pcuHr): 12.27

Full Input Data And Results

Full Input Data And Results

**Scenario 2: '2019 PM Base'** (FG2: '2019 PM Base', Plan 1: 'Network Control Plan 1')

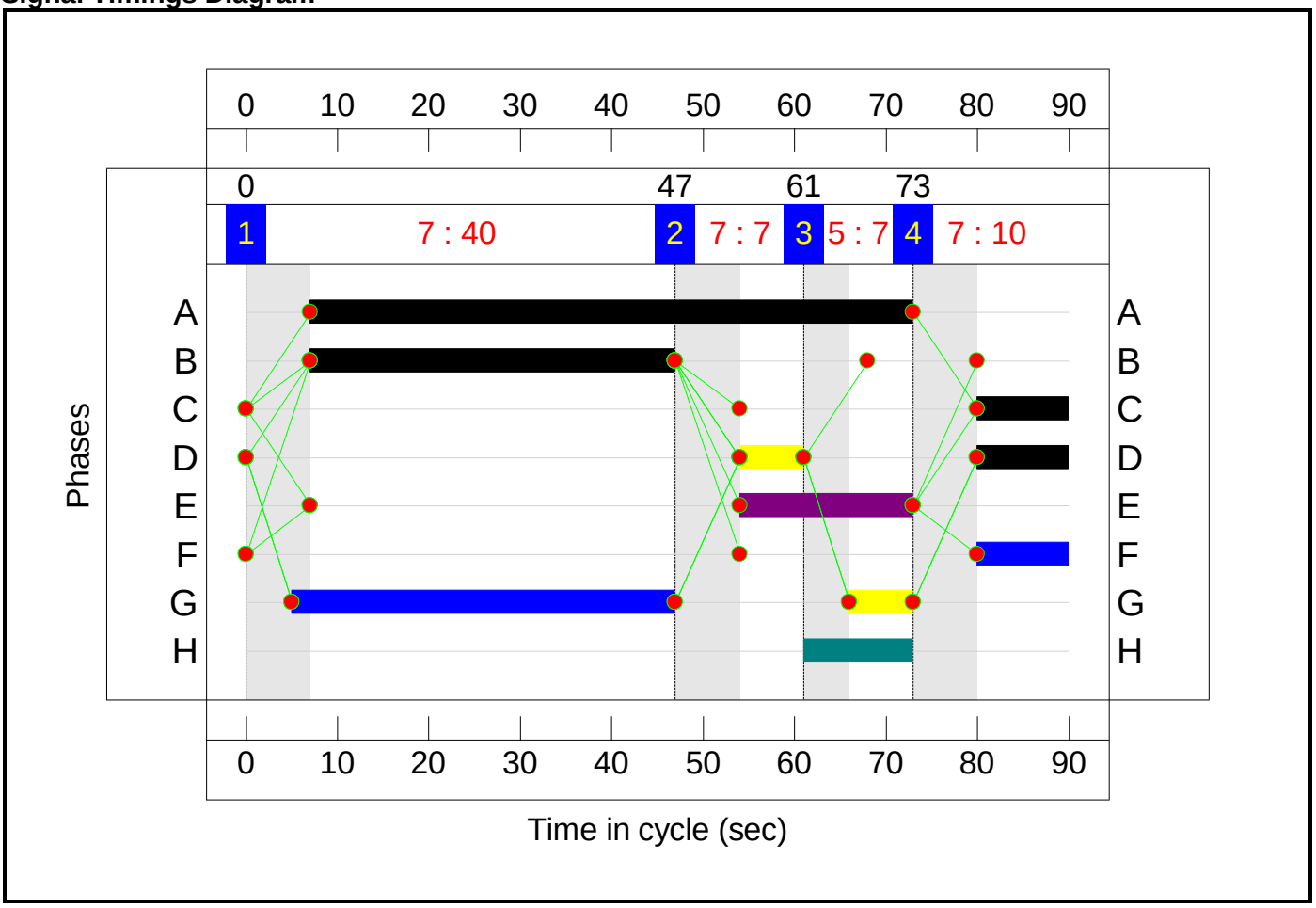
## Stage Sequence Diagram




## Stage Timings

| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Duration** | 40 | 7 | 7 | 10 |
| **Change Point** | 0 | 47 | 61 | 73 |

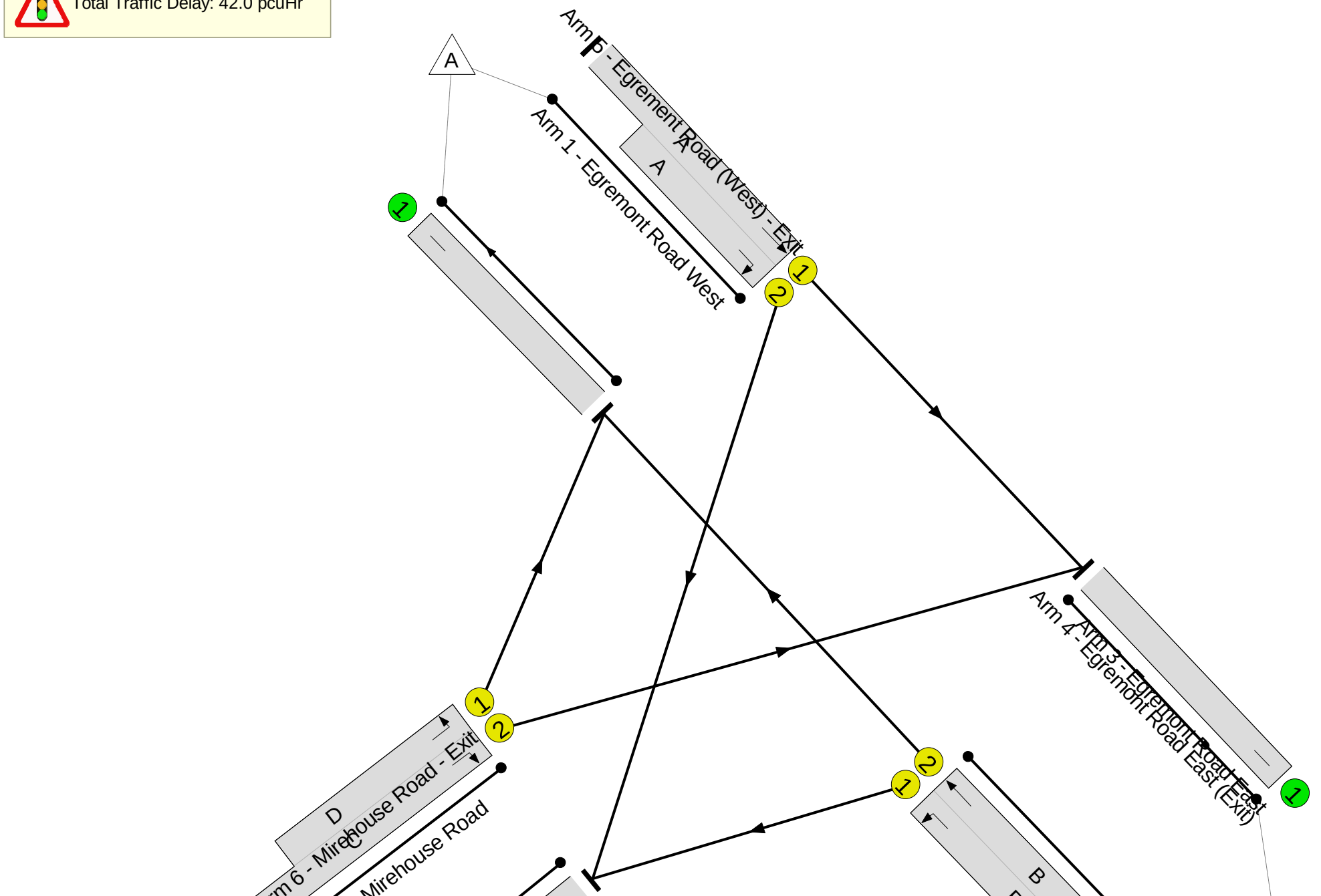
## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**

Mirehouse-Egremont Junction
PRC: -13.5 %
Total Traffic Delay: 42.0 pcuHr



Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **102.2%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **102.2%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 66 | - | 860 | 1940:1928 | 1202+334 | 56.0 : 56.0% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 10:17 | - | 390 | 1805:1764 | 221+176 | 98.4 : 98.4% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 40 | - | 972 | 1940:1764 | 794+158 | 102.2 : 102.2% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 890 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 984 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 348 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **11.5** | **30.6** | **0.0** | **42.0** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **11.5** | **30.6** | **0.0** | **42.0** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 860 | 860 | - | - | - | 1.0 | 0.6 | - | 1.6 | 6.9 | 6.5 | 0.6 | 7.2 |
| 2/2+2/1 | 390 | 390 | - | - | - | 3.3 | 8.4 | - | 11.7 | 107.9 | 5.4 | 8.4 | 13.7 |
| 3/2+3/1 | 972 | 951 | - | - | - | 7.1 | 21.6 | - | 28.7 | 106.3 | 24.1 | 21.6 | 45.6 |
| 4/1 | 890 | 890 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 967 | 967 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 345 | 345 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

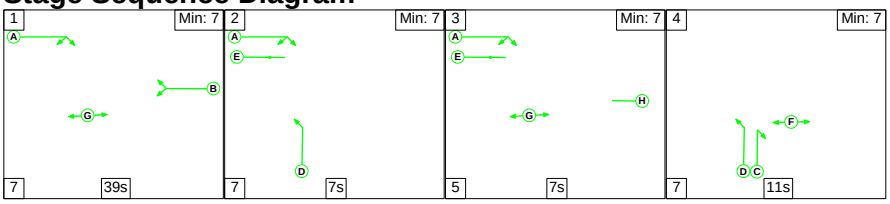
C1 PRC for Signalled Lanes (%): -13.5 Total Delay for Signalled Lanes (pcuHr): 42.04 Cycle Time (s): 90
PRC Over All Lanes (%): -13.5 Total Delay Over All Lanes(pcuHr): 42.04

Full Input Data And Results

Full Input Data And Results

**Scenario 3: '2019 AM Base + Dev'** (FG3: '2019 AM Base + Dev', Plan 1: 'Network Control Plan 1')

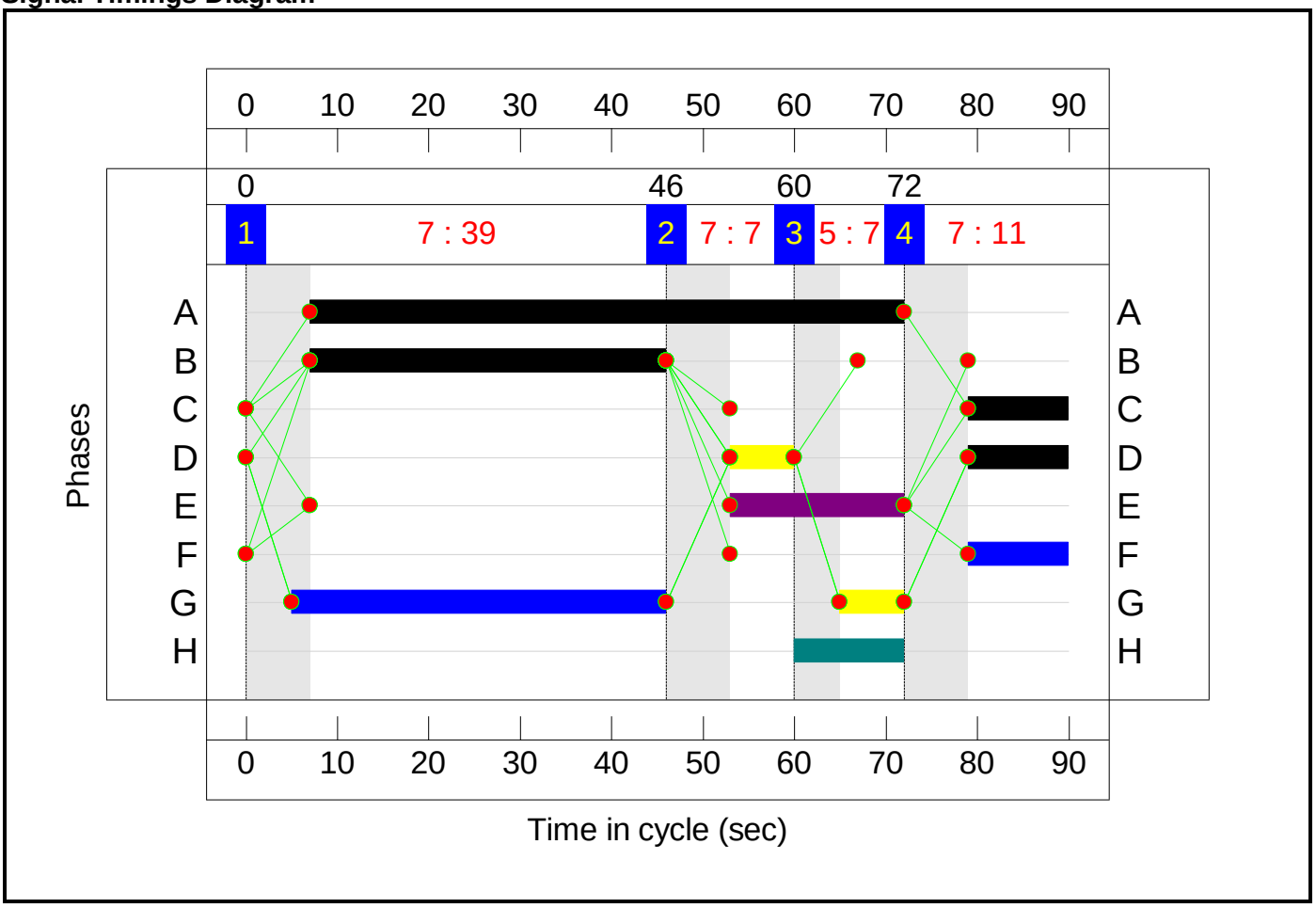
## Stage Sequence Diagram




## Stage Timings

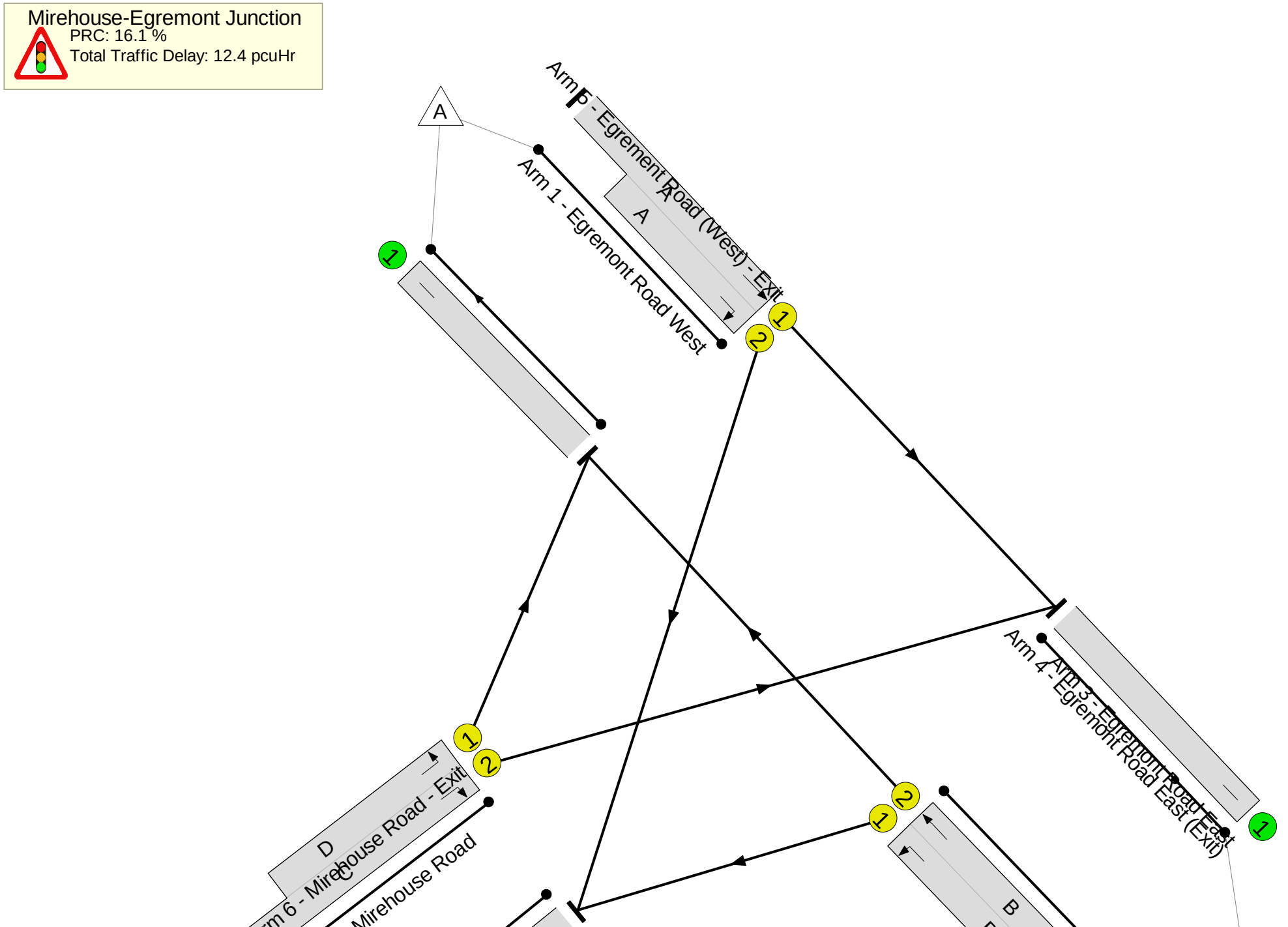
| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 39 | 7 | 7 | 11 |
| Change Point | 0 | 46 | 60 | 72 |

## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**


Mirehouse-Egremont Junction
PRC: 16.1 %
Total Traffic Delay: 12.4 pcuHr
A
Arm 1 - Egremont Road West
Arm 2 - Egrement Road (West) - Exit
Arm 3 - Egremont Road East (Exit)
Arm 4 - Egremont Road East
Arm 6 - Mirehouse Road - Exit
Mirehouse Road
1
2

Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **77.5%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **77.5%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 65 | - | 969 | 1940:1928 | 1309+147 | 66.5 : 66.5% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 11:18 | - | 366 | 1805:1764 | 241+254 | 74.0 : 74.0% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 39 | - | 713 | 1940:1764 | 793+126 | 77.5 : 77.5% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 1049 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 803 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 196 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **8.3** | **4.1** | **0.0** | **12.4** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **8.3** | **4.1** | **0.0** | **12.4** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 969 | 969 | - | - | - | 1.5 | 1.0 | - | 2.5 | 9.3 | 10.9 | 1.0 | 11.9 |
| 2/2+2/1 | 366 | 366 | - | - | - | 2.8 | 1.4 | - | 4.2 | 41.6 | 4.3 | 1.4 | 5.6 |
| 3/2+3/1 | 713 | 713 | - | - | - | 4.0 | 1.7 | - | 5.7 | 28.6 | 13.4 | 1.7 | 15.1 |
| 4/1 | 1049 | 1049 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 803 | 803 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 196 | 196 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

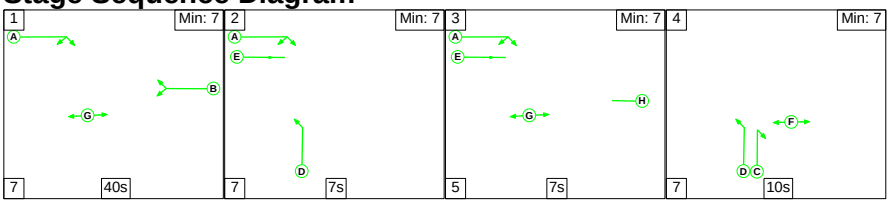
C1 PRC for Signalled Lanes (%): 16.1 Total Delay for Signalled Lanes (pcuHr): 12.39 Cycle Time (s): 90
PRC Over All Lanes (%): 16.1 Total Delay Over All Lanes(pcuHr): 12.39

Full Input Data And Results

Full Input Data And Results

**Scenario 4: '2019 PM Base + Dev'** (FG4: '2019 PM Base + Dev', Plan 1: 'Network Control Plan 1')

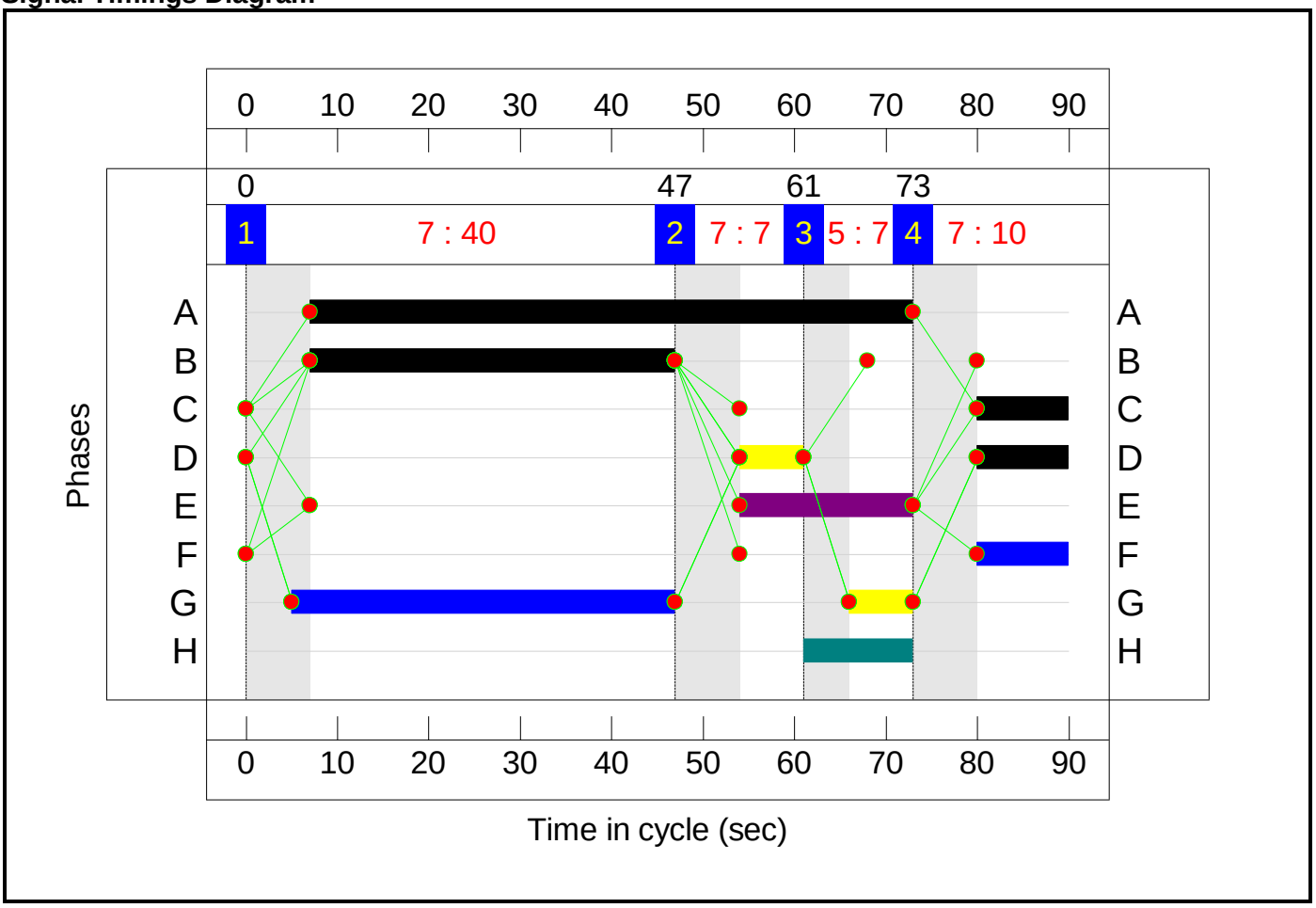
## Stage Sequence Diagram




## Stage Timings

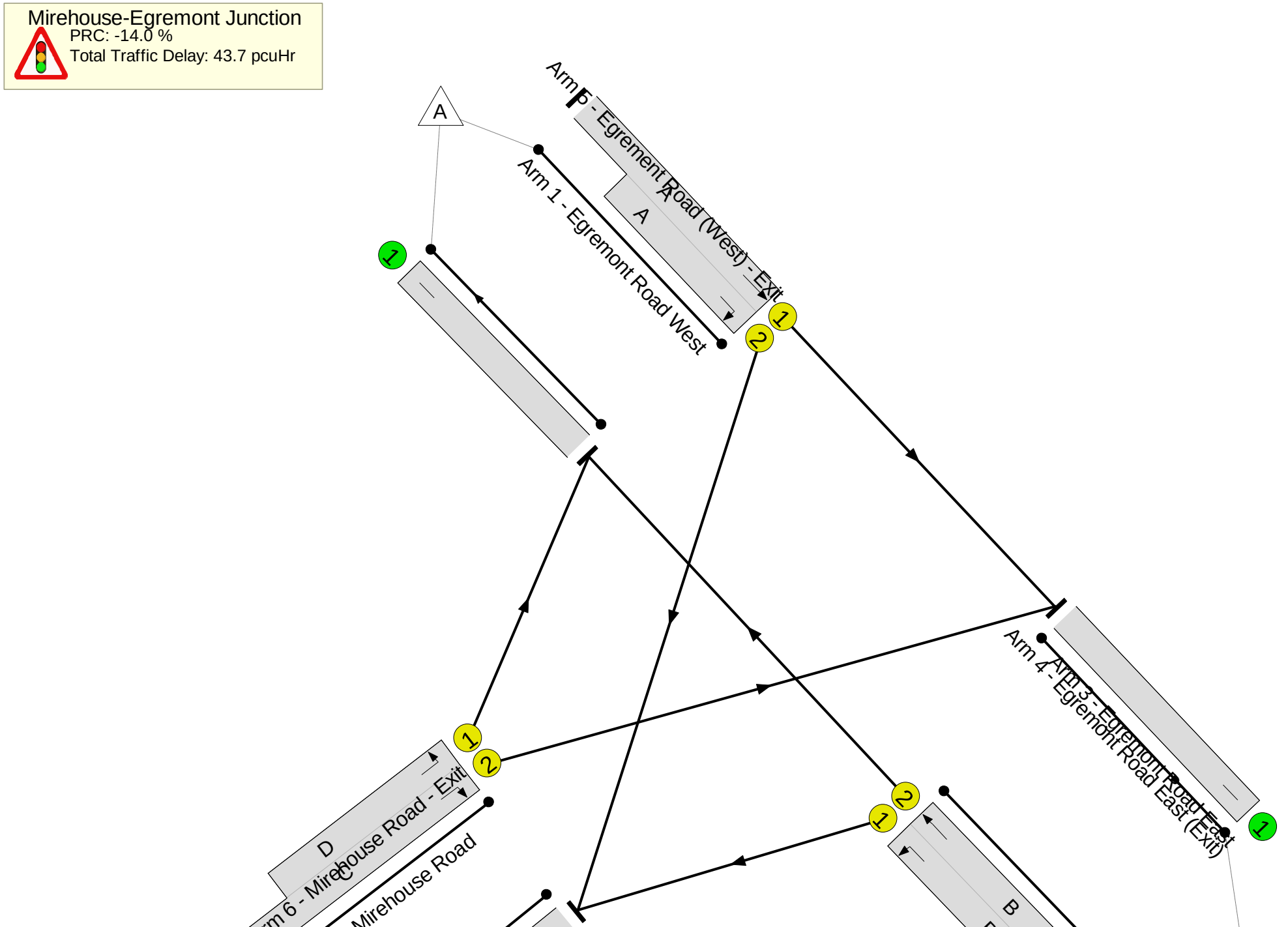
| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 40 | 7 | 7 | 10 |
| Change Point | 0 | 47 | 61 | 73 |

## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**


Mirehouse-Egremont Junction
PRC: -14.0 %
Total Traffic Delay: 43.7 pcuHr
A
Arm 1 - Egremont Road West
Arm 2 - Egrement Road (West) - Exit
A
Arm 3 - Egremont Road East (Exit)
Arm 4 - Egremont Road East
D
Arm 6 - Mirehouse Road - Exit
Mirehouse Road
B
1
2

Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **102.6%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **102.6%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 66 | - | 866 | 1940:1928 | 1203+333 | 56.4 : 56.4% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 10:17 | - | 391 | 1805:1764 | 221+177 | 98.4 : 98.4% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 40 | - | 976 | 1940:1764 | 794+157 | 102.6 : 102.6% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 895 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 989 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 349 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **11.7** | **32.1** | **0.0** | **43.7** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **11.7** | **32.1** | **0.0** | **43.7** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 866 | 866 | - | - | - | 1.0 | 0.6 | - | 1.7 | 6.9 | 6.6 | 0.6 | 7.2 |
| 2/2+2/1 | 391 | 391 | - | - | - | 3.3 | 8.4 | - | 11.7 | 107.8 | 5.4 | 8.4 | 13.8 |
| 3/2+3/1 | 976 | 951 | - | - | - | 7.4 | 23.0 | - | 30.4 | 112.0 | 24.6 | 23.0 | 47.6 |
| 4/1 | 895 | 895 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 968 | 968 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 345 | 345 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

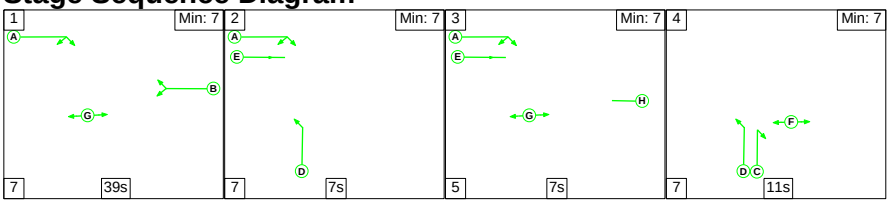
C1 PRC for Signalled Lanes (%): -14.0 Total Delay for Signalled Lanes (pcuHr): 43.74 Cycle Time (s): 90
PRC Over All Lanes (%): -14.0 Total Delay Over All Lanes(pcuHr): 43.74

Full Input Data And Results

Full Input Data And Results

**Scenario 5: '2026 AM Base'** (FG5: '2026 AM Base', Plan 1: 'Network Control Plan 1')

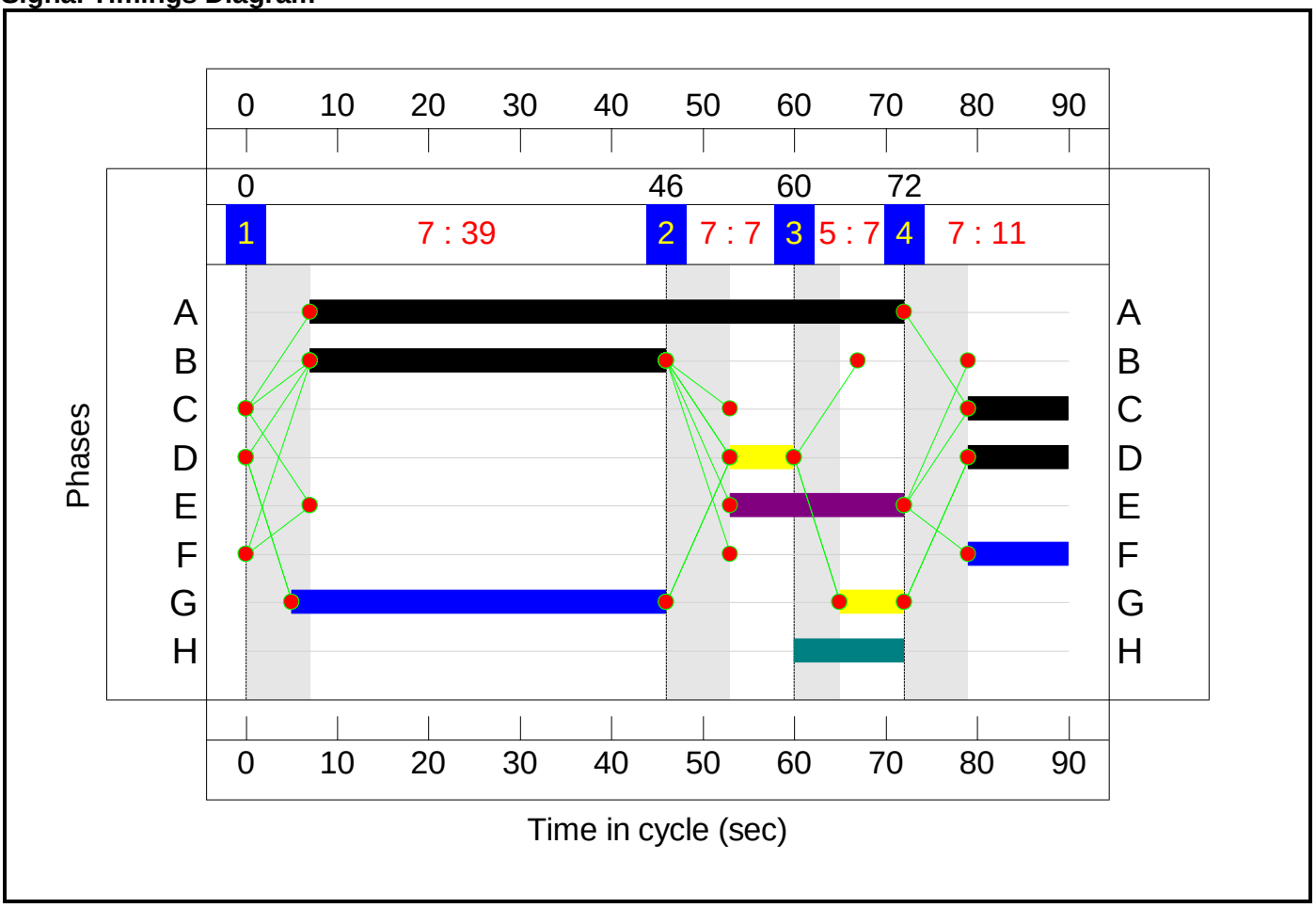
## Stage Sequence Diagram




## Stage Timings

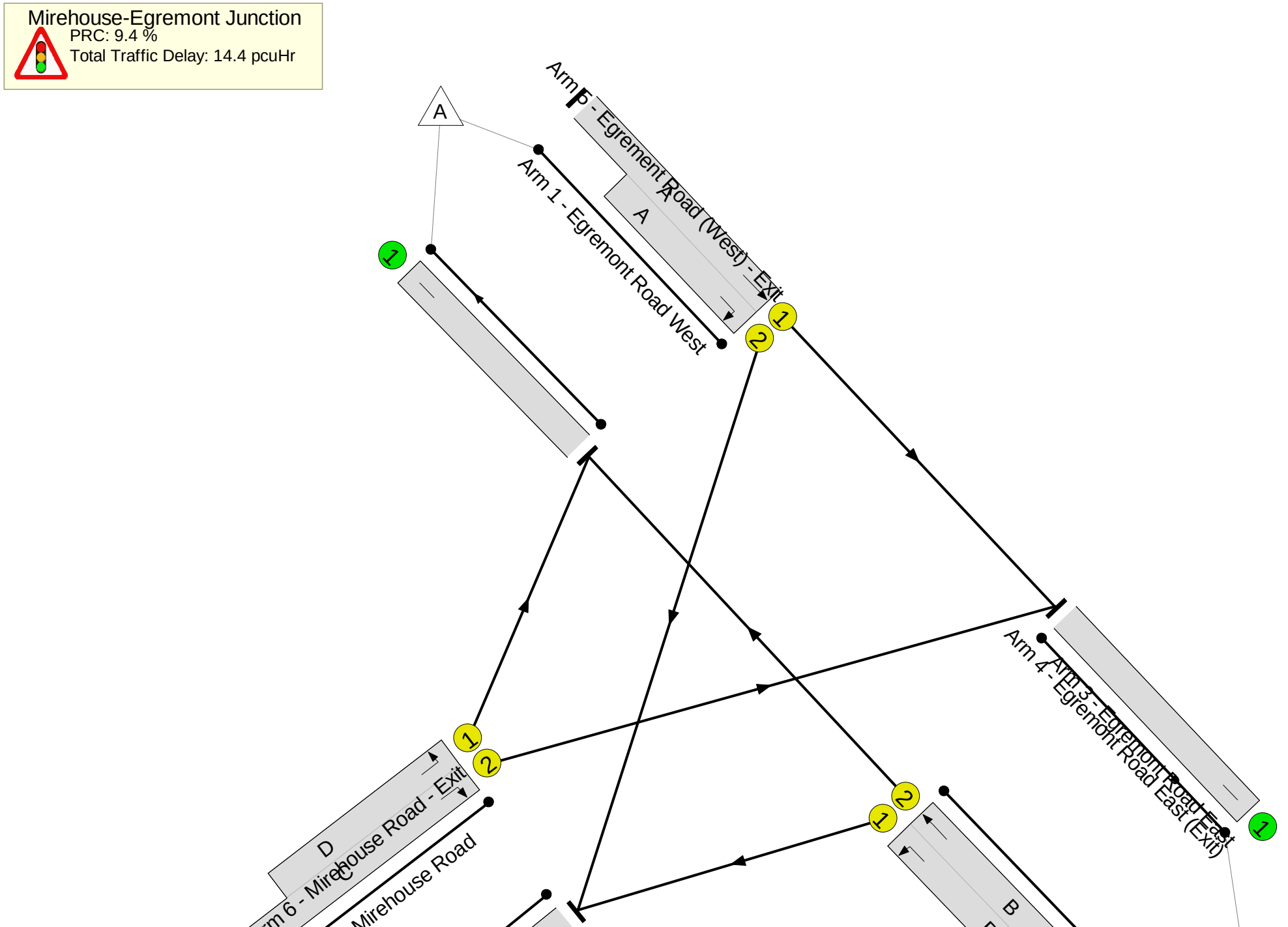
| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 39 | 7 | 7 | 11 |
| Change Point | 0 | 46 | 60 | 72 |

## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**


Mirehouse-Egremont Junction
PRC: 9.4 %
Total Traffic Delay: 14.4 pcuHr
A
Arm 1 - Egremont Road West
Arm 2 - Egrement Road (West) - Exit
Arm 3 - Egremont Road East (Exit)
Arm 4 - Egremont Road East
Arm 5 - Mirehouse Road
Arm 6 - Mirehouse Road - Exit
B
C
D
1
2

Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **82.3%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **82.3%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 65 | - | 1034 | 1940:1928 | 1308+148 | 71.0 : 71.0% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 11:18 | - | 390 | 1805:1764 | 241+253 | 78.9 : 78.9% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 39 | - | 757 | 1940:1764 | 792+128 | 82.3 : 82.3% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 1119 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 852 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 210 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **9.1** | **5.3** | **0.0** | **14.4** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **9.1** | **5.3** | **0.0** | **14.4** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 1034 | 1034 | - | - | - | 1.7 | 1.2 | - | 2.9 | 10.2 | 12.7 | 1.2 | 14.0 |
| 2/2+2/1 | 390 | 390 | - | - | - | 3.0 | 1.8 | - | 4.9 | 44.9 | 4.6 | 1.8 | 6.4 |
| 3/2+3/1 | 757 | 757 | - | - | - | 4.4 | 2.3 | - | 6.6 | 31.4 | 14.9 | 2.3 | 17.2 |
| 4/1 | 1119 | 1119 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 852 | 852 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 210 | 210 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

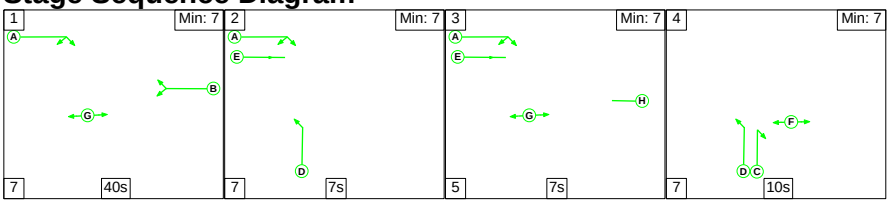
C1 PRC for Signalled Lanes (%): 9.4 Total Delay for Signalled Lanes (pcuHr): 14.41 Cycle Time (s): 90
PRC Over All Lanes (%): 9.4 Total Delay Over All Lanes(pcuHr): 14.41

Full Input Data And Results

Full Input Data And Results

**Scenario 6: '2026 PM Base'** (FG6: '2026 PM Base', Plan 1: 'Network Control Plan 1')

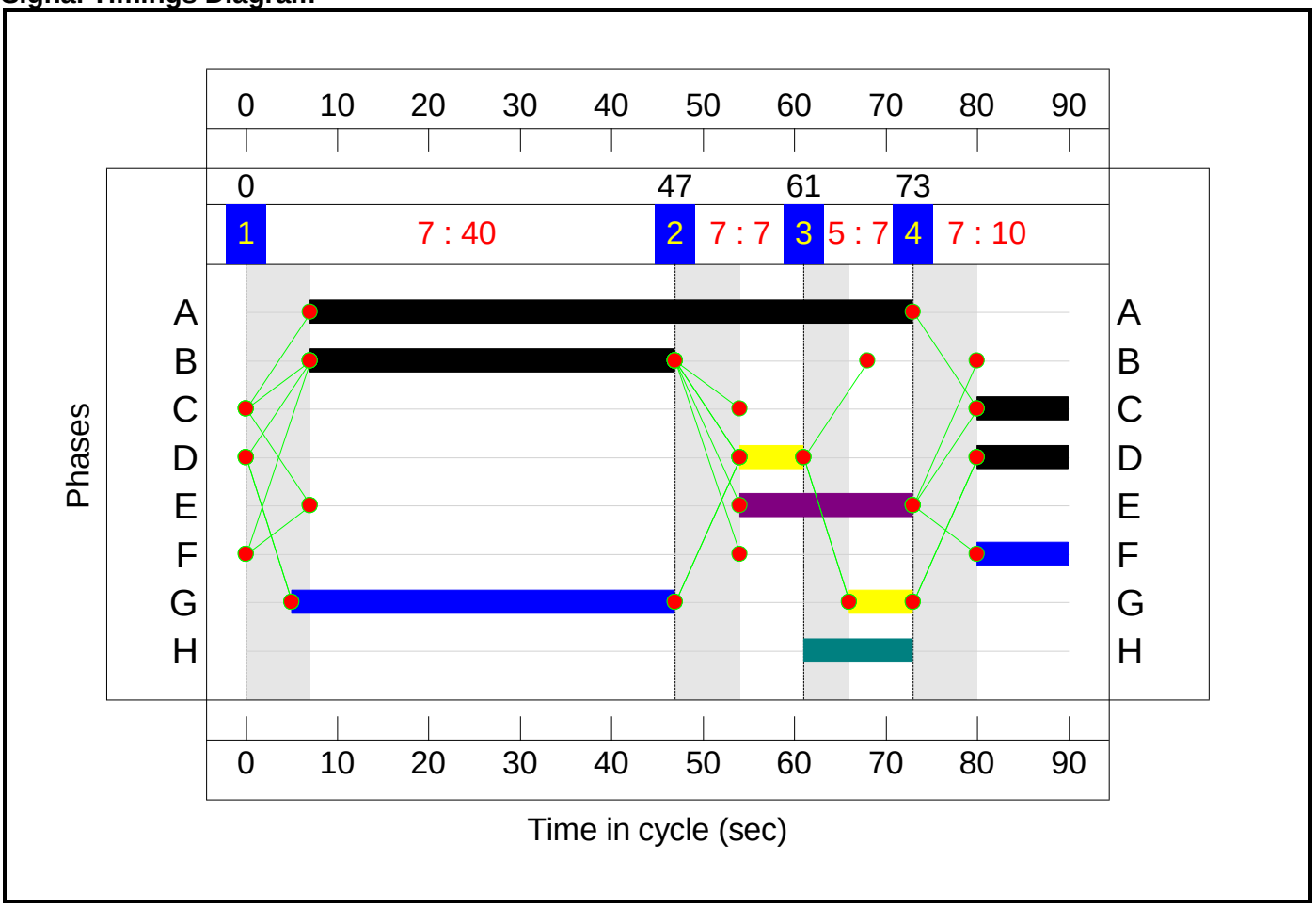
## Stage Sequence Diagram




## Stage Timings

| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 40 | 7 | 7 | 10 |
| Change Point | 0 | 47 | 61 | 73 |

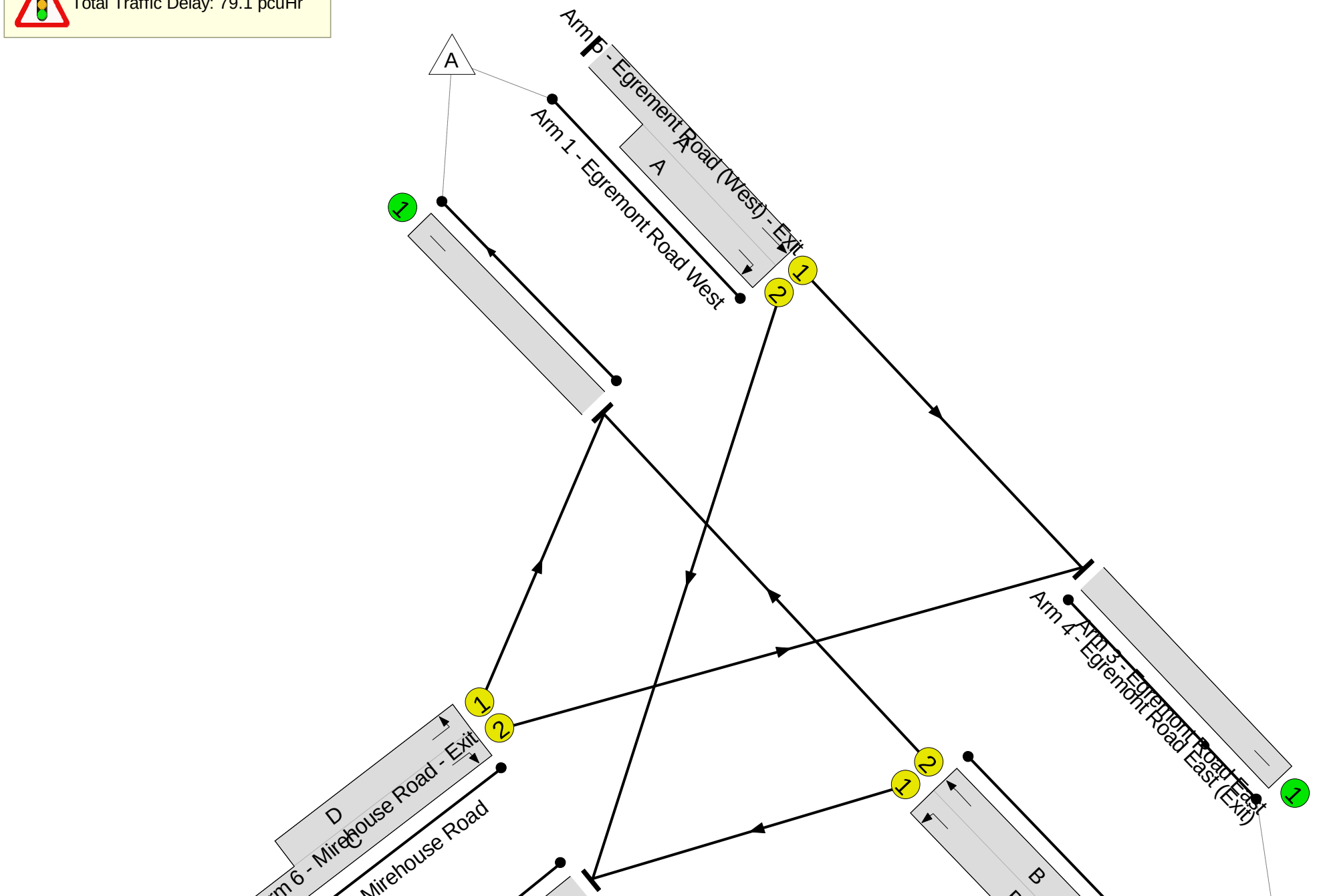
## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**

Mirehouse-Egremont Junction
PRC: -20.9 %
Total Traffic Delay: 79.1 pcuHr



Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **108.8%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **108.8%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 66 | - | 916 | 1940:1928 | 1202+334 | 59.6 : 59.6% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 10:17 | - | 415 | 1805:1764 | 221+176 | 104.7 : 104.7% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 40 | - | 1035 | 1940:1764 | 794+157 | 108.8 : 108.8% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 948 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 1048 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 370 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **15.1** | **63.9** | **0.0** | **79.1** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **15.1** | **63.9** | **0.0** | **79.1** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 916 | 916 | - | - | - | 1.1 | 0.7 | - | 1.8 | 7.3 | 7.2 | 0.7 | 7.9 |
| 2/2+2/1 | 415 | 405 | - | - | - | 3.8 | 15.9 | - | 19.7 | 170.6 | 5.8 | 15.9 | 21.7 |
| 3/2+3/1 | 1035 | 951 | - | - | - | 10.2 | 47.3 | - | 57.6 | 200.2 | 28.1 | 47.3 | 75.5 |
| 4/1 | 938 | 938 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 978 | 978 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 356 | 356 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

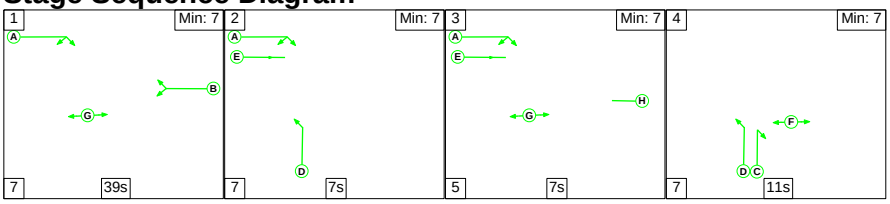
C1 PRC for Signalled Lanes (%): -20.9 Total Delay for Signalled Lanes (pcuHr): 79.07 Cycle Time (s): 90
PRC Over All Lanes (%): -20.9 Total Delay Over All Lanes(pcuHr): 79.07

Full Input Data And Results

Full Input Data And Results

**Scenario 7: '2026 AM Base + Dev'** (FG7: '2026 AM Base + Dev', Plan 1: 'Network Control Plan 1')

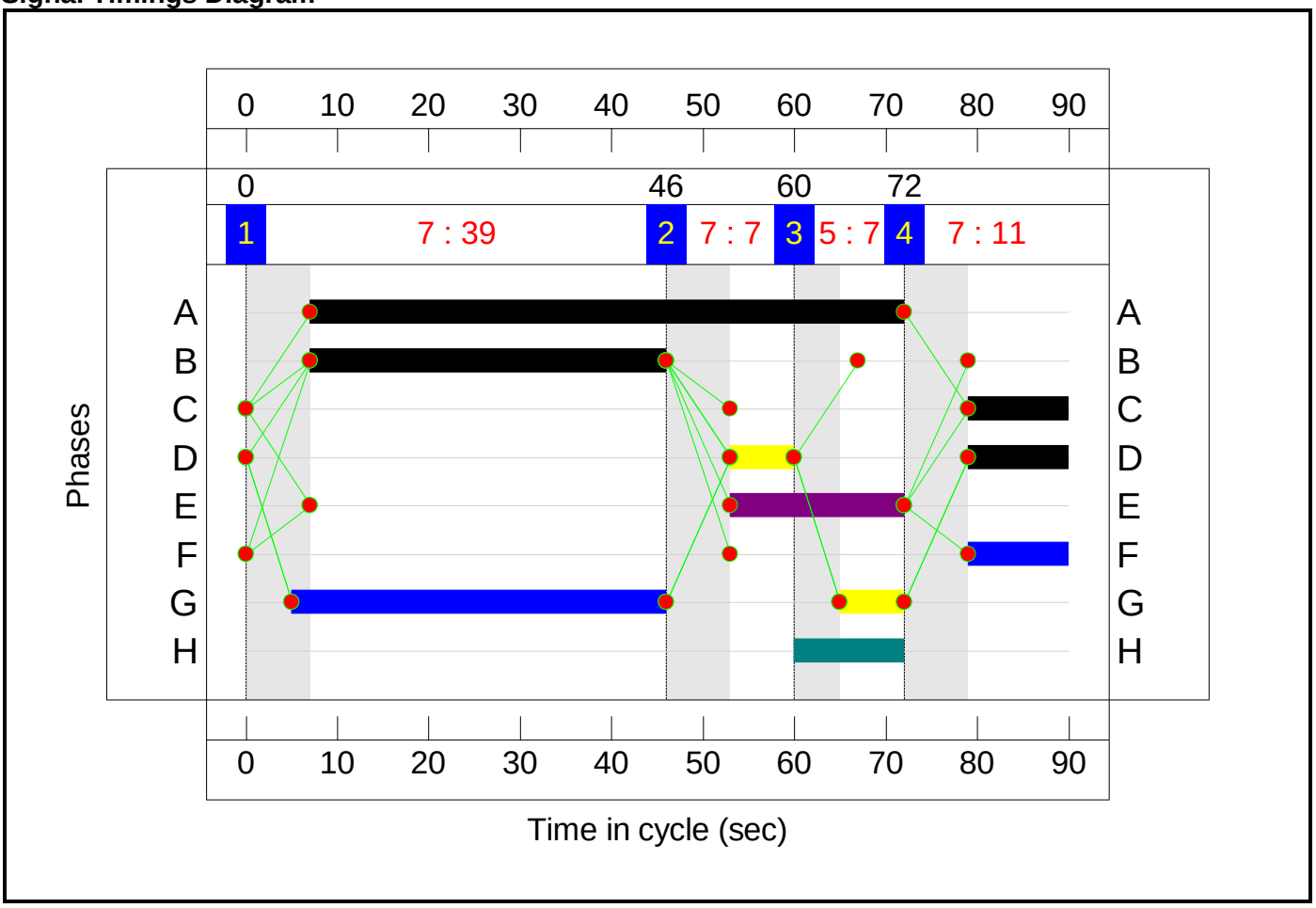
## Stage Sequence Diagram




## Stage Timings

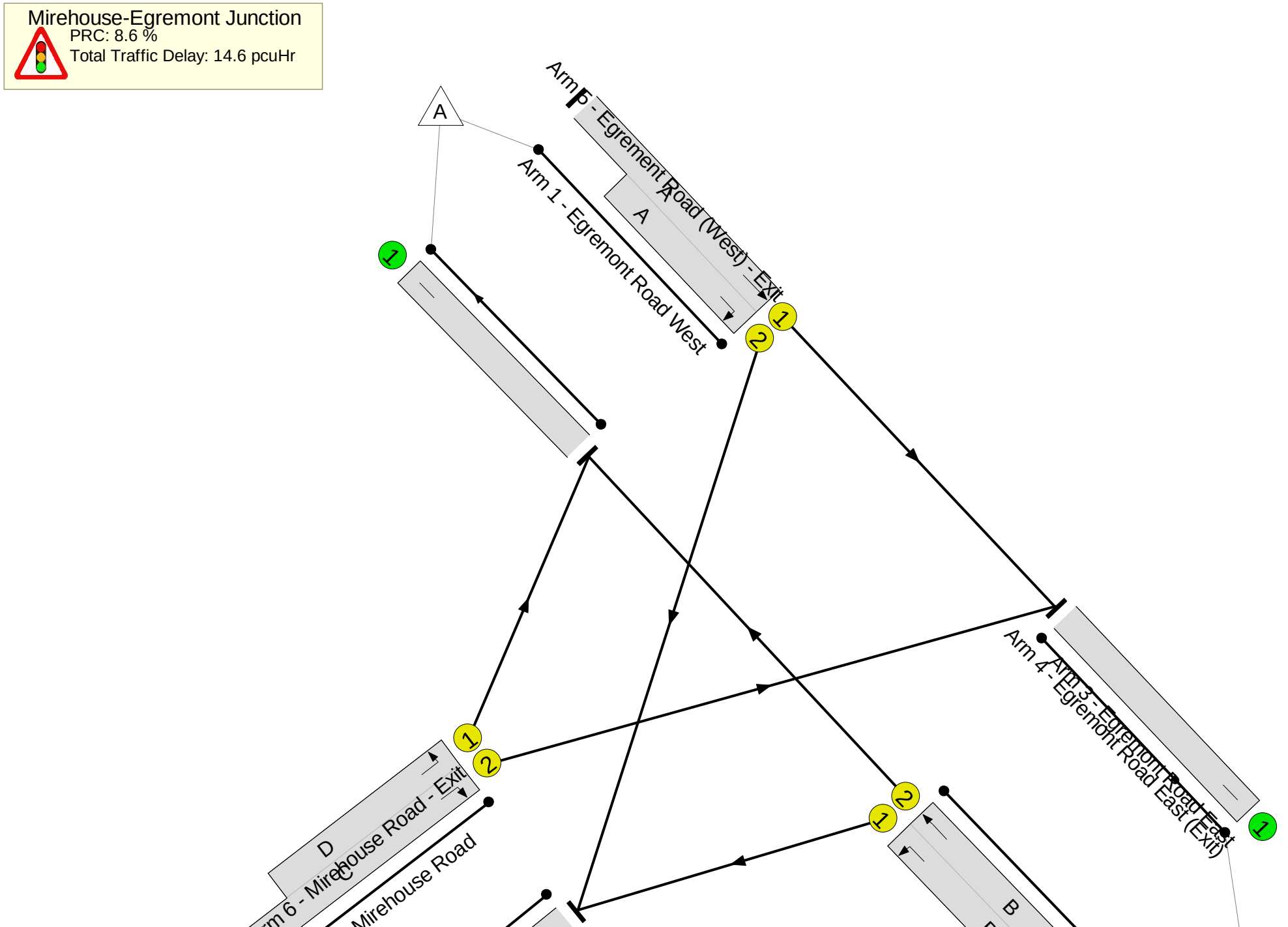
| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 39 | 7 | 7 | 11 |
| Change Point | 0 | 46 | 60 | 72 |

## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**


Mirehouse-Egremont Junction
PRC: 8.6 %
Total Traffic Delay: 14.6 pcuHr
A
Arm 1 - Egremont Road West
Arm 2 - Egrement Road (West) - Exit
Arm 3 - Egremont Road East (Exit)
Arm 4 - Egremont Road East
Arm 6 - Mirehouse Road - Exit
Mirehouse Road
D
C
B
1
2

Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **82.9%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **82.9%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 65 | - | 1036 | 1940:1928 | 1309+148 | 71.1 : 71.1% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 11:18 | - | 391 | 1805:1764 | 241+255 | 78.9 : 78.9% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 39 | - | 762 | 1940:1764 | 793+127 | 82.9 : 82.9% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 1121 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 858 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 210 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **9.2** | **5.4** | **0.0** | **14.6** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **9.2** | **5.4** | **0.0** | **14.6** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 1036 | 1036 | - | - | - | 1.7 | 1.2 | - | 3.0 | 10.3 | 13.0 | 1.2 | 14.3 |
| 2/2+2/1 | 391 | 391 | - | - | - | 3.1 | 1.8 | - | 4.9 | 44.8 | 4.6 | 1.8 | 6.4 |
| 3/2+3/1 | 762 | 762 | - | - | - | 4.4 | 2.3 | - | 6.7 | 31.9 | 15.1 | 2.3 | 17.4 |
| 4/1 | 1121 | 1121 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 858 | 858 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 210 | 210 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

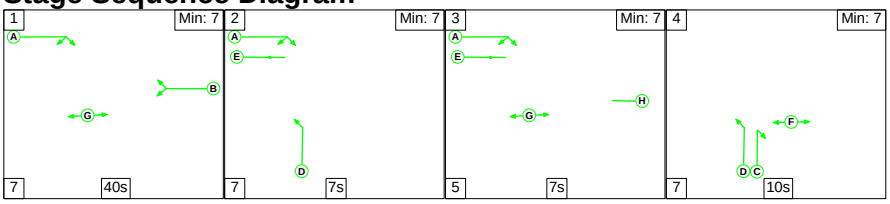
C1 PRC for Signalled Lanes (%): 8.6 Total Delay for Signalled Lanes (pcuHr): 14.57 Cycle Time (s): 90
PRC Over All Lanes (%): 8.6 Total Delay Over All Lanes(pcuHr): 14.57

Full Input Data And Results

Full Input Data And Results

**Scenario 8: '2026 PM Base + Dev'** (FG8: '2026 PM Base + Dev', Plan 1: 'Network Control Plan 1')

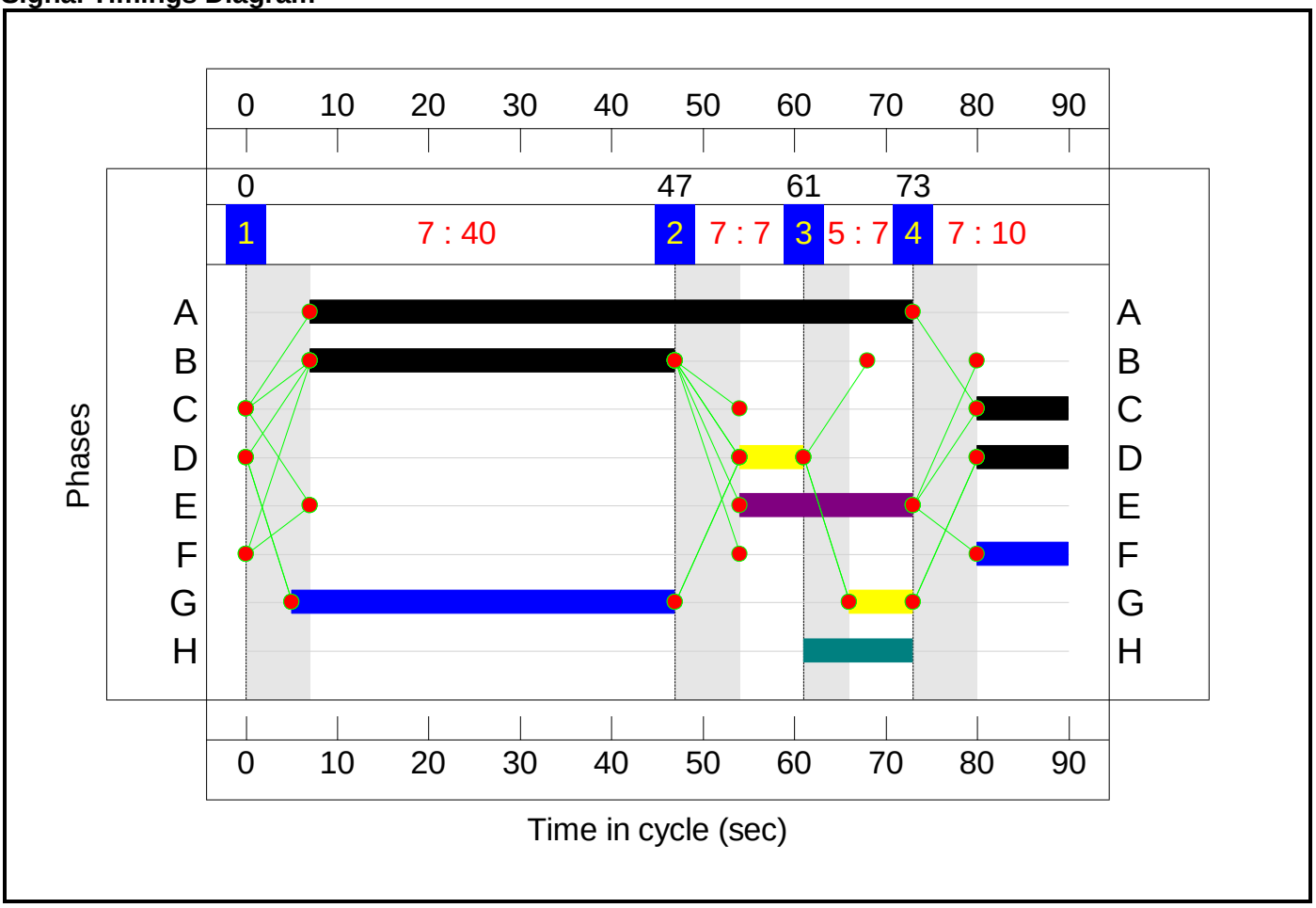
## Stage Sequence Diagram




## Stage Timings

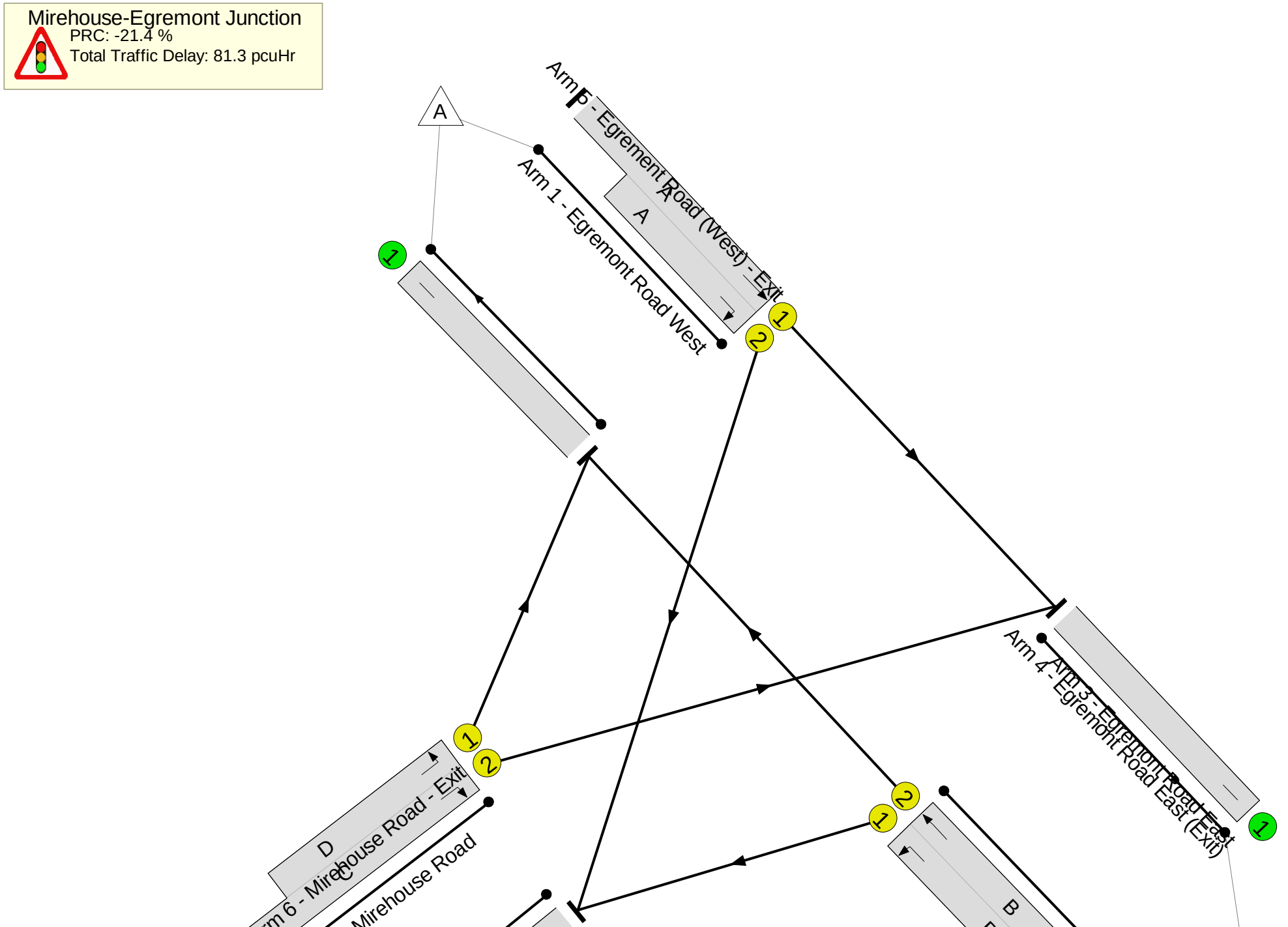
| Stage | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duration | 40 | 7 | 7 | 10 |
| Change Point | 0 | 47 | 61 | 73 |

## Signal Timings Diagram



Full Input Data And Results

**Network Layout Diagram**


Mirehouse-Egremont Junction
PRC: -21.4 %
Total Traffic Delay: 81.3 pcuHr
A
Arm 1 - Egremont Road West
Arm 2 - Egrement Road (West) - Exit
A
Arm 3 - Egremont Road East (Exit)
Arm 4 - Egremont Road East
D
Arm 6 - Mirehouse Road - Exit
Mirehouse Road
B
1
2

Full Input Data And Results

## Network Results

| Item | Lane Description | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **109.3%** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **N/A** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **109.3%** |
| 1/1+1/2 | Egremont Road West Ahead Right | U | N/A | N/A | A | | 1 | 66 | - | 921 | 1940:1928 | 1203+334 | 60.0 : 60.0% |
| 2/2+2/1 | Mirehouse Road Right Left | U | N/A | N/A | C D | | 1:2 | 10:17 | - | 416 | 1805:1764 | 221+177 | 104.7 : 104.7% |
| 3/2+3/1 | Egremont Road East Ahead Left | U | N/A | N/A | B | | 1 | 40 | - | 1039 | 1940:1764 | 794+157 | 109.3 : 109.3% |
| 4/1 | Egremont Road East (Exit) | U | N/A | N/A | - | | - | - | - | 952 | Inf | Inf | 0.0% |
| 5/1 | Egrement Road (West) - Exit | U | N/A | N/A | - | | - | - | - | 1053 | Inf | Inf | 0.0% |
| 6/1 | Mirehouse Road - Exit | U | N/A | N/A | - | | - | - | - | 371 | Inf | Inf | 0.0% |

| Item | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **0** | **0** | **0** | **15.4** | **65.9** | **0.0** | **81.3** | **-** | **-** | **-** | **-** |
| **Mirehouse-Egremont Junction** | **-** | **-** | **0** | **0** | **0** | **15.4** | **65.9** | **0.0** | **81.3** | **-** | **-** | **-** | **-** |
| 1/1+1/2 | 921 | 921 | - | - | - | 1.1 | 0.7 | - | 1.9 | 7.3 | 7.2 | 0.7 | 8.0 |
| 2/2+2/1 | 416 | 406 | - | - | - | 3.8 | 15.9 | - | 19.7 | 170.5 | 5.8 | 15.9 | 21.7 |
| 3/2+3/1 | 1039 | 951 | - | - | - | 10.4 | 49.3 | - | 59.7 | 206.8 | 28.4 | 49.3 | 77.6 |
| 4/1 | 942 | 942 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5/1 | 979 | 979 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6/1 | 357 | 357 | - | - | - | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

C1 PRC for Signalled Lanes (%): -21.4 Total Delay for Signalled Lanes (pcuHr): 81.26 Cycle Time (s): 90
PRC Over All Lanes (%): -21.4 Total Delay Over All Lanes(pcuHr): 81.26

Full Input Data And Results

# Junctions 8

## PICADY 8 - Priority Intersection Module

Version: 8.0.4.487 [15039,24/03/2014]


For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk



**Filename:** Cleator Moor Rd-Overend Rd - Priority Junction.arc8
**Path:** \\mafs02\Projects\073001 - 074000\073096 - West Cumberland Hospital\Q3-Design\3B-Models\TP\Junction Models
**Report generation date:** 14/05/2020 14:13:57

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## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (PCU) | Delay (s) | RFC | LOS | Queue (PCU) | Delay (s) | RFC | LOS |
| | A1 - 2019 Survey | | | | | | | |
| Stream B-C | 0.21 | 8.60 | 0.17 | A | 0.40 | 11.91 | 0.29 | B |
| Stream B-A | 0.57 | 19.63 | 0.37 | C | 0.94 | 24.56 | 0.49 | C |
| Stream C-AB | 3.01 | 25.58 | 0.77 | D | 0.30 | 8.74 | 0.21 | A |
| Stream C-A | - | - | - | - | - | - | - | - |
| Stream A-B | - | - | - | - | - | - | - | - |
| Stream A-C | - | - | - | - | - | - | - | - |
| | A1 - 2019+Dev Survey | | | | | | | |
| Stream B-C | 0.21 | 8.72 | 0.18 | A | 0.42 | 12.16 | 0.30 | B |
| Stream B-A | 0.60 | 20.20 | 0.38 | C | 0.98 | 25.15 | 0.50 | D |
| Stream C-AB | 3.24 | 27.32 | 0.78 | D | 0.31 | 8.77 | 0.21 | A |
| Stream C-A | - | - | - | - | - | - | - | - |
| Stream A-B | - | - | - | - | - | - | - | - |
| Stream A-C | - | - | - | - | - | - | - | - |
| | A1 - 2026 Survey | | | | | | | |
| Stream B-C | 0.24 | 9.40 | 0.19 | A | 0.51 | 14.20 | 0.34 | B |
| Stream B-A | 0.73 | 23.47 | 0.43 | C | 1.25 | 30.99 | 0.56 | D |
| Stream C-AB | 4.28 | 36.19 | 0.85 | E | 0.35 | 9.00 | 0.23 | A |
| Stream C-A | - | - | - | - | - | - | - | - |
| Stream A-B | - | - | - | - | - | - | - | - |
| Stream A-C | - | - | - | - | - | - | - | - |
| | A1 - 2026+Dev | | | | | | | |
| Stream B-C | 0.25 | 9.55 | 0.20 | A | 0.53 | 14.63 | 0.35 | B |
| Stream B-A | 0.76 | 24.20 | 0.44 | C | 1.30 | 31.95 | 0.58 | D |
| Stream C-AB | 4.65 | 39.52 | 0.86 | E | 0.36 | 9.03 | 0.24 | A |
| Stream C-A | - | - | - | - | - | - | - | - |
| Stream A-B | - | - | - | - | - | - | - | - |
| Stream A-C | - | - | - | - | - | - | - | - |

*Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.*

*"D1 - 2019 Survey, AM" model duration: 08:00 - 09:30*
*"D2 - 2019 Survey, PM" model duration: 17:00 - 18:30*
*"D3 - 2026 Survey, AM" model duration: 08:00 - 09:30*
*"D4 - 2026 Survey, PM" model duration: 17:00 - 18:30*
*"D5 - 2026+Dev, AM" model duration: 08:00 - 09:30*
*"D6 - 2026+Dev, PM" model duration: 17:00 - 18:30*
*"D7 - 2019+Dev Survey, AM" model duration: 08:00 - 09:30*
*"D8 - 2019+Dev Survey, PM " model duration: 17:00 - 18:30*

*Run using Junctions 8.0.4.487 at 14/05/2020 14:13:57*

## File summary

| | |
|---|---|
| **Title** | (untitled) |
| **Location** | |
| **Site Number** | |
| **Date** | 25/09/2019 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | jonathan.ashcroft |
| **Description** | |

## Analysis Options

| Vehicle Length (m) | Do Queue Variations | Calculate Residual Capacity | Residual Capacity Criteria Type | RFC Threshold | Average Delay Threshold (s) | Queue Threshold (PCU) |
|---|---|---|---|---|---|---|
| 5.75 | | | N/A | 0.85 | 36.00 | 20.00 |

## Units

| Distance Units | Speed Units | Traffic Units Input | Traffic Units Results | Flow Units | Average Delay Units | Total Delay Units | Rate Of Delay Units |
|---|---|---|---|---|---|---|---|
| m | kph | PCU | PCU | perHour | s | -Min | perMin |

# (Default Analysis Set) - 2019+Dev Survey, PM

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

| Name | Roundabout Capacity Model | Description | Locked | Network Flow Scaling Factor (%) | Reason For Scaling Factors |
|---|---|---|---|---|---|
| (Default Analysis Set) | N/A | | | 100.000 | |

## Demand Set Details

| Name | Scenario Name | Time Period Name | Description | Traffic Profile Type | Model Start Time (HH:mm) | Model Finish Time (HH:mm) | Model Time Period Length (min) | Time Segment Length (min) | Single Time Segment Only | Locked |
|---|---|---|---|---|---|---|---|---|---|---|
| 2019+Dev Survey, PM | 2019+Dev Survey | PM | | ONE HOUR | 17:00 | 18:30 | 90 | 15 | | |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major Road Direction | Arm Order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|---|
| 1 | (untitled) | T-Junction | Two-way | A,B,C | 16.20 | C |

## Junction Network Options

| Driving Side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Name | Arm | Name | Description | Arm Type |
|---|---|---|---|---|
| **Cleator Moor Rd (S)** | A | Cleator Moor Rd (S) | | Major |
| **Overend Rd** | B | Overend Rd | | Minor |
| **Cleator Moor Rd (N)** | C | Cleator Moor Rd (N) | | Major |

## Major Arm Geometry

| Name | Width of carriageway (m) | Has kerbed central reserve | Width of kerbed central reserve (m) | Has right turn bay | Width For Right Turn (m) | Visibility For Right Turn (m) | Blocks? | Blocking Queue (PCU) |
|---|---|---|---|---|---|---|---|---|
| **Cleator Moor Rd (N)** | 7.50 | | 0.00 | | 2.20 | 120.00 | ✓ | 1.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Name | Minor Arm Type | Lane Width (m) | Lane Width (Left) (m) | Lane Width (Right) (m) | Width at give-way (m) | Width at 5m (m) | Width at 10m (m) | Width at 15m (m) | Width at 20m (m) | Estimate Flare Length | Flare Length (PCU) | Visibility To Left (m) | Visibility To Right (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Overend Rd** | One lane plus flare | | | | 9.60 | 4.70 | 3.40 | 3.00 | 3.00 | ✓ | 1.00 | 39 | 120 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (PCU/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| **1** | B-A | 591.139 | 0.101 | 0.254 | 0.160 | 0.363 |
| **1** | B-C | 726.988 | 0.104 | 0.263 | - | - |
| **1** | C-B | 643.457 | 0.233 | 0.233 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Flows

## Demand Set Data Options

| Default Vehicle Mix | Vehicle Mix Varies Over Time | Vehicle Mix Varies Over Turn | Vehicle Mix Varies Over Entry | Vehicle Mix Source | PCU Factor for a HV (PCU) | Default Turning Proportions | Estimate from entry/exit counts | Turning Proportions Vary Over Time | Turning Proportions Vary Over Turn | Turning Proportions Vary Over Entry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ✓ | ✓ | HV Percentages | 2.00 | | | | ✓ | ✓ |

# Entry Flows

## General Flows Data

| Name | Profile Type | Use Turning Counts | Average Demand Flow (PCU/hr) | Flow Scaling Factor (%) |
|---|---|---|---|---|
| Cleator Moor Rd (S) | ONE HOUR | ✓ | 763.00 | 100.000 |
| Overend Rd | ONE HOUR | ✓ | 243.00 | 100.000 |
| Cleator Moor Rd (N) | ONE HOUR | ✓ | 555.00 | 100.000 |

# Turning Proportions

### Turning Counts / Proportions (PCU/hr) - (untitled) (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Cleator Moor Rd (S) | Overend Rd | Cleator Moor Rd (N) |
| From | Cleator Moor Rd (S) | 0.000 | 203.000 | 560.000 |
| | Overend Rd | 130.000 | 0.000 | 113.000 |
| | Cleator Moor Rd (N) | 473.000 | 82.000 | 0.000 |

### Turning Proportions (PCU) - (untitled) (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Cleator Moor Rd (S) | Overend Rd | Cleator Moor Rd (N) |
| From | Cleator Moor Rd (S) | 0.00 | 0.27 | 0.73 |
| | Overend Rd | 0.53 | 0.00 | 0.47 |
| | Cleator Moor Rd (N) | 0.85 | 0.15 | 0.00 |

# Vehicle Mix

### Average PCU Per Vehicle - (untitled) (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Cleator Moor Rd (S) | Overend Rd | Cleator Moor Rd (N) |
| From | Cleator Moor Rd (S) | 1.000 | 1.000 | 1.000 |
| | Overend Rd | 1.000 | 1.000 | 1.000 |
| | Cleator Moor Rd (N) | 1.000 | 1.000 | 1.000 |

### Heavy Vehicle Percentages - (untitled) (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Cleator Moor Rd (S) | Overend Rd | Cleator Moor Rd (N) |
| From | Cleator Moor Rd (S) | 0.0 | 0.0 | 0.0 |
| | Overend Rd | 0.0 | 0.0 | 0.0 |
| | Cleator Moor Rd (N) | 0.0 | 0.0 | 0.0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| B-C | 0.30 | 12.16 | 0.42 | B |
| B-A | 0.50 | 25.15 | 0.98 | D |
| C-AB | 0.21 | 8.77 | 0.31 | A |
| C-A | - | - | - | - |
| A-B | - | - | - | - |
| A-C | - | - | - | - |

## Main Results for each time segment

### Main results: (17:00-17:15)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 85.07 | 84.35 | 0.00 | 553.93 | 0.154 | 0.18 | 7.656 | A |
| B-A | 97.87 | 96.54 | 0.00 | 386.99 | 0.253 | 0.33 | 12.341 | B |
| C-AB | 66.96 | 66.37 | 0.00 | 539.79 | 0.124 | 0.15 | 7.593 | A |
| C-A | 350.87 | 350.87 | 0.00 | - | - | - | - | - |
| A-B | 152.83 | 152.83 | 0.00 | - | - | - | - | - |
| A-C | 421.60 | 421.60 | 0.00 | - | - | - | - | - |

### Main results: (17:15-17:30)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 101.58 | 101.31 | 0.00 | 507.79 | 0.200 | 0.25 | 8.851 | A |
| B-A | 116.87 | 116.20 | 0.00 | 345.60 | 0.338 | 0.50 | 15.646 | C |
| C-AB | 83.60 | 83.38 | 0.00 | 529.36 | 0.158 | 0.20 | 8.070 | A |
| C-A | 415.34 | 415.34 | 0.00 | - | - | - | - | - |
| A-B | 182.49 | 182.49 | 0.00 | - | - | - | - | - |
| A-C | 503.43 | 503.43 | 0.00 | - | - | - | - | - |

### Main results: (17:30-17:45)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 124.42 | 123.77 | 0.00 | 423.10 | 0.294 | 0.41 | 12.000 | B |
| B-A | 143.13 | 141.32 | 0.00 | 286.17 | 0.500 | 0.95 | 24.547 | C |
| C-AB | 111.46 | 111.05 | 0.00 | 522.24 | 0.213 | 0.31 | 8.753 | A |
| C-A | 499.60 | 499.60 | 0.00 | - | - | - | - | - |
| A-B | 223.51 | 223.51 | 0.00 | - | - | - | - | - |
| A-C | 616.57 | 616.57 | 0.00 | - | - | - | - | - |

## Main results: (17:45-18:00)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 124.42 | 124.39 | 0.00 | 420.28 | 0.296 | 0.42 | 12.164 | B |
| B-A | 143.13 | 143.03 | 0.00 | 285.92 | 0.501 | 0.98 | 25.147 | D |
| C-AB | 111.46 | 111.45 | 0.00 | 522.24 | 0.213 | 0.31 | 8.769 | A |
| C-A | 499.60 | 499.60 | 0.00 | - | - | - | - | - |
| A-B | 223.51 | 223.51 | 0.00 | - | - | - | - | - |
| A-C | 616.57 | 616.57 | 0.00 | - | - | - | - | - |

## Main results: (18:00-18:15)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 101.58 | 102.23 | 0.00 | 505.22 | 0.201 | 0.25 | 8.948 | A |
| B-A | 116.87 | 118.67 | 0.00 | 345.46 | 0.338 | 0.52 | 15.996 | C |
| C-AB | 83.60 | 84.00 | 0.00 | 529.36 | 0.158 | 0.21 | 8.092 | A |
| C-A | 415.34 | 415.34 | 0.00 | - | - | - | - | - |
| A-B | 182.49 | 182.49 | 0.00 | - | - | - | - | - |
| A-C | 503.43 | 503.43 | 0.00 | - | - | - | - | - |

## Main results: (18:15-18:30)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 85.07 | 85.36 | 0.00 | 552.30 | 0.154 | 0.18 | 7.715 | A |
| B-A | 97.87 | 98.59 | 0.00 | 386.80 | 0.253 | 0.34 | 12.521 | B |
| C-AB | 66.96 | 67.18 | 0.00 | 539.79 | 0.124 | 0.15 | 7.620 | A |
| C-A | 350.87 | 350.87 | 0.00 | - | - | - | - | - |
| A-B | 152.83 | 152.83 | 0.00 | - | - | - | - | - |
| A-C | 421.60 | 421.60 | 0.00 | - | - | - | - | - |

# Junctions 8

## ARCADY 8 - Roundabout Module

Version: 8.0.4.487 [15039,24/03/2014]


For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk



**Filename:** Egremont Road - Homewood Rd RB.arc8
**Path:** \\mafs02\Projects\073001 - 074000\073096 - West Cumberland Hospital\Q3-Design\3B-Models\TP\Junction Models
**Report generation date:** 14/05/2020 13:44:32

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## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (PCU) | Delay (s) | RFC | LOS | Queue (PCU) | Delay (s) | RFC | LOS |
| | A1 - 2019 Base | | | | | | | |
| Egremont Road - N | 3.50 | 15.29 | 0.78 | C | 2.21 | 10.60 | 0.69 | B |
| B5295 | 0.30 | 5.22 | 0.23 | A | 0.21 | 4.55 | 0.17 | A |
| Homewood Rd | 1.35 | 15.51 | 0.58 | C | 6.26 | 48.36 | 0.88 | E |
| Egremont Rd - S | 7.72 | 26.56 | 0.90 | D | 36.55 | 101.06 | 1.03 | F |
| | A1 - 2019 Base+Dev | | | | | | | |
| Egremont Road - N | 3.63 | 15.81 | 0.79 | C | 2.24 | 10.69 | 0.70 | B |
| B5295 | 0.30 | 5.27 | 0.23 | A | 0.21 | 4.57 | 0.18 | A |
| Homewood Rd | 1.38 | 15.73 | 0.59 | C | 7.12 | 53.98 | 0.90 | F |
| Egremont Rd - S | 8.13 | 27.85 | 0.90 | D | 39.13 | 106.85 | 1.04 | F |
| | A1 - 2026 Base | | | | | | | |
| Egremont Road - N | 5.23 | 21.78 | 0.85 | C | 2.76 | 12.45 | 0.74 | B |
| B5295 | 0.34 | 5.68 | 0.26 | A | 0.24 | 4.81 | 0.19 | A |
| Homewood Rd | 1.81 | 19.68 | 0.65 | C | 14.05 | 97.57 | 0.99 | F |
| Egremont Rd - S | 15.17 | 48.58 | 0.96 | E | 73.20 | 183.00 | 1.11 | F |
| | A1 - 2026 Base+Dev | | | | | | | |
| Egremont Road - N | 5.47 | 22.75 | 0.86 | C | 2.81 | 12.64 | 0.74 | B |
| B5295 | 0.35 | 5.75 | 0.26 | A | 0.24 | 4.83 | 0.19 | A |
| Homewood Rd | 1.86 | 20.03 | 0.66 | C | 16.83 | 112.08 | 1.01 | F |
| Egremont Rd - S | 16.31 | 51.64 | 0.97 | F | 76.52 | 196.29 | 1.11 | F |

*Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.*

*"D1 - 2019 Base, AM" model duration: 08:00 - 09:30*
*"D2 - 2019 Base, PM" model duration: 17:00 - 18:30*
*"D3 - 2026 Base, AM" model duration: 08:00 - 09:30*
*"D4 - 2026 Base, PM" model duration: 17:00 - 18:30*
*"D5 - 2026 Base+Dev, AM" model duration: 08:00 - 09:30*
*"D6 - 2026 Base+Dev, PM" model duration: 17:00 - 18:30*
*"D7 - 2019 Base+Dev, AM" model duration: 08:00 - 09:30*
*"D8 - 2019 Base+Dev, PM " model duration: 17:00 - 18:30*

*Run using Junctions 8.0.4.487 at 14/05/2020 13:44:31*

## File summary

| | |
|---|---|
| Title | (untitled) |
| Location | |
| Site Number | |
| Date | 26/09/2019 |
| Version | |
| Status | (new file) |
| Identifier | |
| Client | |
| Jobnumber | |
| Enumerator | jonathan.ashcroft |
| Description | |

### Analysis Options

| Vehicle Length (m) | Do Queue Variations | Calculate Residual Capacity | Residual Capacity Criteria Type | RFC Threshold | Average Delay Threshold (s) | Queue Threshold (PCU) |
|---|---|---|---|---|---|---|
| 5.75 | | | N/A | 0.85 | 36.00 | 20.00 |

### Units

| Distance Units | Speed Units | Traffic Units Input | Traffic Units Results | Flow Units | Average Delay Units | Total Delay Units | Rate Of Delay Units |
|---|---|---|---|---|---|---|---|
| m | kph | PCU | PCU | perHour | s | -Min | perMin |

# (Default Analysis Set) - 2019 Base+Dev, PM

### Data Errors and Warnings

*No errors or warnings*

### Analysis Set Details

| Name | Roundabout Capacity Model | Description | Locked | Network Flow Scaling Factor (%) | Reason For Scaling Factors |
|---|---|---|---|---|---|
| (Default Analysis Set) | ARCADY | | | 100.000 | |

### Demand Set Details

| Name | Scenario Name | Time Period Name | Description | Traffic Profile Type | Model Start Time (HH:mm) | Model Finish Time (HH:mm) | Model Time Period Length (min) | Time Segment Length (min) | Single Time Segment Only | Locked |
|---|---|---|---|---|---|---|---|---|---|---|
| 2019 Base+Dev, PM | 2019 Base+Dev | PM | | ONE HOUR | 17:00 | 18:30 | 90 | 15 | | |

# Junction Network

### Junctions

| Junction | Name | Junction Type | Arm Order | Grade Separated | Large Roundabout | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|---|---|
| 1 | (untitled) | Roundabout | 1,2,3,4 | | | 62.97 | F |

### Junction Network Options

| Driving Side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

### Arms

| Name | Arm | Name | Description |
|---|---|---|---|
| **Egremont Road - N** | 1 | Egremont Road - N | |
| **B5295** | 2 | B5295 | |
| **Homewood Rd** | 3 | Homewood Rd | |
| **Egremont Rd - S** | 4 | Egremont Rd - S | |

### Capacity Options

| Name | Minimum Capacity (PCU/hr) | Maximum Capacity (PCU/hr) |
|---|---|---|
| **Egremont Road - N** | 0.00 | 99999.00 |
| **B5295** | 0.00 | 99999.00 |
| **Homewood Rd** | 0.00 | 99999.00 |
| **Egremont Rd - S** | 0.00 | 99999.00 |

### Roundabout Geometry

| Name | V - Approach road half-width (m) | E - Entry width (m) | I' - Effective flare length (m) | R - Entry radius (m) | D - Inscribed circle diameter (m) | PHI - Conflict (entry) angle (deg) | Exit Only |
|---|---|---|---|---|---|---|---|
| **Egremont Road - N** | 3.50 | 5.00 | 15.70 | 10.00 | 42.00 | 31.00 | |
| **B5295** | 3.50 | 5.44 | 14.20 | 33.00 | 42.00 | 22.00 | |
| **Homewood Rd** | 2.70 | 4.50 | 5.70 | 12.00 | 42.00 | 55.00 | |
| **Egremont Rd - S** | 3.50 | 4.50 | 15.00 | 12.00 | 42.00 | 22.00 | |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Name | Enter slope and intercept directly | Entered slope | Entered intercept (PCU/hr) | Final Slope | Final Intercept (PCU/hr) |
|---|---|---|---|---|---|
| **Egremont Road - N** | | (calculated) | (calculated) | 0.549 | 1334.813 |
| **B5295** | | (calculated) | (calculated) | 0.619 | 1538.610 |
| **Homewood Rd** | | (calculated) | (calculated) | 0.454 | 959.356 |
| **Egremont Rd - S** | | (calculated) | (calculated) | 0.557 | 1303.884 |

*The slope and intercept shown above include any corrections and adjustments.*

# Traffic Flows

### Demand Set Data Options

| Default Vehicle Mix | Vehicle Mix Varies Over Time | Vehicle Mix Varies Over Turn | Vehicle Mix Varies Over Entry | Vehicle Mix Source | PCU Factor for a HV (PCU) | Default Turning Proportions | Estimate from entry/exit counts | Turning Proportions Vary Over Time | Turning Proportions Vary Over Turn | Turning Proportions Vary Over Entry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ✓ | ✓ | HV Percentages | 2.00 | | | | ✓ | ✓ |

# Entry Flows

### General Flows Data

| Name | Profile Type | Use Turning Counts | Average Demand Flow (PCU/hr) | Flow Scaling Factor (%) |
|---|---|---|---|---|
| **Egremont Road - N** | ONE HOUR | ✓ | 697.00 | 100.000 |
| **B5295** | ONE HOUR | ✓ | 152.00 | 100.000 |
| **Homewood Rd** | ONE HOUR | ✓ | 464.00 | 100.000 |
| **Egremont Rd - S** | ONE HOUR | ✓ | 1128.00 | 100.000 |

# Turning Proportions

### Turning Counts / Proportions (PCU/hr) - (untitled) (for whole period)

| | | To | | | |
|---|---|---|---|---|---|
| | | Egremont Road - N | B5295 | Homewood Rd | Egremont Rd - S |
| From | Egremont Road - N | 0.000 | 3.000 | 50.000 | 644.000 |
| | B5295 | 2.000 | 0.000 | 10.000 | 140.000 |
| | Homewood Rd | 170.000 | 7.000 | 0.000 | 287.000 |
| | Egremont Rd - S | 733.000 | 224.000 | 171.000 | 0.000 |

### Turning Proportions (PCU) - (untitled) (for whole period)

| | | To | | | |
|---|---|---|---|---|---|
| | | Egremont Road - N | B5295 | Homewood Rd | Egremont Rd - S |
| From | Egremont Road - N | 0.00 | 0.00 | 0.07 | 0.92 |
| | B5295 | 0.01 | 0.00 | 0.07 | 0.92 |
| | Homewood Rd | 0.37 | 0.02 | 0.00 | 0.62 |
| | Egremont Rd - S | 0.65 | 0.20 | 0.15 | 0.00 |

# Vehicle Mix

### Average PCU Per Vehicle - (untitled) (for whole period)

| | | To | | | |
|---|---|---|---|---|---|
| | | Egremont Road - N | B5295 | Homewood Rd | Egremont Rd - S |
| From | Egremont Road - N | 1.000 | 1.000 | 1.000 | 1.000 |
| | B5295 | 1.000 | 1.000 | 1.000 | 1.000 |
| | Homewood Rd | 1.000 | 1.000 | 1.000 | 1.000 |
| | Egremont Rd - S | 1.000 | 1.000 | 1.000 | 1.000 |

### Heavy Vehicle Percentages - (untitled) (for whole period)

| | | To | | | |
|---|---|---|---|---|---|
| | | Egremont Road - N | B5295 | Homewood Rd | Egremont Rd - S |
| From | Egremont Road - N | 0.0 | 0.0 | 0.0 | 0.0 |
| | B5295 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Homewood Rd | 0.0 | 0.0 | 0.0 | 0.0 |
| | Egremont Rd - S | 0.0 | 0.0 | 0.0 | 0.0 |

# Results

### Results Summary for whole modelled period

| Name | Max RFC | Max Delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| Egremont Road - N | 0.70 | 10.69 | 2.24 | B |
| B5295 | 0.18 | 4.57 | 0.21 | A |
| Homewood Rd | 0.90 | 53.98 | 7.12 | F |
| Egremont Rd - S | 1.04 | 106.85 | 39.13 | F |

# Main Results for each time segment

## Main results: (17:00-17:15)

| Name | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Circulating Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|---|
| Egremont Road - N | 524.74 | 521.52 | 299.56 | 0.00 | 1170.41 | 0.448 | 0.80 | 5.522 | A |
| B5295 | 114.43 | 113.99 | 646.71 | 0.00 | 1138.30 | 0.101 | 0.11 | 3.512 | A |
| Homewood Rd | 349.32 | 345.34 | 588.36 | 0.00 | 692.05 | 0.505 | 1.00 | 10.271 | B |
| Egremont Rd - S | 849.22 | 840.58 | 133.23 | 0.00 | 1229.68 | 0.691 | 2.16 | 9.062 | A |

## Main results: (17:15-17:30)

| Name | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Circulating Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|---|
| Egremont Road - N | 626.59 | 624.99 | 357.97 | 0.00 | 1138.36 | 0.550 | 1.20 | 6.989 | A |
| B5295 | 136.64 | 136.50 | 774.56 | 0.00 | 1059.15 | 0.129 | 0.15 | 3.902 | A |
| Homewood Rd | 417.13 | 413.94 | 704.98 | 0.00 | 639.06 | 0.653 | 1.79 | 15.766 | C |
| Egremont Rd - S | 1014.05 | 1004.43 | 159.70 | 0.00 | 1214.94 | 0.835 | 4.56 | 16.377 | C |

## Main results: (17:30-17:45)

| Name | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Circulating Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|---|
| Egremont Road - N | 767.41 | 763.51 | 414.53 | 0.00 | 1107.32 | 0.693 | 2.18 | 10.352 | B |
| B5295 | 167.36 | 167.10 | 936.46 | 0.00 | 958.94 | 0.175 | 0.21 | 4.545 | A |
| Homewood Rd | 510.87 | 493.73 | 861.57 | 0.00 | 567.92 | 0.900 | 6.08 | 41.400 | E |
| Egremont Rd - S | 1241.95 | 1162.50 | 190.54 | 0.00 | 1197.76 | 1.037 | 24.43 | 57.045 | F |

## Main results: (17:45-18:00)

| Name | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Circulating Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|---|
| Egremont Road - N | 767.41 | 767.18 | 421.95 | 0.00 | 1103.25 | 0.696 | 2.24 | 10.690 | B |
| B5295 | 167.36 | 167.35 | 943.24 | 0.00 | 954.75 | 0.175 | 0.21 | 4.571 | A |
| Homewood Rd | 510.87 | 506.70 | 865.18 | 0.00 | 566.28 | 0.902 | 7.12 | 53.976 | F |
| Egremont Rd - S | 1241.95 | 1183.14 | 195.49 | 0.00 | 1195.01 | 1.039 | 39.13 | 106.849 | F |

## Main results: (18:00-18:15)

| Name | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Circulating Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|---|
| Egremont Road - N | 626.59 | 630.27 | 407.47 | 0.00 | 1111.19 | 0.564 | 1.32 | 7.543 | A |
| B5295 | 136.64 | 136.89 | 801.10 | 0.00 | 1042.73 | 0.131 | 0.15 | 3.976 | A |
| Homewood Rd | 417.13 | 437.61 | 710.22 | 0.00 | 636.68 | 0.655 | 2.00 | 19.728 | C |
| Egremont Rd - S | 1014.05 | 1144.75 | 168.73 | 0.00 | 1209.91 | 0.838 | 6.46 | 66.652 | F |

## Main results: (18:15-18:30)

| Name | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Circulating Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|---|
| **Egremont Road - N** | 524.74 | 526.69 | 308.50 | 0.00 | 1165.51 | 0.450 | 0.83 | 5.651 | A |
| **B5295** | 114.43 | 114.59 | 655.67 | 0.00 | 1132.75 | 0.101 | 0.11 | 3.535 | A |
| **Homewood Rd** | 349.32 | 353.13 | 593.69 | 0.00 | 689.62 | 0.507 | 1.05 | 10.816 | B |
| **Egremont Rd - S** | 849.22 | 865.77 | 136.21 | 0.00 | 1228.02 | 0.692 | 2.32 | 10.363 | B |

# Junctions 8

## PICADY 8 - Priority Intersection Module

Version: 8.0.4.487 [15039,24/03/2014]


For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk



**Filename:** Site Access- Homewood RD.arc8
**Path:** \\mafs02\Projects\073001 - 074000\073096 - West Cumberland Hospital\Q3-Design\3B-Models\TP\Junction Models
**Report generation date:** 14/05/2020 11:42:15



## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (PCU) | Delay (s) | RFC | LOS | Queue (PCU) | Delay (s) | RFC | LOS |
| | A1 - 2019 Base+Dev | | | | | | | |
| Stream B-C | 0.01 | 6.13 | 0.01 | A | 0.02 | 6.52 | 0.02 | A |
| Stream B-A | 0.01 | 9.45 | 0.01 | A | 0.01 | 10.80 | 0.01 | B |
| Stream C-AB | 0.02 | 6.37 | 0.02 | A | 0.01 | 6.96 | 0.01 | A |
| Stream C-A | - | - | - | - | - | - | - | - |
| Stream A-B | - | - | - | - | - | - | - | - |
| Stream A-C | - | - | - | - | - | - | - | - |
| | A1 - 2026 Base+Dev | | | | | | | |
| Stream B-C | 0.01 | 6.19 | 0.01 | A | 0.02 | 6.62 | 0.02 | A |
| Stream B-A | 0.01 | 9.63 | 0.01 | A | 0.01 | 11.08 | 0.01 | B |
| Stream C-AB | 0.02 | 6.42 | 0.02 | A | 0.02 | 7.06 | 0.01 | A |
| Stream C-A | - | - | - | - | - | - | - | - |
| Stream A-B | - | - | - | - | - | - | - | - |
| Stream A-C | - | - | - | - | - | - | - | - |

*Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.*

*"D1 - 2026 Base+Dev, AM" model duration: 08:00 - 09:30*
*"D2 - 2026 Base+Dev, PM" model duration: 17:00 - 18:30*
*"D3 - 2019 Base+Dev, AM" model duration: 08:00 - 09:30*
*"D4 - 2019 Base+Dev, PM " model duration: 17:00 - 18:30*

*Run using Junctions 8.0.4.487 at 14/05/2020 11:42:15*

## File summary

| | |
|---|---|
| **Title** | (untitled) |
| **Location** | |
| **Site Number** | |
| **Date** | 03/12/2019 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | harrison.drury |
| **Description** | |

## Analysis Options

| Vehicle Length (m) | Do Queue Variations | Calculate Residual Capacity | Residual Capacity Criteria Type | RFC Threshold | Average Delay Threshold (s) | Queue Threshold (PCU) |
|---|---|---|---|---|---|---|
| 5.75 | | | N/A | 0.85 | 36.00 | 20.00 |

## Units

| Distance Units | Speed Units | Traffic Units Input | Traffic Units Results | Flow Units | Average Delay Units | Total Delay Units | Rate Of Delay Units |
|---|---|---|---|---|---|---|---|
| m | kph | PCU | PCU | perHour | s | -Min | perMin |

# (Default Analysis Set) - 2019 Base+Dev, PM

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

| Name | Roundabout Capacity Model | Description | Locked | Network Flow Scaling Factor (%) | Reason For Scaling Factors |
|---|---|---|---|---|---|
| (Default Analysis Set) | N/A | | | 100.000 | |

## Demand Set Details

| Name | Scenario Name | Time Period Name | Description | Traffic Profile Type | Model Start Time (HH:mm) | Model Finish Time (HH:mm) | Model Time Period Length (min) | Time Segment Length (min) | Single Time Segment Only | Locked |
|---|---|---|---|---|---|---|---|---|---|---|
| 2019 Base+Dev, PM | 2019 Base+Dev | PM | | ONE HOUR | 17:00 | 18:30 | 90 | 15 | | |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major Road Direction | Arm Order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|---|
| 1 | WCH SITE ACCESS | T-Junction | Two-way | A,B,C | 7.53 | A |

## Junction Network Options

| Driving Side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Name | Arm | Name | Description | Arm Type |
|---|---|---|---|---|
| **Homewood Rd (E)** | A | Homewood Rd (E) | | Major |
| **Site Access** | B | Site Access | | Minor |
| **Homewood RD (W)** | C | Homewood RD (W) | | Major |

## Major Arm Geometry

| Name | Width of carriageway (m) | Has kerbed central reserve | Width of kerbed central reserve (m) | Has right turn bay | Width For Right Turn (m) | Visibility For Right Turn (m) | Blocks? | Blocking Queue (PCU) |
|---|---|---|---|---|---|---|---|---|
| **Homewood RD (W)** | 6.20 | | 0.00 | | 2.20 | 115.00 | ✓ | 1.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Name | Minor Arm Type | Lane Width (m) | Lane Width (Left) (m) | Lane Width (Right) (m) | Width at give-way (m) | Width at 5m (m) | Width at 10m (m) | Width at 15m (m) | Width at 20m (m) | Estimate Flare Length | Flare Length (PCU) | Visibility To Left (m) | Visibility To Right (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Site Access** | One lane plus flare | | | | 10.00 | 6.00 | 4.60 | 4.40 | 4.00 | ✓ | 2.00 | 35 | 20 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (PCU/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| **1** | B-A | 468.977 | 0.085 | 0.214 | 0.135 | 0.306 |
| **1** | B-C | 690.450 | 0.105 | 0.265 | - | - |
| **1** | C-B | 640.561 | 0.246 | 0.246 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Flows

## Demand Set Data Options

| Default Vehicle Mix | Vehicle Mix Varies Over Time | Vehicle Mix Varies Over Turn | Vehicle Mix Varies Over Entry | Vehicle Mix Source | PCU Factor for a HV (PCU) | Default Turning Proportions | Estimate from entry/exit counts | Turning Proportions Vary Over Time | Turning Proportions Vary Over Turn | Turning Proportions Vary Over Entry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ✓ | ✓ | HV Percentages | 2.00 | | | | ✓ | ✓ |

# Entry Flows

## General Flows Data

| Name | Profile Type | Use Turning Counts | Average Demand Flow (PCU/hr) | Flow Scaling Factor (%) |
|---|---|---|---|---|
| Homewood Rd (E) | ONE HOUR | ✓ | 434.00 | 100.000 |
| Site Access | ONE HOUR | ✓ | 13.00 | 100.000 |
| Homewood RD (W) | ONE HOUR | ✓ | 190.00 | 100.000 |

# Turning Proportions

### Turning Counts / Proportions (PCU/hr) - WCH SITE ACCESS (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Homewood Rd (E) | Site Access | Homewood RD (W) |
| From | Homewood Rd (E) | 0.000 | 3.000 | 431.000 |
| | Site Access | 4.000 | 0.000 | 9.000 |
| | Homewood RD (W) | 183.000 | 7.000 | 0.000 |

### Turning Proportions (PCU) - WCH SITE ACCESS (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Homewood Rd (E) | Site Access | Homewood RD (W) |
| From | Homewood Rd (E) | 0.00 | 0.01 | 0.99 |
| | Site Access | 0.31 | 0.00 | 0.69 |
| | Homewood RD (W) | 0.96 | 0.04 | 0.00 |

# Vehicle Mix

### Average PCU Per Vehicle - WCH SITE ACCESS (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Homewood Rd (E) | Site Access | Homewood RD (W) |
| From | Homewood Rd (E) | 1.000 | 1.000 | 1.000 |
| | Site Access | 1.000 | 1.000 | 1.000 |
| | Homewood RD (W) | 1.000 | 1.000 | 1.000 |

### Heavy Vehicle Percentages - WCH SITE ACCESS (for whole period)

| | | To | | |
|---|---|---|---|---|
| | | Homewood Rd (E) | Site Access | Homewood RD (W) |
| From | Homewood Rd (E) | 0.0 | 0.0 | 0.0 |
| | Site Access | 0.0 | 0.0 | 0.0 |
| | Homewood RD (W) | 0.0 | 0.0 | 0.0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| B-C | 0.02 | 6.52 | 0.02 | A |
| B-A | 0.01 | 10.80 | 0.01 | B |
| C-AB | 0.01 | 6.96 | 0.01 | A |
| C-A | - | - | - | - |
| A-B | - | - | - | - |
| A-C | - | - | - | - |

## Main Results for each time segment

### Main results: (17:00-17:15)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 6.78 | 6.73 | 0.00 | 602.97 | 0.011 | 0.01 | 6.037 | A |
| B-A | 3.01 | 2.98 | 0.00 | 379.18 | 0.008 | 0.01 | 9.569 | A |
| C-AB | 5.28 | 5.24 | 0.00 | 561.07 | 0.009 | 0.01 | 6.476 | A |
| C-A | 137.76 | 137.76 | 0.00 | - | - | - | - | - |
| A-B | 2.26 | 2.26 | 0.00 | - | - | - | - | - |
| A-C | 324.48 | 324.48 | 0.00 | - | - | - | - | - |

### Main results: (17:15-17:30)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 8.09 | 8.08 | 0.00 | 585.81 | 0.014 | 0.01 | 6.230 | A |
| B-A | 3.60 | 3.59 | 0.00 | 361.83 | 0.010 | 0.01 | 10.048 | B |
| C-AB | 6.31 | 6.31 | 0.00 | 545.90 | 0.012 | 0.01 | 6.671 | A |
| C-A | 164.49 | 164.49 | 0.00 | - | - | - | - | - |
| A-B | 2.70 | 2.70 | 0.00 | - | - | - | - | - |
| A-C | 387.46 | 387.46 | 0.00 | - | - | - | - | - |

### Main results: (17:30-17:45)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 9.91 | 9.89 | 0.00 | 562.26 | 0.018 | 0.02 | 6.516 | A |
| B-A | 4.40 | 4.39 | 0.00 | 337.73 | 0.013 | 0.01 | 10.799 | B |
| C-AB | 7.75 | 7.74 | 0.00 | 525.10 | 0.015 | 0.01 | 6.957 | A |
| C-A | 201.44 | 201.44 | 0.00 | - | - | - | - | - |
| A-B | 3.30 | 3.30 | 0.00 | - | - | - | - | - |
| A-C | 474.54 | 474.54 | 0.00 | - | - | - | - | - |

## Main results: (17:45-18:00)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 9.91 | 9.91 | 0.00 | 562.21 | 0.018 | 0.02 | 6.517 | A |
| B-A | 4.40 | 4.40 | 0.00 | 337.76 | 0.013 | 0.01 | 10.798 | B |
| C-AB | 7.75 | 7.75 | 0.00 | 525.10 | 0.015 | 0.01 | 6.957 | A |
| C-A | 201.44 | 201.44 | 0.00 | - | - | - | - | - |
| A-B | 3.30 | 3.30 | 0.00 | - | - | - | - | - |
| A-C | 474.54 | 474.54 | 0.00 | - | - | - | - | - |

## Main results: (18:00-18:15)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 8.09 | 8.11 | 0.00 | 585.69 | 0.014 | 0.01 | 6.234 | A |
| B-A | 3.60 | 3.61 | 0.00 | 361.90 | 0.010 | 0.01 | 10.049 | B |
| C-AB | 6.31 | 6.33 | 0.00 | 545.90 | 0.012 | 0.01 | 6.671 | A |
| C-A | 164.49 | 164.49 | 0.00 | - | - | - | - | - |
| A-B | 2.70 | 2.70 | 0.00 | - | - | - | - | - |
| A-C | 387.46 | 387.46 | 0.00 | - | - | - | - | - |

## Main results: (18:15-18:30)

| Stream | Total Demand (PCU/hr) | Entry Flow (PCU/hr) | Pedestrian Demand (Ped/hr) | Capacity (PCU/hr) | RFC | End Queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| B-C | 6.78 | 6.79 | 0.00 | 602.72 | 0.011 | 0.01 | 6.040 | A |
| B-A | 3.01 | 3.02 | 0.00 | 379.33 | 0.008 | 0.01 | 9.568 | A |
| C-AB | 5.28 | 5.29 | 0.00 | 561.07 | 0.009 | 0.01 | 6.479 | A |
| C-A | 137.76 | 137.76 | 0.00 | - | - | - | - | - |
| A-B | 2.26 | 2.26 | 0.00 | - | - | - | - | - |
| A-C | 324.48 | 324.48 | 0.00 | - | - | - | - | - |

# Our Locations

**Birmingham**
2 The Wharf
Bridge Street
Birmingham
B1 2JS
T. 0121 643 4694
birmingham@curtins.com

**Bristol**
Quayside
40-58 Hotwell Road
Bristol
BS8 4UQ
T. 0117 302 7560
bristol@curtins.com

**Cardiff**
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

**Douglas**
Varley House
29-31 Duke Street
Douglas
Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

**Dublin**
39 Fitzwilliam Square
Dublin 2
Ireland
T. 00353 1 507 9447
dublin@curtins.com

**Edinburgh**
1a Belford Road
Edinburgh
EH4 3BL
T. 0131 225 2175
edinburgh@curtins.com

**Kendal**
28 Lowther Street
Kendal
Cumbria
LA9 4DH
T. 01539 724 823
kendal@curtins.com

**Leeds**
Rose Wharf
Ground Floor
Leeds
L29 8EE
T. 0113 274 8509
leeds@curtins.com

**Liverpool**
Curtins
51-55 Tithebarn Street
Liverpool
L2 2SB
T. 0151 726 2000
liverpool@curtins.com

**London**
40 Compton Street
London
EC1V 0BD
T. 020 7324 2240
london@curtins.com

**Manchester**
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

**Nottingham**
56 The Ropewalk
Nottingham
NG1 5DW
T. 0115 941 5551
nottingham@curtins.com



Registered in England and Wales number: 2054159
Registered office: Curtin House, Columbus Quay, Riverside Drive, Liverpool L3 4DB