

TRANSPORT ASSESSMENT

THE GRANGE UNIVERSITY HOSPITAL, CWMBRAN

Emergency Department: Section 73 application for proposed variation to Condition 11 of 20/P/0535/VAR, and full planning application for proposed extension.

Client: Aneurin Bevan University Health Board

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Primary Author	Tom Ponting	Initialled:	TP
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Contributor	Mitchell Wilson	Initialled:	MW
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Review by	Andy Miles	Initialled:	AM
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CONTENTS

		Page No
1.0	INTRODUCTION	
1.1	Purpose of Report	1
1.2	Planning Context	2
1.3	BREEAM Assessment	4
1.4	Methodology and Scope of Study	6
2.0	EXISTING SITUATION	
2.1	Site Location	9
2.2	Local Road Network	9
2.3	Accident Data Analysis	11
3.0	ACCESSIBILITY	
3.1	Walking	13
3.2	Disabled Access	14
3.3	Cycling	15
3.4	Public Transport	16
3.5	BREEAM Assessment	17
4.0	BASELINE TRAFFIC SITUATION	
4.1	Traffic Data	19
4.2	Year of Assessment	20
4.3	MHSISU Flows	20
5.0	DEVELOPMENT PROPOSALS	
5.1	The Proposal	22
5.2	Access Arrangements	22
5.3	Parking	23
5.4	Delivery, Servicing, and Emergency Access Arrangements	25
6.0	TRIP GENERATION	
6.1	Proposed Trip Generation	26
6.2	Trip Distribution and Assignment	28
7.0	JUNCTION CAPACITY ASSESSMENT	
7.1	Junction 1 – Main Hospital Roundabout	29
7.2	Junction 2 – Turnpike Roundabout	29

8.0 TRANSPORT IMPLEMENTATION STRATEGY

8.1	Introduction	31
8.2	Mode Share and Targets	31
8.3	Monitoring and Evaluation	32
8.4	Measures and Interventions	33
8.5	Summary	34

9.0 SUMMARY AND CONCLUSIONS

APPENDICES

1.0 SITE LOCATION

2.0 ACCIDENT ANALYSIS

- 2.1 Crashmap Search Extent
- 2.2 Collision Reports

3.0 ACCESSIBILITY

- 3.1 Walking Isochrone Map
- 3.2 Cycling Isochrone Map
- 3.3 Accessibility Index Calculator

4.0 BASELINE TRAFFIC

- 4.1 CTC Data (Junction 1)
- 4.2 CTC Data (Junction 2)
- 4.3 2027 Baseline Flows
- 4.4 2027 Baseline Flows + MHSISU Flows

5.0 PROPOSED SITE LAYOUT

6.0 TRIP GENERATION

- 6.1 Proposed Extension Flows
- 6.2 2027 Total Flows

7.0 JUNCTION CAPACITY ASSESSMENT

- 7.1 ARCADY Output: Emergency Dept. Access Roundabout (Junction 1)
- 7.2 ARCADY Output: Turnpike Roundabout (Junction 2)

1.0 INTRODUCTION

1.1 Purpose of Report

1.1.1 ADL Traffic & Highways Engineering Ltd have prepared this Transport Assessment (TA) on behalf of Aneurin Bevan University Health Board (ABUHB) in order to assess the transport implications associated with the Emergency Department (ED) at The Grange University Hospital, Cwmbran, NP44 8YN.

1.1.2 The TA has been prepared in support of two planning applications:

- A Section 73 application to vary Condition 11 of the previous outline consent for the hospital (ref. 20/P/0535/VAR) in order to allow for "walk in" A&E services at the ED.

- A full planning application for an extension to the ED, and associated landscaping, access, and parking arrangements. This includes seeking retrospective permission for a 47-space car park on the north side of the ED access road and a further 11 spaces which have been added to the car park fronting the ED entrance. The car parking spaces were constructed in December 2021 to accommodate patients arriving by private car.

1.1.3 This TA assesses the implications, with respect to transport, of the existing number and profile of patients and staff travelling to the ED, which neither application is intended to change. It also considers the implications of an increase in trip numbers proportionate to the size of the proposed extension, although this is not anticipated to occur due to the extension providing additional space for existing patients and staff. It provides details regarding access arrangements and accessibility to non-car users.

1.1.4 This TA has been undertaken in accordance with Planning Policy Wales Technical Advice Note 18 (2007), Torfaen Local Development Plan (2013) and Torfaen County Borough Council's (TCBC's) Supplementary Planning Guidance (2014).

- 1.1.5 To promote and encourage staff (and visitors) on site to travel sustainably, a Framework Travel Plan (FTP) accompanies the planning applications.
- 1.1.6 An Active Travel Assessment has also been undertaken which supports the planning applications.

1.2 Planning Context

Grange University Hospital Outline Planning Permission

- 1.2.1 The Grange University Hospital was originally granted outline planning permission in July 2012, and opened in November 2020 as the designated Specialist and Critical Care Centre for Gwent. In line with the pattern of healthcare provision identified in ABUHB's Clinical Futures programme, the outline planning application was prepared and approved on the basis that the hospital's ED would primarily treat pre-triaged patients arriving via ambulance or helicopter, following a 999 call or transfer from another healthcare facility. As such, the Transport Assessment prepared in support of the application (WSP, 2012) assumed that the hospital would not include a conventional walk-in A&E or outpatients' service. This is reflected in Condition 11 of the outline permission which restricts the uses allowed at the hospital accordingly.
- 1.2.2 Since opening however, the ED has seen a greater number of people arrive by private car, and higher attendance than forecast. While ABUHB has sought to encourage people to consider alternative services, there remains a clinical requirement to accommodate walk-in cases in a way that was not envisaged during preparation of the original planning application, including through the expansion of existing facilities.
- 1.2.3 In response, this Transport Assessment has been prepared in support of an application to amend Condition 11 of the outline planning consent; and a separate planning application for an extension to the existing Emergency Department.

Existing Travel Survey Data - Mental Health Specialist Inpatient Services Unit

- 1.2.4 ADL prepared a Transport Assessment, Framework Travel Plan, and Active Travel Assessment to support an application (ref. 22/P/0446/OUT) for a proposed Mental Health Specialist Inpatient Services Unit (MHSISU) and associated highway, drainage, and landscape infrastructure at Grange University Hospital. The planning application was submitted in June 2022 and was approved at Committee in March 2023.
- 1.2.5 The BREEAM compliant Transport Assessment (ref. ADL/AM/5232/24A) submitted for the MHSISU application included a junction capacity assessment of the Turnpike Roundabout and the Caerleon Road / Emergency Access / Main Entrance roundabout in the future 2027 scenario with MHSISU traffic and concluded that there would be no increase in queuing as a result of the development compared to the base scenario.
- 1.2.6 Following the TA to support the MHSISU application, ADL provided an Addendum Transport Letter (ref. ADL/AM/5232/Addendum) to address the consultation responses from Torfaen County Borough Council (the Local Highway Authority) and Welsh Government Highways (the trunk road agency) in relation to access arrangements and accident data.
- 1.2.7 In addition, as mentioned previously, ADL also prepared an Active Travel Assessment to support the MHSISU application. The report included an audit of existing and proposed active travel routes in the vicinity of the site to support the TA.
- 1.2.8 Given that the proposed amendment to Condition 11, and extension of the ED, are not intended to increase the number of patients using the ED or materially affect the travel to / from the ED, the survey data gathered in order to prepare the MHSISU application has also been used as the basis for this TA.

1.3 BREEAM Assessment

1.3.1 BREEAM is the world's leading sustainability assessment method for masterplanning projects, infrastructure, and buildings. It recognises and reflects the value in higher performing assets across the built environment lifecycle, from new construction to in-use and refurbishment.

1.3.2 In terms of transport, BREEAM comprises *Tra 01 Transport Assessment and Travel Plan* (2 credits) and *Tra 02 Sustainable Transport Measures* (10 credits). The aim of Tra 01 and Tra 02 is to reward awareness of existing local transport and identify improvements to make it more sustainable.

1.3.3 Transport Assessments are required where a proposed development is likely to incur transport and related environmental impacts. This TA aims to achieve the following objectives:

1. *No later than Concept Design stage, undertake a site-specific transport assessment (or develop a travel statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form; see Methodology.*

1.3.4 This TA has been produced alongside a Framework Travel Plan (FTP). This report outlines the existing and proposed uses of the site and assesses the proposed development with respect to transport. Both documents are being prepared during concept design.

2. *The site-specific travel assessment (or statement) shall cover as a minimum:*

- a. *If relevant, travel patterns and attitudes of existing building or site users towards cycling, walking and public transport, to identify relevant constraints and opportunities.*

1.3.5 To determine travel patterns on site, surveys will be commissioned upon first occupation of the proposed extension. To determine baseline modal splits, travel to work Census data for this locality has been derived. Through the travel planning process travel patterns and attitudes would be established and monitored.

1.3.6 Chapter 3.0 of this TA assesses the accessibility of the site to walking, cycling, and public transport.

b. Predicted travel patterns and transport impact of future building or site users.

1.3.7 The proposed ED extension is not intended to increase the volume of patients and instead would only facilitate the existing demand on site which is resulting in overcrowding at the current facility.

c. Current local environment for pedestrians and cyclists, accounting for any age-related requirements of occupants and visitors.

1.3.8 Chapter 3.0 assesses the accessibility of the site to walking, cycling, and public transport. The extension would be designed to accommodate all users including visually impaired and elderly people.

d. Reporting of the number and type of existing accessible amenities, see Table 7.1, within 500m of the site.

1.3.9 Section 3.5 lists the BREEAM compliant amenities within 500 metres of the building entrance.

e. Disabled access accounting for varying levels and types of disability, including visual impairment.

1.3.10 Section 3.2 describes the accessibility of the site to those with reduced mobility and visual impairment.

f. Calculation of the existing public transport Accessibility Index (AI), see Methodology.

1.3.11 Section 3.5 describes the public transport accessibility index. The AI calculator is provided as Appendix 3.5.

g. Current facilities for cyclists.

1.3.12 Section 3.3 describes the existing cycling infrastructure, and the Active Travel Assessment provides details on existing and planned routes in the area.

3. *Following a transport assessment (in accordance with the requirements set out in criteria 2), develop a site-specific travel plan that provides a long-term management strategy which encourages more sustainable travel. The travel plan includes measures to increase or improve more sustainable modes of transport and movement of people and goods during the building's operation see Methodology.*

1.3.13 This report is accompanied by an FTP which provides a range of hard and soft measures to encourage and facilitate non-car modes of transport. The FTP also provides details on how the Plan would be implemented, monitored, and reviewed. Upon approval, the FTP would be revised to a Full Travel Plan.

4. *If the occupier is known, involve them in the development of the travel plan.*

1.3.14 The occupier (ABUHB) has been involved in the development of the TA and FTP from the initial design concept.

5. *Demonstrate that the travel plan will be implemented and supported by the building's management in operation.*

1.3.15 The Travel Plan would be implemented and supported by ABUHB. A Travel Plan Coordinator (TPC) would be designated prior to occupation of the ED extension and would be assigned the responsibility of implementing the plan. The role of the TPC is described in further detail in the FTP.

1.4 Methodology and Scope of Study

Methodology

1.4.1 The proposed extension is not intended to increase inbound patients at the ED but rather to facilitate the existing demand which is causing overcrowding. The proposed extension would not generate additional vehicular trips compared to the existing scenario.

- 1.4.2 Notwithstanding this, to be robust, this TA assesses the Caerleon Road roundabout junction for capacity in the proposed scenario undertaking a theoretical test of associated traffic increase. For the purposes of assessment, this is achieved by scaling the surveyed trips to / from the ED proportionately according to the increased floorspace from 2,985 sqm to 3,942 sqm GIA i.e., 32% increase,
- 1.4.3 To accommodate the car parking demand on-site, 11 spaces have been added to the car park fronting the ED entrance which has increased the provision from 22 to 33 spaces. In addition, a new car park with 47 spaces has been formed on the north side of the ED access road. Retrospective planning permission is being sought for the additional 58 car parking spaces which are beyond the scope of the original planning permission for The Grange University Hospital.
- 1.4.4 To support the application for the proposed ED extension, active travel facilities (such as cycle parking) will be discussed in the TA and FTP as measures to encourage access by sustainable modes for staff, although given the nature of the proposal it is not anticipated that patients will travel on foot or bicycle. As noted, an Active Travel Assessment accompanies the TA and FTP.
- 1.4.5 As discussed, the application for the proposed ED extension is being submitted alongside a S73 amendment application, to vary a condition attached to the original planning consent for The Grange University Hospital (ref. 12/P/00348) which did not allow for a “walk in” A&E that has arisen since the hospital opened. The assessment undertaken will support this application by considering the acceptability of the existing use of the ED.

Scope of Study

- 1.4.6 Chapter 2.0 of this report describes the site and surrounding area, local highway network, and the local accident situation.
- 1.4.7 Chapter 3.0 of the report describes the accessibility of the site to non-car modes of transport.

- 1.4.8 Chapter 4.0 describes the baseline traffic situation in the vicinity of the site.
- 1.4.9 Chapter 5.0 describes the proposed extension, including access arrangements, parking provision, and delivery and servicing arrangements.
- 1.4.10 Chapter 6.0 calculates the potential traffic generated by the proposed extension and the impact on the local network.
- 1.4.11 Chapter 7.0 provides junction capacity assessments at junctions in the vicinity of the site in the base scenario (i.e., without MHSISU traffic), the base plus committed scenario (i.e., with MHSISU traffic), and total scenario (i.e., base + committed MHSISU development + proposed ED traffic).
- 1.4.12 Chapter 8.0 provides a Transport Implementation Strategy (TIS).
- 1.4.13 Chapter 9.0 summarises and concludes this Transport Assessment.

2.0 EXISTING SITUATION

2.1 Site Location

- 2.1.1 The site is located at The Grange University Hospital, to the east of Caerleon Road (B4236), approximately 3.0 kilometres east of Cwmbran (walking distance via the A4042 underpass). The site postcode is NP44 8YN. The site location plan is provided as Appendix 1.0.
- 2.1.2 The site encompasses an area of 2.93 hectares and the existing ED comprises 2,985 sqm (gross internal area) of the total circa 50,000 sqm hospital.
- 2.1.3 The ED is primarily intended to treat patients arriving via ambulance or helicopter for serious incidents and benefits from sufficient waiting space for 38 patients. However, since opening in November 2020, the ED has been subjected to greater than anticipated visitors arriving by private car, resulting in overcrowding.
- 2.1.4 To accommodate patients and visitors, in December 2021, an additional 11 spaces have been constructed on the north side of the existing ED car park to increase the provision from 22 to 33 spaces. Furthermore, a car park with 47 spaces has been formed on the north side of the ED access road. Retrospective planning permission is sought for the additional 58 car parking spaces which are beyond the scope of the original planning permission at The Grange University Hospital.
- 2.1.5 The site is bound by Ysguborneydd Farm to the north, agricultural land to the east, green space fronting The Grange and Caerleon Road to the west, and The Grange University Hospital to the south.

2.2 Local Road Network

- 2.2.1 Access to the site is gained from the northeast arm of a 4-arm roundabout junction with Caerleon Road (B4236) and the Main Entrance to Grange University Hospital. The access road is a single carriageway road, approximately 7.5 metres wide, which can safely accommodate emergency vehicles including ambulances.

- 2.2.2 The access is clearly signposted at the roundabout, directing visitors to the “Emergency Drop Off” as well as “Children’s Emergencies & Assessment”. There are no footways present at the roundabout or on the ED access road, warning signs showing that pedestrians may be walking in the area are provided at the entrance to both the ED access road and the Main Entrance access.
- 2.2.3 Caerleon Road is subject to a 30-mph speed limit and is a minimum 7.5 metres wide within the vicinity of the roundabout with the ED access and Main Entrance.
- 2.2.4 Caerleon Road serves as a collector road for The Grange University Hospital and the local residential area. Access for delivery vehicles and the consented MHSISU unit on Old Hospital Drive is located approximately 300 metres south of the ED access. To the southeast, Caerleon Road provides access to Ponthir before continuing as Ponthir Road towards Caerleon.
- 2.2.5 To the north of the roundabout, Caerleon Road forms the eastern arm of the 4-arm Turnpike Roundabout. This roundabout links the site to the A4042 Croesyceiliog Bypass, which continues northwards for approximately 20 kilometres to the A40 and A465 outside Abergavenny. To the south, Turnpike Road (A4042) continues for approximately 9.1 kilometres to Newport city centre. The western arm of the roundabout, Turnpike Road, forms one of the main corridors linking the site to Cwmbran.
- 2.2.6 In the broader context of the surrounding highway network, Junction 26 of the M4 is located approximately 6.7 kilometres south of the site via the A4051 and provides access westbound to Cardiff and Swansea. In addition, Junction 25A is located approximately 6.5 kilometres south of the site and provides access eastbound to Bristol.

2.3 Accident Data Analysis

2.3.1 A review of www.crashmap.co.uk over the most recent 5-year period (2017 – 2021 inclusive) demonstrates that there have been 2 collisions on Caerleon Road within the vicinity of the site. The Caerleon Road accidents are summarised in Table 2A.

Table 2A Caerleon Road Accident Summary

Ref	Date, Time	Conditions	Severity	Summary
2019610004419	04.02.2019, 17:53	Darkness, fine, dry	Slight	V1 (car) was in the act of turning right, whilst V2 (car) was proceeding normally along the carriageway (not on a bend). V2 collides with V1.
2020610017220	13.06.2020, 20:40	Daylight, fine, dry	Slight	V1 (car) and V2 (car) both proceeding normally along the carriageway in opposing directions, impact head on.

2.3.3 Both collisions were classed as being of slight severity. Neither collision involved emergency vehicles.

2.3.4 There have been zero collisions along the internal access network of The Grange University Hospital during the review period.

2.3.5 It should be noted that a further 6 collisions have occurred to the north on Turnpike Roundabout. The collisions at Turnpike Roundabout were analysed as part of ADL's Transport Addendum Note to support the MHSISU application. The accidents are summarised in Table 2B.

Table 2B Turnpike Road Accidents Summary

Date/Time	Severity	Vehicle (s)	Impact	Casualty
15/03/2018 07:07	Slight	V1 (car) is slowing down or stopping.	Back	1
		V2 (car) is slowing down or stopping.	Front	-
31/07/2018 07:32	Serious	V1 (car) proceeding normally along the carriageway.	Front	-
		V2 (pedal cycle) proceeding normally along the carriageway.	Nearside	1
01/05/2019 07:53	Slight	V1 (car) proceeding normally along the carriageway.	Back	1
		V2 (car) proceeding normally along the carriageway.	Front	1
22/06/2019 17:10	Slight	V1 (car) is moving off. Hit road sign/traffic signal off carriageway.	Offside	1
		V2 (car) proceeding normally along the carriageway.	Front	-
09/10/2019 17:15	Serious	V1 (car) proceeding normally along the carriageway.	Offside	-
		V2 (motorcycle >500cc) proceeding normally along the carriageway.	Front	1
23/10/2019 18:18	Slight	V1 (car) is slowing down or stopping.	Back	-
		V2 (car) proceeding normally along the carriageway.	Front	1

2.3.6 The Crashmap search extent covering both Caerleon Road and Turnpike Road, and associated collision reports are provided as Appendices 2.1 and 2.2, respectively.

2.3.7 As discussed in this TA, the proposed ED extension and amendment to Condition 11 is not intended to increase the number of patients and would simply accommodate existing demand. Therefore, the accident situation on the local highway network would not be exacerbated by the proposal.

2.3.8 In conclusion, there is not an existing road safety issue within The Grange University Hospital or the surrounding highway network on Caerleon Road (B4236). As such, mitigation is not deemed necessary as part of this planning application.

3.0 ACCESSIBILITY

3.1 Walking

Pedestrian Infrastructure

- 3.1.1 As mentioned previously, there are no footways on the ED access road or at the roundabout with Caerleon Road. However, there is a footpath at the hospital frontage which connects the ED car park with the main hospital entrance to the south.
- 3.1.2 There is a zebra crossing provided across the Main Entrance access road on the north side of the hospital car parks. The crossing connects to a shared footpath/cyclepath which bounds the car park to the north, before turning southwest and providing access to the footway on the east side of Caerleon Road.
- 3.1.3 The shared footpath/cyclepath emerges onto Caerleon Road adjacent to a Toucan crossing facility, with dropped kerbs and tactile paving, located approximately 15 metres north of the junction with Old Hospital Drive (OHD). In addition, dropped kerbs with tactile paving are also provided across OHD at the junction with Caerleon Road which provides access to the southbound bus stop.
- 3.1.4 The main pedestrian desire lines are expected to be associated with The Grange University Hospital main entrance (and associated bus stop) and the additional bus stops on Caerleon Road, as well as local residential areas. As noted previously, given the nature of the proposal, it is not anticipated that walking and cycling will be the chosen travel choice for patients.

Walking Distance to/from Site

- 3.1.5 According to Manual for Streets (MfS, 2007), walking offers the greatest potential to replace short car trips, particularly those under 2 kilometres. This is shown within the walking isochrone map included as Appendix 3.1.

3.1.6 Appendix 3.1 demonstrates that the proposed development is within ‘desirable’ walking distance (i.e., 500 metres) of the bus stop at the main entrance to The Grange University Hospital. In addition, the bus stops on Caerleon Road are within ‘acceptable’ walking distance (i.e., one kilometre) of the site for the benefit of employees. Within the ‘preferred maximum’ walking distance (i.e., two kilometres) are multiple amenities including those associated with Llanyrafon Square Local Shops.

3.1.7 Appendix 3.1 also shows the ‘Pedestrian Desire Line’ or walking route which staff would use to travel to/from the local shops at Llanyrafon Square (i.e., during their lunch break). This route benefits from a subway underpass beneath the A4042 and a traffic-free footpath linking the subway to the existing pedestrian infrastructure on Tudor Woods/Mill Lane. Llanyrafon Square hosts the following important amenities:

- MRS Supermarket
- Lloyds Pharmacy
- Cwmbran Fresh Produce
- Llanyrafon Dental Surgery
- Llanyrafon Post Office (with ATM machine)

3.1.8 Located beyond the ‘preferred maximum’ walking distance are Cwmbran Railway Station and the amenities associated with the Cwmbran Retail District.

3.1.9 Overall, it is considered that the pedestrian infrastructure is good, and the site is well positioned for staff of the proposed extension to walk for local journeys.

3.2 Disabled Access

3.2.1 Footways of minimum 1.5-metre widths can accommodate a wheelchair user and an ambulant person side by side (as per DfT’s Inclusive Mobility document, 2021).

- 3.2.2 The internal pedestrian infrastructure at The Grange University Hospital complies with minimum width requirements and there are multiple crossing points with dropped kerbs and tactile paving throughout the network including those with zebra markings to highlight pedestrian priority.
- 3.2.3 As an alternative to the shared footpath/cyclepath which connects the main entrance with Caerleon Road, wheelchair users could also use the 2-metre-wide footway on the south side of OHD which provides access to Caerleon Road. This route offers a continuous level connection to Caerleon Road which disabled users may prefer to the footpath/cyclepath due to gradient constraints.
- 3.2.4 Across the OHD/Caerleon Road junction, there are dropped kerbs and tactile paving. There is a Toucan crossing facility across Caerleon Road approximately 15 metres north of the junction with OHD, with dropped kerbs and tactile paving.
- 3.2.5 Level or flush access is essential for the majority of wheelchair users. The ED is designed with step-free entrances. There are multiple crossing points at The Grange University Hospital located on the internal network and within car parks which benefit from dropped kerbs and tactile paving.
- 3.2.6 The existing pedestrian infrastructure is therefore considered to be suitable for those with reduced mobility and visual impairment.

3.3 Cycling

- 3.3.1 According to the Department for Transport LTN 1/20: Cycle Infrastructure Design, a distance of 8 kilometres is considered to be suitable for cycling local journeys. This extent is shown within the cycling isochrone map provided as Appendix 3.2.
- 3.3.2 The map demonstrates that Cwmbran, Pontypool, and Newport are within suitable cycling distance of the site. National Cycle Network (NCN) Route 49 is located approximately 3.0 kilometres west of the site via Llanfrechfa Way and connects Pontypool with Route 47 at J26 of the M4. NCN Route 47 continues south towards Newport.

- 3.3.3 In addition, NCN Route 492 is located approximately 3.2 kilometres northwest of the site via Turnpike Road. This route branches from NCN Route 49 on Maendy Way and provides a connection to NCN Route 423 on Ponrhydyrun Road before continuing northwards towards Pontypool.
- 3.3.4 Local Cycle Network (LCN) Route Afon Lwyd Greenway serves as a traffic-free route through Northfields Park that runs broadly in a north–south direction and connects NCN Route 423 with Llanyrafon. There is a recommended cycle route connecting Caerleon Road at the junction with OHD to the Afon Lwyd Greenway via the A4042 underpass and Turnpike/Woodland Road.
- 3.3.5 The provision of local and national cycle routes within the vicinity of the site, which benefit from being mostly traffic-free, is conducive to encouraging staff at the ED to cycle to work. As discussed previously, patients are not likely to cycle to the site.

3.4 Public Transport

Bus

- 3.4.1 The nearest bus stop to the ED is located at the main hospital entrance and is easily accessible via the footpath at the building hospital frontage. The stop benefits from a shelter, seating, and timetable information.
- 3.4.2 In addition, there are bus stops on Caerleon Road located approximately 650 metres from the proposed ED extension.
- 3.4.3 Both stops on Caerleon Road near the junction with OHD benefit from a shelter, seating, and timetable information. The location of local bus stops is provided in Appendix 3.1.
- 3.4.4 CIHT's Buses in Urban Development report (2018) states that 500 metres is the maximum walking distance to bus stops for sites with core bus corridors. As such, the bus stop at the hospital entrance is within this threshold.

- 3.4.5 The stop is served by route no. 29/29A which together provide 2 buses per hour from Monday – Saturday between Cwmbran Bus Station and Newport. Service 29A operates hourly services only on Sundays.

Rail

- 3.4.6 Cwmbran Railway Station is located approximately 2.5 kilometres northwest of the site via Turnpike Road (i.e., 30-minute walk or a 10-minute cycle). The station is located on the Welsh Marches Line and is operated by Transport for Wales. The station provides services to Newport, Cardiff Central, and Manchester Piccadilly via Abergavenny and Hereford. The station is equipped with 76 car parking spaces, six cycle parking spaces and has step free access to all platforms.
- 3.4.7 Newport Railway Station is located approximately 7.9 kilometres south of the site on Queensway via the A4042 (i.e., less than a 25-minute cycle). The station provides regular services to Cardiff Central, Swansea, London Paddington, Carmarthen, and Manchester Piccadilly. The station is equipped with 266 car parking spaces, 42 cycle parking spaces, and has step free access to all platforms.

3.5 BREEAM Assessment

Accessibility Index

- 3.5.1 In accordance with BREEAM requirements, the Public Transport Accessibility Index has been calculated based on bus stops within 650 metres and railway facilities within 1000 metres of the proposed site entrance. The average number of services has been calculated for The Grange University Hospital bus stop node between 07:00 – 20:00 (i.e., 13 hours). The results are summarised in Table 3B below.

Table 3B BREEAM Accessibility Index Calculation

Transport Type	Location	Distance from main building entrance (m)	Service No	No of Services 07:00 – 20:00	Average Frequency / hr.
Bus	The Grange University Hospital	250	29	16	1.23
Bus	The Grange University Hospital	250	29A	10	0.77
Accessibility Index Calculation					1.36

3.5.2 Table 3B shows that the Accessibility Index for the ED at The Grange University Hospital is 1.36. The AI calculator is provided as Appendix 3.3.

Local Amenities

3.5.3 In accordance with the BREEAM requirements for Type 3 buildings (i.e., Healthcare), ADL have considered the applicable amenities located within 500 metres of the site.

3.5.4 Due to the location of the ED and proposed extension, these amenities will be confined to The Grange University Hospital grounds.

3.5.5 Within 500 metres of the site (i.e., within hospital grounds) are the following BREEAM compliant amenities:

- Costa Coffee Shop;
- Hospital Restaurant;
- Post Box;
- Cash Machine; and
- Pharmacy.

3.5.6 It should be noted that the locations of additional amenities within 2 kilometres are provided in the walking catchment plan (Appendix 3.1).

4.0 BASELINE TRAFFIC SITUATION

4.1 Traffic Data

4.1.1 To determine the traffic impact of the existing operation of the ED and proposed extension, the following junctions have been assessed:

- Caerleon Road / ED access / Main Entrance access
- Turnpike Roundabout

4.1.2 As part of the MHSISU application, ADL commissioned Severnside Transportation Data Collection to undertake classified turning count (CTC) surveys at the junctions listed above.

4.1.3 The surveys were undertaken on Thursday 16th June 2022. The CTC survey data is provided as Appendices 4.1 and 4.2. The hourly traffic data is summarised in Tables 4A and 4B below.

Table 4A Caerleon Road Roundabout - Hourly Totals

Hour		Arm				Total
		Caerleon Road (N)	Hospital Emergency Access	Hospital Main Access	Caerleon Road (S)	
AM	07:00 – 08:00	686	16	242	198	1142
	08:00 – 09:00	812	10	77	334	1233
	09:00 – 10:00	493	18	62	251	824
PM	15:00 – 16:00	527	29	158	380	1094
	16:00 – 17:00	529	37	263	442	1271
	17:00 – 18:00	554	47	234	403	1238

Table 4B Turnpike Roundabout - Hourly Totals

Hour		Arm				Total
		A4042 (N)	Caerleon Road	A4042 (S)	Turnpike Road	
AM	07:00 – 08:00	1642	429	1184	304	3559
	08:00 – 09:00	1705	396	1354	403	3858
	09:00 – 10:00	1197	300	908	282	2687
PM	15:00 – 16:00	1063	531	1314	405	3313
	16:00 – 17:00	1125	700	1507	351	3683
	17:00 – 18:00	1172	649	1424	285	3530

4.1.4 The tables demonstrate that the AM peak hour is between 08:00 – 09:00 and the PM peak hour is between 16:00 – 17:00.

4.2 Year of Assessment

4.2.1 To account for changes in the base traffic flows, growth factors were derived from TEMPro for the year 2027.

4.2.2 TEMPro growth factors have been applied to the 2022 surveyed flows. In the TA for the MHSISU application, TEMPro growth factors were applied for Torfaen 013 (W02000335), as per below:

- 2022 – 2027: AM = 1.0374 PM = 1.0371

4.2.3 It should be noted that the ED and proposed extension is located within Torfaen 008 (W02000330). The TEMPro growth factors for this area are the same as those within Torfaen 013 and therefore the growth factors used in the MHSISU Transport Assessment will be retained for the purposes of assessing the ED.

4.2.4 The 2027 Baseline Flows are shown diagrammatically as Appendix 4.3.

4.3 MHSISU Flows

4.3.1 As discussed in Chapter 1.0, ADL supported an application for a proposed Mental Health Specialist Inpatient Services Unit (MHSISU) and associated highway, drainage, and landscape infrastructure at Grange University Hospital. The planning application was submitted in June 2022 and was approved at committee.

4.3.2 As part of the application, ADL prepared a Transport Assessment (ref. ADL/AM/5232/24A) which included a traffic impact assessment associated with the proposed MHSISU development.

- 4.3.3 Accordingly, the permitted traffic flows are added to the base traffic flows accounting for the vehicular trips associated with the development on the local network as part of this assessment in support of application to amend Condition 11 of the outline planning consent for the hospital, and the proposed extension of the ED.
- 4.3.4 The 2027 base + MHSISU application traffic (i.e., committed flows) are shown diagrammatically as Appendix 4.4.

5.0 DEVELOPMENT PROPOSALS

5.1 The Proposal

- 5.1.1 In order to allow for "walk in" cases arriving at the Grange University Hospital ED by private car, a Section 73 application is being submitted in order to vary condition 11 of the original outline planning consent (20/P/0535/VAR) which currently restricts its use to primarily "pre-triaged" patients.
- 5.1.2 To address existing capacity issues and accommodate the number of patients currently arriving at the hospital, a separate planning application is being submitted for an extension to the existing ED building at The Grange University Hospital including a new entrance, additional waiting space, and patient/staff facilities to facilitate the existing demand. Retrospective planning permission is also being sought for an existing 47-space car park located on the north side of the ED access road, as well as the 11 spaces added on the north side of the existing car park fronting the ED entrance.
- 5.1.3 The proposed development is described below:

“Extension to the existing Emergency Department building, with associated landscaping, parking and access arrangements.”

- 5.1.4 The proposed extension would comprise 957 sqm of floorspace which would connect to the existing ED department via a corridor in the southwest corner. The total area of the ED on site would therefore increase from 2,985 sqm to 3,942 sqm.
- 5.1.5 The proposed site layout is provided as Appendix 5.0.

5.2 Access Arrangements

Vehicular Access

- 5.2.1 The ED access road from the Caerleon Road roundabout and internal vehicular access arrangements would be retained as per the existing situation.

5.2.2 As mentioned previously, retrospective planning permission is being sought for 58 car parking spaces, including 11 spaces on the north side of the existing ED car park and a new 47-space car park on the north side of the ED access which has been used to accommodate the greater than expected parking demand. Pedestrian connectivity from the new car park to the ED is proposed as part of this application, as discussed below.

Pedestrian Access

5.2.3 Pedestrian connectivity would be provided linking the car park on the north side of the ED access road (subject to retrospective planning permission) and the building entrance in the form of new footpaths and zebra style crossing points with dropped kerbs and tactile paving.

5.2.4 The proposed improvements to the internal pedestrian infrastructure would link with the existing network in the vicinity of the ED building.

5.2.5 There is a footpath on the east side of the existing ED car park which connects the building entrance with the 11 additional spaces to the north. The 47-space car park benefits from a footpath which bounds the parking bays to the rear, which will be contiguous with the existing infrastructure and proposed footpaths/crossing points.

5.3 Parking

Car Parking Provision

5.3.1 As mentioned previously, the purpose of the proposed extension is to accommodate the existing demand at the ED and relieve overcrowding stress rather than intending to increase the volume of patients.

5.3.2 There is a car park which formerly comprised of 22 spaces, adjacent to the ED entrance, which has not been sufficient to cater for parking demand. Therefore, retrospective planning permission is being sought for an additional 11 spaces on the north side of the car park to increase the provision to 33 spaces as well as a new 47-space car park on the north side of the ED access road. The car parking provision for patients and visitors is therefore 80 spaces (i.e., 33 spaces in south car park and 47 spaces in north car park), which is sufficient to accommodate the parking demand on site without any overspill.

5.3.3 Torfaen County Borough Council's (TCBC) Parking Standards SPG (2016) states that the *maximum* car parking standard for hospitals is 2.5 spaces per bed.

5.3.4 The ED at The Grange University Hospital currently has waiting space / beds for 38 patients. As part of the proposals, the extension would provide an additional 117 sqm waiting area but no further beds. The provision of 80 car parking spaces total therefore accords with the maximum car parking standards ($38 \times 2.5 = 95$).

Cycle Parking Provision

5.3.5 Torfaen County Borough Council's (TCBC) Parking Standards SPG (2016) states that the *minimum* cycle parking standard for hospitals is as follows:

- Long Stay: 1 stand per 20 beds
- Short Stay: 1 stand per 20 beds

5.3.6 Covered and secure cycle parking is provided at the hospital frontage adjacent to the main entrance and would be used by staff at the ED as per the existing scenario. As mentioned previously, the development is not anticipated to increase patient or staff numbers on site and would only accommodate existing demand. In addition, patients at the ED by nature would be unable to travel to site by cycle as the site is intended for critical patients who would typically arrive by ambulance.

5.3.7 Based on the above, additional cycle parking to support the ED extension is not considered to be necessary. As part of the Travel Plan monitoring process, the Travel Plan Co-ordinator would ensure that cycle parking provision is sufficient to accommodate demand and could recommend remedial measures if necessary.

5.4 Delivery, Servicing, and Emergency Access Arrangements

5.4.1 There would be no change to the internal network within the site and therefore access arrangements for delivery vehicles (which would likely occur via OHD in any case), service/refuse vehicles, and emergency vehicles would continue as per the existing situation.

6.0 TRIP GENERATION

6.1 Proposed Trip Generation

- 6.1.1 As part of the trip generation assessment for the MHSISU site, the TA (ref. ADL/AM/5232/24A) used the TRICS database to calculate the increase in trips associated with 65 patient beds compared to 15 beds in the permitted scenario.
- 6.1.2 The additional trips were then distributed onto the highway network and junctions based on the proportion of trips in the base scenario (i.e., 2027 Base without development) which were calculated using the CTC surveys and TEMPro growth factors for Torfaen.
- 6.1.3 As stated throughout this report, the proposed ED extension is not expected to generate any additional vehicular trips during peak hours and instead is only intended to accommodate the existing patient and visitor demand on site which has been greater than expected.
- 6.1.4 Although no additional trips are expected, as part of a robust assessment, ADL will assess the capacity of both Junction 1 and Junction 2 (see Chapter 4.0) in the proposed scenario assuming an uplift in vehicle trips proportional to the ED extension.
- 6.1.5 The existing ED comprises 2,985 sqm and the proposed 957 sqm extension will increase this to 3,942 sqm. Based on the surveyed flows at the Caerleon Road roundabout junction, the 2027 peak hour flows associated with the existing ED are summarised in Table 6A below.

Table 6A 2027 Peak Hour Flows (ED Access – Without Extension)

Time	Trips (2,985 sqm)		
	In	Out	Two-Way
AM Peak (08:00 – 09:00)	17	10	27
PM Peak (17:00 – 18:00)	41	38	79

6.1.6 Table 6A demonstrates that in the 2027 scenario, without the proposed extension, the ED at The Grange University Hospital will generate up to 79 vehicular trips (two-way) during network peak hours and it has been advised this is not anticipated to increase as a result of the extension.

6.1.7 For the purposes of providing a robust assessment, however, ADL will assess the traffic impact on the assumption that the number of trips in the proposed scenario would increase proportionately to the floor area which will be 3,942 sqm (i.e., 1.32 times greater than existing).

6.1.8 Table 6B shows the 2027 peak hour flows associated with the ED including proposed extension.

Table 6B 2027 Peak Hour Flows (ED Access – With Extension)

Time	Trips (3,942 sqm)		
	In	Out	Two-Way
AM Peak (08:00 – 09:00)	22	13	35
PM Peak (17:00 – 18:00)	54	50	104

6.1.9 Table 6B demonstrates that in the 2027 scenario, with the proposed extension, the ED at The Grange University Hospital could generate up to 104 vehicular trips (two-way) during network peak hours.

6.1.10 The net traffic impact of the proposed ED extension is summarised in Table 6C.

Table 6C Net Traffic Impact

Time	Existing (Table 6A)			Proposed (Table 6B)			Difference		
	In	Out	2-Way	In	Out	2-Way	In	Out	2-Way
AM Peak (08:00 – 09:00)	17	10	27	22	13	35	+5	+3	+8
PM Peak (16:00 – 17:00)	41	38	79	54	50	104	+13	+12	+25

6.1.11 Table 6C demonstrates that the proposed extension could generate up to 8 and 25 *additional* vehicular trips (two-way) during AM and PM peak hours, respectively, compared to the existing use of the site.

- 6.1.12 The net increase in trips equates to less than one additional vehicle entering or exiting the site every 6 minutes during the AM peak hour, and less than one entering or exiting the site every 2 minutes during the PM peak hour, respectively. This is not considered to be severe.
- 6.1.13 As mentioned before, the above trip generation is based on a proportionate increase relative to the total existing and proposed floorspace at The Grange University Hospital ED. This is considered to be robust and represents a worst-case scenario as the proposed extension is not intended to attract additional patients or visitors and is only designed to cater for existing demand.

6.2 Trip Distribution and Assignment

- 6.2.1 The proposed trips have been distributed across both junctions based on the turning proportions from the 2027 Baseline Flows (without the proposed extension).
- 6.2.2 The Proposed Development Flows are shown diagrammatically as Appendix 6.1.
- 6.2.3 The 2027 Total Flows comprise the 2027 Base Flows, the MHSISU Flows, and the Proposed ED Extension Flows. The 2027 Total Flows are shown diagrammatically as Appendix 6.3.

7.0 JUNCTION CAPACITY ASSESSMENT

7.1 Junction 1 – Main Hospital Roundabout

7.1.1 The Grange University Hospital Roundabout has been assessed for capacity using TRL’s Junctions 10 software.

7.1.2 The ARCADY output file is provided as Appendix 7.1. The results are summarised in Table 7A.

Table 7A Model Summary: Junction 1

Arms		2027 Base (Without MHSISU)		2027 Committed (Base + MHSISU)		2027 Total (Base + MHSISU + ED)		Increase in Queues
		RFC	Queue	RFC	Queue	RFC	Queue	
AM Peak	Caerleon Rd N	0.63	2	0.66	2	0.67	2	0
	ED Access	0.01	0	0.01	0	0.03	0	0
	Main Hospital Access	0.08	0	0.08	0	0.08	0	0
	Caerleon Rd S	0.31	1	0.32	1	0.33	1	0
PM Peak	Caerleon Rd N	0.40	1	0.41	1	0.45	1	0
	ED Access	0.04	0	0.04	0	0.09	0	0
	Main Hospital Access	0.25	0	0.25	0	0.26	0	0
	Caerleon Rd S	0.44	1	0.46	1	0.48	1	0

RFC = Ratio of flow to capacity
Queue measured in vehicles.

7.1.3 Table 7A shows that The Grange University Hospital Roundabout operates within theoretical capacity in the 2027 Total scenario. There is no increase in queuing as a result of the proposed ED extension compared to the baseline or committed scenarios.

7.2 Junction 2 – Turnpike Roundabout

7.2.1 The Turnpike Roundabout has been assessed for capacity using TRL’s Junctions 10 software.

7.2.2 The ARCADY output file is provided as Appendix 7.2. The results are summarised in Table 7B.

Table 7B Model Summary: Junction 2

Arms		2027 Base (Without MHSISU)		2027 Committed (Base + MHSISU)		2027 Total (Base + MHSISU + ED)		Increase in Queues
		RFC	Queue	RFC	Queue	RFC	Queue	
AM Peak	A4042 N	0.72	3	0.73	3	0.74	3	0
	Caerleon Rd	0.43	1	0.44	1	0.45	1	0
	A4042 S	0.74	3	0.75	3	0.76	3	0
	Turnpike Rd	0.43	1	0.44	1	0.44	1	0
PM Peak	A4042 N	0.43	1	0.43	1	0.44	1	0
	Caerleon Rd	0.54	1	0.56	1	0.59	1	0
	A4042 S	0.85	6	0.86	6	0.88	7	+1
	Turnpike Rd	0.43	1	0.43	1	0.46	1	0

RFC = Ratio of flow to capacity
Queue Measured in vehicles.

7.2.3 Table 7B shows that the strategic Turnpike Roundabout operates within theoretical capacity (i.e., RFC of 0.85 or less), except for the A4042 (south arm) in the PM peak hour where the RFC increases from 0.86 to 0.88 which is marginal.

7.2.4 Table 7B demonstrates that there would be no increase in queues as a result of the proposed development compared to the base and committed scenarios, with the exception of one additional vehicle on the A4042 south in the PM peak hour which is not considered to be severe.

8.0 TRANSPORT IMPLEMENTATION STRATEGY

8.1 Introduction

8.1.1 Planning Policy Wales Technical Advice Note (TAN) 18 – Transport requires any TA document to provide the information necessary to assess the suitability of an application in travel demand and traffic impact terms. It recommends that a TIS should be included within the TA. This TIS is intended to set objectives and targets in managing travel demand, whilst detailing the infrastructure and measures necessary to achieve them. The TIS should also set up a framework for monitoring the targets including modal travel choice.

8.1.2 A TIS shares many of the same goals as an FTP (which will be submitted with this planning application) therefore, the modal information, targets, and measures set out in this section inform the FTP. The monitoring and reporting of targets and objectives will be carried out by a Travel Plan Co-Ordinator (TPC).

8.2 Mode Share and Targets

8.2.1 Mode share targets are used to evaluate the success of the TIS and to identify areas in which further measures should be focused to drive travel behaviour change. In order to set targets, a valid baseline needs to be established.

8.2.2 Travel to work data from the 2011 Census can be used to predict travel behaviour using dataset WU03EW – Location of usual residence and place of work by method of travel to work.

8.2.3 The site lies in TCBC's Middle Super Output Area (MSOA) W02000330 (Torfaen 008). Using the mode share from this MSOA is therefore a reasonable proxy for the site. Table 8A provides the mode share.

Table 8A Staff Travel to Work Mode Share

Mode of Transport	Mode Share
Driving a car or van	85%
On foot	6%
Passenger in a car or van	5%
Bus, minibus, or coach	2%
Bicycle	1%
Motorcycle, scooter or moped	1%
Total	100%

8.2.4 Table 8A demonstrates that 90% of those who work within the MSOA in which the ED is located travel to work by car or van (i.e., either as driver or passenger), 7% travel by active modes (i.e., walking or cycling), and 2% travel by bus.

8.2.5 Following the baseline travel survey, the travel behaviour of staff will be more accurately determined. Once established, definitive mode share targets can be set through discussion between TCBC and the TPC.

8.2.6 In any case, the primary target would be for a reduction in single occupancy vehicle travel to/from the site by staff and visitors, and an increase in travel by sustainable modes (i.e., car sharing, walking, cycling, and public transport).

8.3 Monitoring and Evaluation

8.3.1 The point at which baseline travel surveys are required would be subject to agreement with TCBC. This should generally be at a time when the build-out of the development is at a point that is considered reasonably representative of the final scheme. A minimum response rate to the travel surveys would be set to ensure that the data is representative.

8.3.2 The format of the baseline and monitoring surveys will need to be agreed with TCBC. In general, these would seek to establish the actual travel patterns, the reasons for travel choice and potential measures to encourage consideration of alternatives. For staff, it is envisaged that the surveys would be primarily online based, but paper copies will also be made available should they prefer.

- 8.3.3 The results of the baseline travel surveys would be analysed and the factors influencing travel behaviour would be investigated. It would then be necessary for the TPC to review and update the FTP to include additional details not available prior to occupation of the extension.
- 8.3.4 Specific objectives and targets need to be identified, separated into short / medium / and long-term targets, and will need to be SMART (Specific, Measurable, Achievable, Realistic, and Timebound). Specific actions and measures to encourage sustainable modes of travel would be identified. For the on-going management of the TP to be successful and to deliver the desired outcomes, it is important that the parties involved in the delivery of the TP, which means the TPC and TCBC, work effectively in partnership to achieve the desired results.
- 8.3.5 Monitoring of the TP would be required for a 5-year period starting from the date of the baseline travel surveys. They would be undertaken one, three, and five years after the date (or close to the date) of the baseline travel surveys. The TPC would aim to coordinate the baseline travel surveys and subsequent monitoring surveys to ensure consistency between the collection of data for the TP. Surveys will avoid periods when there is significant disruption to the local road and / or public transport network.
- 8.3.6 A monitoring report would be prepared by the TPC for each monitoring survey. These will identify the results of the surveys and the success of measures implemented in achieving the targets. The reports would be submitted to TCBC for comment. If the targets are not met, then it would be necessary to review what remedial measures need to be implemented to mitigate the impact of any underachievement.

8.4 Measures and Interventions

- 8.4.1 In order to achieve the reduction in single occupancy car use and encourage a modal shift to more sustainable forms of travel, a number of measures would be implemented. These would include physical infrastructure in the design of the development and also TP measures based on the accessibility of the site.

8.4.2 The site has been designed to ensure safe access for pedestrians from the new car park and will benefit from pedestrian and cycle connectivity to Caerleon Road via the existing shared footpath/cyclepath at the hospital frontage. An audit of important pedestrian routes within a one-mile catchment area of the site is provided separately to demonstrate that The Grange University Hospital is accessible via active modes of travel for existing staff.

8.4.3 The appointed TPC would be responsible for ensuring the success of the TP against its targets and objectives. The TP would contain a range of measures additional to those that will be provided as part of the development to enhance the attractiveness of sustainable travel and to encourage the use of the walking, cycling, and public transport infrastructure. Such additional measures could include:

- Noticeboard information displayed in a communal area (i.e., staff room)
- Promotion of active travel initiatives such as national Cycle to Work Day
- Newsletters/sustainable travel information including details on Public Rights of Way, NCN routes, and Active Travel routes could be distributed to staff

8.5 Summary

8.5.1 The TIS has considered the modal travel split of the development based upon 2011 Census data. This has been used to establish baseline modal proportions.

8.5.2 Formal targets will be set for the reduction of private car use following the baseline travel surveys that will be completed within 6 months of the extension's occupation. A commitment to a TP and monitoring programme has been made.

8.5.3 The TIS has set out the measures that would be implemented as part of the development proposals to help to achieve the targets and objectives set. These measures are discussed in greater detail within the FTP.

8.5.4 The TP measures would add another layer of interventions which would continue to promote and encourage the range of facilities available and improve awareness or provision wherever possible.

9.0 SUMMARY AND CONCLUSIONS

9.1 ADL have prepared this TA on behalf of ABUHB in order to assess the transport implications associated with the ED at The Grange University Hospital, Cwmbran, NP44 8YN. The TA has been prepared in support of two planning applications:

- A Section 73 application to vary Condition 11 of the previous outline consent for the hospital (ref. 20/P/0535/VAR) in order to allow for "walk in" A&E services at the ED.
- A full planning application for an extension to the ED, and associated landscaping, access, and parking arrangements. This includes seeking retrospective permission for a 47-space car park on the north side of the ED access road and a further 11 spaces which have been added to the car park fronting the ED entrance. The car parking spaces were constructed in December 2021 to accommodate patients arriving by private car.

9.2 The site is located at The Grange University Hospital, to the east of Caerleon Road (B4236), approximately 3.0 kilometres east of Cwmbran (walking distance via the A4042 underpass). The site postcode is NP44 8YN.

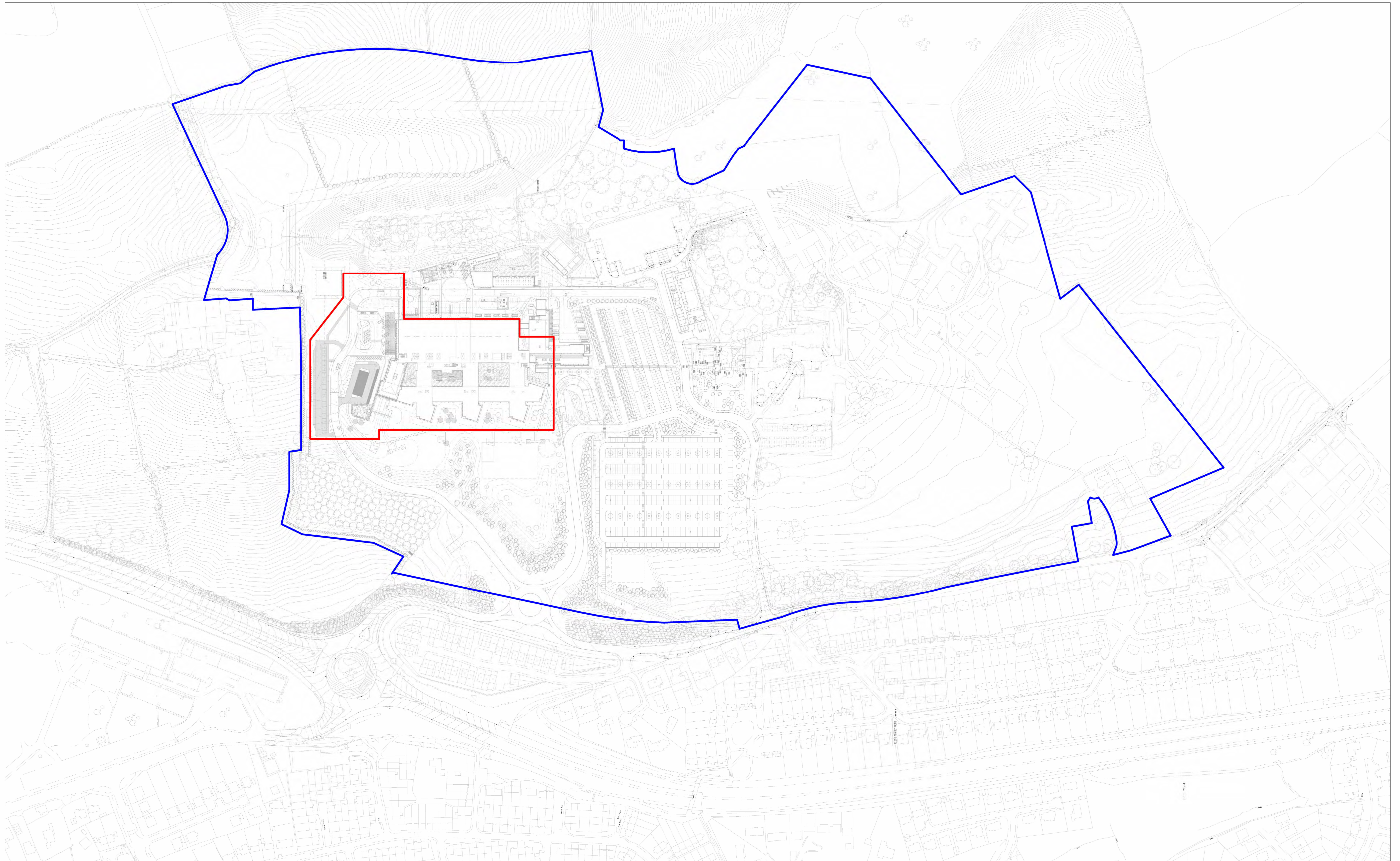
9.3 The site encompasses an area of 2.93 hectares and the existing ED building comprises 2,985 sqm (gross internal area).

9.4 The site is located at an edge of town environment. There is a footpath at the hospital frontage which connects the ED car park with the main hospital entrance to the south. A zebra style crossing is then provided across the main hospital access road which connects to a shared footpath/cyclepath. The shared path continues southwest and provides access to Caerleon Road in the vicinity of a Toucan crossing facility with dropped kerbs and tactile paving adjacent to the junction with OHD.

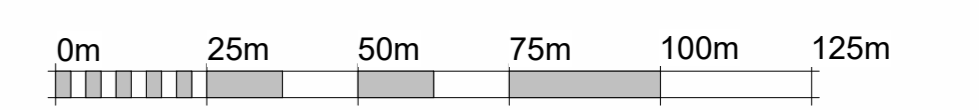
- 9.5 The nearest bus stop to the ED is located at the main hospital entrance and is easily accessible via the footpath at the building hospital frontage. The stop is served by route no. 29/29A which together provide 2 buses per hour from Monday – Saturday between Cwmbran Bus Station and Newport. Service 29A operates hourly services only on Sundays.
- 9.6 The proposed extension would comprise 957 sqm GIA which would connect to the existing ED department via a corridor in the southwest corner. The total area of the ED on site would therefore increase from 2,985 sqm to 3,942 sqm.
- 9.7 Pedestrian connectivity would be provided linking the car park on the north side of the ED access road (subject to retrospective planning permission) and the building entrance in the form of new footpaths and zebra style crossing points with dropped kerbs and tactile paving.
- 9.8 There is a car park which formerly comprised of 22 spaces, adjacent to the ED entrance, which has not been sufficient to cater for parking demand. Therefore, retrospective planning permission is being sought for an additional 11 spaces on the north side of the car park to increase the provision to 33 spaces as well as a new 47-space car park on the north side of the ED access road. The car parking provision for patients and visitors is therefore 80 spaces (i.e., 33 spaces in south car park and 47 spaces in north car park), which is sufficient to accommodate the parking demand on site without any overspill.
- 9.9 Although the extension is simply intended to cater for existing demand, a worst-case theoretical assessment of the proposals could generate up to 8 and 25 *additional* vehicular trips (two-way) during AM and PM peak hours, respectively, compared to the existing use of the site.
- 9.10 Junction capacity assessment of the main hospital roundabout, and Turnpike Roundabout demonstrates that the proposed extension would not generate severe increases in RFC, queues, or delays, compared to the 2027 base and committed scenarios.

9.11 In conclusion, the proposed development will not have a severe impact on the local road network and should not be refused on highways grounds.

SITE LOCATION



Planning Boundary
1: 1250



BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED.
ALL DIMENSIONS SHOULD BE CHECKED ON SITE.
ANY DRAWING ERRORS OR OVERRIDES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.
DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING BEFORE WORK COMMENCES:
- THE CON DESIGN ISSUES REGISTER
- THE SDP RISK REGISTER OF DRAWINGS
- THE PROJECT CON RISK REGISTER

NOTES

NO.	DESCRIPTION	DATE	BY	CHECKED
P03	Parking layout update	06/06/23	BH	SW
P02	Red line boundary update	31/05/23	BH	SW
P01	Planning Issue	25/05/23	BH	SW

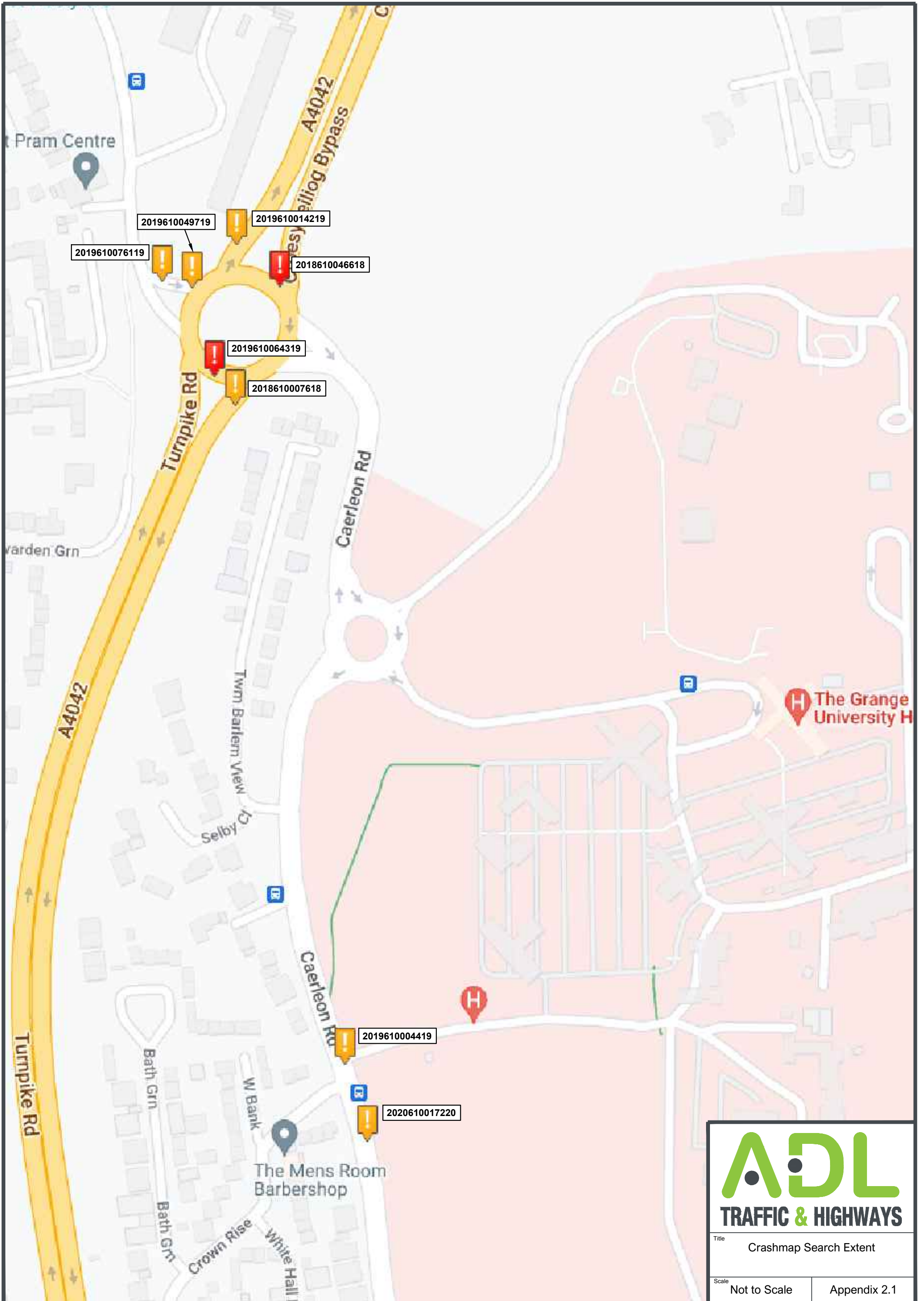
7 Hill Street
Bristol
BS1 5SR
United Kingdom
T +44 (0)117 929 9861
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GUH ED Expansion
P3003076 Commercial In Confidence
Site Location Plan
15/05/23
P012X-BDP-ED-XX-PL-A-901010 P03

ACCIDENT ANALYSIS

- 2.1 Crashmap Search Extent
- 2.2 Crashmap Accident Reports



ADL
TRAFFIC & HIGHWAYS

Title
 Crashmap Search Extent

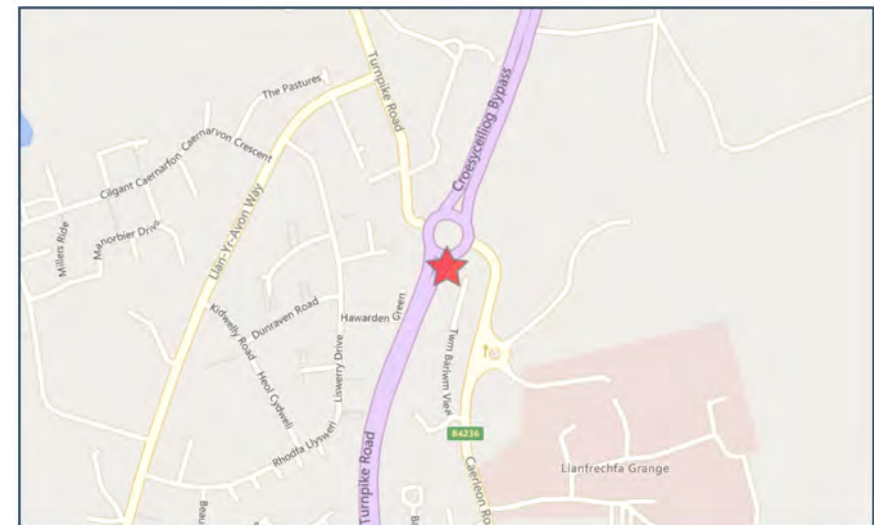
Scale
 Not to Scale | Appendix 2.1



Validated Data

Crash Date: Thursday, March 15, 2018 **Time of Crash:** 7:07:00 AM **Crash Reference:** 2018610007618

Highest Injury Severity:	Slight	Road Number:	U0	Number of Casualties:	1
Highway Authority:	Torfaen			Number of Vehicles:	2
Local Authority:	Torfaen County Borough			OS Grid Reference:	330826 195034
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)		3 Male	46 - 55	Vehicle is slowing down or stopping	Back	Journey as part of work	None	None
2	Car (excluding private hire)		5 Male	36 - 45	Vehicle is slowing down or stopping	Front	Journey as part of work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	46 - 55	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

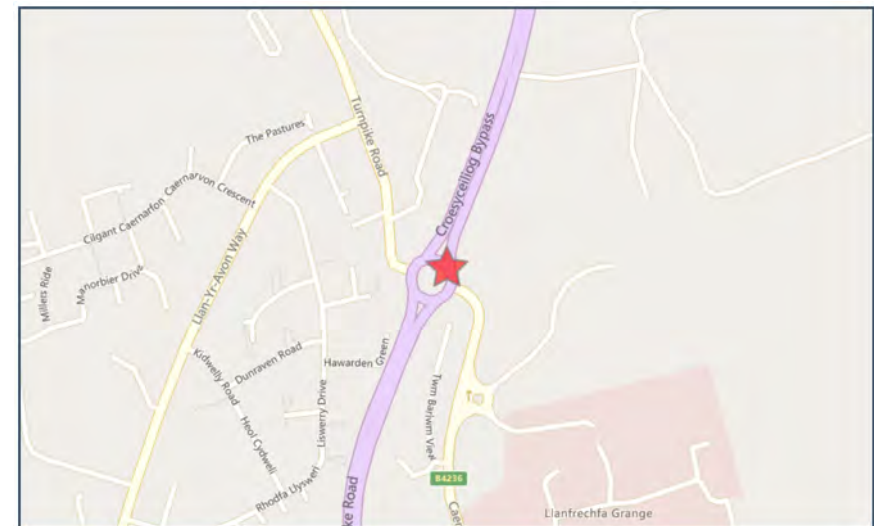
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Validated Data

Crash Date: Tuesday, July 31, 2018 **Time of Crash:** 7:32:00 AM **Crash Reference:** 2018610046618

Highest Injury Severity:	Serious	Road Number:	A4042	Number of Casualties:	1
Highway Authority:	Torfaen			Number of Vehicles:	2
Local Authority:	Torfaen County Borough			OS Grid Reference:	330852 195101
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Roundabout				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Manoeuvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)		3 Male	66 - 75	Vehicle proceeding normally along the carriageway, not on a bend	Front	Journey as part of work	None	None
2	Pedal cycle		-1 Male	66 - 75	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Unknown	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Serious	Driver or rider	Male	66 - 75	Unknown or other	Unknown or other

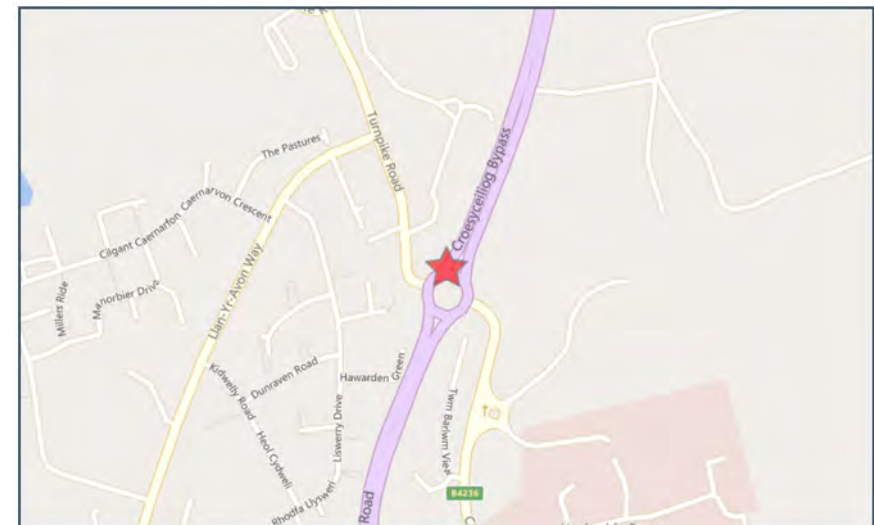
For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Crash Date:	Wednesday, May 01, 2019	Time of Crash:	7:53:00 AM	Crash Reference:	2019610014219
Highest Injury Severity:	Slight	Road Number:	A4042	Number of Casualties:	2
Highway Authority:	Torfaen	Number of Vehicles:	2	OS Grid Reference:	330828 195125
Local Authority:	Torfaen County Borough				
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	-1	Male	21 - 25	Vehicle proceeding normally along the carriageway, not on a bend	Back	Journey as part of work	None	None
2	Car (excluding private hire)	2	Female	56 - 65	Vehicle proceeding normally along the carriageway, not on a bend	Front	Journey as part of work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	21 - 25	Unknown or other	Unknown or other
2	2	Slight	Driver or rider	Female	56 - 65	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	13	Male	Over 75	Vehicle is moving off	Offside	Unknown	None	Road sign/Traffic signal
2	Car (excluding private hire)	-1	Female	26 - 35	Vehicle proceeding normally along the carriageway, not on a bend	Front	Unknown	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	Over 75	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

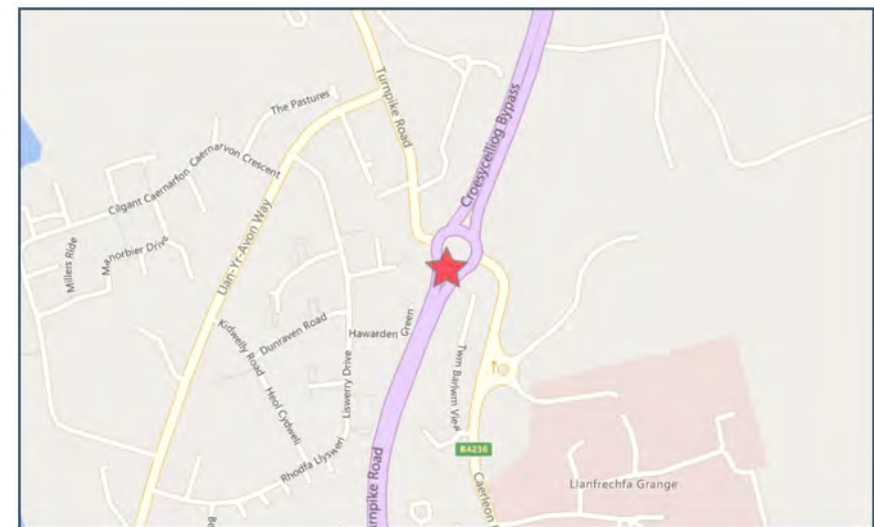
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Validated Data

Crash Date: Wednesday, October 09, 2019 **Time of Crash:** 5:15:00 PM **Crash Reference:** 2019610064319

Highest Injury Severity:	Serious	Road Number:	A4042	Number of Casualties:	1
Highway Authority:	Torfaen			Number of Vehicles:	2
Local Authority:	Torfaen County Borough			OS Grid Reference:	330814 195050
Weather Description:	Raining without high winds				
Road Surface Description:	Wet or Damp				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Roundabout				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	4	Male	Unknown	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Unknown	None	None
2	Motorcycle over 500cc	-1	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Commuting to/from work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Serious	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

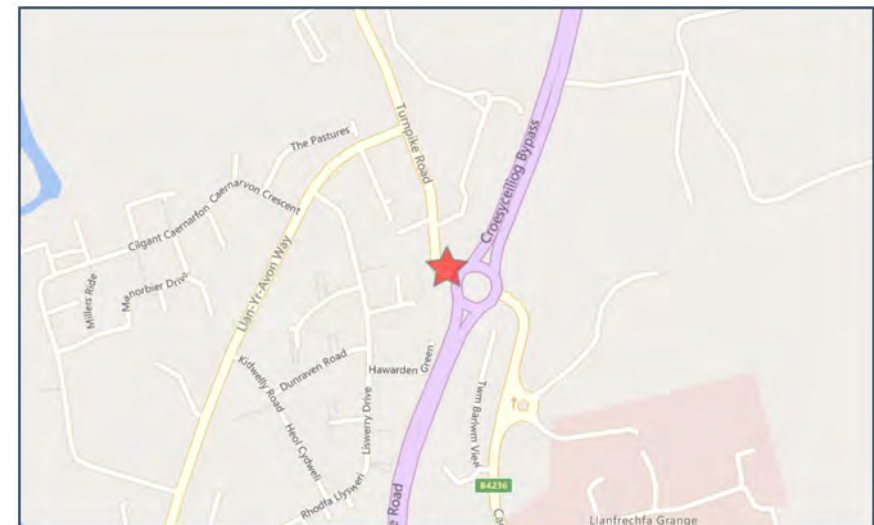
For more information about the data please visit: www.crashmap.co.uk/home/Faq

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Validated Data

Crash Date:	Wednesday, October 23, 2019	Time of Crash:	6:18:00 AM	Crash Reference:	2019610076119
Highest Injury Severity:	Slight	Road Number:	A4042	Number of Casualties:	1
Highway Authority:	Torfaen			Number of Vehicles:	2
Local Authority:	Torfaen County Borough			OS Grid Reference:	330785 195105
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Darkness: street lights present but unlit				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Roundabout				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	9	Male	36 - 45	Vehicle is slowing down or stopping	Back	Commuting to/from work	None	None
2	Car (excluding private hire)	9	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Commuting to/from work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

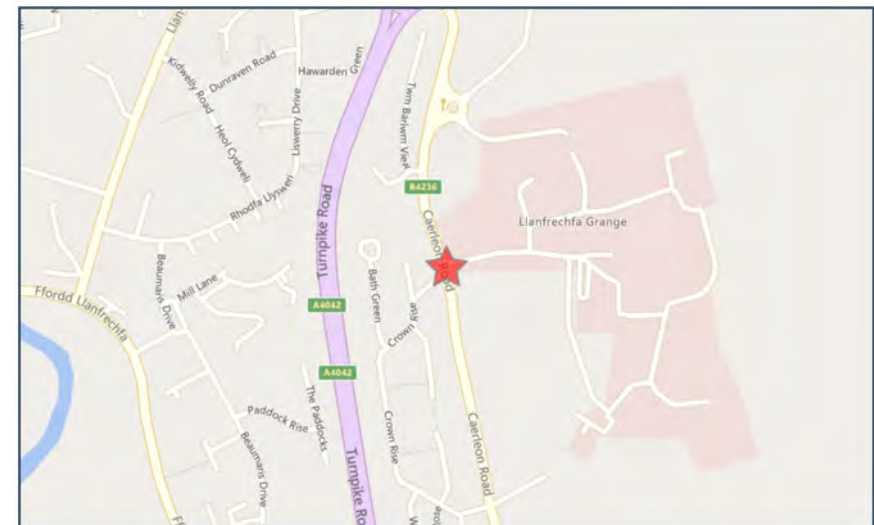
For more information about the data please visit: www.crashmap.co.uk/home/Faq

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Validated Data

Crash Date:	Monday, February 04, 2019	Time of Crash:	5:53:00 PM	Crash Reference:	2019610004419
Highest Injury Severity:	Slight	Road Number:	B4236	Number of Casualties:	1
Highway Authority:	Torfaen	Number of Vehicles:	2	OS Grid Reference:	330883 194660
Local Authority:	Torfaen County Borough				
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Darkness: street lights present and lit				
Carriageway Hazards:	None				
Junction Detail:	Other junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Manoeuvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	13	Male	46 - 55	Vehicle is in the act of turning right	Back	Other	None	None
2	Car (excluding private hire)	-1	Male	26 - 35	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Vehicle or pillion passenger	Female	46 - 55	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

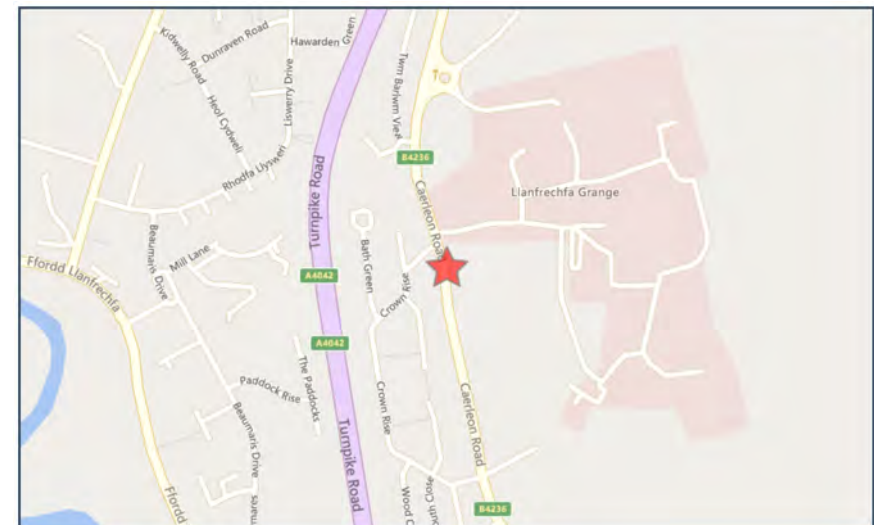
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Validated Data

Crash Date: Saturday, June 13, 2020 **Time of Crash:** 8:40:00 PM **Crash Reference:** 2020610017220

Highest Injury Severity:	Slight	Road Number:	B4236	Number of Casualties:	3
Highway Authority:	Torfaen	Number of Vehicles:	2	OS Grid Reference:	330895 194616
Local Authority:	Torfaen County Borough				
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	4	Male	16 - 20	Vehicle proceeding normally along the carriageway, on a left hand bend	Front	Other	None	Wall or fence
2	Car (excluding private hire)	7	Male	36 - 45	Vehicle proceeding normally along the carriageway, on a right hand bend	Front	Journey as part of work	None	None

Casualties

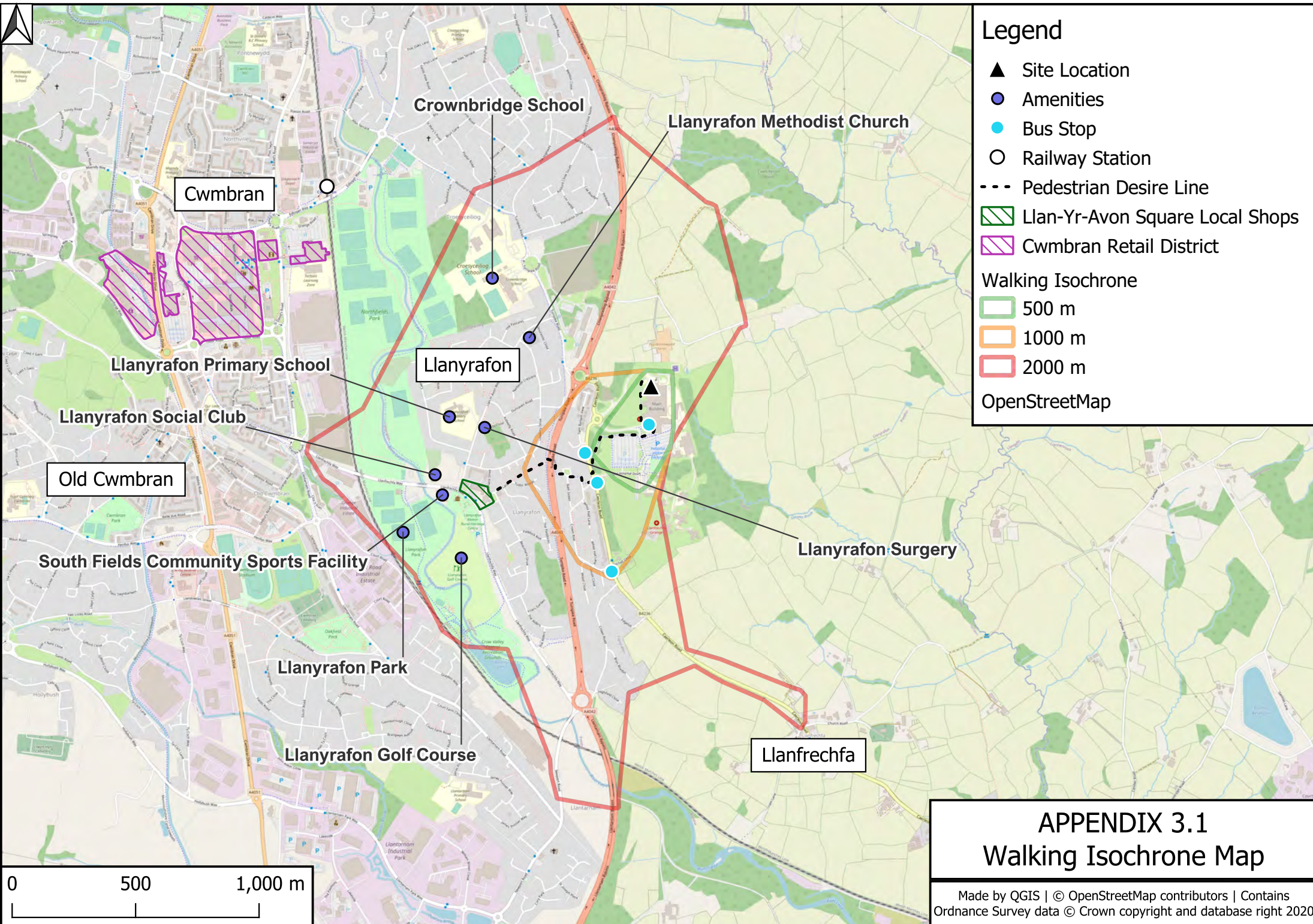
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	16 - 20	Unknown or other	Unknown or other
2	2	Slight	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other
2	3	Slight	Vehicle or pillion passenger	Female	36 - 45	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services

ACCESSIBILITY

- 3.1 Walking Isochrone Map
- 3.2 Cycling Isochrone Map
- 3.3 Accessibility Index Calculator



Legend

- ▲ Site Location
- Amenities
- Bus Stop
- Railway Station
- - - Pedestrian Desire Line
- ▨ Llanfyllen Square Local Shops
- ▨ Cwmbran Retail District

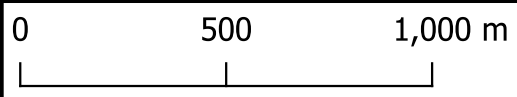
Walking Isochrone

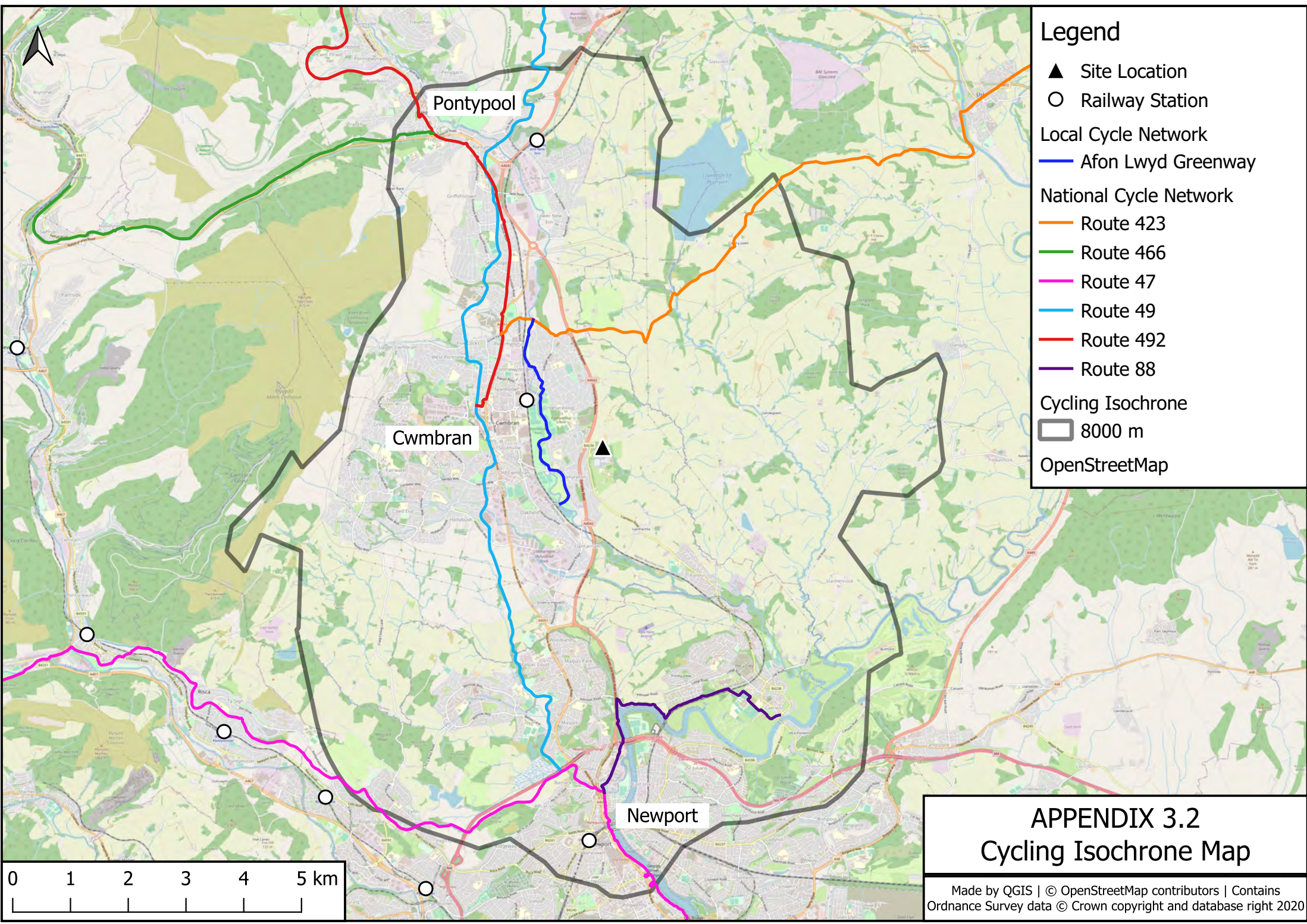
- 500 m
- 1000 m
- 2000 m

OpenStreetMap

APPENDIX 3.1
Walking Isochrone Map

Made by QGIS | © OpenStreetMap contributors | Contains Ordnance Survey data © Crown copyright and database right 2020





Legend

- ▲ Site Location
- Railway Station
- Local Cycle Network
- Afon Lwyd Greenway
- National Cycle Network
- Route 423
- Route 466
- Route 47
- Route 49
- Route 492
- Route 88
- Cycling Isochrone
- ▭ 8000 m
- OpenStreetMap

APPENDIX 3.2 Cycling Isochrone Map

BREEAM 2018 Tra01/02 Accessibility Index calculator

Using the drop down boxes make the relevant selections and press the 'Select' button

Building type

No. nodes required

Select

NODE 1

Public transport type	Bus									
Distance to node (m)	250									
	Service 1	Service 2	Service 3	Service 4	Service 5	Service 6	Service 7	Service 8	Service 9	Service 10
Average frequency per hour	1.23	0.77								

Accessibility Index	1.36
---------------------	------

BASELINE TRAFFIC

4.1	CTC Data (Junction 1)
4.2	CTC Data (Junction 2)
4.3	2027 Baseline Flows
4.4	2027 Baseline Flows + MHSISU Flows



SS757 Cwmbran
Thursday 16 June
0700-1000 & 1500-1800
Junction 1

	Arm A - Arm A							Arm A - Arm B							Arm A - Arm C							Arm A - Arm D							Arm Total				
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2		PSV	MC	PC	Total
0700-0715	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	45	1	0	0	1	0	0	47	24	11	3	0	1	0	0	39	90
0715-0730	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	60	3	0	0	0	0	0	63	51	7	1	0	1	1	0	61	128
0730-0745	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	2	98	6	1	0	1	0	0	106	74	13	5	0	0	1	0	93	202
0745-0800	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	128	3	0	0	0	0	0	131	105	16	4	5	0	1	0	131	266
Hourly Total	0	1	0	0	0	0	0	1	13	1	0	0	0	0	0	14	331	13	1	0	2	0	0	347	254	47	13	5	2	3	0	324	686
0800-0815	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	90	0	1	0	1	0	0	92	100	9	5	2	0	0	0	116	210
0815-0830	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	4	75	1	0	0	0	0	0	76	97	15	3	0	1	0	0	116	196
0830-0845	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	63	2	0	0	1	0	0	66	118	17	3	2	0	0	0	140	208
0845-0900	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6	66	3	2	0	0	1	0	72	100	16	1	3	0	0	0	120	198
Hourly Total	0	0	0	0	0	0	0	0	9	5	0	0	0	0	0	14	294	6	3	0	2	1	0	306	415	57	12	7	1	0	0	492	812
0900-0915	1	0	0	0	0	0	0	1	7	0	0	0	0	0	0	7	31	3	0	0	0	0	0	34	81	6	5	0	0	0	0	92	134
0915-0930	1	0	0	0	0	0	0	1	6	0	0	0	0	0	0	6	42	2	0	0	1	0	0	45	77	15	4	2	0	2	0	100	152
0930-0945	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0	7	23	0	0	0	1	0	0	24	51	12	5	0	1	0	0	69	100
0945-1000	0	0	0	0	0	0	0	0	8	3	0	0	0	0	0	11	24	0	0	0	0	0	0	24	55	8	7	2	0	0	0	72	107
Hourly Total	2	0	0	0	0	0	0	2	26	5	0	0	0	0	0	31	120	5	0	0	2	0	0	127	264	41	21	4	1	2	0	333	493
3 Hour Totals (am)	2	1	0	0	0	0	0	3	48	11	0	0	0	0	0	59	745	24	4	0	6	1	0	780	933	145	46	16	4	5	0	1149	1991
1500-1515	2	0	0	0	0	0	0	2	8	2	0	0	0	0	0	10	21	5	0	0	1	1	0	28	81	5	2	1	0	0	0	89	129
1515-1530	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	5	25	0	0	0	0	0	0	26	89	7	4	1	0	1	0	102	133
1530-1545	1	0	0	0	0	0	0	1	4	1	0	0	0	0	0	5	22	0	0	0	0	0	0	22	72	7	3	1	0	1	0	84	112
1545-1600	1	0	0	0	0	0	0	1	3	1	0	0	0	0	0	4	37	5	0	0	0	0	0	42	92	10	2	0	0	2	0	106	153
Hourly Total	4	0	0	0	0	0	0	4	19	5	0	0	0	0	0	24	106	10	0	0	1	1	0	118	334	29	11	3	0	4	0	381	527
1600-1615	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	11	31	6	0	0	1	0	0	38	77	10	3	0	1	0	0	91	140
1615-1630	0	0	0	0	0	0	0	0	3	4	0	0	0	0	0	7	24	3	0	0	0	0	0	27	74	10	2	0	0	3	0	89	123
1630-1645	0	0	0	0	0	0	0	0	7	2	0	0	0	0	0	9	26	3	0	0	1	0	0	30	84	9	0	0	0	2	0	95	134
1645-1700	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	8	17	1	0	0	0	0	0	18	99	5	1	0	0	1	0	106	132
Hourly Total	0	0	0	0	0	0	0	0	29	6	0	0	0	0	0	35	98	13	0	0	2	0	0	113	334	34	6	0	1	6	0	381	529
1700-1715	0	0	0	0	0	0	0	0	6	2	0	0	0	0	0	8	17	1	0	0	1	0	0	19	105	8	2	0	0	0	2	117	144
1815-1830	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	7	32	2	0	0	0	1	0	35	91	8	2	0	0	3	0	104	146
1730-1745	0	0	0	0	0	0	0	0	9	1	0	0	0	0	0	10	19	1	0	0	1	0	0	21	93	7	1	0	0	0	0	101	132
1745-1800	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	7	27	5	0	0	0	0	0	32	87	3	1	0	0	2	0	93	132
Hourly Total	0	0	0	0	0	0	0	0	25	7	0	0	0	0	0	32	95	9	0	0	2	1	0	107	376	26	6	0	0	5	2	415	554
3 Hour Totals (pm)	4	0	0	0	0	0	0	4	73	18	0	0	0	0	0	91	299	32	0	0	5	2	0	338	1044	89	23	3	1	15	2	1177	1610
Day Total	6	1	0	0	0	0	0	7	121	29	0	0	0	0	0	150	1044	56	4	0	11	3	0	1118	1977	234	69	19	5	20	2	2326	3601

APPENDIX 4.1
CTC Data (Junction 1)

	Arm B - Arm A							Arm B - Arm B							Arm B - Arm C							Arm B - Arm D							Arm Total				
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2		PSV	MC	PC	Total
0700-0715	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
0715-0730	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
0730-0745	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
0745-0800	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Hourly Total	13	2	0	0	0	0	0	15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	16
0800-0815	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
0815-0830	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3
0830-0845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	2
0845-0900	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3
Hourly Total	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	0	1	0	0	0	0	0	1	10
0900-0915	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	5
0915-0930	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
0930-0945	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4
0945-1000	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	7
Hourly Total	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	9	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0	18
3 Hour Totals (am)	25	3	0	0	0	0	0	28	0	0	0	0	0	0	0	0	13	2	0	0	0	0	0	15	0	1	0	0	0	0	0	1	44
1500-1515	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6
1515-1530	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	7
1530-1545	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	8
1545-1600	6	2	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Hourly Total	19	4	0	0	0	0	0	23	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	5	1	0	0	0	0	0	0	1	29
1600-1615	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	11
1615-1630	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	6
1630-1645	5	2	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	9
1645-1700	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	11
Hourly Total	24	2	0	0	0	0	0	26	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	6	0	0	0	0	0	0	6	37
1700-1715	7	2	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1715-1730	7	3	0	0	0	0	0	10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	12
1730-1745	7	6	0	0	0	0	0	13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	16
1745-1800	7	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	10
Hourly Total	28	11	0	0	0	0	0	39	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	6	0	0	0	0	0	0	6	47
3 Hour Totals (pm)	71	17	0	0	0	0	0	88	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	12	13	0	0	0	0	0	0	13	113
Day Total	96	20	0	0	0	0	0	116	0	0	0	0	0	0	0	0	24	3	0	0	0	0	0	27	13	1	0	0	0	0	0	14	157

	Arm C - Arm A								Arm C - Arm B								Arm C - Arm C								Arm C - Arm D								Arm Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	
0700-0715	50	0	0	0	0	0	0	50	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	53
0715-0730	71	0	0	0	1	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72
0730-0745	73	0	0	0	0	0	0	73	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	77
0745-0800	34	0	1	0	1	0	0	36	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	40
Hourly Total	228	0	1	0	2	0	0	231	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8	242
0800-0815	23	0	0	0	0	0	0	23	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	25
0815-0830	13	1	0	0	1	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	16
0830-0845	18	2	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	21
0845-0900	10	1	1	0	1	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	15
Hourly Total	64	4	1	0	2	0	0	71	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5	77
0900-0915	15	1	0	0	1	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
0915-0930	11	2	1	0	0	0	0	14	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	17
0930-0945	9	1	0	0	0	0	0	10	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	13
0945-1000	14	0	0	0	1	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Hourly Total	49	4	1	0	2	0	0	56	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	62
3 Hour Totals (am)	341	8	3	0	6	0	0	358	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0	12	0	0	0	5	0	0	17	381
1500-1515	36	5	0	0	0	2	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3	46
1515-1530	32	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	34
1530-1545	36	2	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
1545-1600	35	2	0	0	1	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	40
Hourly Total	139	9	0	0	1	2	0	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	1	0	0	7	158
1600-1615	75	1	0	0	0	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	79
1615-1630	41	1	0	0	1	0	0	43	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	50
1630-1645	66	3	0	0	0	0	0	69	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	74
1645-1700	56	0	0	0	1	0	0	57	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	60
Hourly Total	238	5	0	0	2	0	0	245	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	14	0	0	0	1	0	0	15	263
1700-1715	55	0	0	0	0	1	0	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6	62
1815-1830	48	0	0	0	1	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	53
1730-1745	49	0	0	0	0	0	0	49	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	54
1745-1800	60	1	0	0	1	0	0	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	65
Hourly Total	212	1	0	0	2	1	0	216	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	14	1	0	0	2	0	0	17	234
3 Hour Totals (pm)	589	15	0	0	5	3	0	612	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	33	2	0	0	4	0	0	39	655
Day Total	930	23	3	0	11	3	0	970	8	2	0	0	0	0	0	10	0	0	0	0	0	0	0	0	45	2	0	0	9	0	0	56	1036

	Arm D - Arm A							Arm D - Arm B							Arm D - Arm C							Arm D - Arm D							Arm Total												
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2		PSV	MC	PC	Total								
0700-0715	20	3	1	0	0	1	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
0715-0730	34	4	2	0	0	1	0	41	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
0730-0745	41	4	1	0	0	0	0	46	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46
0745-0800	60	10	2	2	0	1	0	75	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75
Hourly Total	155	21	6	2	0	3	0	187	0	0	0	0	0	0	0	0	9	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187
0800-0815	68	8	5	1	0	0	0	82	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82
0815-0830	73	4	3	2	1	0	0	83	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83
0830-0845	75	6	9	0	1	1	0	92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92
0845-0900	56	8	0	0	1	0	0	65	1	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65
Hourly Total	272	26	17	3	3	1	0	322	1	0	0	0	0	0	0	0	9	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	322
0900-0915	50	10	3	2	1	1	0	67	2	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67
0915-0930	45	4	4	2	0	0	0	55	1	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
0930-0945	42	13	3	2	0	2	0	62	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62
0945-1000	39	5	2	0	0	0	1	47	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47
Hourly Total	176	32	12	6	1	3	1	231	4	1	0	0	0	0	0	0	13	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231

3 Hour Totals (am)	603	79	35	11	4	7	1	740	5	1	0	0	0	0	0	6	31	0	0	0	5	0	0	36	1	0	0	0	0	0	0	1	783
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1500-1515	72	12	1	0	0	1	0	86	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	87
1515-1530	83	14	0	0	0	0	0	97	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	102
1530-1545	71	6	2	0	0	1	0	80	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	82
1545-1600	92	10	4	1	0	0	0	107	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	109
Hourly Total	318	42	7	1	0	2	0	370	0	0	0	0	0	0	0	0	9	0	0	0	1	0	0	10	0	0	0	0	0	0	0	0	380
1600-1615	90	11	2	0	0	1	1	105	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	107
1615-1630	74	13	3	0	1	0	1	92	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	95
1630-1645	93	12	2	0	0	1	0	108	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	116
1645-1700	103	16	1	1	0	1	0	122	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	124
Hourly Total	360	52	8	1	1	3	2	427	1	1	0	0	0	0	0	0	11	0	0	0	1	0	0	12	1	0	0	0	0	0	0	1	442
1700-1715	87	20	0	0	0	1	0	108	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	1	113
1815-1830	97	9	0	0	2	0	0	108	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	110
1730-1745	78	2	0	0	0	4	0	84	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	86
1745-1800	81	4	0	0	1	1	1	88	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	94
Hourly Total	343	35	0	0	3	6	1	388	5	0	0	0	0	0	0	0	7	0	0	0	2	0	0	9	0	0	1	0	0	0	0	1	403

3 Hour Totals (am)	1021	129	15	2	4	11	3	1185	6	1	0	0	0	0	0 <th>7</th> <th>27</th> <th>0</th> <th>0</th> <th>0 <th>4</th><th>0</th><th>0</th><th>31</th> <th>1</th><th>0</th><th>1</th><th>0</th><th>0</th><th>0</th><th>0 <th>2</th> <th>1225</th> </th></th>	7	27	0	0	0 <th>4</th> <th>0</th> <th>0</th> <th>31</th> <th>1</th> <th>0</th> <th>1</th> <th>0</th> <th>0</th> <th>0</th> <th>0 <th>2</th> <th>1225</th> </th>	4	0	0	31	1	0	1	0	0	0	0 <th>2</th> <th>1225</th>	2	1225
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Day Total	1624	208	50	13	8	18	4	1925	11	2	0	0	0	0	0 <th>13</th> <th>58</th> <th>0</th> <th>0</th> <th>0 <th>9</th><th>0</th><th>0</th><th>67</th> <th>2</th><th>0</th><th>1</th><th>0</th><th>0</th><th>0</th><th>0 <th>3</th> <th>2008</th> </th></th>	13	58	0	0	0 <th>9</th> <th>0</th> <th>0</th> <th>67</th> <th>2</th> <th>0</th> <th>1</th> <th>0</th> <th>0</th> <th>0</th> <th>0 <th>3</th> <th>2008</th> </th>	9	0	0	67	2	0	1	0	0	0	0 <th>3</th> <th>2008</th>	3	2008
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	Origin - Arm A							Origin - Arm B							Origin - Arm C							Origin - Arm D							Arm Total					
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2		PSV	MC	PC	Total	
0700-0715	73	12	3	0	2	0	0	90	5	1	0	0	0	0	0	6	52	0	0	0	0	0	0	53	20	3	1	0	0	1	0	25	174	
0715-0730	115	10	1	0	1	1	0	128	5	0	0	0	0	0	0	5	71	0	0	0	1	0	0	72	34	4	2	0	0	1	1	0	42	247
0730-0745	173	21	6	0	1	1	0	202	2	0	0	0	0	0	0	2	77	0	0	0	0	0	0	77	45	4	1	0	0	0	0	50	331	
0745-0800	237	19	4	5	0	1	0	266	2	1	0	0	0	0	0	3	36	1	1	0	2	0	0	40	65	10	2	2	1	1	0	81	390	
Hourly Total	598	62	14	5	4	3	0	686	14	2	0	0	0	0	0	16	236	1	1	0	4	0	0	242	164	21	6	2	2	3	0	198	1142	
0800-0815	192	9	6	2	1	0	0	210	2	0	0	0	0	0	0	2	24	0	0	0	1	0	0	25	69	8	5	1	0	0	0	83	320	
0815-0830	173	19	3	0	1	0	0	196	3	0	0	0	0	0	0	3	14	1	0	0	1	0	0	16	79	4	3	2	2	0	0	90	305	
0830-0845	182	20	3	2	1	0	0	208	0	2	0	0	0	0	0	2	18	2	0	0	1	0	0	21	75	6	9	0	1	1	0	92	323	
0845-0900	171	20	3	3	0	1	0	198	2	1	0	0	0	0	0	3	12	1	1	0	1	0	0	15	59	8	0	0	2	0	0	69	285	
Hourly Total	718	68	15	7	3	1	0	812	7	3	0	0	0	0	0	10	68	4	1	0	4	0	0	77	282	26	17	3	5	1	0	334	1233	
0900-0915	120	9	5	0	0	0	0	134	5	0	0	0	0	0	0	5	15	1	0	0	1	0	0	17	57	10	3	2	1	1	0	74	230	
0915-0930	126	17	4	2	1	2	0	152	2	0	0	0	0	0	0	2	13	2	1	0	1	0	0	17	50	4	4	2	1	0	0	61	232	
0930-0945	79	14	5	0	2	0	0	100	4	0	0	0	0	0	0	4	12	1	0	0	0	0	0	13	42	14	3	2	0	2	0	63	180	
0945-1000	87	11	7	2	0	0	0	107	6	1	0	0	0	0	0	7</																		

1700-1715	128	11	2	0	1	0	2	144
1815-1830	127	13	2	0	0	4	0	146
1730-1745	121	9	1	0	1	0	0	132
1745-1800	120	9	1	0	0	2	0	132
Hourly Total	496	42	6	0	2	6	2	554

3 Hour Totals (pm)	1420	139	23	3	6	17	2	1610
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Day Total	3148	320	73	19	16	23	2	3601
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7	2	0	0	0	0	0	0	9
9	3	0	0	0	0	0	0	12
10	6	0	0	0	0	0	0	16
10	0	0	0	0	0	0	0	10
36	11	0	0	0	0	0	0	47

95	18	0	0	0	0	0	0	113
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133	24	0	0	0	0	0	0	157
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60	1	0	0	0	1	0	0	62
51	0	0	0	2	0	0	0	53
54	0	0	0	0	0	0	0	54
62	1	0	0	2	0	0	0	65
227	2	0	0	4	1	0	0	234

625	18	0	0	9	3	0	0	655
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983	27	3	0	20	3	0	0	1036
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91	20	1	0	0	1	0	0	113
98	9	0	0	3	0	0	0	110
79	2	0	0	1	4	0	0	86
87	4	0	0	1	1	1	1	94
355	35	1	0	5	6	1	0	403

1055	130	16	2	8	11	3	0	1225
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1695	210	51	13	17	18	4	0	2008
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Destination - Arm A								
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
0700-0715	75	4	1	0	0	1	0	81
0715-0730	110	4	2	0	1	1	0	118
0730-0745	116	5	1	0	0	0	0	122
0745-0800	95	11	3	2	1	1	0	113
Hourly Total	396	24	7	2	2	3	0	434
0800-0815	92	8	5	1	0	0	0	106
0815-0830	88	5	3	2	2	0	0	100
0830-0845	93	8	9	0	1	1	0	112
0845-0900	67	10	1	0	2	0	0	80
Hourly Total	340	31	18	3	5	1	0	398
0900-0915	67	11	3	2	2	1	0	86
0915-0930	57	6	5	2	0	0	0	70
0930-0945	53	14	3	2	0	2	0	74
0945-1000	58	5	2	0	1	0	1	67
Hourly Total	235	36	13	6	3	3	1	297

3 Hour Totals (am)	971	91	38	11	10	7	1	1129
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1500-1515	114	18	1	0	0	3	0	136
1515-1530	118	15	0	0	0	0	0	133
1530-1545	0	8	2	0	0	1	0	11
1545-1600	134	14	4	1	1	0	0	154
Hourly Total	366	55	7	1	1	4	0	434
1600-1615	173	12	2	0	0	1	1	189
1615-1630	0	14	3	0	2	0	1	20
1630-1645	0	17	2	0	0	1	0	20
1645-1700	167	16	1	1	1	1	0	187
Hourly Total	340	59	8	1	3	3	2	416
1700-1715	149	22	0	0	0	2	0	173
1815-1830	0	12	0	0	3	0	0	15
1730-1745	134	8	0	0	0	4	0	146
1745-1800	148	5	0	0	2	1	1	157
Hourly Total	431	47	0	0	5	7	1	491

3 Hour Totals (pm)	1137	161	15	2	9	14	3	1341
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Day Total	2108	252	53	13	19	21	4	2470
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Destination - Arm B								
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
5	0	0	0	0	0	0	0	5
4	0	0	0	0	0	0	0	4
2	1	0	0	0	0	0	0	3
4	1	0	0	0	0	0	0	5
15	2	0	0	0	0	0	0	17
3	0	0	0	0	0	0	0	3
1	3	0	0	0	0	0	0	4
1	1	0	0	0	0	0	0	2
6	1	0	0	0	0	0	0	7
11	5	0	0	0	0	0	0	16
9	0	0	0	0	0	0	0	9
8	0	0	0	0	0	0	0	8
6	3	0	0	0	0	0	0	9
9	3	0	0	0	0	0	0	12
32	6	0	0	0	0	0	0	38

58	13	0	0	0	0	0	0	71
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8	2	0	0	0	0	0	0	10
4	1	0	0	0	0	0	0	5
4	1	0	0	0	0	0	0	5
3	1	0	0	0	0	0	0	4
19	5	0	0	0	0	0	0	24
11	0	0	0	0	0	0	0	11
5	5	0	0	0	0	0	0	10
7	3	0	0	0	0	0	0	10
9	0	0	0	0	0	0	0	9
32	8	0	0	0	0	0	0	40
8	2	0	0	0	0	0	0	10
4	3	0	0	0	0	0	0	7
11	1	0	0	0	0	0	0	12
8	1	0	0	0	0	0	0	9
31	7	0	0	0	0	0	0	38

82	20	0	0	0	0	0	0	102
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140	33	0	0	0	0	0	0	173
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Destination - Arm C								
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
45	1	0	0	1	0	0	0	47
60	3	0	0	1	0	0	0	64
102	6	1	0	1	0	0	0	110
134	3	0	0	1	0	0	0	138
341	13	1	0	4	0	0	0	359
92	0	1	0	1	0	0	0	94
82	1	0	0	1	0	0	0	84
63	3	0	0	1	0	0	0	67
69	3	2	0	1	1	0	0	76
306	7	3	0	4	1	0	0	321
40	3	0	0	0	0	0	0	43
48	2	0	0	2	0	0	0	52
25	0	0	0	1	0	0	0	26
29	1	0	0	0	0	0	0	30
142	6	0	0	3	0	0	0	151

789	26	4	0	11	1	0	0	831
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23	5	0	0	1	1	0	0	30
33	0	0	0	0	0	0	0	33
25	1	0	0	0	0	0	0	26
38	5	0	0	1	0	0	0	44
119	11	0	0	2	1	0	0	133
33	6	0	0	2	0	0	0	41
26	3	0	0	0	0	0	0	29
34	3	0	0	1	0	0	0	38
21	1	0	0	0	0	0	0	22
114	13	0	0	3	0	0	0	130
19	1	0	0	1	0	0	0	21
34	2	0	0	1	1	0	0	38
20	1	0	0	2	0	0	0	23
31	5	0	0	0	0	0	0	36
104	9	0	0	4	1	0	0	118

337	33	0	0	9	2	0	0	381
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1126	59	4	0	20	3	0	0	1212
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Destination - Arm D								
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
25	11	3	0	2	0	0	0	41
51	7	1	0	1	1	0	0	61
77	13	5	0	0	1	0	0	96
107	16	4	5	1	1	0	0	134
260	47	13	5	4	3	0	0	332
100	9	5	2	1	0	0	0	117
98	15	3	0	1	0	0	0	117
118	18	3	2	1	0	0	0	142
102	16	1	3	0	0	0	0	122
418	58	12	7	3	0	0	0	498
81	6	5	0	0	0	0	0	92
78	15	4	2	1	2	0	0	102
53	12	5	0	1	0	0	0	71
56	8	7	2	0	0	0	0	73
268	41	21	4	2	2	0	0	338

946	146	46	16	9	5	0	0	1168
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83	6	2	1	0	0	0	0	92
91	7	4	1	1				



SS757 Cwmbran
 Thursday 16 June
 0700-1000 & 1500-1800
 Junction 2

Arm A - Arm A								Arm A - Arm B							Arm A - Arm C							Arm A - Arm D							Arm Total			
Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV		MC	PC	Total
0700-0715	0	0	0	0	0	0	0	25	5	0	0	0	0	0	30	224	50	2	8	0	5	0	289	7	0	0	0	0	1	0	8	327
0715-0730	0	0	0	0	0	0	0	52	6	1	0	1	0	0	60	267	62	6	1	3	9	0	348	9	1	3	0	0	0	0	13	421
0730-0745	1	0	0	0	0	0	1	61	14	1	0	0	0	0	76	328	58	12	4	0	6	0	408	14	1	0	0	0	0	0	15	500
0745-0800	0	0	0	0	0	0	0	90	5	0	5	0	1	0	101	218	41	6	3	0	5	0	273	18	1	1	0	0	0	0	20	394
Hourly Total	1	0	0	0	0	0	1	228	30	2	5	1	1	0	267	1037	211	26	16	3	25	0	1318	48	3	4	0	0	1	0	56	1642
0800-0815	1	0	0	0	0	0	1	92	5	5	0	0	0	0	102	327	68	11	3	2	4	0	415	20	3	1	0	0	0	0	24	542
0815-0830	1	0	0	0	0	0	1	71	10	1	0	1	0	0	83	265	38	11	6	1	3	0	324	21	1	0	0	1	1	0	24	432
0830-0845	1	0	0	0	0	0	1	66	7	2	0	0	0	0	75	223	40	14	4	0	9	0	290	29	0	1	0	0	0	0	30	396
0845-0900	1	0	0	0	0	0	1	64	8	2	0	0	0	0	74	191	25	9	9	1	2	0	237	20	1	2	0	0	0	0	23	335
Hourly Total	4	0	0	0	0	0	4	293	30	10	0	1	0	0	334	1006	171	45	22	4	18	0	1266	90	5	4	0	1	1	0	101	1705
0900-0915	0	0	0	0	0	0	0	49	3	5	0	0	0	0	57	199	38	6	8	0	2	0	253	13	2	0	0	0	0	0	15	325
0915-0930	0	0	0	0	0	0	0	51	3	2	1	0	0	1	58	204	31	7	7	1	2	0	252	15	0	1	0	0	0	0	16	326
0930-0945	0	0	0	0	0	0	0	37	6	3	0	1	0	0	47	160	36	9	4	3	1	0	213	14	4	1	0	0	0	0	19	279
0945-1000	2	0	0	0	0	0	2	25	5	0	1	0	0	0	31	166	30	7	12	0	1	0	216	14	2	1	1	0	0	0	18	267
Hourly Total	2	0	0	0	0	0	2	162	17	10	2	1	1	0	193	729	135	29	31	4	6	0	934	56	8	3	1	0	0	0	68	1197
3 Hour Totals (am)	7	0	0	0	0	0	7	683	77	22	7	3	2	0	794	2772	517	100	69	11	49	0	3518	194	16	11	1	1	2	0	225	4544
1500-1515	1	0	0	0	0	0	1	40	2	1	0	0	0	0	43	133	30	5	6	1	2	0	177	24	1	0	0	3	3	0	31	252
1515-1530	0	1	0	0	0	0	1	32	3	1	0	0	1	0	37	168	26	3	4	3	5	0	209	20	4	0	0	0	0	0	24	271
1530-1545	0	0	0	0	0	0	0	36	2	1	0	0	0	0	39	168	26	3	4	0	2	0	203	17	2	0	0	0	0	0	19	261
1545-1600	1	0	0	0	0	0	1	39	7	0	0	0	0	0	46	161	35	6	5	2	4	0	213	17	2	0	0	0	0	0	19	279
Hourly Total	2	1	0	0	0	0	3	147	14	3	0	0	1	0	165	630	117	17	19	6	13	0	802	78	9	0	0	3	3	0	93	1063
1600-1615	1	0	0	0	0	0	1	37	7	2	0	0	0	0	46	156	41	4	5	1	2	0	209	15	1	1	0	0	0	0	17	273
1615-1630	0	0	0	0	0	0	0	34	6	1	0	0	1	0	42	193	37	3	5	0	1	0	239	15	0	0	0	0	0	0	15	296
1630-1645	1	0	0	0	0	0	1	35	3	0	0	0	0	0	38	190	22	2	2	0	6	0	222	10	1	0	0	0	0	0	11	272
1645-1700	0	0	0	0	0	0	0	32	3	1	0	0	0	1	37	196	23	2	6	0	6	0	233	13	1	0	0	0	0	0	14	284
Hourly Total	2	0	0	0	0	0	2	138	19	4	0	0	2	0	163	735	123	11	18	1	15	0	903	53	3	1	0	0	0	0	57	1125
1700-1715	1	0	0	0	0	0	1	30	6	1	0	0	0	0	37	224	21	7	2	3	1	0	258	6	1	0	0	0	0	0	7	303
1715-1730	0	0	0	0	0	0	0	44	8	0	0	0	4	0	56	218	20	4	3	0	5	0	250	9	2	0	0	0	0	0	11	317
1730-1745	1	0	0	0	0	0	1	39	4	0	0	0	0	0	43	214	20	3	1	2	4	0	244	11	0	0	0	0	0	0	11	299
1745-1800	1	0	0	0	0	0	1	48	5	0	0	0	2	0	55	148	20	2	5	0	3	0	178	17	2	0	0	0	0	0	19	253
Hourly Total	3	0	0	0	0	0	3	161	23	1	0	0	6	0	191	804	81	16	11	5	13	0	930	43	5	0	0	0	0	0	48	1172
3 Hour Totals (pm)	7	1	0	0	0	0	8	446	56	8	0	0	9	0	519	2169	321	44	48	12	41	0	2635	174	17	1	0	3	3	0	198	3360
Day Total	14	1	0	0	0	0	15	1129	133	30	7	3	11	0	1313	4941	838	144	117	23	90	0	6153	368	33	12	1	4	5	0	423	7904

APPENDIX 4.2
 CTC Data (Junction 2)

Arm C - Arm A							
Car	LGV	OGV1	PSV	MC	PC	Total	
0700-0715	94	26	9	6	0	0	135
0715-0730	125	22	8	5	0	0	160
0730-0745	168	32	6	7	1	2	216
0745-0800	194	38	9	3	0	1	245
Hourly Total	581	118	32	21	1	3	756
0800-0815	161	34	12	13	0	1	221
0815-0830	138	29	5	5	1	2	180
0830-0845	150	29	2	11	1	0	193
0845-0900	136	34	9	4	0	0	183
Hourly Total	585	126	28	33	2	3	777
0900-0915	111	25	12	8	1	0	157
0915-0930	108	39	3	10	0	2	162
0930-0945	108	26	8	7	0	1	150
0945-1000	108	30	6	7	1	0	152
Hourly Total	435	120	29	32	2	3	621

Arm C - Arm B							
Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
33	6	3	0	0	0	0	42
52	3	0	0	0	1	0	56
90	2	3	0	0	0	0	95
121	7	4	0	0	0	0	132
296	18	10	0	0	1	0	325
80	2	0	2	0	0	0	84
81	5	1	0	0	0	0	87
87	8	1	2	0	0	0	98
82	9	1	3	0	1	0	96
330	24	3	7	0	1	0	365
49	5	0	0	0	0	0	54
42	6	2	1	0	1	0	52
24	3	2	0	0	0	0	29
41	4	5	1	0	0	0	51
156	18	9	2	0	1	0	186

Arm C - Arm C							
Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
1	0	0	0	0	0	0	1
1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	2
4	0	0	0	0	0	0	4
1	0	0	0	0	0	0	1
1	0	0	0	0	0	0	1
3	0	0	0	0	0	0	3
0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	5
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	1

Arm C - Arm D							
Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
17	3	0	0	0	0	0	20
19	0	0	0	0	0	0	19
29	2	0	0	0	0	0	31
24	3	2	0	0	0	0	29
89	8	2	0	0	0	0	99
32	5	1	0	0	0	0	38
61	9	1	1	1	0	0	73
53	6	0	0	0	0	0	59
33	3	1	0	0	0	0	37
179	23	3	1	1	0	0	207
19	3	0	0	0	0	0	22
19	5	1	0	0	0	0	25
17	5	0	0	0	0	0	22
26	5	0	0	0	0	0	31
81	18	1	0	0	0	0	100

Arm Total
198
236
342
408
1184
344
341
353
316
1354
233
239
202
234
908

3 Hour Totals (am)	1601	364	89	86	5	9	0	2154
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782	60	22	9	0	3	0	876
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10	0	0	0	0	0	0	0	10
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349	49	6	1	1	0	0	406
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3446

1500-1515	168	37	7	2	0	8	0	222
1515-1530	175	27	9	10	0	1	0	222
1530-1545	179	44	2	5	1	3	0	234
1545-1600	178	31	6	5	1	2	0	223
Hourly Total	700	139	24	22	2	14	0	901
1600-1615	210	43	4	7	1	5	0	270
1615-1630	224	57	7	2	0	8	0	298
1630-1645	239	33	5	7	0	4	0	288
1645-1700	211	27	2	3	0	6	0	249
Hourly Total	884	160	18	19	1	23	0	1105
1700-1715	198	32	3	5	0	7	0	245
1815-1830	229	28	1	5	0	2	0	265
1730-1745	213	21	0	0	0	3	0	237
1745-1800	240	19	0	3	2	2	0	266
Hourly Total	880	100	4	13	2	14	0	1013

45	4	1	1	0	1	0	52
53	6	3	1	0	0	0	63
44	2	2	1	0	0	0	49
57	10	2	0	0	0	0	69
199	22	8	3	0	1	0	233
47	4	1	0	1	0	0	53
37	6	0	0	0	2	0	45
45	8	0	0	0	1	0	54
52	1	0	0	0	0	0	53
181	19	1	0	1	3	0	205
63	4	2	0	0	0	0	69
49	4	1	0	0	0	0	54
57	3	1	0	0	0	0	61
44	2	1	0	0	0	0	47
213	13	5	0	0	0	0	231

1	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	2
1	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	2
0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	2

58	4	1	0	0	0	0	63
31	5	1	0	0	1	0	38
31	7	1	1	0	0	0	40
32	5	0	0	0	0	0	37
152	21	3	1	0	1	0	178
36	5	0	0	0	1	0	42
42	7	0	0	0	1	0	50
37	7	0	0	0	0	0	44
52	7	0	0	0	0	0	59
167	26	0	0	0	2	0	195
37	8	0	0	0	1	0	46
42	5	0	0	0	1	0	48
35	2	0	0	0	2	0	39
39	6	0	0	0	0	0	45
153	21	0	0	0	4	0	178

338
324
323
329
1314
366
393
387
361
1507
361
367
338
358
1424

3 Hour Totals (pm)	2464	399	46	54	5	51	0	3019
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593	54	14	3	1	4	0	669
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4	1	1	0	0	0	0	6
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472	68	3	1	0	7	0	551
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4245

Day Total	4065	763	135	140	10	60	0	5173
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1375	114	36	12	1	7	0	1545
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14	1	1	0	0	0	0	16
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821	117	9	2	1	7	0	957
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7691

	Arm D - Arm A								Arm D - Arm B								Arm D - Arm C								Arm D - Arm D								Arm Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total	
0700-0715	2	0	0	0	0	0	0	2	13	2	0	0	2	0	0	17	37	4	0	0	0	0	0	41	0	0	0	0	0	0	0	0	60
0715-0730	2	0	1	0	0	0	0	3	16	2	0	0	0	0	0	18	32	6	1	0	0	1	0	40	0	0	0	0	0	0	0	0	61
0730-0745	5	3	0	0	0	0	0	8	21	3	2	0	1	1	0	28	40	9	0	0	0	1	0	50	1	0	0	0	0	0	0	1	67
0745-0800	12	0	0	0	0	1	0	13	31	7	0	0	0	0	0	38	38	7	0	0	0	0	0	45	0	0	0	0	0	0	0	0	96
Hourly Total	21	3	1	0	0	1	0	26	81	14	2	0	3	1	0	101	147	26	1	0	0	2	0	176	1	0	0	0	0	0	0	1	304
0800-0815	7	0	0	0	0	0	0	7	23	4	1	0	1	0	0	29	41	10	1	0	0	0	0	52	0	0	0	0	0	0	0	0	88
0815-0830	17	0	0	0	0	0	0	17	20	4	1	0	0	0	0	25	53	7	0	0	0	0	0	60	0	0	0	0	0	0	0	0	102
0830-0845	12	1	0	0	0	4	0	17	28	6	0	0	1	0	0	35	62	12	1	0	0	1	0	76	0	0	0	0	0	0	0	0	128
0845-0900	17	1	0	0	1	0	0	19	22	3	0	0	0	0	0	25	34	5	2	0	0	0	0	41	0	0	0	0	0	0	0	0	85
Hourly Total	53	2	0	0	1	4	0	60	93	17	2	0	2	0	0	114	190	34	4	0	0	1	0	229	0	0	0	0	0	0	0	0	403
0900-0915	12	0	1	1	0	1	0	15	26	1	0	0	0	0	0	27	22	4	0	0	1	0	0	27	0	0	0	0	0	0	0	0	69
0915-0930	11	0	0	0	0	0	0	11	28	7	0	0	1	0	0	36	32	6	0	0	0	3	0	41	0	0	0	0	0	0	0	0	88
0930-0945	15	1	0	0	0	1	0	17	19	5	0	0	1	0	0	25	25	8	0	0	0	0	0	33	0	0	0	0	0	0	0	0	75
0945-1000	4	3	1	0	0	0	0	8	19	3	2	0	0	0	0	24	12	5	0	1	0	0	0	18	0	0	0	0	0	0	0	0	50
Hourly Total	42	4	2	1	0	2	0	51	92	16	2	0	2	0	0	112	91	23	0	1	1	3	0	119	0	0	0	0	0	0	0	0	282
3 Hour Totals (am)	116	9	3	1	1	7	0	137	266	47	6	0	7	1	0	327	428	83	5	1	1	6	0	524	1	0	0	0	0	0	0	1	989
1500-1515	25	4	0	0	0	0	0	29	26	5	0	0	1	0	0	32	48	2	0	0	0	1	0	51	0	0	0	0	0	0	0	0	112
1515-1530	18	1	0	0	0	0	0	19	32	1	1	0	0	0	0	34	51	2	1	0	0	0	0	54	0	0	0	0	0	0	0	0	107
1530-1545	24	0	0	0	1	1	0	26	27	4	0	0	0	1	0	32	50	4	1	0	0	0	0	55	0	0	0	0	0	0	0	0	113
1545-1600	10	1	0	0	0	0	0	11	27	2	1	0	0	2	0	32	27	3	0	0	0	0	0	30	0	0	0	0	0	0	0	0	73
Hourly Total	77	6	0	0	1	1	0	85	112	12	2	0	1	3	0	130	176	11	2	0	0	1	0	190	0	0	0	0	0	0	0	0	405
1600-1615	23	1	0	0	1	2	0	27	35	6	0	0	1	0	0	42	32	6	0	0	0	0	0	38	0	0	0	0	0	0	0	0	107
1615-1630	7	0	0	0	0	0	0	7	34	1	0	0	0	0	0	35	38	4	0	0	0	0	0	42	0	0	0	0	0	0	0	0	94
1630-1645	3	2	0	0	0	0	0	5	36	4	0	0	1	1	0	42	27	4	0	0	0	1	0	32	0	0	0	0	0	0	0	0	79
1645-1700	7	0	0	0	0	1	0	8	42	1	0	0	0	0	0	43	27	3	0	0	0	0	0	30	0	0	0	0	0	0	0	0	81
Hourly Total	40	3	0	0	1	3	0	47	147	12	0	0	2	1	0	162	124	17	0	0	0	1	0	142	0	0	0	0	0	0	0	0	351
1700-1715	5	0	0	0	0	0	0	5	36	1	0	0	1	0	2	40	29	2	0	0	0	0	0	31	0	0	0	0	0	0	0	0	76
1815-1830	7	0	0	0	0	0	0	7	35	1	0	0	0	0	0	36	21	5	0	0	0	0	0	26	0	0	0	0	0	0	0	0	69
1730-1745	8	0	0	0	0	0	0	8	29	1	0	0	1	0	0	31	33	5	0	0	0	0	0	38	0	0	0	0	0	0	0	0	77
1745-1800	10	0	0	0	0	0	0	10	26	1	0	0	0	0	0	27	22	3	0	0	0	1	0	26	0	0	0	0	0	0	0	0	63
Hourly Total	30	0	0	0	0	0	0	30	126	4	0	0	2	0	2	134	105	15	0	0	0	1	0	121	0	0	0	0	0	0	0	0	285
3 Hour Totals (pm)	147	9	0	0	2	4	0	162	385	28	2	0	5	4	2	426	405	43	2	0	0	3	0	453	0	0	0	0	0	0	0	0	1041
Day Total	263	18	3	1	3	11	0	299	651	75	8	0	12	5	2	753	833	126	7	1	1	9	0	977	1	0	0	0	0	0	0	1	2030

	Origin - Arm A							Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	
0700-0715	256	55	2	8	0	6	0	327
0715-0730	328	69	10	1	4	9	0	421
0730-0745	404	73	13	4	0	6	0	500
0745-0800	326	47	7	8	0	6	0	394
Hourly Total	1314	244	32	21	4	27	0	1642
0800-0815	440	76	17	3	2	4	0	542
0815-0830	358	49	12	6	3	4	0	432
0830-0845	319	47	17	4	0	9	0	396
0845-0900	276	34	13	9	1	2	0	335
Hourly Total	1393	206	59	22	6	19	0	1705
0900-0915	261	43	11	8	0	2	0	325
0915-0930	270	34	10	8	1	3	0	326
0930-0945	211	46	13	4	4	1	0	279
0945-1000	207	37	8	14	0	1	0	267
Hourly Total	949	160	42	34	5	7	0	1197

	Origin - Arm B						Total
	Car	LGV	OGV1	OGV2	PSV	MC	
72	4	1	0	0	1	0	78
100	4	2	0	1	1	0	108
127	5	1	0	0	0	0	133
93	10	3	2	1	1	0	110
392	23	7	2	2	3	0	429
93	9	5	0	0	0	0	107
88	5	3	3	2	0	0	101
93	8	9	0	1	0	0	111
64	10	1	0	2	0	0	77
338	32	18	3	5	0	0	396
66	11	3	2	1	1	0	84
60	5	5	2	1	0	0	73
51	14	3	2	0	2	0	72
61	6	2	0	1	0	1	71
238	36	13	6	3	3	1	300

	Origin - Arm C						Total
	Car	LGV	OGV1	OGV2	PSV	MC	
145	35	12	6	0	0	0	198
197	25	8	5	0	1	0	236
287	36	9	7	1	2	0	342
341	48	15	3	0	1	0	408
970	144	44	21	1	4	0	1184
274	41	13	15	0	1	0	344
281	43	7	6	2	2	0	341
293	43	3	13	1	0	0	353
251	46	11	7	0	1	0	316
1099	173	34	41	3	4	0	1354
179	33	12	8	1	0	0	233
169	50	6	11	0	3	0	239
150	34	10	7	0	1	0	202
175	39	11	8	1	0	0	234
673	156	39	34	2	4	0	908

	Origin - Arm D						Total
	Car	LGV	OGV1	OGV2	PSV	MC	
52	6	0	0	2	0	0	60
50	8	2	0	0	1	0	61
67	15	2	0	1	2	0	87
81	14	0	0	0	1	0	96
250	43	4	0	3	4	0	304
71	14	2	0	1	0	0	88
90	11	1	0	0	0	0	102
102	19	1	0	1	5	0	128
73	9	2	0	1	0	0	85
336	53	6	0	3	5	0	403
60	5	1	1	1	1	0	69
71	13	0	0	1	3	0	88
59	14	0	0	1	1	0	75
35	11	3	1	0	0	0	50
225	43	4	2	3	5	0	282

Arm Total
663
826
1062
1008
3559
1081
976
988
813
3858
711
726
628
622
2687

3 Hour Totals (am)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	3656	610	133	77	15	53	0	4544

3 Hour Totals (am)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	968	91	38	11	10	6	1	1125

3 Hour Totals (am)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	2742	473	117	96	6	12	0	3446

3 Hour Totals (am)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	811	139	14	2	9	14	0	989

3 Hour Totals (am)
10104

1500-1515	198	33	6	6	4	5	0	252
1515-1530	220	34	4	4	3	6	0	271
1530-1545	221	30	4	4	0	2	0	261
1545-1600	218	44	6	5	2	4	0	279
Hourly Total	857	141	20	19	9	17	0	1063
1600-1615	209	49	7	5	1	2	0	273
1615-1630	242	43	4	5	0	2	0	296
1630-1645	236	26	2	2	0	6	0	272
1645-1700	241	27	3	6	0	7	0	284
Hourly Total	928	145	16	18	1	17	0	1125
1700-1715	261	28	8	2	3	1	0	303
1815-1830	271	30	4	3	0	9	0	317
1730-1745	265	24	3	1	2	4	0	299
1745-1800	214	27	2	5	0	5	0	253
Hourly Total	1011	109	17	11	5	19	0	1172

109	21	1	0	0	3	0	134
113	14	0	0	0	0	0	127
115	8	2	0	0	1	0	126
125	13	4	1	1	0	0	144
462	56	7	1	1	4	0	531
176	15	2	0	0	1	1	195
120	13	3	0	2	0	1	139
157	17	2	0	0	1	0	177
169	16	1	1	1	1	0	189
622	61	8	1	3	3	2	700
148	21	0	0	0	2	0	171
158	13	0	0	3	0	0	174
128	8	0	0	0	4	0	140
154	6	0	0	2	1	1	164
588	48	0	0	5	7	1	649

272	45	9	3	0	9	0	338
260	38	13	11	0	2	0	324
254	53	5	7	1	3	0	323
267	46	8	5	1	2	0	329
1053	182	35	26	2	16	0	1314
294	52	5	7	2	6	0	366
303	70	7	2	0	11	0	393
322	48	5	7	0	5	0	387
315	35	2	3	0	6	0	361
1234	205	19	19	2	28	0	1507
298	44	6	5	0	8	0	361
320	37	2	5	0	3	0	367
305	27	1	0	0	5	0	338
323	27	1	3	2	2	0	358
1246	135	10	13	2	18	0	1424

99	11	0	0	1	1	0	112
101	4	2	0	0	0	0	107
101	8	1	0	1	2	0	113
64	6	1	0	0	2	0	73
365	29	4	0	2	5	0	405
90	13	0	0	2	2	0	107
79	5	0	0	0	0	0	84
66	10	0	0	1	2	0	79
76	4	0	0	0	1	0	81
311	32	0	0	3	5	0	351
70	3	0	0	1	0	2	76
63	6	0	0	0	0	0	69
70	6	0	0	1	0	0	77
58	4	0	0	0	1	0	63
261	19	0	0	2	1	2	285

836
829
823
825
3313
941
912
915
915
3683
911
927
854
838
3530

3 Hour Totals (pm)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	2796	395	53	48	15	53	0	3360

3 Hour Totals (pm)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	1672	165	15	2	9	14	3	1880

3 Hour Totals (pm)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	3533	522	64	58	6	62	0	4245

3 Hour Totals (pm)	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	937	80	4	0	7	11	2	1041

3 Hour Totals (pm)
10526

Day Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	6452	1005	186	125	30	106	0	7904

Day Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	2640	256	53	13	19	20	4	3005

Day Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	6275	995	181	154	12	74	0	7691

Day Total	Car	LGV	OGV1	OGV2	PSV	MC	PC	Total
	1748	219	18	2	16	25	2	2030

Day Total
20630

	Destination - Arm A							Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	
0700-0715	126	29	10	6	0	1	0	172
0715-0730	169	24	10	5	0	0	0	208
0730-0745	224	36	6	7	1	2	0	276
0745-0800	242	42	10	3	0	3	0	300
Hourly Total	761	131	36	21	1	6	0	956
0800-0815	213	37	14	13	0	1	0	278
0815-0830	189	31	7	7	2	2	0	238
0830-0845	195	35	6	11	1	4	0	252
0845-0900	184	38	10	4	2	0	0	238
Hourly Total	781	141	37	35	5	7	0	1006
0900-0915	147	31	13	9	1	1	0	202
0915-0930	140	41	6	10	0	2	0	199
0930-0945	139	33	10	7	0	4	0	193
0945-1000	137	35	8	7	1	0	0	188
Hourly Total	563	140	37	33	2	7	0	782

	Destination - Arm B							Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	
71	13	3	0	2	0	0	0	89
120	11	1	0	1	1	1	0	134
172	19	6	0	1	1	1	0	199
242	19	4	5	0	1	0	0	271
605	62	14	5	4	3	0	0	693
195	11	6	2	1	0	0	0	215
172	19	3	0	1	0	0	0	195
181	21	3	2	1	0	0	0	208
168	20	3	3	0	1	0	0	195
716	71	15	7	3	1	0	0	813
124	9	5	0	0	0	0	0	138
121	16	4	2	1	2	0	0	146
80	14	5	0	2	0	0	0	101
85	12	7	2	0	0	0	0	106
410	51	21	4	3	2	0	0	491

	Destination - Arm C							Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	
294	54	2	8	0	5	0	0	363
347	68	8	1	3	10	0	0	437
422	69	12	4	0	7	0	0	514
300	53	7	5	0	5	0	0	370
1363	244	29	18	3	27	0	0	1684
396	79	14	3	2	4	0	0	498
344	48	11	7	1	3	0	0	414
322	53	20	4	1	10	0	0	410
242	35	11	9	1	2	0	0	300
1304	215	56	23	5	19	0	0	1622
244	44	7	10	2	2	0	0	309
250	38	8	9	1	5	0	0	311
198	46	9	6	3	1	0	0	263
199	38	8	13	0	1	0	0	259
891	166	32	38	6	9	0	0	1142

	Destination - Arm D							Total
	Car	LGV	OGV1	OGV2	PSV	MC	PC	
34	4	0	0	0	1	0	0	39
39	3	3	0	1	1	0	0	47
67	5	1	0	0	0	0	0	73
57	5	4	0	1	0	0	0	67
197	17	8	0	2	2	0	0	226
74	13	3	0	0	0	0	0	90
112	10	2	1	3	1	0	0	129
109	8	1	0	0	0	0	0	118
70	6	3	0	1	0	0	0	80
365	37	9	1	4	1	0	0	417
51	8	2	0	0	1	0	0	62
59	7	3	0	1	0	0	0	70
54	15	2	0	0	0	0	0	71
57	8	1	1	1	0	1	0	69
221	38	8	1	2	1	1	1	272

Arm Total
663
826
1062
1008
3559
1081
976
988
813
3858
711
726
628
622
2687

3 Hour Totals (am)	2105	412	110	89	8	20	0	2744
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1731	184	50	16	10	6	0	0	1997
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3558	625	117	79	14	55	0	0	4448
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783	92	25	2	8	4	1	0	915
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10104

1500-1515	238	51	7	2	0	10	0	308
1515-1530	239	35	9	10	0	1	0	294
1530-1545	0	49	3	5	2	5	0	64
1545-1600	251	42	8	6	1	2	0	310
Hourly Total	728	177	27	23	3	18	0	976
1600-1615	307	52	5	7	2	7	0	380
1615-1630	0	64	9	2	0	8	0	83
1630-1645	0	46	7	7	0	4	0	64
1645-1700	288	36	2	4	0	7	0	337
Hourly Total	595	198	23	20	2	26	0	864
1700-1715	253	41	3	5	0	8	0	310
1815-1830	0	33	1	5	2	2	0	43
1730-1745	272	26	0	0	0	7	0	305
1745-1800	322	23	0	3	3	2	1	354
Hourly Total	847	123	4	13	5	19	1	1012

111	11	2	1	1	1	0	0	127
117	10	5	1	0	1	0	0	134
107	8	3	1	0	1	0	0	120
123	19	3	0	0	2	0	0	147
458	48	13	3	1	5	0	0	528
119	17	3	0	2	0	0	0	141
105	13	1	0	0	3	0	0	122
116	15	0	0	1	2	0	0	134
126	5	1	0	0	1	0	0	133
466	50	5	0	3	6	0	0	530
129	11	3	0	1	0	2	0	146
128	13	1	0	0	4	0	0	146
125	8	1	0	1	0	0	0	135
118	8	1	0	0	2	0	0	129
500	40	6	0	2	6	2	0	556

215	35	5	6	1	3	0	0	265
255	30	4	4	3	5	0	0	301
252	31	4	4	0	2	0	0	293
221	39	8	5	2	4	0	0	279
943	135	21	19	6	14	0	0	1138
258	49	4	5	1	2	0	0	319
267	42	3	5	0	1	0	0	318
273	28	2	2	0	7	0	0	312
282	27	3	6	0	6	0	0	324
1080	146	12	18	1	16	0	0	1273
314	29	8	2	3	1	0	0	357
297	29	4	3	0	5	0	0	338
289	28	3	1	2	4	0	0	327
215	24	2	5	0	5	0	0	251
1115	110	17	11	5	15	0	0	1273

114	13	2	0	3	4	0	0	136
83	15	1	0	0	1	0	0	100
75	11	2	1	0	0	0	0	89
79	9	0	0	1	0	0	0	89
351	48	5	1	4	5	0	0	414
85	11	2	0	0	2	1	0	101
84	12	1	0	2	1	1	0	101
86	12	0	0	0	1	0	0	99
105	14	0	0	1	1	0	0	121
360	49	3	0	3	5	2	0	422
81	15	0	0	0	2	0	0	98
97	11	0	0	1	1	0	0	110
82	3	0	0	0	2	0	0	87
94	9	0	0	1	0	0	0	104
354	38	0	0	2	5	0	0	399

836
829
566
825
3056
941
624
609
915
3089
911
637
854
838
3240

3 Hour Totals (pm)	2170	498	54	56	10	63	1	2852
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1424	138	24	3	6	17	2	0	1614
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3138	391	50	48	12	45	0	0	3684
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1065	135	8	1	9	15	2	0	1235
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9385

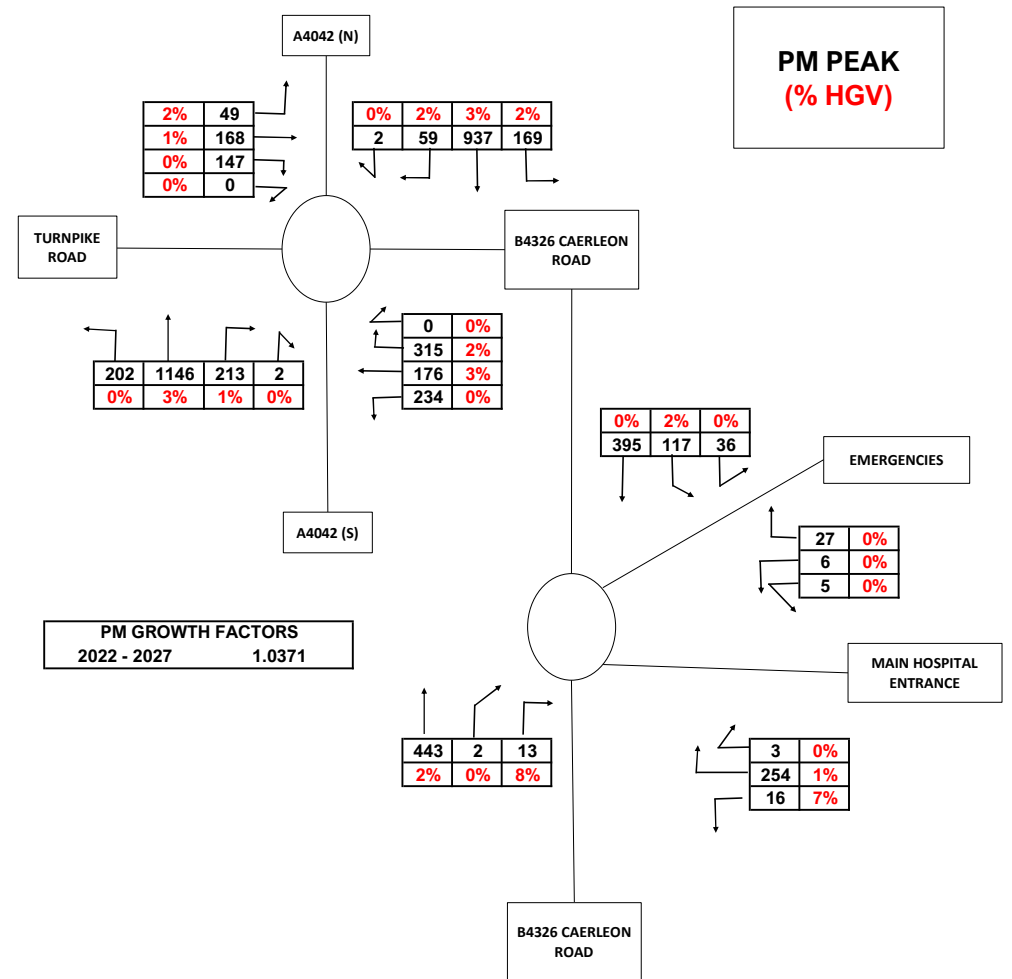
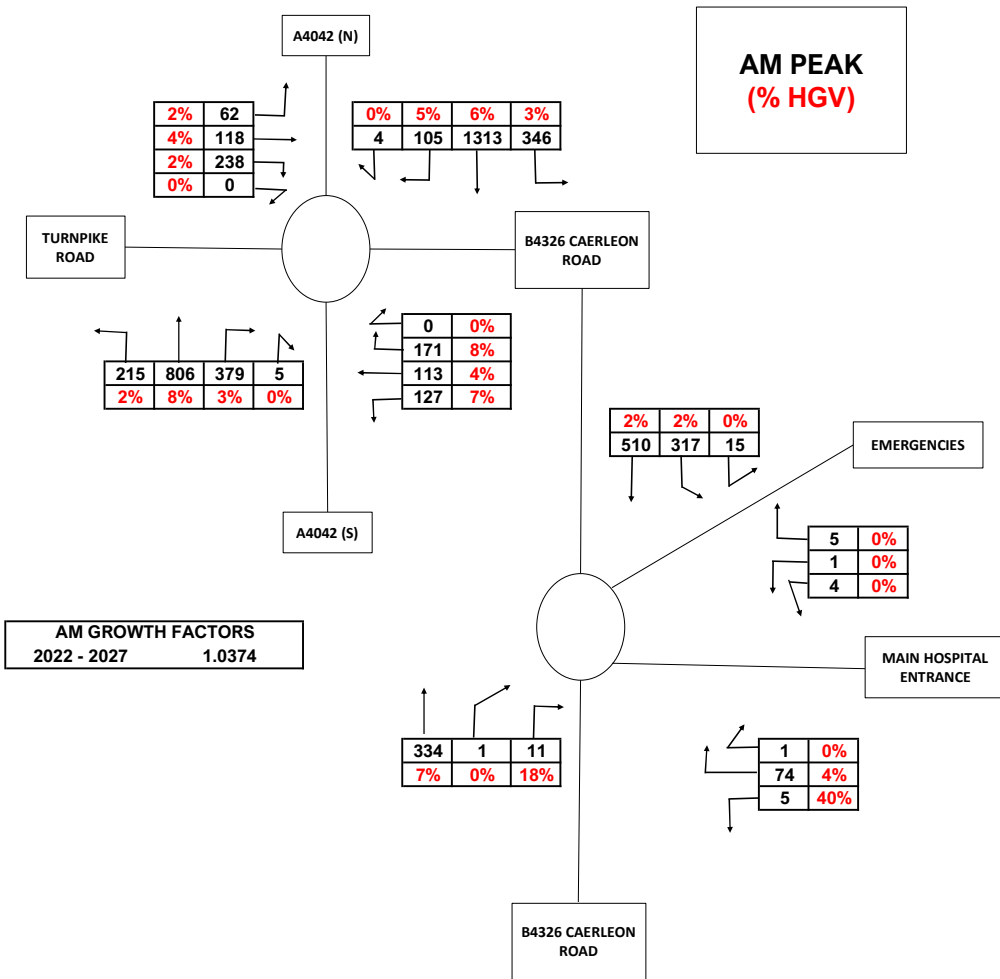
Day Total	4275	910	164	145	18	83	1	5596
-----------	------	-----	-----	-----	----	----	---	------

3155	322	74	19	16	23	2	0	3611
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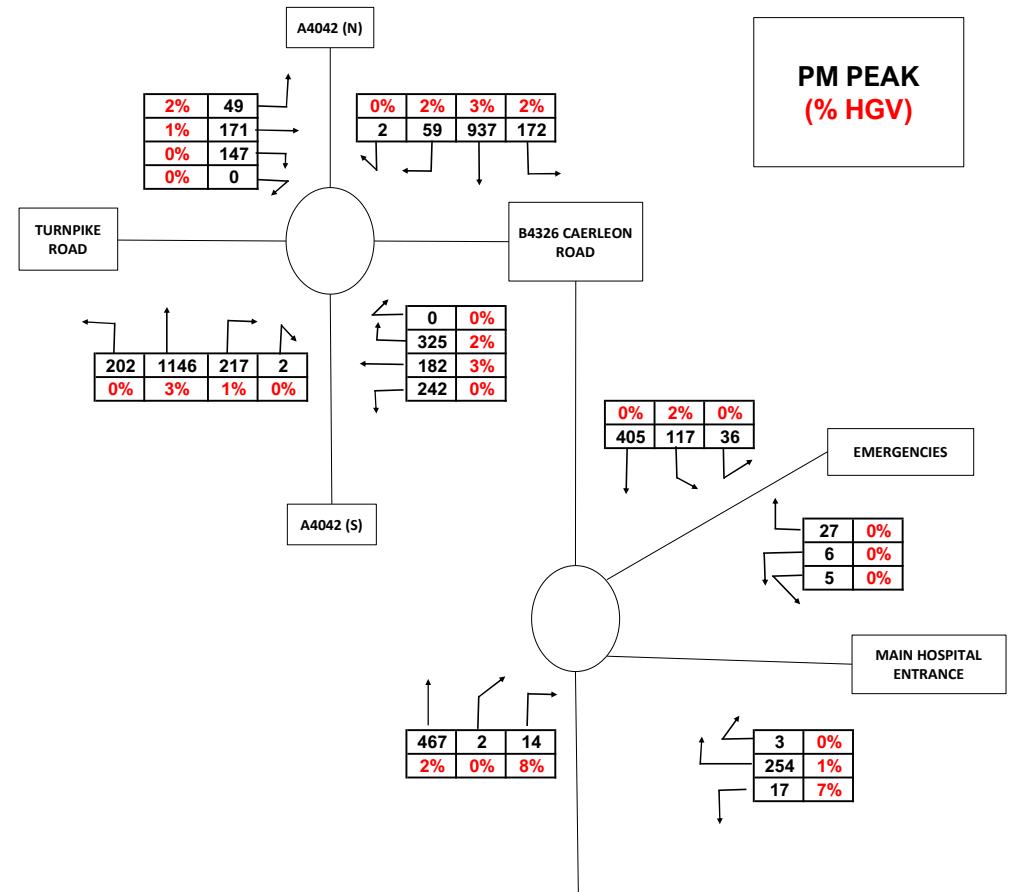
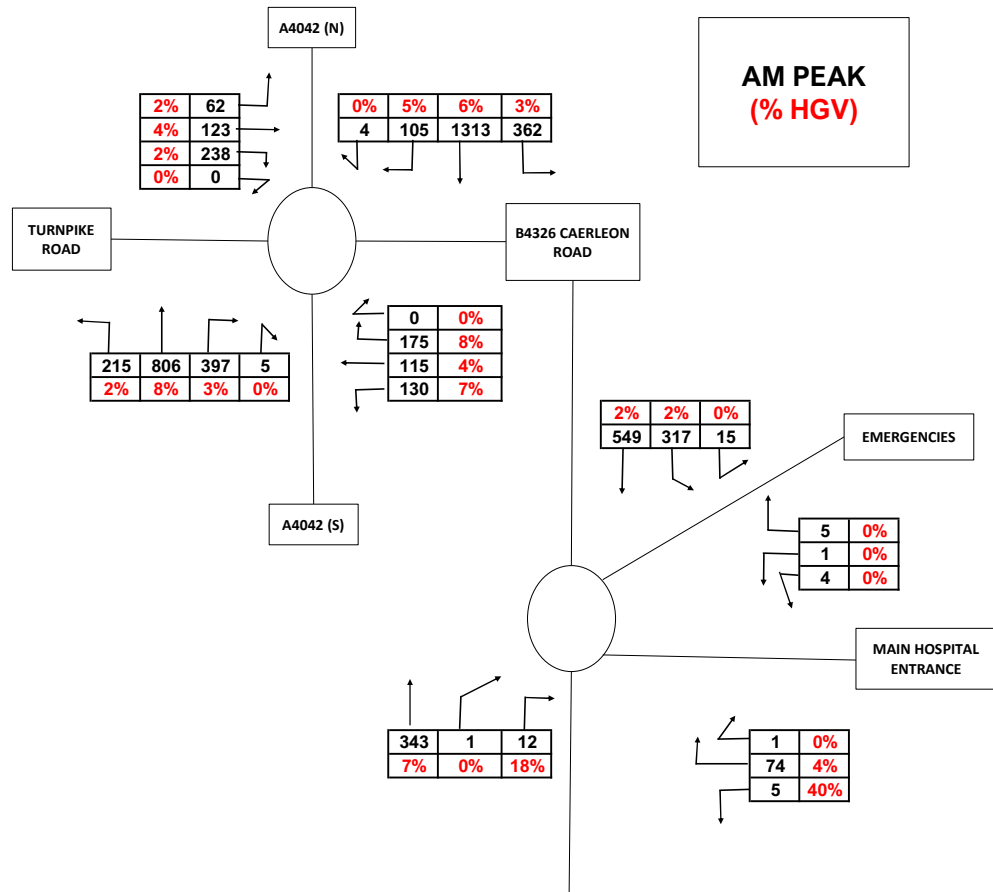
6696	1016	167	127	26	100	0	0	8132
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1848	227	33	3	17	19	3	0	2150
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19489

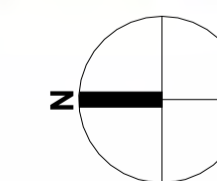
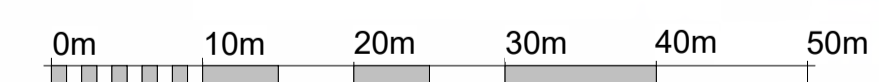
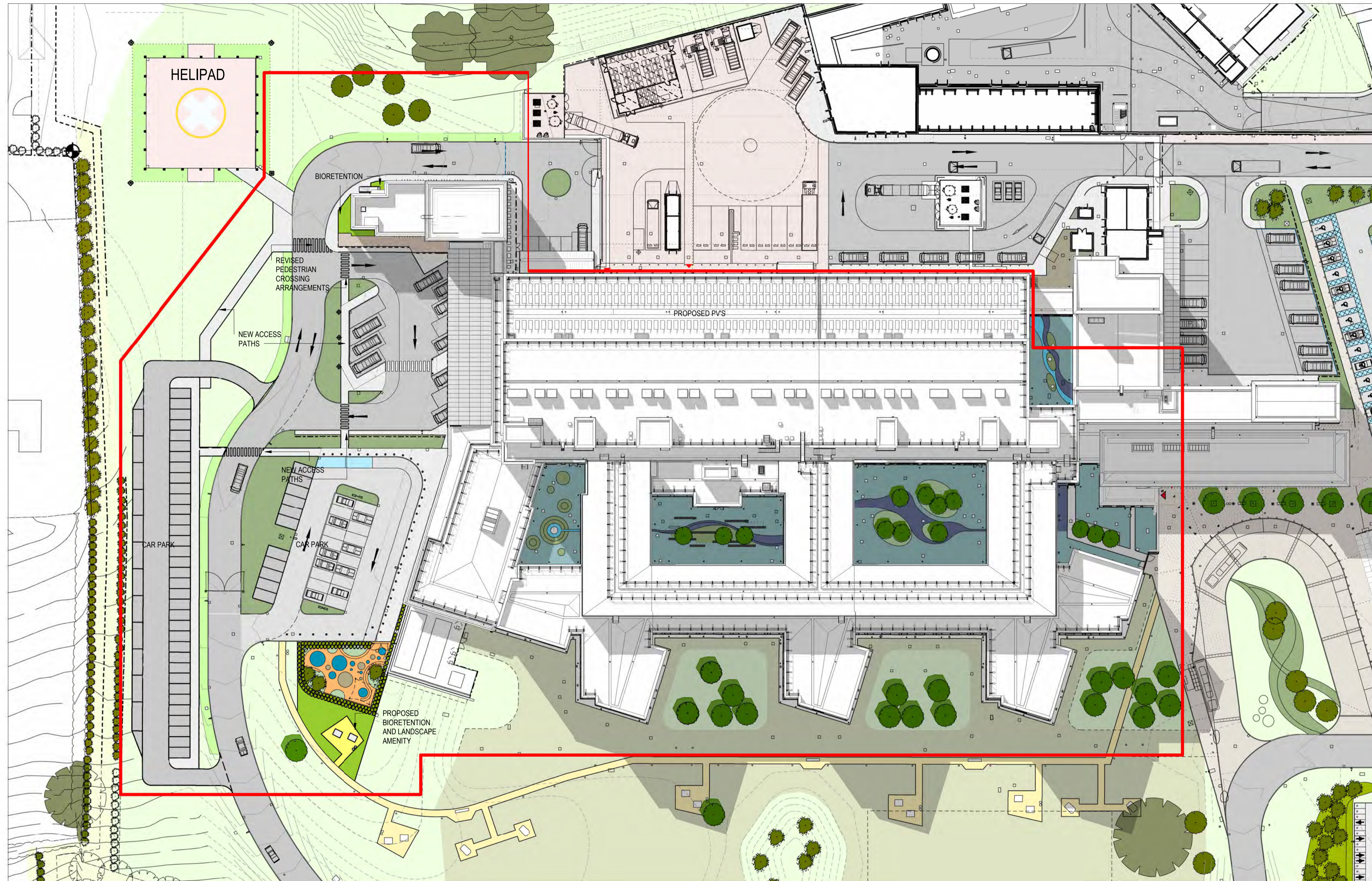


**APPENDIX 4.3
2027 Baseline Flows**



**APPENDIX 4.4
2027 Committed Flows**

PROPOSED SITE LAYOUT



BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED.
ALL DIMENSIONS SHOULD BE CHECKED ON SITE.

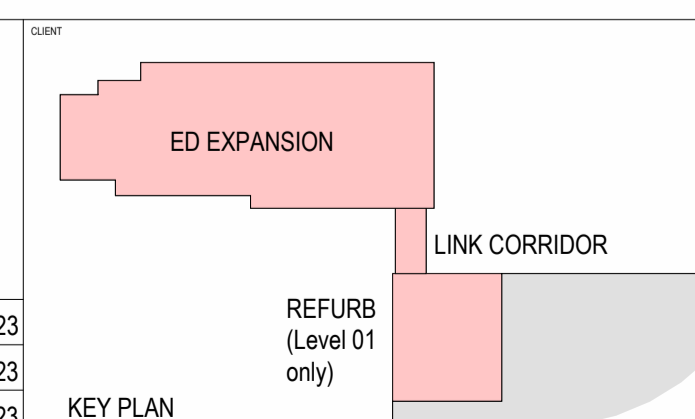
ANY DRAWING ERRORS OR DIVERGENCIES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING BEFORE WORK COMMENCES:
 • THE CDM DESIGN ISSUES REGISTER
 • THE BDP RISK SERIES OF DRAWINGS
 • THE PROJECT CDM RISK REGISTER

NOTES

REVISION	DESCRIPTION	DRAWN	CHECKED	DATE	REVISION	DESCRIPTION	DRAWN	CHECKED	DATE	REVISION	DESCRIPTION	DRAWN	CHECKED	DATE

P03	Parking layout updated	BH	SW	05/06/23
P02	Red line boundary update	BH	SW	31/05/23
P01	Planning Issue	BH	SW	25/05/23



7 Hill Street
 Bristol
 BS1 5RW
 United Kingdom
 T + 44 (0)117 929 9861
 www.bdp.com

BDP.

PROJECT TITLE
 GUH ED Expansion

BDP JOB NUMBER
 P3003076

DRAWING TITLE
 Proposed Site Plan

DRAWING NO.
 P012X-BDP-ED-XX-PL-A-901012

SCALE
 @ A1

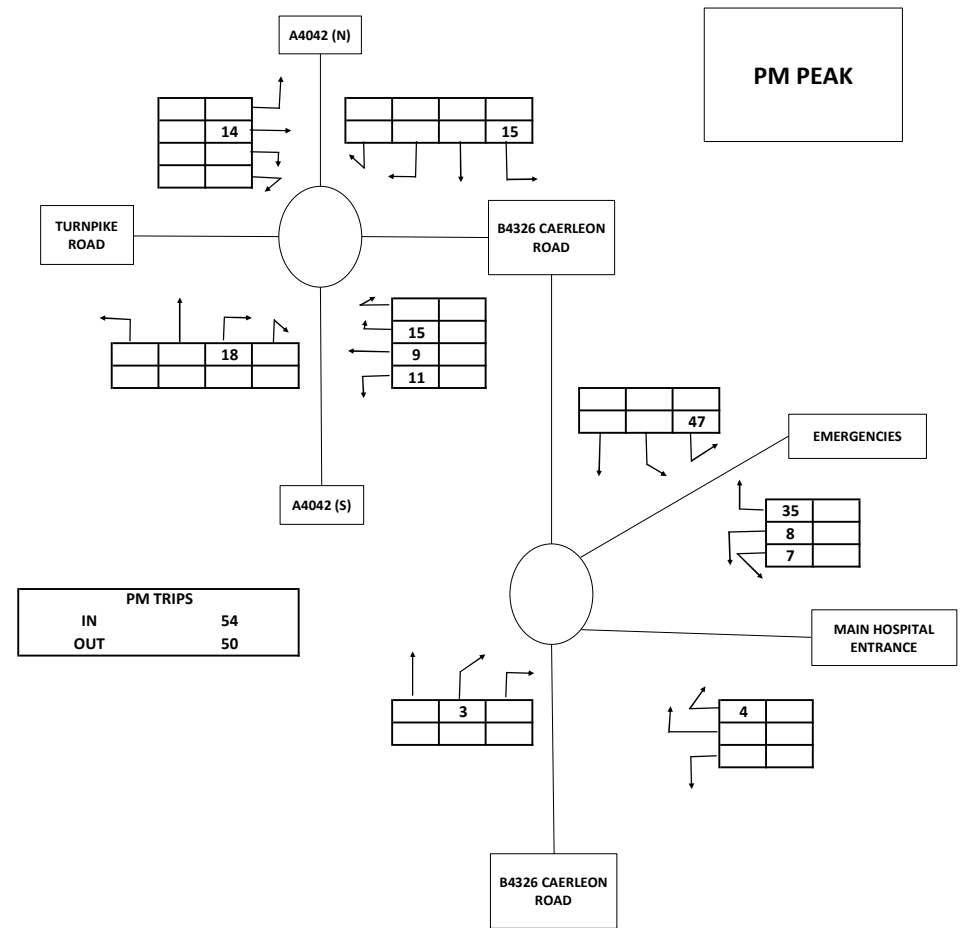
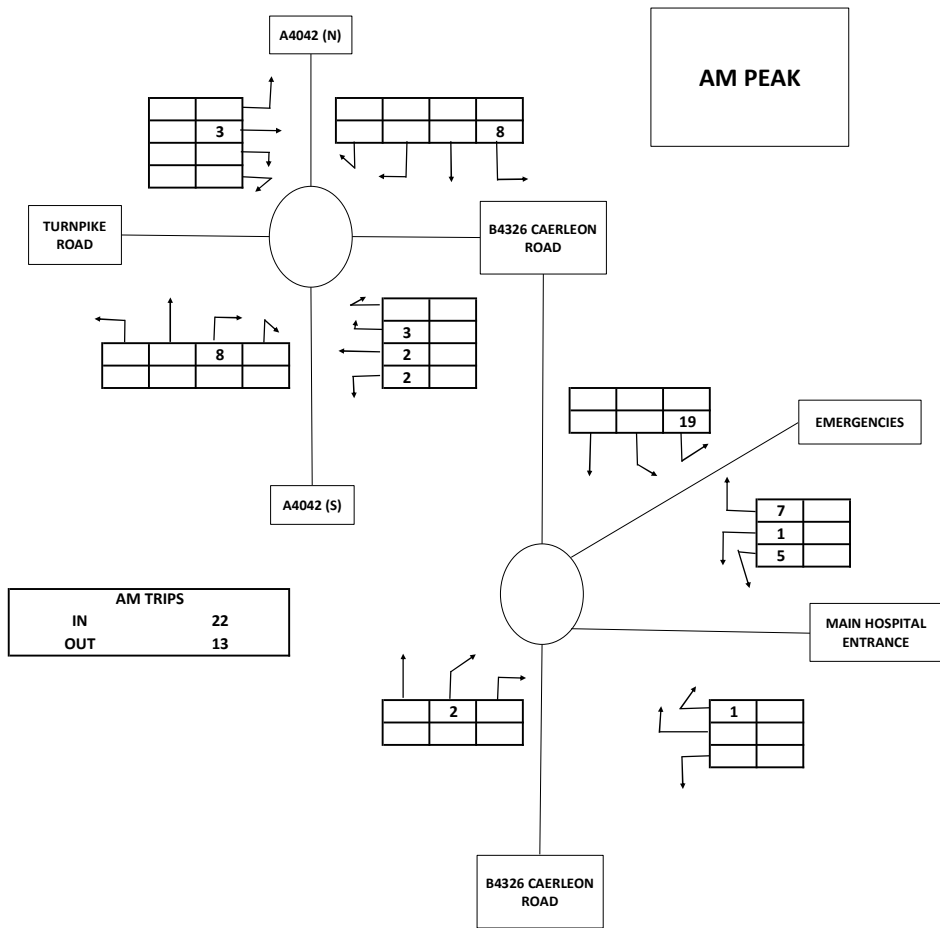
1 : 500

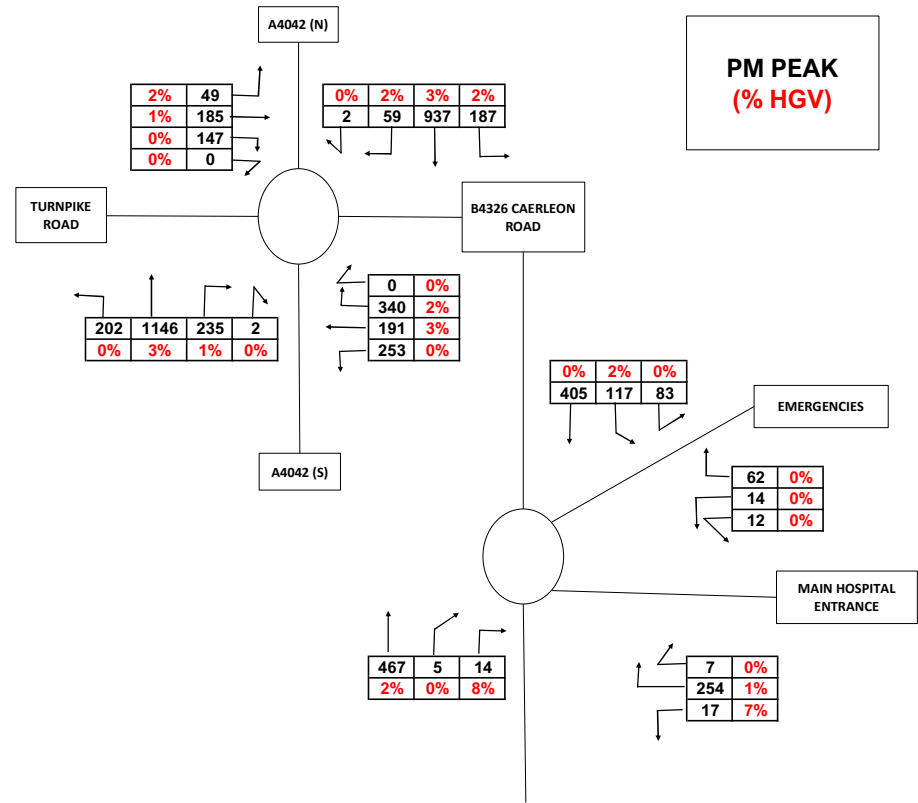
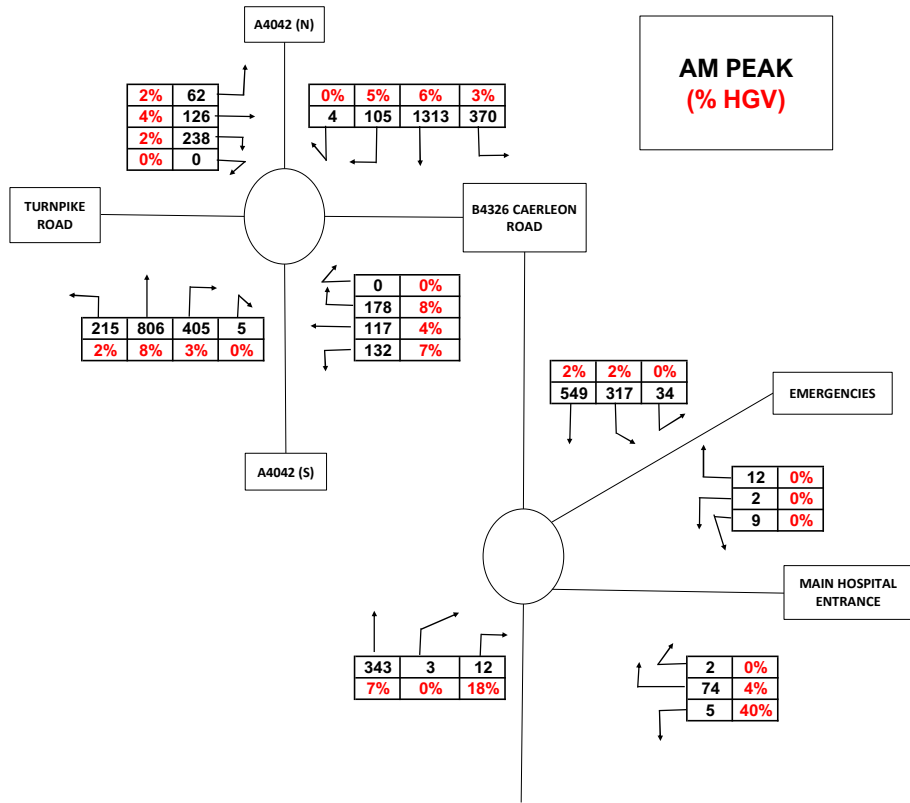
DATE PLOT ISSUED
 15/05/23

REVISION
 P03

TRIP GENERATION

6.1	Proposed Extension Flows
6.2	2027 Total Flows





**APPENDIX 6.2
2027 Total Flows**

JUNCTION CAPACITY ASSESSMENT

- 7.1 ARCADY Output: ED Access Roundabout (Junction 1)
- 7.2 ARCADY Output: Turnpike Roundabout (Junction 2)

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.0.0.1499 © Copyright TRL Software Limited, 2021
For sales and distribution information, program advice and maintenance, contact TRL Software: +44 (0)1344 379777 software@trl.co.uk trlsoftware.com
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Import of Junction 2 - Hospital Roundabout.j10

Path: \\svr-adl-fs\Traffic\5200-5299\5232 Llanfrechfa Grange\Junction Modelling\Updated (June 2022)

Report generation date: 07/06/2023 11:48:33

- »2027 Base, AM
- »2027 Base, PM
- »2027 Committed, AM
- »2027 Committed, PM
- »2027 Total, AM
- »2027 Total, PM

Summary of junction performance

	AM								PM							
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
2027 Base																
1 - Caerleon Road North	D1	1.7	6.61	0.63	A	5.76	A	49 % [1 - Caerleon Road North]	D2	0.7	4.05	0.40	A	4.55	A	81 % [4 - Caerleon Road South]
2 - Emergencies Access		0.0	4.15	0.01	A					0.0	3.41	0.04	A			
3 - Main Hospital Access		0.1	3.56	0.08	A					0.3	3.92	0.25	A			
4 - Caerleon Road South		0.5	4.33	0.31	A					0.8	5.60	0.44	A			
2027 Committed																
1 - Caerleon Road North	D3	1.9	7.18	0.66	A	6.17	A	43 % [1 - Caerleon Road North]	D4	0.7	4.11	0.41	A	4.69	A	74 % [4 - Caerleon Road South]
2 - Emergencies Access		0.0	4.28	0.01	A					0.0	3.43	0.04	A			
3 - Main Hospital Access		0.1	3.65	0.08	A					0.3	3.96	0.25	A			
4 - Caerleon Road South		0.5	4.39	0.32	A					0.9	5.85	0.46	A			
2027 Total																
1 - Caerleon Road North	D5	2.0	7.52	0.67	A	6.39	A	39 % [1 - Caerleon Road North]	D6	0.8	4.39	0.45	A	4.87	A	67 % [4 - Caerleon Road South]
2 - Emergencies Access		0.0	4.36	0.03	A					0.1	3.62	0.09	A			
3 - Main Hospital Access		0.1	3.67	0.08	A					0.3	4.11	0.26	A			
4 - Caerleon Road South		0.5	4.43	0.33	A					0.9	6.12	0.48	A			

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	02/12/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ADLUKJunction
Description	

APPENDIX 7.1
ARCADY Output: Junction 1

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	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75					✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2027 Base	PM	ONE HOUR	15:45	17:15	15	✓
D3	2027 Committed	AM	ONE HOUR	07:45	09:15	15	✓
D4	2027 Committed	PM	ONE HOUR	15:45	17:15	15	✓
D5	2027 Total	AM	ONE HOUR	07:45	09:15	15	✓
D6	2027 Total	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2027 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.76	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	49	1 - Caerleon Road North	5.76	A

Arms

Arms

Arm	Name	Description	No give-way line
1	Caerleon Road North		
2	Emergencies Access		
3	Main Hospital Access		
4	Caerleon Road South		

Roundabout Geometry

Arm	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)	Entry only	Exit only
1 - Caerleon Road North	4.50	5.90	3.4	19.0	40.0	36.0		
2 - Emergencies Access	3.70	5.20	6.5	22.3	40.0	17.0		
3 - Main Hospital Access	3.80	5.90	6.0	35.4	40.0	21.0		
4 - Caerleon Road South	4.20	4.70	1.5	24.4	40.0	31.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Caerleon Road North	0.597	1510
2 - Emergencies Access	0.608	1452
3 - Main Hospital Access	0.623	1528
4 - Caerleon Road South	0.574	1353

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 Base	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Caerleon Road North		ONE HOUR	✓	842	100.000
2 - Emergencies Access		ONE HOUR	✓	10	100.000

3 - Main Hospital Access	ONE HOUR	✓	80	100.000
4 - Caerleon Road South	ONE HOUR	✓	346	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	15	317	510
	2 - Emergencies Access	5	0	4	1
	3 - Main Hospital Access	74	1	0	5
	4 - Caerleon Road South	334	1	11	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	0	2	2
	2 - Emergencies Access	0	0	0	0
	3 - Main Hospital Access	4	0	0	40
	4 - Caerleon Road South	7	0	18	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Caerleon Road North	0.63	6.61	1.7	A	773	1159
2 - Emergencies Access	0.01	4.15	0.0	A	9	14
3 - Main Hospital Access	0.08	3.56	0.1	A	73	110
4 - Caerleon Road South	0.31	4.33	0.5	A	317	476

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	634	158	10	1475	0.430	631	310	0.0	0.7	4.252	A
2 - Emergencies Access	8	2	628	1062	0.007	8	13	0.0	0.0	3.413	A
3 - Main Hospital Access	60	15	387	1207	0.050	60	249	0.0	0.1	3.138	A
4 - Caerleon Road South	260	65	60	1227	0.212	259	387	0.0	0.3	3.716	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	757	189	12	1473	0.514	756	371	0.7	1.0	5.008	A
2 - Emergencies Access	9	2	752	985	0.009	9	15	0.0	0.0	3.688	A
3 - Main Hospital Access	72	18	463	1161	0.062	72	298	0.1	0.1	3.303	A
4 - Caerleon Road South	311	78	72	1221	0.255	311	463	0.3	0.3	3.955	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	927	232	14	1472	0.630	925	454	1.0	1.7	6.550	A
2 - Emergencies Access	11	3	920	880	0.013	11	19	0.0	0.0	4.140	A

3 - Main Hospital Access	88	22	567	1099	0.080	88	365	0.1	0.1	3.558	A
4 - Caerleon Road South	381	95	88	1212	0.314	380	567	0.3	0.5	4.328	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	927	232	14	1472	0.630	927	455	1.7	1.7	6.607	A
2 - Emergencies Access	11	3	923	879	0.013	11	19	0.0	0.0	4.147	A
3 - Main Hospital Access	88	22	568	1099	0.080	88	366	0.1	0.1	3.561	A
4 - Caerleon Road South	381	95	88	1212	0.314	381	568	0.5	0.5	4.332	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	757	189	12	1473	0.514	759	372	1.7	1.1	5.059	A
2 - Emergencies Access	9	2	756	983	0.009	9	15	0.0	0.0	3.699	A
3 - Main Hospital Access	72	18	465	1160	0.062	72	299	0.1	0.1	3.310	A
4 - Caerleon Road South	311	78	72	1221	0.255	312	465	0.5	0.3	3.961	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	634	158	10	1475	0.430	635	311	1.1	0.8	4.294	A
2 - Emergencies Access	8	2	632	1059	0.007	8	13	0.0	0.0	3.424	A
3 - Main Hospital Access	60	15	389	1206	0.050	60	250	0.1	0.1	3.145	A
4 - Caerleon Road South	260	65	60	1227	0.212	261	389	0.3	0.3	3.725	A

2027 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.55	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	81	4 - Caerleon Road South	4.55	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2027 Base	PM	ONE HOUR	15:45	17:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Caerleon Road North		ONE HOUR	✓	548	100.000
2 - Emergencies Access		ONE HOUR	✓	38	100.000
3 - Main Hospital Access		ONE HOUR	✓	273	100.000
4 - Caerleon Road South		ONE HOUR	✓	458	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	36	117	395
	2 - Emergencies Access	27	0	5	6
	3 - Main Hospital Access	254	3	0	16
	4 - Caerleon Road South	443	2	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	0	2	0
	2 - Emergencies Access	0	0	0	0
	3 - Main Hospital Access	1	0	0	7
	4 - Caerleon Road South	2	0	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Caerleon Road North	0.40	4.05	0.7	A	503	754
2 - Emergencies Access	0.04	3.41	0.0	A	35	52
3 - Main Hospital Access	0.25	3.92	0.3	A	251	376
4 - Caerleon Road South	0.44	5.60	0.8	A	420	630

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	413	103	13	1495	0.276	411	543	0.0	0.4	3.315	A
2 - Emergencies Access	29	7	394	1211	0.024	29	31	0.0	0.0	3.043	A
3 - Main Hospital Access	206	51	321	1310	0.157	205	101	0.0	0.2	3.256	A
4 - Caerleon Road South	345	86	213	1204	0.286	343	313	0.0	0.4	4.176	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	493	123	16	1494	0.330	492	650	0.4	0.5	3.592	A
2 - Emergencies Access	34	9	472	1164	0.029	34	37	0.0	0.0	3.186	A
3 - Main Hospital Access	245	61	384	1271	0.193	245	121	0.2	0.2	3.509	A
4 - Caerleon Road South	412	103	255	1180	0.349	411	375	0.4	0.5	4.681	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	603	151	20	1491	0.405	603	796	0.5	0.7	4.046	A
2 - Emergencies Access	42	10	577	1099	0.038	42	45	0.0	0.0	3.404	A
3 - Main Hospital Access	301	75	471	1218	0.247	300	148	0.2	0.3	3.922	A
4 - Caerleon Road South	504	126	312	1147	0.440	503	459	0.5	0.8	5.582	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	603	151	20	1491	0.405	603	797	0.7	0.7	4.053	A
2 - Emergencies Access	42	10	578	1098	0.038	42	45	0.0	0.0	3.406	A
3 - Main Hospital Access	301	75	471	1218	0.247	301	149	0.3	0.3	3.925	A
4 - Caerleon Road South	504	126	313	1147	0.440	504	459	0.8	0.8	5.599	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	493	123	16	1494	0.330	493	652	0.7	0.5	3.600	A
2 - Emergencies Access	34	9	473	1163	0.029	34	37	0.0	0.0	3.188	A
3 - Main Hospital Access	245	61	385	1271	0.193	246	122	0.3	0.2	3.516	A
4 - Caerleon Road South	412	103	256	1179	0.349	413	375	0.8	0.5	4.702	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	413	103	14	1495	0.276	413	546	0.5	0.4	3.326	A
2 - Emergencies Access	29	7	396	1210	0.024	29	31	0.0	0.0	3.049	A
3 - Main Hospital Access	206	51	323	1309	0.157	206	102	0.2	0.2	3.265	A
4 - Caerleon Road South	345	86	214	1203	0.287	345	314	0.5	0.4	4.199	A

2027 Committed, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	6.17	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	43	1 - Caerleon Road North	6.17	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2027 Committed	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Caerleon Road North		ONE HOUR	✓	881	100.000
2 - Emergencies Access		ONE HOUR	✓	10	100.000
3 - Main Hospital Access		ONE HOUR	✓	80	100.000
4 - Caerleon Road South		ONE HOUR	✓	356	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	15	317	549
	2 - Emergencies Access	5	0	4	1
	3 - Main Hospital Access	74	1	0	5
	4 - Caerleon Road South	343	1	12	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	0	2	2
	2 - Emergencies Access	0	0	0	0
	3 - Main Hospital Access	4	0	0	40
	4 - Caerleon Road South	7	0	18	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Caerleon Road North	0.66	7.18	1.9	A	808	1213
2 - Emergencies Access	0.01	4.28	0.0	A	9	14
3 - Main Hospital Access	0.08	3.65	0.1	A	73	110
4 - Caerleon Road South	0.32	4.39	0.5	A	327	490

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	663	166	10	1474	0.450	660	316	0.0	0.8	4.404	A
2 - Emergencies Access	8	2	658	1043	0.007	7	13	0.0	0.0	3.474	A
3 - Main Hospital Access	60	15	416	1190	0.051	60	249	0.0	0.1	3.186	A
4 - Caerleon Road South	268	67	60	1227	0.218	267	416	0.0	0.3	3.746	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	792	198	13	1473	0.538	791	379	0.8	1.1	5.267	A
2 - Emergencies Access	9	2	788	963	0.009	9	15	0.0	0.0	3.774	A
3 - Main Hospital Access	72	18	498	1140	0.063	72	299	0.1	0.1	3.368	A
4 - Caerleon Road South	320	80	72	1221	0.262	320	498	0.3	0.4	3.995	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	970	242	15	1471	0.659	967	464	1.1	1.9	7.102	A
2 - Emergencies Access	11	3	964	853	0.013	11	19	0.0	0.0	4.273	A
3 - Main Hospital Access	88	22	609	1074	0.082	88	366	0.1	0.1	3.650	A
4 - Caerleon Road South	392	98	88	1212	0.324	391	609	0.4	0.5	4.386	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	970	242	15	1471	0.660	970	465	1.9	1.9	7.184	A
2 - Emergencies Access	11	3	967	852	0.013	11	19	0.0	0.0	4.282	A
3 - Main Hospital Access	88	22	611	1073	0.082	88	367	0.1	0.1	3.654	A
4 - Caerleon Road South	392	98	88	1212	0.324	392	611	0.5	0.5	4.391	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	792	198	13	1473	0.538	795	380	1.9	1.2	5.336	A
2 - Emergencies Access	9	2	792	960	0.009	9	15	0.0	0.0	3.787	A
3 - Main Hospital Access	72	18	501	1139	0.063	72	300	0.1	0.1	3.374	A
4 - Caerleon Road South	320	80	72	1221	0.262	321	501	0.5	0.4	4.003	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	663	166	11	1474	0.450	665	318	1.2	0.8	4.456	A
2 - Emergencies Access	8	2	662	1041	0.007	8	13	0.0	0.0	3.484	A
3 - Main Hospital Access	60	15	419	1188	0.051	60	251	0.1	0.1	3.194	A
4 - Caerleon Road South	268	67	60	1227	0.218	268	419	0.4	0.3	3.755	A

2027 Committed, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.69	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	74	4 - Caerleon Road South	4.69	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2027 Committed	PM	ONE HOUR	15:45	17:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Caerleon Road North		ONE HOUR	✓	558	100.000
2 - Emergencies Access		ONE HOUR	✓	38	100.000
3 - Main Hospital Access		ONE HOUR	✓	274	100.000
4 - Caerleon Road South		ONE HOUR	✓	483	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	36	117	405
	2 - Emergencies Access	27	0	5	6
	3 - Main Hospital Access	254	3	0	17
	4 - Caerleon Road South	467	2	14	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	0	2	0
	2 - Emergencies Access	0	0	0	0
	3 - Main Hospital Access	1	0	0	7
	4 - Caerleon Road South	2	0	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Caerleon Road North	0.41	4.11	0.7	A	512	768
2 - Emergencies Access	0.04	3.43	0.0	A	35	52
3 - Main Hospital Access	0.25	3.96	0.3	A	251	377
4 - Caerleon Road South	0.46	5.85	0.9	A	443	665

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	420	105	14	1495	0.281	419	561	0.0	0.4	3.340	A
2 - Emergencies Access	29	7	402	1206	0.024	29	31	0.0	0.0	3.056	A
3 - Main Hospital Access	206	52	329	1305	0.158	206	102	0.0	0.2	3.272	A
4 - Caerleon Road South	364	91	213	1204	0.302	362	321	0.0	0.4	4.268	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	502	125	17	1493	0.336	501	672	0.4	0.5	3.626	A
2 - Emergencies Access	34	9	481	1158	0.030	34	37	0.0	0.0	3.203	A
3 - Main Hospital Access	246	62	393	1265	0.195	246	122	0.2	0.2	3.532	A
4 - Caerleon Road South	434	109	255	1180	0.368	434	384	0.4	0.6	4.820	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	614	154	21	1491	0.412	614	822	0.5	0.7	4.100	A
2 - Emergencies Access	42	10	589	1091	0.038	42	45	0.0	0.0	3.428	A
3 - Main Hospital Access	302	75	482	1211	0.249	301	150	0.2	0.3	3.954	A
4 - Caerleon Road South	532	133	312	1147	0.464	531	471	0.6	0.9	5.827	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	614	154	21	1491	0.412	614	824	0.7	0.7	4.106	A
2 - Emergencies Access	42	10	590	1091	0.038	42	45	0.0	0.0	3.430	A
3 - Main Hospital Access	302	75	482	1211	0.249	302	150	0.3	0.3	3.960	A
4 - Caerleon Road South	532	133	313	1147	0.464	532	471	0.9	0.9	5.850	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	502	125	17	1493	0.336	502	674	0.7	0.5	3.635	A
2 - Emergencies Access	34	9	483	1157	0.030	34	37	0.0	0.0	3.208	A
3 - Main Hospital Access	246	62	394	1265	0.195	247	122	0.3	0.2	3.539	A
4 - Caerleon Road South	434	109	256	1179	0.368	435	385	0.9	0.6	4.844	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	420	105	14	1495	0.281	421	564	0.5	0.4	3.351	A
2 - Emergencies Access	29	7	404	1205	0.024	29	31	0.0	0.0	3.060	A
3 - Main Hospital Access	206	52	330	1304	0.158	206	103	0.2	0.2	3.279	A
4 - Caerleon Road South	364	91	214	1203	0.302	364	323	0.6	0.4	4.294	A

2027 Total, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	6.39	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	39	1 - Caerleon Road North	6.39	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2027 Total	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Caerleon Road North		ONE HOUR	✓	900	100.000
2 - Emergencies Access		ONE HOUR	✓	23	100.000
3 - Main Hospital Access		ONE HOUR	✓	81	100.000
4 - Caerleon Road South		ONE HOUR	✓	358	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	34	317	549
	2 - Emergencies Access	12	0	9	2
	3 - Main Hospital Access	74	2	0	5
	4 - Caerleon Road South	343	3	12	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	0	2	2
	2 - Emergencies Access	0	0	0	0
	3 - Main Hospital Access	4	0	0	40
	4 - Caerleon Road South	7	0	18	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Caerleon Road North	0.67	7.52	2.0	A	826	1239
2 - Emergencies Access	0.03	4.36	0.0	A	21	32
3 - Main Hospital Access	0.08	3.67	0.1	A	74	111
4 - Caerleon Road South	0.33	4.43	0.5	A	329	493

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	678	169	13	1473	0.460	674	322	0.0	0.8	4.485	A
2 - Emergencies Access	17	4	658	1043	0.017	17	29	0.0	0.0	3.507	A
3 - Main Hospital Access	61	15	422	1187	0.051	61	253	0.0	0.1	3.196	A
4 - Caerleon Road South	270	67	66	1224	0.220	268	417	0.0	0.3	3.763	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	809	202	15	1472	0.550	808	385	0.8	1.2	5.408	A
2 - Emergencies Access	21	5	788	963	0.021	21	35	0.0	0.0	3.821	A
3 - Main Hospital Access	73	18	505	1137	0.064	73	303	0.1	0.1	3.381	A
4 - Caerleon Road South	322	80	79	1217	0.264	322	499	0.3	0.4	4.018	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	991	248	19	1470	0.674	988	472	1.2	2.0	7.421	A
2 - Emergencies Access	25	6	964	854	0.030	25	43	0.0	0.0	4.346	A
3 - Main Hospital Access	89	22	618	1070	0.083	89	371	0.1	0.1	3.671	A
4 - Caerleon Road South	394	99	97	1207	0.326	394	610	0.4	0.5	4.421	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	991	248	19	1469	0.674	991	472	2.0	2.0	7.515	A
2 - Emergencies Access	25	6	967	852	0.030	25	43	0.0	0.0	4.356	A
3 - Main Hospital Access	89	22	620	1068	0.083	89	372	0.1	0.1	3.675	A
4 - Caerleon Road South	394	99	97	1207	0.326	394	612	0.5	0.5	4.426	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	809	202	15	1472	0.550	812	386	2.0	1.2	5.487	A
2 - Emergencies Access	21	5	792	960	0.022	21	35	0.0	0.0	3.832	A
3 - Main Hospital Access	73	18	508	1135	0.064	73	305	0.1	0.1	3.388	A
4 - Caerleon Road South	322	80	79	1217	0.264	322	502	0.5	0.4	4.026	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	678	169	13	1473	0.460	679	323	1.2	0.9	4.542	A
2 - Emergencies Access	17	4	662	1040	0.017	17	29	0.0	0.0	3.517	A
3 - Main Hospital Access	61	15	425	1185	0.051	61	255	0.1	0.1	3.204	A
4 - Caerleon Road South	270	67	66	1224	0.220	270	420	0.4	0.3	3.775	A

2027 Total, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.87	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	67	4 - Caerleon Road South	4.87	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2027 Total	PM	ONE HOUR	15:45	17:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Caerleon Road North		ONE HOUR	✓	605	100.000
2 - Emergencies Access		ONE HOUR	✓	88	100.000
3 - Main Hospital Access		ONE HOUR	✓	278	100.000
4 - Caerleon Road South		ONE HOUR	✓	486	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	83	117	405
	2 - Emergencies Access	62	0	12	14
	3 - Main Hospital Access	254	7	0	17
	4 - Caerleon Road South	467	5	14	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Caerleon Road North	2 - Emergencies Access	3 - Main Hospital Access	4 - Caerleon Road South
From	1 - Caerleon Road North	0	0	2	0
	2 - Emergencies Access	0	0	0	0
	3 - Main Hospital Access	1	0	0	7
	4 - Caerleon Road South	2	0	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - Caerleon Road North	0.45	4.39	0.8	A	555	833
2 - Emergencies Access	0.09	3.62	0.1	A	81	121
3 - Main Hospital Access	0.26	4.11	0.3	A	255	383
4 - Caerleon Road South	0.48	6.12	0.9	A	446	669

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	455	114	19	1492	0.305	454	587	0.0	0.4	3.459	A
2 - Emergencies Access	66	17	402	1206	0.055	66	71	0.0	0.1	3.157	A
3 - Main Hospital Access	209	52	361	1286	0.163	209	107	0.0	0.2	3.341	A
4 - Caerleon Road South	366	91	242	1187	0.308	364	327	0.0	0.4	4.365	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	544	136	23	1490	0.365	543	703	0.4	0.6	3.800	A
2 - Emergencies Access	79	20	481	1158	0.068	79	85	0.1	0.1	3.337	A
3 - Main Hospital Access	250	62	432	1242	0.201	250	128	0.2	0.3	3.628	A
4 - Caerleon Road South	437	109	290	1160	0.377	436	392	0.4	0.6	4.968	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	666	167	29	1487	0.448	665	861	0.6	0.8	4.377	A
2 - Emergencies Access	97	24	589	1092	0.089	97	104	0.1	0.1	3.618	A
3 - Main Hospital Access	306	77	529	1182	0.259	306	157	0.3	0.3	4.105	A
4 - Caerleon Road South	535	134	355	1123	0.476	534	479	0.6	0.9	6.095	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	666	167	29	1487	0.448	666	862	0.8	0.8	4.386	A
2 - Emergencies Access	97	24	590	1091	0.089	97	105	0.1	0.1	3.620	A
3 - Main Hospital Access	306	77	530	1182	0.259	306	157	0.3	0.3	4.110	A
4 - Caerleon Road South	535	134	356	1123	0.476	535	480	0.9	0.9	6.121	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	544	136	23	1490	0.365	545	705	0.8	0.6	3.811	A
2 - Emergencies Access	79	20	483	1157	0.068	79	86	0.1	0.1	3.340	A
3 - Main Hospital Access	250	62	433	1241	0.201	250	129	0.3	0.3	3.636	A
4 - Caerleon Road South	437	109	291	1160	0.377	438	393	0.9	0.6	4.995	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Caerleon Road North	455	114	20	1492	0.305	456	590	0.6	0.4	3.477	A
2 - Emergencies Access	66	17	404	1205	0.055	66	72	0.1	0.1	3.161	A
3 - Main Hospital Access	209	52	363	1285	0.163	210	108	0.3	0.2	3.348	A
4 - Caerleon Road South	366	91	243	1187	0.308	367	329	0.6	0.4	4.394	A

<h1>Junctions 10</h1>
<h2>ARCADY 10 - Roundabout Module</h2>
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Filename: Import of Junction 3 - Turnpike Roundabout.j10

Path: \\svr-adl-fs\Traffic\5200-5299\5232 Llanfrechfa Grange\Junction Modelling\Updated (June 2022)

Report generation date: 07/06/2023 12:07:52

- »2027 Base, AM
- »2027 Base, PM
- »2027 Committed, AM
- »2027 Committed, PM
- »2027 Total, AM
- »2027 Total, PM

Summary of junction performance

	AM								PM							
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
2027 Base																
1 - A4042 North	D1	2.5	4.70	0.72	A	5.66	A	24 % [3 - A4042 South]	D2	0.8	2.13	0.43	A	7.13	A	10 % [3 - A4042 South]
2 - Caerleon Road		0.8	6.06	0.43	A					1.2	5.33	0.54	A			
3 - A4042 South		2.8	6.71	0.74	A					5.5	11.83	0.85	B			
4 - Turnpike Road		0.7	5.78	0.43	A					0.7	6.66	0.43	A			
2027 Committed																
1 - A4042 North	D3	2.7	4.94	0.73	A	5.91	A	23 % [3 - A4042 South]	D4	0.8	2.14	0.43	A	7.49	A	9 % [3 - A4042 South]
2 - Caerleon Road		0.8	6.17	0.44	A					1.3	5.55	0.56	A			
3 - A4042 South		3.0	7.03	0.75	A					5.8	12.57	0.86	B			
4 - Turnpike Road		0.8	5.97	0.44	A					0.8	6.81	0.43	A			
2027 Total																
1 - A4042 North	D5	2.7	5.06	0.74	A	6.05	A	22 % [3 - A4042 South]	D6	0.8	2.20	0.44	A	8.41	A	7 % [3 - A4042 South]
2 - Caerleon Road		0.8	6.25	0.45	A					1.4	5.90	0.59	A			
3 - A4042 South		3.1	7.20	0.76	A					6.8	14.58	0.88	B			
4 - Turnpike Road		0.8	6.07	0.44	A					0.8	7.30	0.46	A			

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	01/12/2021
Version	
Status	(new file)
Identifier	
Client	

APPENDIX 7.2
ARCADY Output: Junction 2

Jobnumber	
Enumerator	ADLUKJunction
Description	

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	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75					✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2027 Base	PM	ONE HOUR	15:45	17:15	15	✓
D3	2027 Committed	AM	ONE HOUR	07:45	09:15	15	✓
D4	2027 Committed	PM	ONE HOUR	15:45	17:15	15	✓
D5	2027 Total	AM	ONE HOUR	07:45	09:15	15	✓
D6	2027 Total	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2027 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Caerleon Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.66	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	24	3 - A4042 South	5.66	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A4042 North		
2	Caerleon Road		
3	A4042 South		
4	Turnpike Road		

Roundabout Geometry

Arm	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)	Entry only	Exit only
1 - A4042 North	8.90	12.30	16.0	77.7	72.0	22.0		
2 - Caerleon Road	3.80	8.50	34.2	31.6	72.0	17.0		
3 - A4042 South	9.50	9.60	3.9	55.0	17.0	72.0		
4 - Turnpike Road	4.60	9.10	8.6	29.5	72.0	20.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A4042 North	0.794	3522
2 - Caerleon Road	0.601	2276
3 - A4042 South	0.810	2573
4 - Turnpike Road	0.555	2000

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 Base	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)

✓	✓	HV Percentages	2.00
---	---	----------------	------

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4042 North		ONE HOUR	✓	1768	100.000
2 - Caerleon Road		ONE HOUR	✓	411	100.000
3 - A4042 South		ONE HOUR	✓	1405	100.000
4 - Turnpike Road		ONE HOUR	✓	418	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	4	346	1313	105
	2 - Caerleon Road	171	0	127	113
	3 - A4042 South	806	379	5	215
	4 - Turnpike Road	62	118	238	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	0	3	6	5
	2 - Caerleon Road	8	0	7	4
	3 - A4042 South	8	3	0	2
	4 - Turnpike Road	2	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - A4042 North	0.72	4.70	2.5	A	1622	2434
2 - Caerleon Road	0.43	6.06	0.8	A	377	566
3 - A4042 South	0.74	6.71	2.8	A	1289	1934
4 - Turnpike Road	0.43	5.78	0.7	A	384	575

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1331	333	555	2913	0.457	1328	782	0.0	0.8	2.266	A
2 - Caerleon Road	309	77	1250	1392	0.222	308	633	0.0	0.3	3.318	A
3 - A4042 South	1058	264	295	2195	0.482	1054	1264	0.0	0.9	3.145	A
4 - Turnpike Road	315	79	1024	1359	0.232	313	325	0.0	0.3	3.441	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1589	397	664	2829	0.562	1588	936	0.8	1.3	2.897	A

2 - Caerleon Road	369	92	1495	1247	0.296	369	757	0.3	0.4	4.098	A
3 - A4042 South	1263	316	353	2148	0.588	1261	1511	0.9	1.4	4.050	A
4 - Turnpike Road	376	94	1225	1243	0.302	375	389	0.3	0.4	4.147	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1947	487	812	2714	0.717	1942	1144	1.3	2.5	4.632	A
2 - Caerleon Road	453	113	1829	1049	0.431	451	925	0.4	0.8	6.010	A
3 - A4042 South	1547	387	431	2084	0.742	1541	1848	1.4	2.8	6.569	A
4 - Turnpike Road	460	115	1498	1086	0.424	459	475	0.4	0.7	5.736	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1947	487	815	2712	0.718	1946	1148	2.5	2.5	4.700	A
2 - Caerleon Road	453	113	1833	1046	0.433	452	928	0.8	0.8	6.064	A
3 - A4042 South	1547	387	433	2083	0.743	1547	1853	2.8	2.8	6.706	A
4 - Turnpike Road	460	115	1503	1083	0.425	460	477	0.7	0.7	5.784	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1589	397	668	2826	0.562	1594	942	2.5	1.3	2.933	A
2 - Caerleon Road	369	92	1501	1243	0.297	371	761	0.8	0.4	4.133	A
3 - A4042 South	1263	316	355	2146	0.588	1269	1518	2.8	1.4	4.128	A
4 - Turnpike Road	376	94	1232	1239	0.303	377	391	0.7	0.4	4.185	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1331	333	558	2911	0.457	1333	787	1.3	0.8	2.285	A
2 - Caerleon Road	309	77	1255	1389	0.223	310	636	0.4	0.3	3.338	A
3 - A4042 South	1058	264	296	2194	0.482	1060	1269	1.4	0.9	3.182	A
4 - Turnpike Road	315	79	1030	1356	0.232	315	327	0.4	0.3	3.464	A

2027 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Caerleon Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	7.13	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	10	3 - A4042 South	7.13	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2027 Base	PM	ONE HOUR	15:45	17:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4042 North		ONE HOUR	✓	1167	100.000
2 - Caerleon Road		ONE HOUR	✓	725	100.000
3 - A4042 South		ONE HOUR	✓	1563	100.000
4 - Turnpike Road		ONE HOUR	✓	364	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	2	169	937	59
	2 - Caerleon Road	315	0	234	176
	3 - A4042 South	1146	213	2	202
	4 - Turnpike Road	49	168	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	0	2	3	2
	2 - Caerleon Road	2	0	0	3
	3 - A4042 South	3	1	0	0

4 - Turnpike Road	2	1	0	0
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Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - A4042 North	0.43	2.13	0.8	A	1071	1606
2 - Caerleon Road	0.54	5.33	1.2	A	665	998
3 - A4042 South	0.85	11.83	5.5	B	1434	2151
4 - Turnpike Road	0.43	6.66	0.7	A	334	501

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	879	220	397	3117	0.282	877	1134	0.0	0.4	1.607	A
2 - Caerleon Road	546	136	862	1717	0.318	544	413	0.0	0.5	3.063	A
3 - A4042 South	1177	294	414	2179	0.540	1172	991	0.0	1.2	3.559	A
4 - Turnpike Road	274	69	1258	1274	0.215	273	328	0.0	0.3	3.595	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1049	262	476	3056	0.343	1049	1357	0.4	0.5	1.792	A
2 - Caerleon Road	652	163	1030	1615	0.404	651	494	0.5	0.7	3.732	A
3 - A4042 South	1405	351	496	2113	0.665	1402	1186	1.2	2.0	5.040	A
4 - Turnpike Road	327	82	1505	1134	0.289	327	392	0.3	0.4	4.456	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1285	321	581	2974	0.432	1284	1654	0.5	0.8	2.128	A
2 - Caerleon Road	798	200	1262	1474	0.541	796	603	0.7	1.2	5.294	A
3 - A4042 South	1721	430	606	2023	0.851	1708	1451	2.0	5.3	10.971	B
4 - Turnpike Road	401	100	1835	948	0.423	399	479	0.4	0.7	6.548	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1285	321	583	2972	0.432	1285	1664	0.8	0.8	2.133	A
2 - Caerleon Road	798	200	1263	1474	0.542	798	605	1.2	1.2	5.329	A
3 - A4042 South	1721	430	608	2022	0.851	1720	1453	5.3	5.5	11.825	B
4 - Turnpike Road	401	100	1847	941	0.426	401	481	0.7	0.7	6.663	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1049	262	479	3053	0.344	1050	1370	0.8	0.5	1.797	A
2 - Caerleon Road	652	163	1032	1613	0.404	654	497	1.2	0.7	3.758	A
3 - A4042 South	1405	351	498	2111	0.665	1419	1189	5.5	2.0	5.299	A
4 - Turnpike Road	327	82	1521	1125	0.291	329	395	0.7	0.4	4.527	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	879	220	400	3115	0.282	879	1141	0.5	0.4	1.609	A
2 - Caerleon Road	546	136	864	1715	0.318	547	415	0.7	0.5	3.081	A
3 - A4042 South	1177	294	416	2177	0.540	1180	995	2.0	1.2	3.620	A
4 - Turnpike Road	274	69	1267	1269	0.216	275	330	0.4	0.3	3.621	A

2027 Committed, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Caerleon Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.91	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	23	3 - A4042 South	5.91	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2027 Committed	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4042 North		ONE HOUR	✓	1784	100.000
2 - Caerleon Road		ONE HOUR	✓	420	100.000
3 - A4042 South		ONE HOUR	✓	1423	100.000
4 - Turnpike Road		ONE HOUR	✓	423	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	4	362	1313	105
	2 - Caerleon Road	175	0	130	115
	3 - A4042 South	806	397	5	215
	4 - Turnpike Road	62	123	238	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	0	3	6	5
	2 - Caerleon Road	8	0	7	4
	3 - A4042 South	8	3	0	2

4 - Turnpike Road	2	4	2	0
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Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - A4042 North	0.73	4.94	2.7	A	1637	2456
2 - Caerleon Road	0.44	6.17	0.8	A	385	578
3 - A4042 South	0.75	7.03	3.0	A	1306	1959
4 - Turnpike Road	0.44	5.97	0.8	A	388	582

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1343	336	572	2900	0.463	1340	785	0.0	0.9	2.302	A
2 - Caerleon Road	316	79	1250	1392	0.227	315	662	0.0	0.3	3.339	A
3 - A4042 South	1071	268	299	2192	0.489	1068	1266	0.0	0.9	3.191	A
4 - Turnpike Road	318	80	1040	1349	0.236	317	326	0.0	0.3	3.483	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1604	401	685	2813	0.570	1602	940	0.9	1.3	2.969	A
2 - Caerleon Road	378	94	1495	1247	0.303	377	792	0.3	0.4	4.136	A
3 - A4042 South	1279	320	358	2144	0.597	1277	1514	0.9	1.5	4.142	A
4 - Turnpike Road	380	95	1245	1231	0.309	380	390	0.3	0.4	4.224	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1964	491	837	2695	0.729	1959	1149	1.3	2.6	4.856	A
2 - Caerleon Road	462	116	1828	1049	0.441	461	968	0.4	0.8	6.108	A
3 - A4042 South	1567	392	438	2079	0.754	1561	1851	1.5	3.0	6.863	A
4 - Turnpike Road	466	116	1521	1072	0.434	464	477	0.4	0.8	5.914	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1964	491	840	2693	0.729	1964	1153	2.6	2.7	4.938	A
2 - Caerleon Road	462	116	1833	1046	0.442	462	971	0.8	0.8	6.167	A
3 - A4042 South	1567	392	439	2078	0.754	1567	1856	3.0	3.0	7.028	A
4 - Turnpike Road	466	116	1527	1069	0.436	466	479	0.8	0.8	5.969	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1604	401	689	2810	0.571	1609	945	2.7	1.3	3.012	A
2 - Caerleon Road	378	94	1502	1243	0.304	379	796	0.8	0.4	4.175	A
3 - A4042 South	1279	320	360	2143	0.597	1285	1521	3.0	1.5	4.229	A
4 - Turnpike Road	380	95	1253	1227	0.310	382	393	0.8	0.5	4.264	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1343	336	576	2898	0.463	1345	790	1.3	0.9	2.320	A
2 - Caerleon Road	316	79	1255	1389	0.228	317	665	0.4	0.3	3.357	A
3 - A4042 South	1071	268	301	2191	0.489	1073	1271	1.5	1.0	3.230	A
4 - Turnpike Road	318	80	1046	1346	0.237	319	328	0.5	0.3	3.506	A

2027 Committed, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Caerleon Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	7.49	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	9	3 - A4042 South	7.49	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2027 Committed	PM	ONE HOUR	15:45	17:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4042 North		ONE HOUR	✓	1170	100.000
2 - Caerleon Road		ONE HOUR	✓	749	100.000
3 - A4042 South		ONE HOUR	✓	1567	100.000
4 - Turnpike Road		ONE HOUR	✓	367	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	2	172	937	59
	2 - Caerleon Road	325	0	242	182
	3 - A4042 South	1146	217	2	202
	4 - Turnpike Road	49	171	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	0	2	3	2
	2 - Caerleon Road	2	0	0	3
	3 - A4042 South	3	1	0	0

4 - Turnpike Road	2	1	0	0
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Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - A4042 North	0.43	2.14	0.8	A	1074	1610
2 - Caerleon Road	0.56	5.55	1.3	A	687	1031
3 - A4042 South	0.86	12.57	5.8	B	1438	2157
4 - Turnpike Road	0.43	6.81	0.8	A	337	505

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	881	220	403	3113	0.283	879	1141	0.0	0.4	1.612	A
2 - Caerleon Road	564	141	862	1717	0.328	562	420	0.0	0.5	3.111	A
3 - A4042 South	1180	295	426	2169	0.544	1175	997	0.0	1.2	3.598	A
4 - Turnpike Road	276	69	1269	1268	0.218	275	332	0.0	0.3	3.624	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1052	263	482	3051	0.345	1051	1365	0.4	0.5	1.799	A
2 - Caerleon Road	673	168	1030	1615	0.417	672	503	0.5	0.7	3.817	A
3 - A4042 South	1409	352	510	2102	0.670	1405	1193	1.2	2.0	5.146	A
4 - Turnpike Road	330	82	1518	1127	0.293	329	398	0.3	0.4	4.511	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1288	322	588	2969	0.434	1287	1664	0.5	0.8	2.140	A
2 - Caerleon Road	825	206	1262	1474	0.559	822	614	0.7	1.3	5.503	A
3 - A4042 South	1725	431	624	2009	0.859	1711	1460	2.0	5.6	11.555	B
4 - Turnpike Road	404	101	1850	939	0.430	403	485	0.4	0.7	6.692	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1288	322	591	2966	0.434	1288	1675	0.8	0.8	2.144	A
2 - Caerleon Road	825	206	1263	1474	0.560	825	616	1.3	1.3	5.546	A
3 - A4042 South	1725	431	625	2008	0.859	1724	1462	5.6	5.8	12.574	B
4 - Turnpike Road	404	101	1862	932	0.433	404	488	0.7	0.8	6.813	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1052	263	486	3048	0.345	1053	1380	0.8	0.5	1.807	A
2 - Caerleon Road	673	168	1032	1613	0.417	675	506	1.3	0.7	3.848	A
3 - A4042 South	1409	352	512	2100	0.671	1424	1196	5.8	2.1	5.440	A
4 - Turnpike Road	330	82	1535	1117	0.295	331	401	0.8	0.4	4.587	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	881	220	405	3111	0.283	881	1149	0.5	0.4	1.616	A
2 - Caerleon Road	564	141	864	1715	0.329	565	422	0.7	0.5	3.130	A
3 - A4042 South	1180	295	428	2168	0.544	1183	1001	2.1	1.2	3.671	A
4 - Turnpike Road	276	69	1277	1263	0.219	277	334	0.4	0.3	3.654	A

2027 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Caerleon Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	6.05	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	22	3 - A4042 South	6.05	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2027 Total	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4042 North		ONE HOUR	✓	1792	100.000
2 - Caerleon Road		ONE HOUR	✓	427	100.000
3 - A4042 South		ONE HOUR	✓	1431	100.000
4 - Turnpike Road		ONE HOUR	✓	426	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	4	370	1313	105
	2 - Caerleon Road	178	0	132	117
	3 - A4042 South	806	405	5	215
	4 - Turnpike Road	62	126	238	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	0	3	6	5
	2 - Caerleon Road	8	0	7	4
	3 - A4042 South	8	3	0	2

4 - Turnpike Road	2	4	2	0
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Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - A4042 North	0.74	5.06	2.7	A	1644	2467
2 - Caerleon Road	0.45	6.25	0.8	A	392	588
3 - A4042 South	0.76	7.20	3.1	A	1313	1970
4 - Turnpike Road	0.44	6.07	0.8	A	391	586

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1349	337	581	2894	0.466	1346	788	0.0	0.9	2.320	A
2 - Caerleon Road	321	80	1250	1392	0.231	320	676	0.0	0.3	3.355	A
3 - A4042 South	1077	269	303	2189	0.492	1073	1267	0.0	1.0	3.216	A
4 - Turnpike Road	321	80	1049	1345	0.239	319	328	0.0	0.3	3.507	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1611	403	695	2806	0.574	1609	942	0.9	1.3	3.002	A
2 - Caerleon Road	384	96	1495	1247	0.308	383	809	0.3	0.4	4.166	A
3 - A4042 South	1286	322	363	2141	0.601	1284	1516	1.0	1.5	4.193	A
4 - Turnpike Road	383	96	1255	1226	0.312	382	392	0.3	0.5	4.266	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1973	493	849	2686	0.735	1968	1152	1.3	2.7	4.974	A
2 - Caerleon Road	470	118	1828	1049	0.448	469	989	0.4	0.8	6.188	A
3 - A4042 South	1576	394	443	2075	0.759	1569	1853	1.5	3.1	7.030	A
4 - Turnpike Road	469	117	1533	1065	0.440	468	479	0.5	0.8	6.012	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1973	493	852	2684	0.735	1973	1156	2.7	2.7	5.062	A
2 - Caerleon Road	470	118	1833	1046	0.449	470	992	0.8	0.8	6.249	A
3 - A4042 South	1576	394	445	2074	0.760	1575	1858	3.1	3.1	7.205	A
4 - Turnpike Road	469	117	1539	1062	0.442	469	481	0.8	0.8	6.072	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1611	403	699	2803	0.575	1616	948	2.7	1.4	3.050	A
2 - Caerleon Road	384	96	1502	1243	0.309	385	813	0.8	0.4	4.205	A
3 - A4042 South	1286	322	365	2139	0.601	1293	1523	3.1	1.5	4.283	A
4 - Turnpike Road	383	96	1263	1221	0.314	384	395	0.8	0.5	4.309	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1349	337	584	2892	0.467	1351	792	1.4	0.9	2.339	A
2 - Caerleon Road	321	80	1255	1389	0.231	322	680	0.4	0.3	3.374	A
3 - A4042 South	1077	269	305	2188	0.492	1080	1273	1.5	1.0	3.256	A
4 - Turnpike Road	321	80	1055	1341	0.239	321	330	0.5	0.3	3.533	A

2027 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Caerleon Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	8.41	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	7	3 - A4042 South	8.41	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2027 Total	PM	ONE HOUR	15:45	17:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - A4042 North		ONE HOUR	✓	1185	100.000
2 - Caerleon Road		ONE HOUR	✓	784	100.000
3 - A4042 South		ONE HOUR	✓	1585	100.000
4 - Turnpike Road		ONE HOUR	✓	381	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	2	187	937	59
	2 - Caerleon Road	340	0	253	191
	3 - A4042 South	1146	235	2	202
	4 - Turnpike Road	49	185	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A4042 North	2 - Caerleon Road	3 - A4042 South	4 - Turnpike Road
From	1 - A4042 North	0	2	3	2
	2 - Caerleon Road	2	0	0	3
	3 - A4042 South	3	1	0	0

4 - Turnpike Road	2	1	0	0
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Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
1 - A4042 North	0.44	2.20	0.8	A	1087	1631
2 - Caerleon Road	0.59	5.90	1.4	A	719	1079
3 - A4042 South	0.88	14.58	6.8	B	1454	2182
4 - Turnpike Road	0.46	7.30	0.8	A	350	524

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	892	223	427	3095	0.288	891	1153	0.0	0.4	1.633	A
2 - Caerleon Road	590	148	862	1717	0.344	588	455	0.0	0.5	3.184	A
3 - A4042 South	1193	298	444	2155	0.554	1188	1006	0.0	1.2	3.706	A
4 - Turnpike Road	287	72	1293	1254	0.229	286	339	0.0	0.3	3.713	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1065	266	510	3029	0.352	1065	1379	0.4	0.5	1.832	A
2 - Caerleon Road	705	176	1030	1615	0.437	704	545	0.5	0.8	3.948	A
3 - A4042 South	1425	356	531	2084	0.684	1421	1203	1.2	2.1	5.400	A
4 - Turnpike Road	343	86	1547	1110	0.308	342	406	0.3	0.4	4.682	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1305	326	623	2942	0.443	1304	1679	0.5	0.8	2.196	A
2 - Caerleon Road	863	216	1261	1474	0.585	861	665	0.8	1.4	5.842	A
3 - A4042 South	1745	436	650	1988	0.878	1728	1472	2.1	6.4	13.049	B
4 - Turnpike Road	419	105	1883	921	0.456	418	495	0.4	0.8	7.142	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1305	326	626	2939	0.444	1305	1691	0.8	0.8	2.202	A
2 - Caerleon Road	863	216	1263	1474	0.586	863	668	1.4	1.4	5.897	A
3 - A4042 South	1745	436	652	1987	0.878	1744	1474	6.4	6.8	14.580	B
4 - Turnpike Road	419	105	1898	912	0.460	419	497	0.8	0.8	7.303	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	1065	266	516	3025	0.352	1066	1396	0.8	0.5	1.840	A
2 - Caerleon Road	705	176	1033	1613	0.437	707	549	1.4	0.8	3.984	A
3 - A4042 South	1425	356	534	2082	0.684	1443	1206	6.8	2.2	5.786	A
4 - Turnpike Road	343	86	1568	1099	0.312	344	409	0.8	0.5	4.779	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - A4042 North	892	223	429	3092	0.289	893	1160	0.5	0.4	1.636	A
2 - Caerleon Road	590	148	864	1715	0.344	591	458	0.8	0.5	3.204	A
3 - A4042 South	1193	298	446	2153	0.554	1197	1009	2.2	1.3	3.778	A
4 - Turnpike Road	287	72	1302	1249	0.230	287	341	0.5	0.3	3.746	A