



Transport Assessment
Tirbach Washery, Ystalyfera

April 2026

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Project Number:
332710131

Document Control Sheet

Issued by	Stantec UK Limited
Client	Mr Robert Maggs
Project name	Tirbach Washery, Ystalyfera
Title	Transport Assessment
Project number	332710131
Status	S2
Date	April 2026

Document production record

Issue number	P02
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Document revision record

Issue number	Status	Date	Revision details
P01	S2	14/04/2026	For comment and review
P02	S2	15/04/2026	Outline Planning Submission

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1 Introduction

1.1 Preamble

- 1.1.1 This Transport Assessment (TA) has been produced by Stantec Uk Limited (Stantec) on behalf of Mr Robert Maggs in support of an outline planning application for the redevelopment of the former Tirbach Washery comprising of the construction of up to 160 residential dwellings and associated infrastructure works
- 1.1.2 The site comprises of brownfield land and was formerly occupied by Tirbach Washery with existing access taken from an unnamed road which forms a junction with the A4067.
- 1.1.3 The application site covers approximately 7 ha of land and is allocated in Neath Port Talbot's (NPT) Local Development Plan (LDP) as a brownfield site for residential development (Ref: H1/31). In addition, the site lies within the defined settlement limits for the area as set out under Policy SC1 of the LDP.

1.2 Planning History

- 1.2.1 The site has an extensive planning history and is summarised as follows:
- P2016/1033 - Prior notification of demolition of former office and workshop building – Prior Notification Not required 22/12/16
 - P2014/0199 – Scheme under Condition 54 of P2006/0853 for the setting up, operation and regular convening of a site liaison committee – Approved 17/4/14
 - P2014/0188 – Scheme under Condition 79 of P2006/0853 for phased stripping of soils – Approved 7/5/14
 - P2014/0187 – Scheme in accordance with condition 51 of P2006/0853 for the interception of any contaminated surface water from the site – Approved 7/5/14
 - P2014/0016 – Proposed scheme for archaeological work in accordance with a written scheme of investigation under condition 45 of P2006/0853 approved on 15 April 2009 – Approved 4/2/14
 - P2013/0988 – Schemes to discharge Conditions 71 (birds), 72 (bats), 73 (badgers) and 74 (water vole) of P2006/0853 – Approved 12/12/13
 - P2010/0305 – Proposed landscape management scheme under Condition 23 of P2006/0853 – Approved 20/12/11
 - P2010/0304 – Details in relation to Condition 30 (control and monitoring of dust) Condition 31 (monitoring of noise) and Condition 40 (Measurement and monitoring of blasting) under previous planning consent P2006/0853 - Approved 20/10/11
 - P2009/0566 – Proposed Water resources protection scheme under Condition 53 of P2006/0853 - 30/12/13
 - P2008/0269 – Retention of motorcycle training track including four steel containers for office and storage facilities – Approved 17/6/08
 - P2006/0853 – Extension of existing quarrying operations - Approved 15/4/09
 - P2003/1521 – Entrance signs (located on A4067) for Cwm Nant Lleici Quarry – Approved 23/12/03



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- L1992/0153 - Proposed location of instrument kiosk part of NRW flood warning scheme – Approved 4/6/92

1.3 Consultation

1.3.1 This Transport Assessment has been prepared in response to comments received on the previous version of the report (Hydrock report 22699-HYD-XX-XX-RP-TP-5001), which included:

- Revisit the site access geometry to take account of the highway authority comments relating to conflict with the quarry road, right turning traffic, and road safety.
- Undertake a speed survey on the A4067.
- Undertake a Stage 1 Road Safety Audit and prepare designers response for the site access junction.
- Update the traffic modelling of the site access junction.
- Expand the discussion on active travel.
- Review the internal layout of the masterplan.

1.3.2 There was also a comment from a local councillor regarding the operation of the two roundabouts that were assessed previously, and therefore new traffic surveys were undertaken in April 2024 (in school term time) to ensure that the analysis is based on up-to-date information.

1.4 Pre-application Submission

1.4.1 This report is an update to the transport assessment submitted as part of the pre-application consultation and recognises the observations made by the highways authority in their response dated 2nd August 2023.

- A summary of the LHA's comments is shown below and the full response is contained in Appendix A:
- A Road Safety Audit is required to demonstrate the safe operation of the proposed signalised site access;
- Concern that some vehicles may turn right into the site despite this not being a permitted manoeuvre;
- Visibility splays for the proposed site access should be shown;
- Full construction details of the site access including long sections and cross sections are required;
- All site roads should be designed for 20mph, noting the site layout featured long straight roads;
- Parking to be provided in accordance with local standards;
- Driveways and garages to be provided in accordance with local standards

1.5 Scope

1.5.1 This TA is set out in the following structure:



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- Chapter 2: Description of the site and surrounding area, as well as the local highway network. This chapter also provides a review of the highway safety situation in the vicinity of the site.
- Chapter 3: An assessment the accessibility of the site by walking, cycling and public transport.
- Chapter 4: Evaluates the national and local planning policy guidance.
- Chapter 5: Description of the development proposals and provides an assessment of the access arrangements, parking provision, standards, and servicing arrangements.
- Chapter 6: Presents the proposed trip generation associated with the development proposals.
- Chapter 7: Assesses the traffic impact of the development on the local highway network.
- Chapter 8: Summarises and concludes the report.

1.6 Summary

- 1.6.1 This TA has been prepared in accordance with industry standards and best practice. It demonstrates that the application is acceptable in terms of transportation, highway safety and access and that it is compliant with relevant national and local planning policies. This includes issues associated with accessibility and connectivity, an assessment of the traffic predicted to be generated and the corresponding traffic impact on the surrounding local highway network.



2 Site Location and Accessibility

2.1 Site Location and Highway Network

- 2.1.1 The site is the previously occupied land by Tirbach Washery, located approximately 1km to the north east of Ystalyfera town centre. Ystalyfera is a former industrial village and community in the upper Swansea Valley, on the River Tawe, about 20km northeast of the centre of Swansea.
- 2.1.2 The site is bounded by woodland to the north and west, to the east by the Afon Twrch and to the south by the A4067. The site's location in a local context is shown at Figure 2.1. Vehicular access to the site is currently provided through an existing unnamed road which forms a junction with the A4067. Access to the Strategic Road Network (SRN) is available at the M4 junction 45 on and off slips via the A4067 / M4 roundabout junction, located some 13.5km southwest of the site.

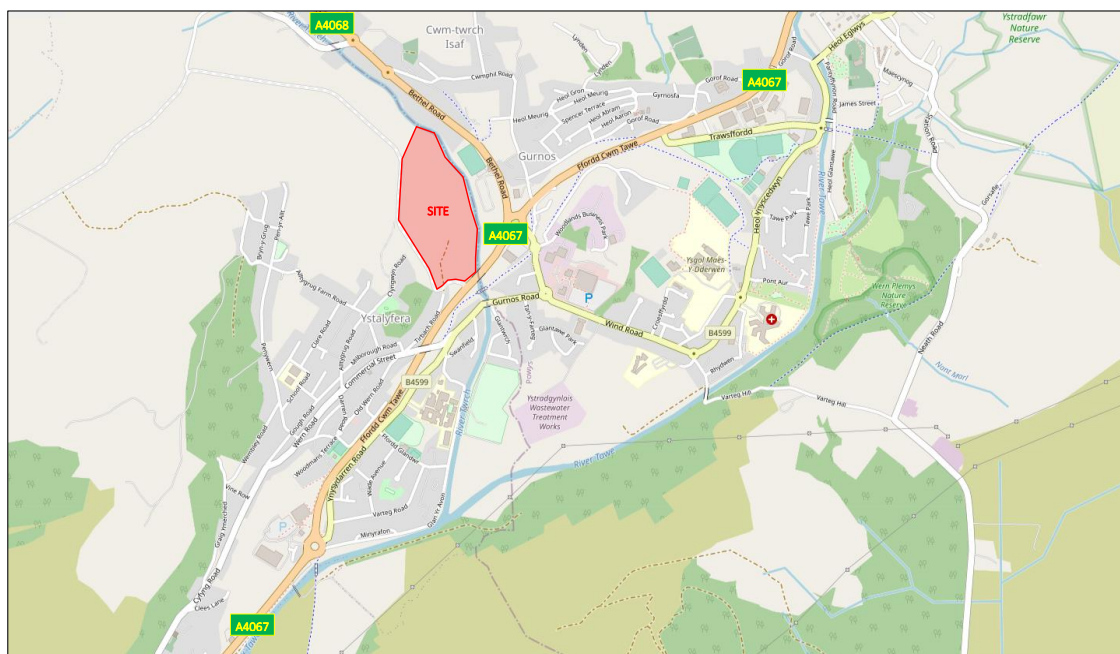


Figure 2.1: Site location

- 2.1.3 The Strategic Road Network (SRN) within the vicinity of the site is summarised in Table 2.1.

Table 2.1 Strategic Road Network

SRN Junction:	Description:	Distance from Site (km):	Alignment/ Journey
A465	A4109 / A4230 / A465 grade separated roundabout junction. Junction accessed via the A4109.	10km	Northeast / Southwest
M4	Junction 45 of the M4 provides access to and from the site. Junction is accessed via the A4067 / M4 grade separated roundabout junction.	13.5km	East / West

2.1.4 The Local Road Network within the vicinity of the site is summarised in Table 2.2 to Table 2.8:

Table 2.2 Local Road Network – A4067

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
×	✓	✓	×	✓	×	Two-way single carriageway subject to national speed limit within vicinity of the site; this reduces to 40mph on approach to A4067 / A4068 roundabout junction and to the south of the site. There is intermittent footway provision on the northern side of the carriageway of the A4067 to the north of the site access.; there is a footway present along the bridge and along the western side of the carriageway that commences just prior to the roundabout junction. Street lighting is present along the carriageway and pedestrian refuge islands are present on some arms of the roundabout junction. Carriageway approximately 6m in width

Table 2.3 Local Road Network – Tirbach Road

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
×	✓	✓	×	×	✓	Two-way single carriageway subject to 30mph speed limit. Footway provision is absent for the majority of the road; however, a footway is provided along the western side of the carriageway for approximately 60m before forming a junction with Commercial Street. Street lighting is provided. On street parking is permitted along the length of the road, however, double yellow lines are present on the approach to the junction with Commercial Street. Carriageway approximately 5m in width.

Table 2.1 Local Road Network – Tirbach Road

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
✓	×	✓	×	✓	×	Two-way single carriageway subject to 30mph speed limit. Pedestrian facilities include footways on both sides of the carriageway, street lighting, and a signalised pedestrian crossing adjacent to Cwm Wanderers AFC. Carriageway approximately 7m in width.

Table 2.5 Local Road Network – Gurnos Road

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
✓	×	✓	×	✓	×	Two-way single carriageway subject to 30mph speed limit. Forms the south eastern arm of the A4067 / A4068 roundabout junction. Pedestrian facilities include footways on both sides of the carriageway, street lighting, and a pedestrian refuge crossing point. Carriageway approximately 7.3m in width.

Table 2.6 Local Road Network – Wind Road

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
✓	×	✓	×	✓	×	Two-way single carriageway subject to 30mph speed limit. Forms the southern arm of the Gurnos Road roundabout junction. Pedestrian facilities include footways on both sides of the carriageway, street lighting, signalised pedestrian crossing and zebra crossing. Carriageway approximately 6.6m in width.

Table 2.7 Local Road Network – Varteg Hill

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
×	✓	×	✓	×	✓	Two-way rural lane / two-way single carriageway. Subject to national speed limit and reduces to 30mph on approach to Ystalyfera and Ystradgynlais. There are no pedestrian facilities present. Carriageway approximately 5m in width.

Table 2.8 Local Road Network – Varteg Hill

Pedestrian footway		Street Lighting		Crossing Facility		Description / Comments:
Yes	No	Yes	No	Yes	No	
✓	×	✓	×	×	✓	Two-way single carriageway subject to 30mph speed limit within vicinity of junction with Varteg Hill. Pedestrian facilities include footways on both sides of the carriageway and street lighting. Carriageway approximately 6.5m in width.

2.2 Highway safety (personal injury accident data review)

- 2.2.1 Personal Injury Accident (PIA) data has been obtained from Crash Map for the most up-date date 5-year period available (2018 - 2023). A review of accidents recorded within approximately 500m (blue circle) of the site access has been shown in Figure 2.1:

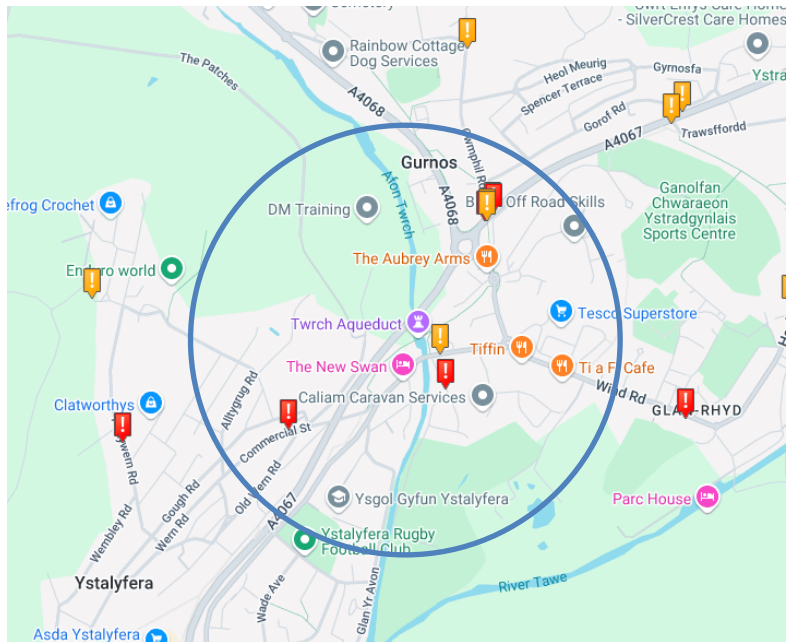


Figure 2.1: PIAs recorded in 2018 to 2023 within 500m of the site entrance

2.2.2 Four serious incidents have been recorded in the study area:

- One serious injury occurred in 2022 in the vicinity of the junction of the A4067 and Cwmpnil Road. This involved a car waiting on the A4067 to turn right into Cwmpnil Road being rear ended by an approaching motorcycle. The motorcycle rider was seriously injured.
- A serious injury occurred in the vicinity of the junction of the A4067 and Cwmpnil Road, in 2021. This involved a head-to-head collision between two cars on the A4067, with two serious casualties recorded in the second vehicle. The casualties were over 75 years of age. The first car recorded a slight injury.
- One serious injury occurred on Glantwrch in 2020. This involved a car turning right and colliding with an oncoming motorbike. The motorbike rider sustained serious injuries.
- One serious injury occurred in 2022 on Commercial Street. This involved a car colliding with a pedestrian walking in the carriageway resulting in a serious injury. It should be noted a footway is provided on one side of the carriageway in this location.

2.2.3 In addition to the serious accidents, three slight injury incidents have been recorded in the vicinity of the A4067 / Cwmpnil Road junction. Two involved vehicles colliding with one another at the junction (a young driver pulling out of Cwmpnil Road failing to give way, and a vehicle being rear ended), and one involved a vehicle colliding on a puffin crossing adjacent to the junction.

2.2.4 The A4067 is an arterial link through Ystalyfera and beyond and as such likely accommodates high volumes of vehicles. The Puffin crossing provides pedestrian access from a suburb towards the town centre. The A4067 is straight and visibility is good for all movements accessing and egressing Cwmpnil Road. As such, the accidents are not considered to represent a highway defect that the development would exacerbate.

2.2.5 One further slight injury accident occurred on Gurnos Road in 2022. This involved a car failing to give way as it turns right and colliding with an oncoming motorcycle. The accident details note that a light goods vehicle is parked on the oncoming motorcycle's lane.

2.2.6 Overall, the accident data is not considered to present a trend in accidents that would be exacerbated by the development proposals.

2.3 Traffic survey data

2.3.1 Traffic survey data has been collected to provide an up-to-date base from which assessments can be undertaken. The surveys were:

- Automatic traffic count - A4067.
- Junction turning count and queue lengths – A4067 roundabout junction with A4068 to the north of the site.
- Junction turning count and queue lengths – A4067 roundabout junction with the B459 and the Asda Superstore.
- Junction turning count and queue lengths – quarry access road/ A4067 junction.

2.3.2 The automatic traffic count was undertaken between Tuesday 9th April and Monday 15th April 2024 and recorded traffic flows and speeds in each direction (Table 2.9 overleaf).

Table 2.9 Summary of ATC traffic flow data

Hour (start)	Southbound		Northbound		Two-way	
	5-Day Average.	7-Day Average.	5-Day Average.	7-Day Average.	5-Day Average	7-Day Average
00:00	9	14	13	20	22	33
01:00	6	8	9	11	16	19
02:00	3	4	6	8	9	12
03:00	6	5	4	5	10	10
04:00	36	30	13	12	49	42
05:00	141	110	31	28	173	138
06:00	287	221	118	97	405	318
07:00	473	370	297	236	770	605
08:00	490	401	468	381	958	782
09:00	406	374	355	332	761	707
10:00	396	398	339	361	735	759
11:00	381	411	395	421	775	832
12:00	388	425	416	426	804	851
13:00	390	420	414	431	804	852
14:00	392	400	487	477	879	876
15:00	472	442	538	494	1010	937
16:00	493	437	590	522	1083	959
17:00	434	393	573	489	1007	882
18:00	319	289	411	369	730	657



Hour (start)	Southbound		Northbound		Two-way	
	5-Day Average.	7-Day Average.	5-Day Average.	7-Day Average.	5-Day Average	7-Day Average
19:00	214	202	283	255	498	457
20:00	147	143	194	177	341	320
21:00	109	102	132	127	241	229
22:00	42	46	99	91	141	137
23:00	23	26	35	38	58	64

2.3.3 Junction turning count surveys (MCC) were carried out within school term time on Tuesday 9th April 2024 between the hours of 07:00 and 10:00 in the AM and 16:00 and 19:00 in the PM to ensure that the development and local network peak periods are captured on the surrounding local highway network.

2.3.4 The survey results have been analysed for the A4068 and Asda roundabouts and quarry road access junction (Table 2.2) to ascertain the network peak hours. This shows that the AM peak hour is consistent across the junctions and is 8am to 9am. The PM peak hour differs and is 4:15pm to 5:15pm at the A4068 roundabout, and 4pm to 5pm at the other two junctions.

Table 2.2 Analysis of MCC traffic flow data

Time	Traffic flow (total vehicles) using junction in hour		
	A4068 roundabout	Asda roundabout	Quarry access
7:00 to 8:15	1,190	958	833
7:15 to 8:30	1,368	1,029	890
7:30 to 8:30	1,559	1,125	928
7:45 to 8:45	1,690	1,194	925
8:00 to 9:00	1,846	1,231	937
8:15 to 9:15	1,845	1,205	902
8:30 to 9:30	1,707	1,097	835
8:45 to 9:45	1,553	1,018	799
9:00 to 10:00	1,322	923	733
16:00 to 17:00	1,937	1,425	1,099
16:15 to 17:30	1,976	1,372	1,094
16:30 to 17:30	1,939	1,400	1,095
16:45 to 17:45	1,889	1,388	1,091
17:00 to 18:00	1,818	1,373	1,067
17:15 to 18:15	1,724	1,341	1,029
17:30 to 18:30	1,628	1,281	1,000

Time	Traffic flow (total vehicles) using junction in hour		
	A4068 roundabout	Asda roundabout	Quarry access
17:45 to 18:45	1,507	1,190	918
18:00 to 19:00	1,416	1,096	849

- 2.3.5 As a result of the variation in peak hour flows the maximum number of through movements throughout the survey period has been assessed as the baseline scenarios. This is considered to be a robust assessment as it is considered that flows associated with the development are likely to be lower at these times with the development peak for residential sites generally being between 0800 and 0900 and 1700 and 1800 in line with working practices.

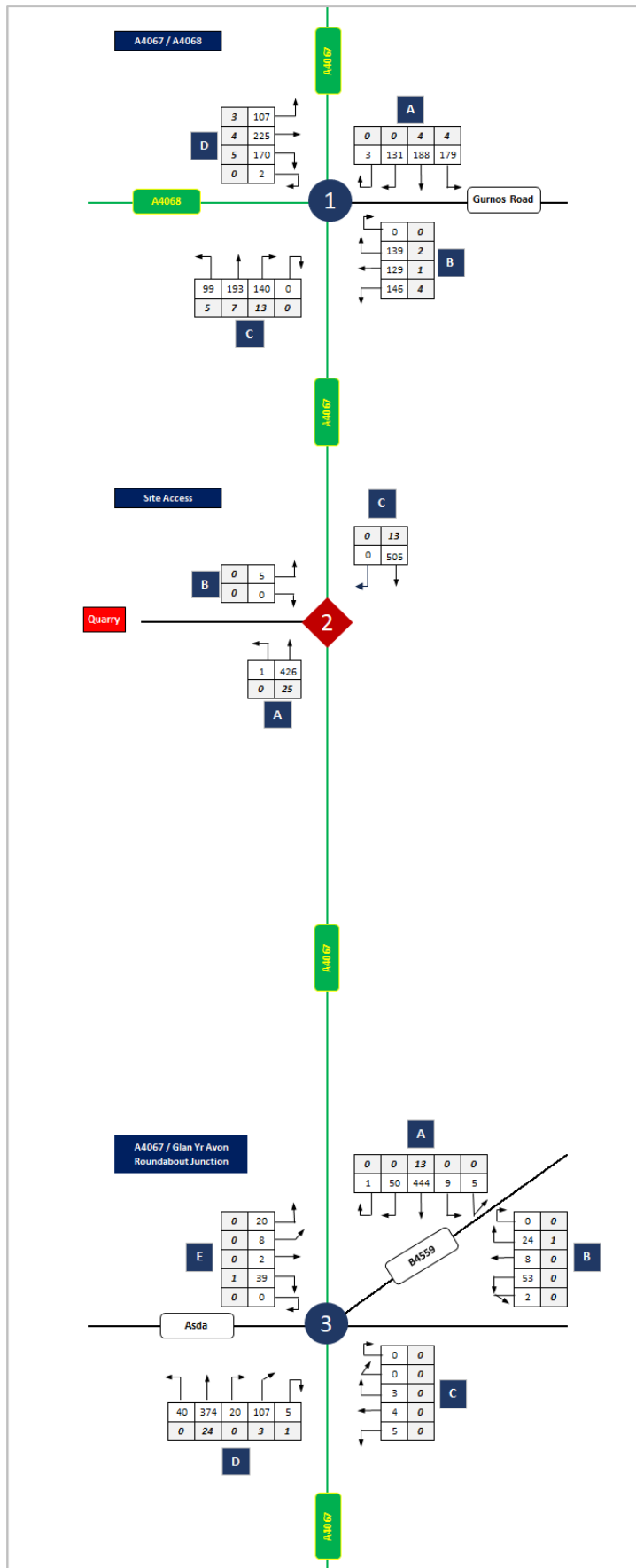


Figure 2.2: Surveyed turning counts (AM peak hour, 8am to 9am)

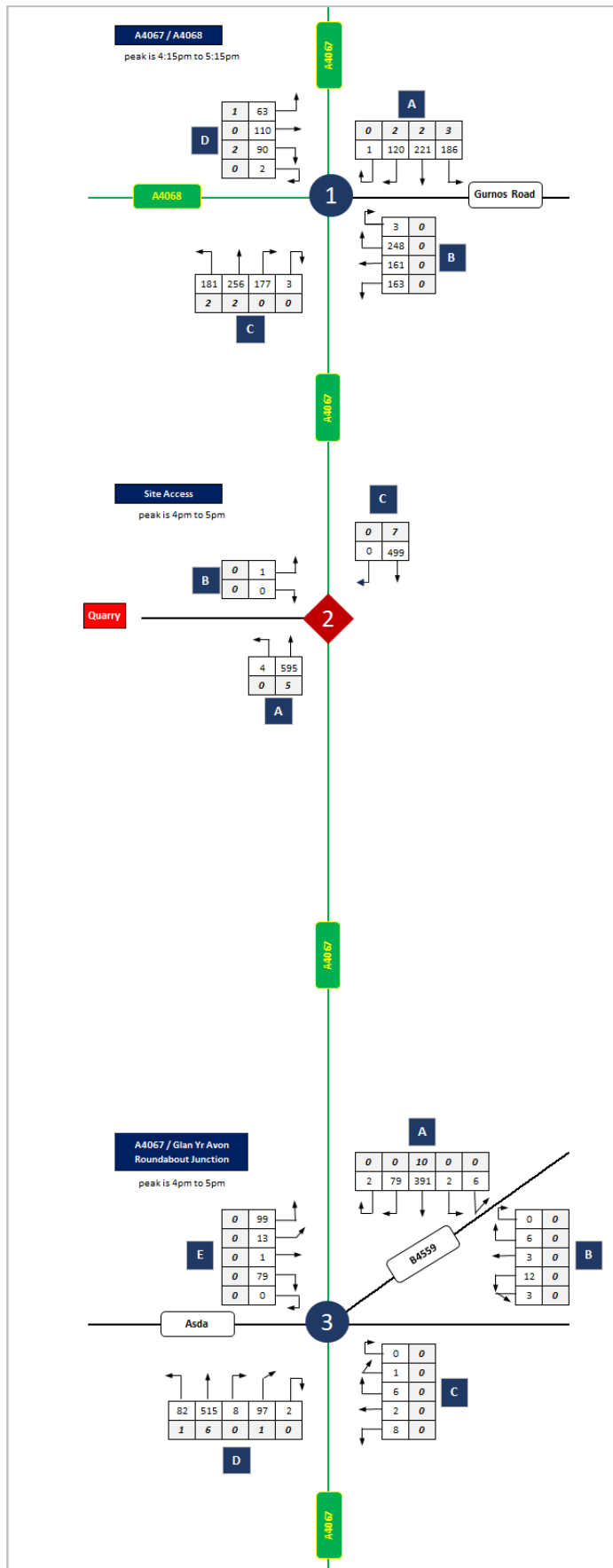


Figure 2.3: Surveyed turning counts (PM peak hour, varies by junction)

2.4 Pedestrian and cycle infrastructure

- 2.4.1 There are a number of publications which suggest guidance for appropriate walking and cycling distances to facilities and employment. These have been summarised as follows.
- 2.4.2 Within the CIHT publication 'Providing for Journeys on Foot' (CIHT 2000) it suggests that the preferred maximum walking distance to school is 2km, with the acceptable distance being 1km and the desirable distance being 500 metres.
- 2.4.3 Although now superseded by CD143, TA91/05 does provide useful guidance on likely walking and cycling distances for Non-Motorised Users with Paragraph 2.2 stating that 2 miles is 'a distance that could easily be walked by the majority of people'. Paragraph 2.3 also continues by stating that 'Walking is used to access a wide variety of destinations including educational facilities... and places of work, normally within a range of up to 2 miles' (3.2km).
- 2.4.4 CIHT (2015) – Planning for Walking: In relation to shorter trips in particular, (section 2.1) states that across Britain about '80% of journeys shorter than 1 mile (1.6km) are made wholly on foot'.
- 2.4.5 TA91/05 also states in paragraph 2.11 that 'Cycling is used for accessing a variety of different destinations, including educational facilities and places of work, up to a range of around 5 miles (8km). Cycling is also undertaken as a leisure activity, often over much longer distances.'
- 2.4.6 Paragraph 2.9 also states that 5 miles (c.8km) is a distance 'that could easily be cycled by the majority of people'.
- 2.4.7 This is consistent with the statement in LTN1/20 Cycle Infrastructure Design (in paragraph 2.2.2) that 'Two out of every three personal trips are less than five miles in length – an achievable distance to cycle for most people'.
- 2.4.8 In the immediate vicinity of the site, there is currently no footway provision. There is intermittent footway provision on the northern side of the carriageway of the A4067 to the north of the site access.; there is a footway present along the bridge and along the western side of the carriageway that commences just prior to the roundabout junction. Street lighting is present along the carriageway and a pedestrian refuge island is present on the A4067 arm of the roundabout junction.
- 2.4.9 The development proposals include the provision of a footway to tie into the existing footway northeast of the site on the A4067.
- 2.4.10 There is a shared use foot / cycleway which runs parallel to both the A4067 and Gurnos Road approximately 30m to the south of the carriageway. A site visit highlighted that an informal track is present directly adjacent to the existing junction into the site. The footpath is overgrown and therefore requires upgrading including surfacing and vegetation clearance.
- 2.4.11 To the east and west this path connects the site with Gurnos Road and associated footways along either side of the carriageway.
- 2.4.12 Additionally, to the north of the site there is a public footpath and bridge over the Afon Twrch which connects to the A4068; this provides some opportunity for a pedestrian / cycle connection to the site.
- 2.4.13 A footway is also provided towards the southern end of Tirbach road circa 220 metres to the west of the proposed development site. Although there is no footway on either side of the Tirbach Road carriageway leading directly into the site, there is limited residential access movements along this stretch of carriageway.



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- 2.4.14 Footway provision along Commercial Street and Gurnos Street is of a good standard with footways provided on both sides of the carriageway, providing access to the local facilities that Ystalyfera has to offer.
- 2.4.15 The National Cycle Network (NCN) Route 43 forms the main cycle route through Ystalyfera; it connects to the Celtic Trail and Swansea. The route provides access to facilities in Swansea including Swansea railway station. To the south, route 43 links with route 4 in Swansea, a long-distance route linking London to Fishguard.
- 2.4.16 NCN Route 43 runs parallel to both the A4067 and Gurnos Road approximately 30m to the south of the carriageway and can be accessed via the informal track that is present directly adjacent to the existing junction into the site.
- 2.4.17 The cycle routes within the vicinity of the site are shown in Figure 2.5.

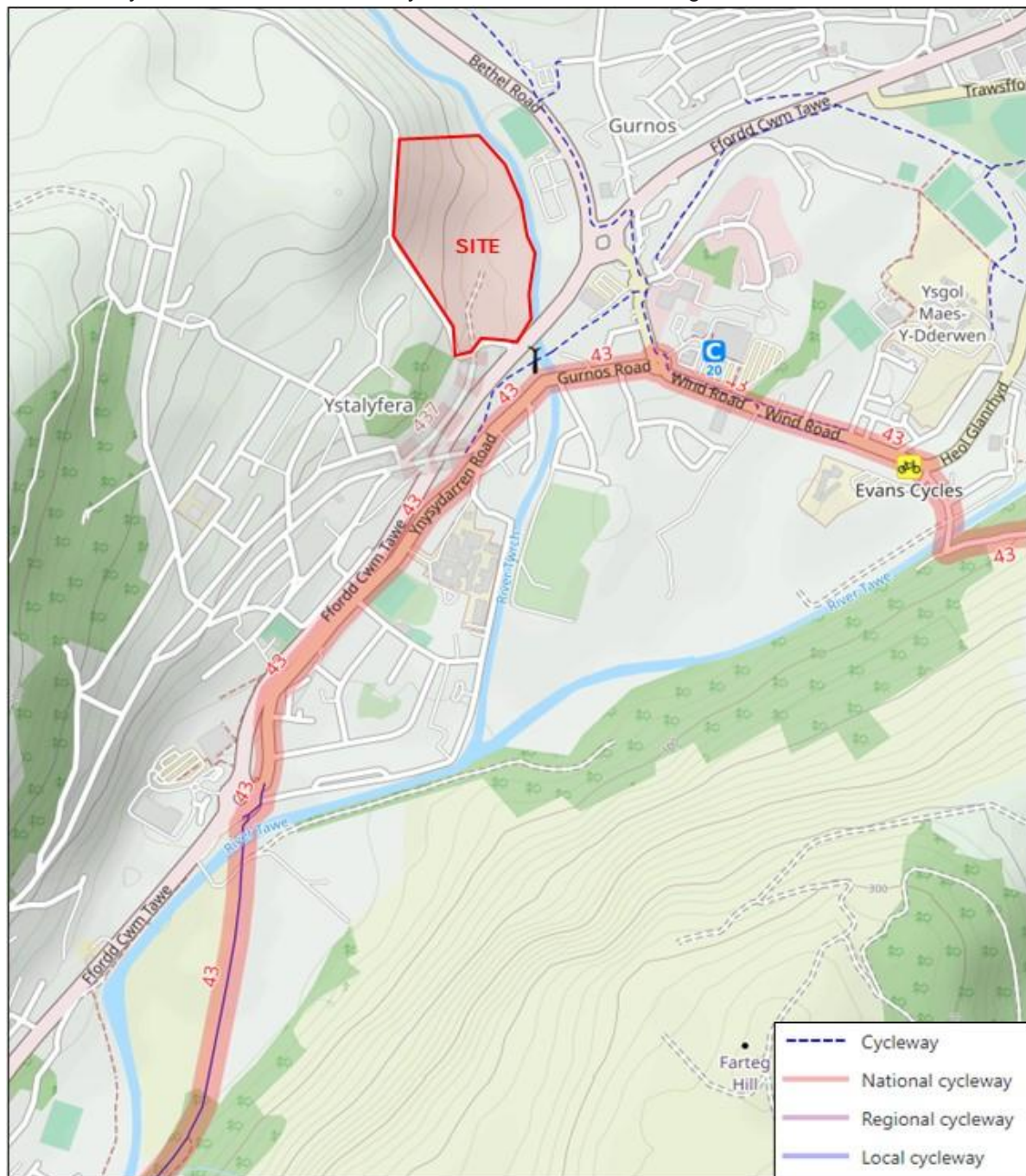


Figure 2.5 Cycle Routes within Vicinity of the Site

2.5 Local facilities and services

- 2.5.1 Manual for Streets (paragraph 4.4.1) states that 'walkable neighbourhoods' are typically characterised by having a range of facilities within 10 minutes (up to 800m) walking distance of residential areas which residents may access comfortably on foot, although that this is not an upper limit.
- 2.5.2 The facilities within recommended walking and cycling distance have been summarised based on approximate distances travelled via walking and cycling routes from the site access as displayed in Table 2.3.

Table 2.3: Summary of Local Services and Facilities

Services, facilities/ amenities	Distance from centre of site (m)	Journey time on foot ¹	Journey time by bicycle ²
Amman Tawe Doctor's Surgery	400	5	1
Capital Shops Bus Stops	430	5	1
New Swan Inn Bus Stops	450	6	1
Premier Express and Post Office	500	6	2
Ystalyfera Community Hall	570	7	2
Co-op	640	8	2
Co-op Store Bus Stops	640	8	2
Home Bargains	640	8	2
The Aubrey Arms	640	8	2
Meddygfar Cwm Doctors Surgery	670	8	2
Texaco	800	10	3
Ysgol Gyfun Ystalyfera	1000	13	3
Ystalyfera Rugby Football Club	1000	13	3
Tesco Superstore	1130	14	4
Ysgol Bro Tawe	1600	20	5
Ysgol Maesydderwen	1600	20	5
Ystradgynlais Sports Centre	1600	20	5

¹ Based on walking speed of 80m/minute, taken from 'Providing for Journeys on Foot', IHT

² Based on cycling speed of 320m/minute, taken from Cycling England Design Guide

- 2.5.3 Table 2.11 demonstrates that there are a wide range of facilities and services within suitable walking and cycling distance from the site; this therefore will encourage travel to and from the site via non-car modes.

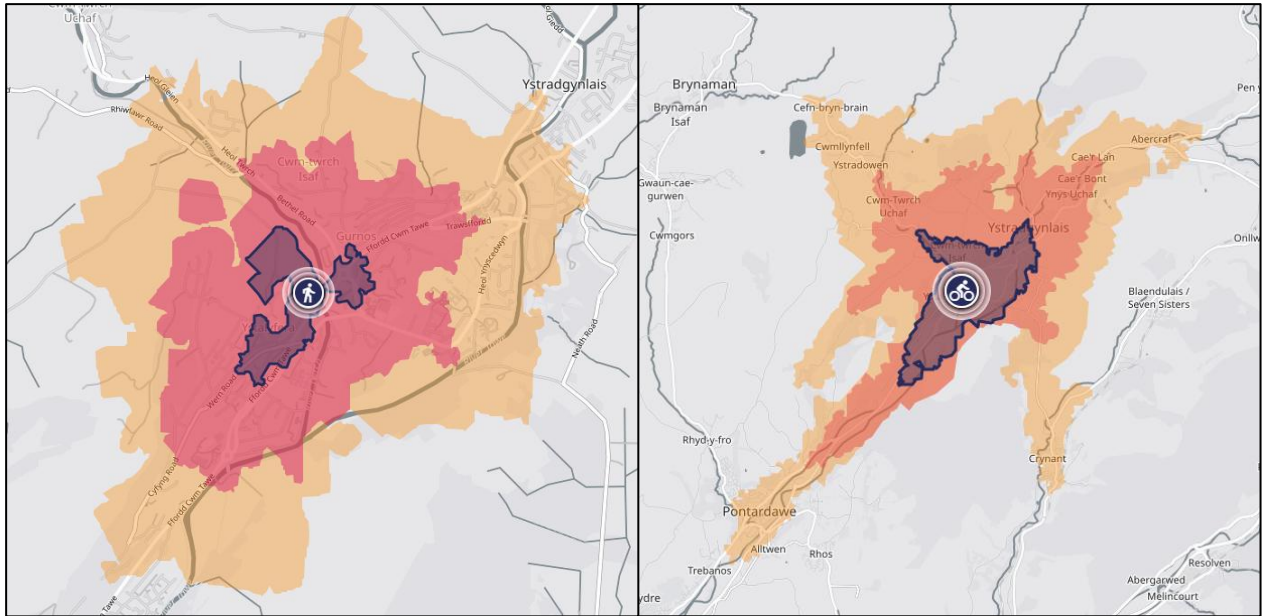


Figure 2.6: 10, 20, 30 Minute Walking and Cycling Isochrones

2.6 Active Travel

- 2.6.1 Active travel involves travel by means of walking and cycling for everyday journeys such as commuting. It plays a key role in promoting healthier lifestyles and reducing the negative impacts of vehicular traffic on local communities.
- 2.6.2 In September 2014, the Welsh government introduced the Active Travel Act 2013 which makes it a legal requirement for Local Authorities in Wales to map and plan active travel routes within certain locations as designated by the Welsh government.
- 2.6.3 The act also requires local authorities to consider the need for new road schemes (including road improvement schemes) to accommodate the needs of pedestrians and cyclists in active travel.

Existing Route Maps

- 2.6.4 A review of the DataMapWales active travel routes map identifies three routes in the vicinity of the site. Walking and cycling route Ysgol Gymraeg Dyffryn y Glowyr to NCN Route 43 is shown in pink whilst walking routes are shown in blue (Figure 2.7).

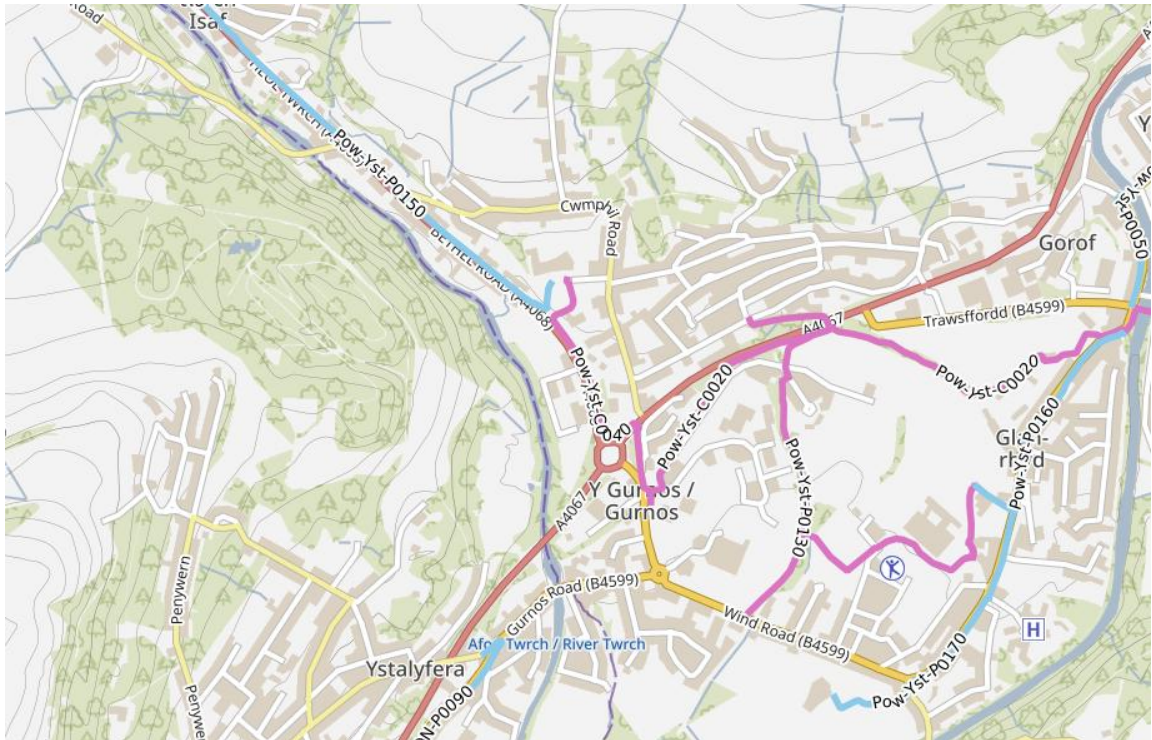


Figure 2.7: Existing walking and cycling routes present on Active Travel Map.

Future Route Maps

- 2.6.5 The Active Travel Act 2014 also required the council to produce Integrated Network Maps (INMs) which outline the Local Authority's plans to develop a network of active travel routes beyond the ERM over the next 15 years. INM proposals have been developed through extensive consultation with the aim of improving access to key services and facilities in town centres and expanding the existing active travel network.
- 2.6.6 NPTCC's INM proposals include additions to the integrated walking and cycling network in the immediate vicinity of the site. The INM proposals are shown at Figure 2.8.

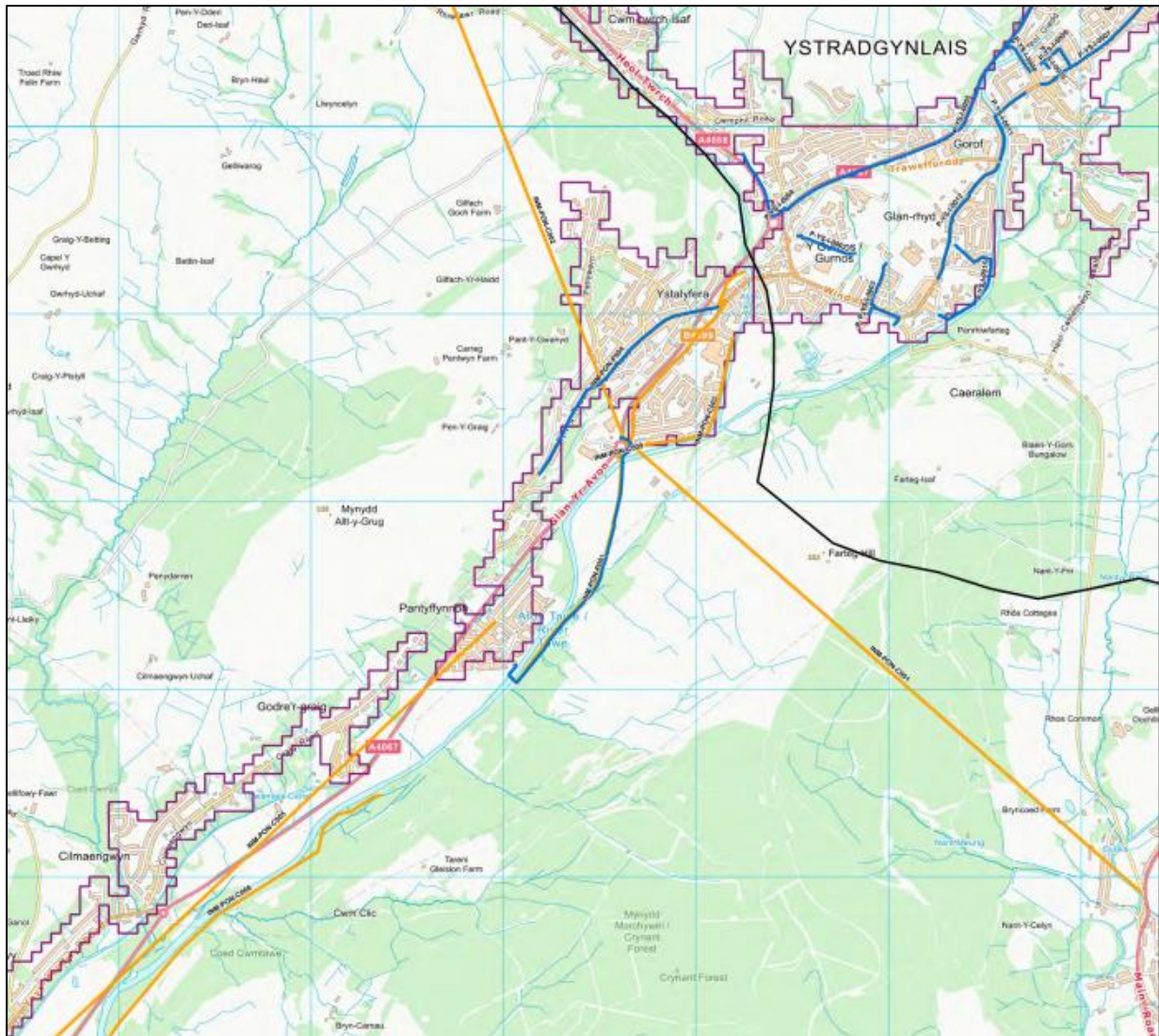


Figure 2.8: Integrated Network Map in Vicinity of Site

2.7 Public Transport

- 2.7.1 The public transport accessibility of the site for 45, 60 and 120-minute isochrones is shown in Figure 2.9 (overleaf).

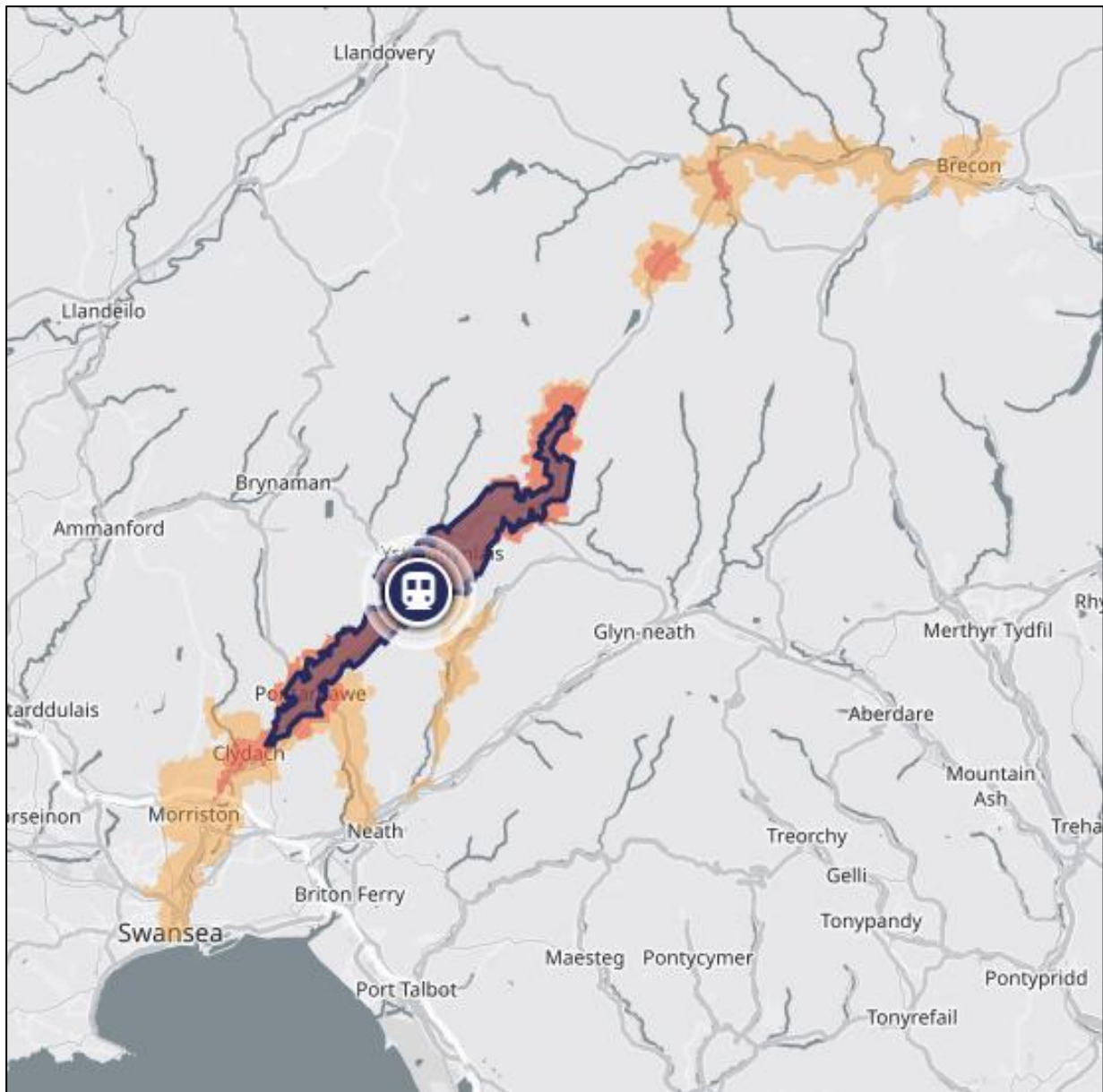


Figure 2.9: 45, 60, 120 Minute Public Transport Isochrone

Bus services

- 2.7.2 The nearest pair of bus stops located to the site is Wind Road near Lyte Ladders and Wind Road opposite 14 Wind Road, approximately a 5-minute walk or 1 minute cycle from the site. Both eastbound and westbound bus stops benefit from a shelter, timetable information and an on-road bus cage.
- 2.7.3 Bus services within the vicinity of the site are of reasonable standard in terms of route destinations and service frequencies, providing access to Neath and Swansea.

Table 2.12: Capital Shops Bus Stop Timetable Summary

Service	Route	First/Last	Frequency		
			Mon-Fri	Saturday	Sunday
64	Ammanford - Ystradgynlais via Brynamman	0920 / 1735	Every 2 hours + 1 extra in the AM	Every 2 hours + 1 extra in the AM peak	-
121	Ystradgynlais - Penywern via Circular via Glanrhyd or Gurnos, Farteg & Hodgson's Rd	0915 / 1345	Every 2 hours, Mon, Wed and Fri	-	-
167	Derlwyn Arms - Main Road after Crynant Business Park	1337 / 1720	Two services as listed left	-	-
903	Abercrave – Neath	0740 / 1635	One service per day	-	-
T6 TrawsCymru	Swansea – Brecon Brecon - Swansea	School service	School Service	-	-
X6 Cymru Clipper	Ystradgynlais – Swansea	0621 / 2126	Hourly	Hourly	-
	Swansea – Ystradgynlais	0757 / 2108	Hourly	Hourly	

Rail services

- 2.7.4 The nearest rail station to the site is Neath railway station which is located approximately 18km to the south of the site. The journey time to the station is approximately an hour cycle or 25-minute drive.
- 2.7.5 The station is located on the Swansea to London Paddington line providing frequent inter-city services to Swansea to the west and, Port Talbot, Bridgend and Cardiff to the east. Direct services are provided to London Paddington as well as Manchester Piccadilly.
- 2.7.6 Local services are also provided by Transport for Wales and these provide access to intermediate stations that are not served by the inter-city service between Swansea and Cardiff. Direct services are also available to Manchester Piccadilly.

2.8 Accessibility summary

- 2.8.1 The site is situated in a sustainable location with pedestrian and cycle route improvement opportunities that would encourage the use of sustainable modes of transport. There will be enhanced Active Travel Routes as per NPTCC's Integrated Network Map.
- 2.8.2 There are a number of bus services located within walking/cycling distance of the development site in. Frequent bus services will encourage an uptake of bus use by residents/visitors from the outset.
- 2.8.3 Consequently, it is considered that there are opportunities for residents and visitors of the proposed development to be able to travel by sustainable modes of transport.

3 Planning policy context

3.1 Preface

- 3.1.1 In producing this assessment due regard has been given to the following Local and National Transport Policies and it is considered that the development accords fully in Transport/Highway terms:

3.2 Planning Policy Wales (Edition 12 February 2024)

- 3.2.1 The Planning Policy Wales Edition 12 (2024) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

- 3.2.2 Chapter 4.0 of PPW covers the theme of 'Active and Social Places' and the transportation components of place making.

- 3.2.3 The principle of the PPW policy is to encourage sustainable travel as set out in paragraph 4.1.1:

"4.1.1 The planning system should enable people to access jobs and services through shorter, more efficient and sustainable journeys, by walking, cycling and public transport. By influencing the location, scale, density, mix of uses and design of new development, the planning system can improve choice in transport and secure accessibility in a way which supports sustainable development, increases physical activity, improves health and helps to tackle the causes of climate change and airborne pollution by:

- Enabling More Sustainable Travel Choices – measures to increase walking, cycling and public transport, reduce dependency on the car for daily travel;
- Network Management – measures to make best use of the available capacity, supported by targeted new infrastructure; and
- Demand Management – the application of strategies and policies to reduce travel demand, specifically that of single-occupancy private vehicles.

- 3.2.4 The proposed development site will be accessible by walking, cycling and public transport.

- 3.2.5 As set out in paragraph 4.1.9 The Welsh Government will seek to encourage cycling:

"4.1.9 The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport'.

- 3.2.6 It is proposed to link the development site to the existing National Cycle Network (NCN) Route 43 located to the east of the site.

- 3.2.7 On sustainable travel, PPW states:

"4.1.11 Development proposals must seek to maximise accessibility by walking, cycling and public transport, by prioritising the provision of appropriate on-site infrastructure and, where necessary, mitigating transport impacts through the provision of off-site measures, such as the development of active travel routes, bus priority infrastructure and financial support for public transport services".

- 3.2.8 The Welsh Government have set out a hierarchy for sustainable transport in relation to new development as follows:



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“4.1.12 it is Welsh Government policy to require the use of a sustainable transport hierarchy in relation to new development, which prioritises walking, cycling and public transport ahead of the private motor vehicles. The transport hierarchy recognises that Ultra Low Emission Vehicles also have an important role to play in the decarbonisation of transport, particularly in rural areas with limited public transport services.”

3.2.9 Figure 3.1 indicates the sustainable transport hierarchy for planning:

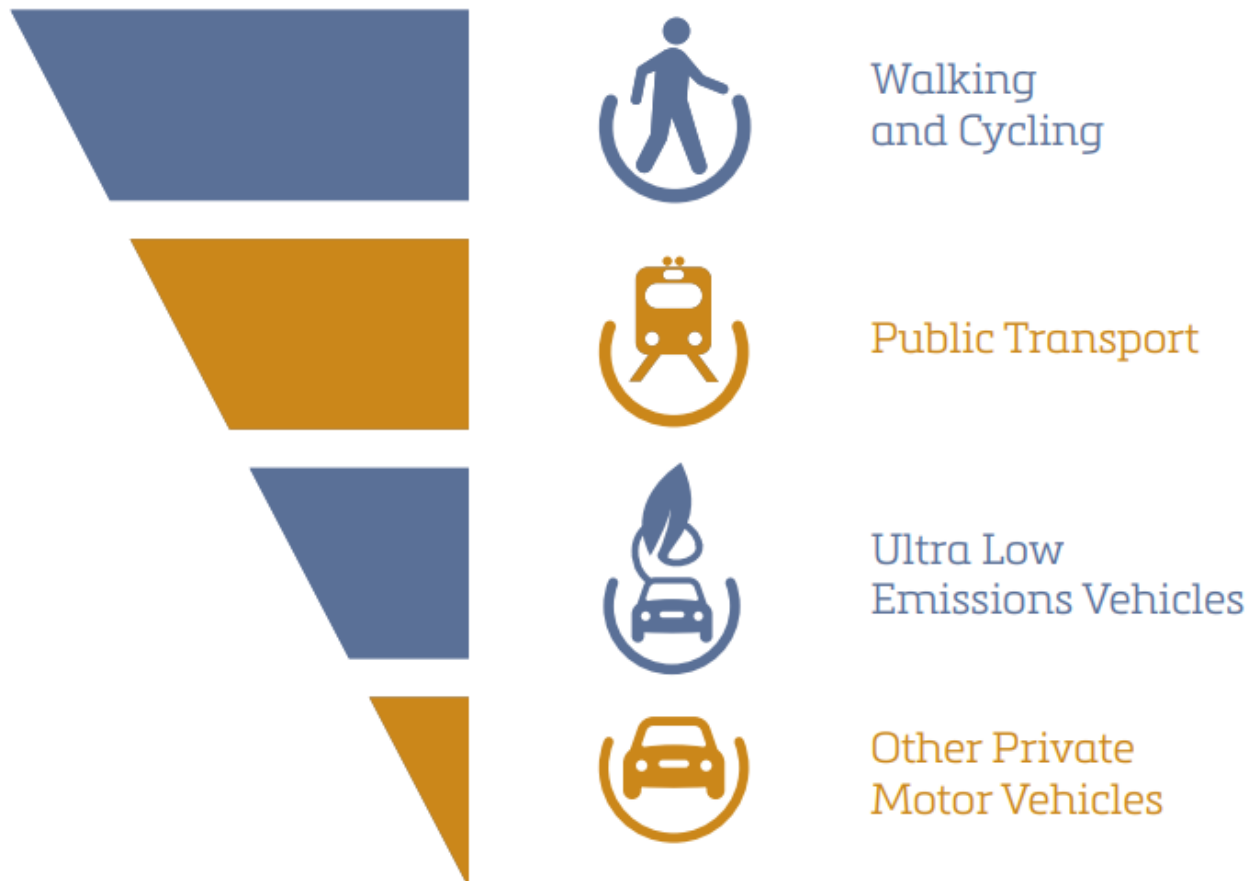


Figure 3.1 The sustainable transport hierarchy for planning

3.2.10 The development proposes pedestrian and cycling infrastructure which connects the site to existing facilities.

3.2.11 The PPW acknowledges in para 4.1.16 that in rural areas the approach to sustainable transport will be site specific:

“4.1.16 Different approaches to sustainable transport will be required in different parts of Wales, particularly in rural areas, and new development will need to reflect local circumstances.”

3.2.12 This site is located on the edge of town, and with the proposed pedestrian improvements the level of sustainable travel options is considered reasonable for a site in such a location.

3.2.13 PPW additionally recognises the differences between development in different areas and the need to consider local context, with paragraph 4.1.17 stating:

“Different approaches to sustainable transport will be required in different parts of Wales, particularly in rural areas, and new development will need to reflect local circumstances.”

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- 3.2.14 The PPW promotes Active Travel and sets out that new development should integrate with existing active travel networks:

“4.1.30 New development places additional demand on transport infrastructure and networks, with the location, layout and design of development affecting the distance and way in which people travel. Developing local active travel networks can help to mitigate the impact of new development, by providing an alternative mode of travel to the private car, particularly for shorter journeys. Provision for active travel must be an essential component of development schemes and planning authorities must ensure new developments are designed and integrated with existing settlements and networks, in a way which makes active travel a practical, safe and attractive choice.”

- 3.2.15 The site will be accessible via non-car modes.

- 3.2.16 The PPW sets out in relation to cycle parking that:

“4.1.35 New development must provide appropriate levels of secure, integrated, convenient and accessible cycle parking and changing facilities. As well as providing cycle parking near destinations, consideration must also be given to where people will leave their bike at home. Guidance on cycle parking is contained within the Active Travel Design Guidance. Planning authorities may alternatively wish to adopt locally specific minimum cycle parking standards and guidance.”

- 3.2.17 Cycle parking will be provided in accordance with the Council's Standard.

- 3.2.18 The PPW sets out in relation to public transport that:

“4.1.36 Planning authorities must direct development to locations most accessible by public transport. They should ensure that development sites which are well served by public transport are used for travel intensive uses, such as housing, jobs, shopping, leisure and services, reallocating their use if necessary. In rural areas, planning authorities should designate local service centres, or clusters of settlements where a sustainable functional linkage can be demonstrated, as the preferred locations for new development.”

- 3.2.19 The site is accessible by public transport.

- 3.2.20 Paragraphs 4.1.49 to 4.1.54 outline the Welsh policy regarding car parking provision:

“4.1.49 Car parking provision is a major influence on how people choose to travel and the pattern of development...

4.1.50 A design-led approach to the provision of car parking should be taken, which ensures an appropriate level of car parking is integrated in a way which does not dominate the development. Parking provision should be informed by the local context, including public transport accessibility, urban design principles and the objective of reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. An appropriate level of car parking will be provided, in line with guidance.

- 3.2.21 PPW regarding Transport Assessments, sets out that:

“4.1.56 Transport Assessments are an important mechanism for setting out the scale of anticipated impacts a proposed development, or redevelopment, is likely to have. They assist in helping to anticipate the impacts of development so that they can be understood and catered for appropriately.”

- 3.2.22 This Transport Assessment provides the information needed to consider the transport implications arising from the development.

- 3.2.23 The site is situated in a location which is accessible by walking, cycling and public transport, with active travel links to the centre of the local settlement and the proposals are fully



compliant with PPW11 as demonstrated in this section of this report. The proposals therefore accord with the Welsh National Guidance.

3.3 Future Wales: the national plan 2040

3.3.1 This spatial plan is the "national development framework, setting the direction for development in Wales to 2040".

3.3.2 This provides a vision for how the planning system can "sustain and developing a vibrant economy, achieve decarbonisation and climate-resilience, develop strong ecosystems and improve the health and well-being of our communities".

3.3.3 In particular, Outcome 7 is "A Wales where people live in places where travel is sustainable". This is expanded: "sustainable transport infrastructure will be embedded within development to enable easy and convenient access from one place to another for commuting, business, tourism and leisure purposes. Development will focus on active travel and public transport, allied with a reduced reliance on private vehicles."

3.3.4 This is to be achieved through Policy 11:

The Welsh Government will support and invest in improving national connectivity. Our priorities are to encourage longer distance trips to be made by public transport, while also making longer journeys possible by electric vehicles. The Welsh Government will work with Transport for Wales, local authorities, operators and partners to support the delivery of the following measures to improve national connectivity:

Rail Network – Transform the rail network and improve the quality of rail services for passengers.

Bus Network – Invest in the development of the national bus network, fully integrated with regional and local bus networks, to increase modal share of bus travel and improve access by bus to a wider range of trip destinations.

Strategic Road Network – Invest in road improvements to reduce journey times, deliver a safer and more resilient road network, and improve air and noise quality. Create a network of rapid charging points to enable longer distance travel by electric vehicles throughout Wales.

National Cycle Network – Revitalise the National Cycle Network to create a network of traffic free paths connecting cities, towns and countryside across Wales.

Planning authorities should support developments associated with improvements to national connectivity and, where appropriate, maximise the opportunities that arise from them. Planning authorities must ensure that, where appropriate, new development contributes towards the improvement and development of the National Cycle Network and key links to and from it.

3.3.5 Policy 12 focuses on regional connectivity.

The Welsh Government will support and invest in improving regional connectivity. In urban areas, to support sustainable growth and regeneration, our priorities are improving and integrating active travel and public transport. In rural areas our priorities are supporting the uptake of ultra low emission vehicles and diversifying and sustaining local bus services.

The Welsh Government will work with Transport for Wales, local authorities, operators and partners to deliver the following measures to improve regional connectivity:

Active Travel – Prioritising walking and cycling for all local travel. We will support the implementation of the Active Travel Act to create comprehensive networks of local walking and cycling routes that connect places that people need to get to for everyday purposes.

Bus – Improve the legislative framework for how local bus services are planned and delivered. We will invest in the development of integrated regional and local bus networks to increase modal share of bus travel and improve access by bus to a wider range of trip destinations.

Metros – Develop the South East Metro, South West Metro and North Wales Metro. We will create new integrated transport systems that provide faster, more frequent and joined up services using trains, buses and light rail.

Ultra Low Emission Vehicles – Support the roll out of suitable fuelling infrastructure to facilitate the adoption of ultra low emission vehicles, particularly in rural areas.

Planning authorities must plan the growth and regeneration of the National and Regional Growth Areas to maximise opportunities arising from the investment in public transport, including identifying opportunities for higher density, mixed use and car free development around metro stations.

Active travel must be an essential and integral component of all new developments, large and small. Planning authorities must integrate site allocations, new development and infrastructure with active travel networks and, where appropriate, ensure new development contributes towards their expansion and improvement.

Planning authorities must act to reduce levels of car parking in urban areas, including supporting car free developments in accessible locations and developments with car parking spaces that allow them to be converted to other uses over time. Where car parking is provided for new non residential development, planning authorities should seek a minimum of 10% of car parking spaces to have electric vehicle charging points.

3.4 Neath Port Talbot County Borough Council Local Development Plan (2011-2026)

- 3.4.1 The Local Development Plan establishes a clear vision for development in Neath Port Talbot, providing developers and the public with a planning framework up to 2026. It provides the policy context for directing development to appropriate locations, conserving the natural, built and historic environment and providing a basis for rational and consistent decision-making on planning applications.
- 3.4.2 This Plan complements the Wales Spatial Plan. It relies on national policy, set out in Planning Policy Wales, Minerals Planning Policy Wales 2000 together with the supporting suite of Technical Advice Notes and Circulars as the context for decision making on land use planning where there is no locally specific LDP policy. These and all adopted Supplementary Planning Guidance (SPG) which support this Plan are material when considering the development proposals.
- 3.4.3 The development proposals accord with the local planning policy guidance.
- 3.4.4 The Authority adopted its Local Development Plan in January 2016. As a significant amount of time has elapsed since the adoption of the plan, the authority is now working on a Replacement Local Development Plan for Neath Port Talbot and it is anticipated that this plan will be adopted in 2026 and will run until 2036.

3.5 Neath Port Talbot County Borough Council - Design Guide for Streets and Public Realm for Residential and Commercial Developments.

- 3.5.1 This guidance note sets out the parameters and standards expected to be incorporated into the design of new developments in the interests of highway safety.
- 3.5.2 This design guidance reflects national highway design guidance and policy such as Manual for Streets, Manual for Streets 2 and the Traffic Signs Manual (2019).

- 3.5.3 Through this document, " developers to create estate layouts which are distinctive and which embrace the principles of MfS by creating a safe, cost effective, attractive environment, with a clear sense of space which meets the needs of all users by embodying the principles of inclusive design".

3.6 Neath Port Talbot County Borough Council - Parking Standards (October 2016)

- 3.6.1 These parking standards provide information about the standards that will need to be achieved in respect of parking provision across Neath Port Talbot.
- 3.6.2 The parking standards are zonal and use a sustainability tool to consider suitable levels of parking.
- 3.6.3 The types of development that will require a travel plan as part of a condition of planning is also outlined in the standards. The production of a travel plan might subsequently result in the relaxation of parking requirements.
- 3.6.4 The standards go on to state:

"In assessing the parking requirements for a particular development, the planning authority will need to take into account the following factors in relation to the development and its location:

- Accessibility to and the service provided by the public transport system;
- The availability of private buses or the extent of car pooling;
- The relative proportions of full time / part time / local catchment of labour;
- Accessibility by walking and cycling;
- The existing and possible future congestion in streets adjacent to the development; and
- Accessibility to and the availability of public and/or private car parking space in the vicinity."

3.7 Planning Policy Wales Technical Advice Note 18: Transport

- 3.7.1 Technical Advice Note 18 adopts a sustainable development approach to improve accessibility, build a stronger economy, improve road safety and foster more sustainable communities. This Advice Note provides seeks to:
- Promote resource and travel-efficient settlement patterns;
 - Ensure new development is located where there is, or will be, good access by public transport, walking and cycling thereby minimising the need for travel and fostering social inclusion;
 - Managing parking provision;
 - Ensuring that new development and major alterations to existing developments include appropriate provision for pedestrians (including those with special access and mobility requirements), cycling, public transport, and traffic management and parking/servicing;
 - Encouraging the location of development near other related uses to encourage multi-purpose trips;
 - Promoting cycling and walking;

- Supporting the provision of high quality, inclusive public transport;
- Supporting provision of a reliable and efficient freight network;
- Promoting the location of warehousing and manufacturing developments to facilitate the use of rail and sea transport for freight;
- Encouraging good quality design of streets that provide a safe public realm and a distinct sense of place; and
- Ensuring that transport infrastructure or service improvements necessary to serve new development allow existing transport networks to continue to perform their identified functions.

3.8 Welsh Government's Active Travel Guidance

3.8.1 This document sets out the vision for "walking and cycling to be the natural mode of choice for short everyday journeys, or as part of a longer journey in combination with other sustainable modes".

3.8.2 This would be achieved through five-year priorities:

- continuously develop a network of local routes for walking and cycling to connect people with the places they travel to for everyday journeys;
- refresh the plans for Active Travel Network Plans (ATNMs) every three years, based on extensive consultation with a particular emphasis on people who do not currently walk or cycle for local trips;
- include education facilities on ATNMs, including Welsh-medium education;
- train and develop professionals in best practice active travel design and guidance to ensure high quality infrastructure is put in place;
- develop a package of 'soft' behaviour change measures, such as aiming to make cycle training available for all and travel planning, to complement 'hard' infrastructure investment;
- put in place a policy framework that ensures that all new developments, including new school and health facilities, make provision for walking and cycling from the outset;
- encourage all schools to have an active travel plan and adopt actions to slow traffic and widen pavements around schools;
- change the default speed limit from 30mph to 20mph in built-up areas to reduce traffic related injuries and fatalities and make walking and cycling safer and more attractive;
- support safer, better cycle paths and more space for walking and cycling through closing roads for vehicle traffic, more facilities for pedestrians, and support for cycle training and safety schemes for all road users;
- introduce pilot schemes to make use of electrically assisted bikes (e-bikes) and e-cargo bikes an affordable option for more individuals and businesses;
- work with partners on behaviour-change programmes to encourage uptake of healthy and active travel through for example, workplace schemes, including provision of facilities such as cycle parking;

- work with UK partners on a regulatory framework for micro-mobility modes such as e-scooters;
- manage and evaluate the active travel fund which supports local authorities to develop and deliver active travel schemes, including best-practice sharing and regional collaboration; and
- work towards 'safe cycling from village to town' giving villages safe cycling access to the nearest town and creating hub-and-spoke active travel corridors connecting market towns and other significant local centres to surrounding villages and outlying developments.

3.8.3 An overall 15-year ambition is to achieve " a comprehensive network of safe, direct, cohesive, comfortable and attractive walking and cycling routes within and connecting to key settlements across Wales".

4 Development Proposals

- 4.1.1 This Transport Assessment has been produced in support of an outline planning application for the redevelopment of the former Tirbach Washery comprising of the construction of up to 160 residential dwellings and associated infrastructure works.
- 4.1.2 The illustrative masterplan includes fewer homes (104 in total), and the detail of the site layout would be determined as part of reserved matters applications. The preliminary masterplan shows a mix of one-to-four-bedroom dwellings, including terraced, semi-detached and detached dwellings; driveway parking will be provided.
- 4.1.3 This indicative site layout is shown at Appendix B.

4.2 Vehicular Access

- 4.2.1 Vehicular access to the site will be provided via a new 4-arm traffic signal-controlled junction which is proposed to replace the existing left-in/left out only priority junction that provides access to Tirbach Road. The site access drawing is shown in Appendix C.
- 4.2.2 The site access proposals include:
- 4-arm traffic signalised junction with prohibited access for quarry traffic (egress only arm)
 - Signalisation of the existing Tirbach Road egress, access remains left-in as existing
 - Access arm radii 10m on northern side, 12m radii on southern side
 - 3m wide separate lanes provided for left-out and right-out vehicular movements; the lane flare commences approximately 40m back from the stop line
 - 3m shared use footway/cycleway on northern side of the access road to connect the site to the proposed pedestrian and cycle crossing on the northern arm (A4067)
 - Propose to reduce the stretch of road (some 500m in length) subject to the existing national speed limit (60mph) to 40mph
- 4.2.3 Due to the difference in flow between the A4067 and the arm that will serve the proposed development it is considered that the junction will operate under Vehicle Actuated (VA) signal control. This would ensure that green time for the proposed development (and Tirbach Road quarry egress) is only allocated when required to allow for vehicles to exit the proposed development therefore reducing delays to the throughput along the A4067.
- 4.2.4 The existing Tirbach Road access remains as existing, with the left in only junction retained. Egress from Tirbach Road will form a fourth arm of the proposed signalised access. This egress retains similar geometry from the existing egress and all turning movements from this egress are permitted. NO ENTRY markings are provided to deter vehicles on the A4067 from entering the egress in error.
- 4.2.5 The proposed site access arrangement is shown on Hydrock Drawing 22699-HYD-XX-XX-DR-D-0003, and visibility splays shown in drawing 22699-HYD-XX-XX-DR-D-0005. Both drawings are provided at Appendix C.
- 4.2.6 Swept path analysis has been undertaken to demonstrate that a refuse vehicle can turn in and out of the site safely. This is presented in full in Appendix D.

Pre-application comments - Safety Audit

- 4.2.7 At the pre-application stage, the LHA advised the following regarding the site access:



- There are concerns with the introduction of a new controlled highway junction with the A4067 and a justification is required as to how this is the safest and most appropriate access arrangement into the development. Please provide your Road Safety Audit for this design (please see comment 3 for further information on the RSA requirement)
 - Any accommodation/alteration works required on the public highway shall be subject to Road safety Audits, stages 1 to 4 in accordance with GG 119 of the Design Manual for Roads and Bridges. Each stage of the Road safety Audit shall be submitted for approval in writing by the Local planning Authority. All issues highlighted at each stage, being addressed to the written approval of the Local Planning Authority within 3 months of that stage of that Road safety Audit has been approved.
- 4.2.8 A Road Safety Audit has been completed by an independent auditor, with the RSA brief approved by transport engineers at the local highway authority. This Audit, along with the designer's response, is contained in Appendix E.
- 4.2.9 The RSA identified a number of recommendations, and these have been incorporated into the design of the junction. Recommendations relevant to this stage of the junction design are summarised below, whilst the full list of recommendations are contained within the Audit and designer's response.
- Ensure that the traffic signal inter-visibility for the proposed junction can be achieved, an alternative mode of control for the junction should be explored if this cannot be achieved.
 - Ensure that a safe pedestrian/cycle access to and from the proposed development is provided
 - Undertake swept path analysis for the appropriate vehicles negotiating the proposed junction, if necessary modify the layout to accommodate the safe movement of vehicles using the junction.
 - Review the levels along the proposed site access roads, if possible the gradients should be reduced, if this is not possible measures to reduce vehicle speeds on the downhill approach to the traffic signal stop lines should be provided.
 - Ensure that clear signs and markings are provided to improve the layout of the proposed traffic signal-controlled junction. Alternatively, if possible the layout should be amended with a simple access arrangement where the quarry access is incorporated into the site access or vice-a-versa.
 - Ensure that VRS is provided to mitigate the risk of vehicles losing control and falling down the embankment.
 - Ensure that the traffic signal controller is located in an area where it does not create an obstruction for non-motorised users and where visibility to the traffic signal heads is not compromised. In addition a safe area for maintenance vehicles should be provided.
- 4.2.10 The above recommendations have been incorporated into the proposed site access design.

Pre-app comments - Quarry Haul Road

- 4.2.11 At the pre-application stage the LHA raised a concern regarding the quarry haul road:
- There is a conflict with the existing 'Quarry Haul Road' how will quarry traffic which includes large HGVs and cars negotiate the proposed controlled junction.
- 4.2.12 This haul road will continue to facilitate the same movements (left in and left out). The left out is signalised. The width and radius of the haul road remains unchanged and as such, the operation of the haul road, including for large HGVs, is not materially affected.



Pre-application comment: right turners into the site

- 4.2.13 The LHA raised a concern that vehicles would turn right into the site despite the no right turn instructions:
- You are proposing that vehicles are unable to turn right into the development at the new traffic light-controlled junction when approaching the site from the East (Ystradgynlais direction) and vehicles are required to travel down to the 'ASDA' roundabout to access the site from a Westerly direction based upon the 'Ahead only' annotations on the drawings provided. There are concerns that vehicles will simply make a right turn here regardless of the 'ahead only' road markings.
- 4.2.14 The proposed site access junction now allows for all turning movements with a dedicated right turn signalling stage.

Pre-application comment: Junction visibility

- 4.2.15 The LHA requested that junction visibility splays should be presented in the TA:
- The new access junction of the site access with the existing highway will require vehicular visibility splays in accordance with TAN 18. It is recommended that during the proposed survey to collect vehicle trip data for the TIA it also collects vehicle speed data and the 85%ile ascertained. Details of which can be provided to the Local Authority to agree the vision splay requirements of the junction.
- 4.2.16 Junction visibility splays are shown in Appendix C.

Pre-application comment: cross sections

- 4.2.17 The LHA requested that construction details for the site access should be provided:
- Full construction details of the site access including long and cross sections and the tie in to the adopted highway is required
- 4.2.18 Long sections and cross sections have been prepared and these are shown in Appendix C.

4.3 Pedestrian and Cycle Access

- 4.3.1 Pedestrian access to the site can be achieved via two main approaches.
- 4.3.2 Pedestrian access will be provided to the quiet lane and pedestrian infrastructure on Tirbach Road. A dedicated walking and cycling access will be created in the location of the existing gate which currently separates Tirbach Road and the existing access road.
- 4.3.3 Pedestrian access onto the A4067 is also a possibility. As part of the proposed signalised access junction, a pedestrian connection to the existing footway on northern side of the A4067 bridge over Afon Twrch is proposed.
- 4.3.4 To the north east of the footway on the bridge is an 85m stretch of well-used informal footway before the footway re-starts on approach to the A4067 / Gurnos Road roundabout. This 85m stretch could potentially be upgraded into a footway to provide a continuous footway from the A4067 / Gurnos Road roundabout.

4.4 Internal layout

- 4.4.1 Whilst the details of the site layout are not under consideration, an illustrative layout has been prepared and is shown in Appendix B.



- 4.4.2 The principles of the site layout are shown, with a 5.5m wide spine road and cul-de-sacs ending in shared surfaces extending off from the site. Footways 2m in width are provided throughout the site, up to the shared surface end of cul-de-sacs.
- 4.4.3 The cul-de-sacs accommodate 6 to 8 dwellings and are shown as sufficient width to turn a refuse vehicle and fire tender.

Servicing arrangements

- 4.4.4 The indicative site layout has been designed in accordance with the principles set out within Manual for Streets (MfS). The site is proposed to be accessed by a main access road running north to south with a width of 5.5 metres; turning heads have been provided.
- 4.4.5 The width enables two HGVs to pass each other (5.5 metres as set out in Figure 7.1 of MfS) and allows cars to manoeuvre into and out of driveways safely and appropriately.
- 4.4.6 Further detailed information regarding servicing will be provided at the reserved matters stage.
- 4.4.7 At this stage, swept paths have been provided to show that there is sufficient space built into the layout to accommodate a refuse vehicle and fire tender. This is shown in Appendix D.

Pre-application comments

- At the pre-application stage, the Local Highway Authority advised that:
 - All roads should be designed for 20mph or less speed limited with bends having a centre line radius not less than 20m and any necessary bend sight line shown as being within the proposed footway;
 - All roads to be designed in accordance with Manual for Streets, the Authority's Design Guide.
- 4.4.8 These comments are noted. At the reserved matters stage the site layout will demonstrate these specific points as well as overall compliance with the Authority's design guide.

4.5 Parking Provision

Car Parking

- 4.5.1 The Neath Port Talbot Council (NPTCC) Supplementary Planning Guidance (SPG) Parking Standards 2016 provides advice on Parking Standards for new developments. The NPTCC standards use designated zones with differing levels of parking for development management purposes. According to Appendix A of the Parking Standards document, the proposed development falls within Zone 4 'Suburban or Near Urban'.
- 4.5.2 The standards set out in this document indicate the maximum requirement in new developments. The maximum parking standards for residential developments is summarised in Table 4.1:

Table 4.1: NPTC SPG Parking Standards 2016 Zones 2 to 4

Use Class and Description	Residents	Visitors
Houses	1 space per bedroom (maximum requirement 3 spaces)	1 space per 5 units
Apartments	1 space per bedroom (maximum requirement 3 spaces per apartment)	1 space per 5 units

- 4.5.3 Based on the quantum of development set out in paragraph 4.1.2, the following car parking is required (Table 4.2):

Table 4.2: Car parking standards

Dwelling type	Quantum	Required resident parking	Required visitor parking	Parking provided
1-bed flat	24	24	21 spaces	188 resident spaces
2-bed house	34	68		
3-bed house	37	111		
4-bed house	9	27		15 visitor spaces
Total	104	230		

- 4.5.4 The illustrative layout includes parking under the maximum set out in the NPTC SPG parking Standards. It is noted that the quantity and design of parking is a reserved matter.
- 4.5.5 The level of parking proposed is considered to be commensurate to the range of facilities accessible on foot and by cycle, reducing the need to travel by car. Table 2.11 identifies that the site benefits from a convenience store, bus stops, doctors' surgery, post office, and public house within a 10-minute walk, and a Tesco superstore within a 15-minute walk.
- 4.5.6 A Travel Plan has been submitted in support of the application to raise encourage mode shift to sustainable modes of travel through a package of measures as well as monitoring strategy.
- 4.5.7 It is further noted that the risk of inappropriate overspill parking is considered to be minimal, given the arterial nature of the A4067.
- 4.5.8 The parking provision would be carefully considered and agreed with NPTCC as part of the detailed planning application. The provision will ensure there is no overspill impact on local streets whilst not overproviding which could encourage the use of vehicles.

4.6 Car Park design

- 4.6.1 At the pre-application stage the local highway authority provided advice regarding the design and layout of parking:

"All shared drives (serving a maximum of 5 dwellings) to have a gradient not exceeding 1 in 9 to be 4.5m wide have pedestrian vision splays of 2.4m by 2.4m (behind footway) which should be hard surfaced, and a turning facility provided so all vehicles can enter and leave in a forward gear. Shared drives should not exceed 30m in length (carrying distance for bins) and there will be a need to widen the footway or provide a bin parking area where bins/sacks can be placed on collection day without obstructing the footway.

"Driveway car parking shall comply with the following:-

- Single driveway shall be 3.6m wide and 6m in length,
- Parallel parking, the first space shall be 3.6m wide with the additional space or spaces thereafter being 2.6m (for example; parallel parking for two vehicle, the dimensions should be 6.2m wide (3.6m plus 2.6m) by 6m in length). For a third space you would add on an additional 2.6m wide.
- Parking in tandem for a single driveway width would require a width of 3.6m wide, together with the first space being 6m in length and then other length(s) being 4.8 metres in addition (for example; two car parking in tandem would require a width of 3.6m and a length of 10.8m (6m plus 4.8m). For a third space you would add on an additional 4.8m.

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"All single garages shall have a minimum internal dimension of 3 metres width by 6 metres length or 6 metre width by 6 metre length for a double garage."

- 4.6.2 These comments have been noted and will be taken into account at the reserved matters stage.

Cycle Parking

- 4.6.3 All residential developments must be accessible by cycles and cycle storage must be a factor of dwelling design.
- 4.6.4 Cycle parking will be provided for each residential unit with one cycle parking space accommodated within the curtilage of each individual dwellings. This is compliant with the guidelines.



5 Trip generation and assignment

5.1 Introduction

- 5.1.1 This section sets out the trip generation of the proposed development. It also provides details of the proposed methodology for distributing and assigning vehicle trips onto the local highway network.
- 5.1.2 The pre-application consultation transport assessment included trip rates derived from the Trip Rate Information Computer System (TRICS 2022 v 7.9.2) (TRICS) online database. It is noted that no comments were raised that would suggest the vehicle trip rates are unacceptable.
- 5.1.3 A more recent version of the TRICS database is now available (TRICS 2024 v 7.11.1) and therefore an updated review of the vehicle trip rates has been undertaken. This considers residential sites with similar characteristics to the proposed development. TRICS is an industry standard software, used to forecast trips likely to be generated by development sites.
- 5.1.4 The TRICS database predicts the likely numbers of arrivals and departures by utilising surveys undertaken at existing developments of a similar size and characteristics across the UK. The analysis in this TS has included the filtering of the sites with regard to use, scale, location, accessibility, car parking availability and surrounding population numbers to establish sites with the most comparable trip characteristics.
- 5.1.5 Vehicle trip rates have been obtained from TRICS and applied to establish trip generation resulting from the proposals during peak network hours (AM – 08:00 – 09:00 and PM – 17:00 – 18:00) and over a 12-hour period (07:00 – 19:00) for the proposed residential use.

5.2 Trip rates

- 5.2.1 The TRICS category 03-A, Houses Privately Owned, has been used to derive the trip rates for the proposed residential development. This has been used for all 160 dwellings to ensure a robust assessment and the presentation of the worst case in terms of vehicle trip generation (as affordable dwellings typically generate lower vehicle trips).
- 5.2.2 The database has been filtered in line with the TRICS Good Practice Guide in order to achieve the most representative sites. The following filters have been applied to the search criteria:
- Multimodal surveys
 - Located within England and Wales (excluding Greater London)
 - Sites with up to 250 dwellings
 - Surveys from Monday to Friday
 - Sites in Edge of Town and Neighbourhood Centre locations
 - Sites with a population of less than 10,000 within 1 mile
 - Sites with a population of less than 75,000 in 5 miles
 - Sites with nearby rail stations have been discounted
 - Surveys undertaken during Covid-19 removed
- 5.2.3 The trip rates included in the previous version of the transport assessment are shown in Table 5.1 and the trip rates from the updated review are shown in Table 5.2. This shows that the previously submitted trip rates are higher than those obtained from the new TRICS review.



Therefore, in order to undertake a robust assessment the previously submitted trip rates have been used to determine the trip generation of the proposed development. The updated TRICS assessment shown in Table 5.2 are contained in Appendix F.

Table 5.1: Vehicle trip rates (previous transport assessment using TRICS 2022 v 7.9.2)

TRICS 7.9.2	AM (8am to 9am)		PM (5pm to 6pm)		Daily	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Vehicle trip rates	0.142	0.344	0.3	0.148	2.293	2.292

Table 5.2: Vehicle trip rates (updated using TRICS 2024 v 7.11.1)

TRICS 7.11.1	AM (8am to 9am)		PM (5pm to 6pm)		Daily	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Vehicle trip rates	0.121	0.261	0.243	0.124	1.715	1.736

5.3 Proposed development vehicle trip generation

- 5.3.1 A summary of the forecast vehicle trip generation for the 160 dwellings included in the outline planning application is shown in Table 5.3.

Table 5.3: Proposed site vehicle trip generation for 160 dwellings

	AM (8am to 9am)		PM (5pm to 6pm)		Daily	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Trip generation	23	55	48	24	367	367

- 5.3.2 It is noted that there is a lower number of homes in the preliminary masterplan, so assessing the impact of the proposed development using the trip generation of 160 homes is robust.

5.4 Development trip distribution and assignment

- 5.4.1 Trip distribution analysis has been undertaken to identify the likely routes to and from the site for the proposed residential development traffic. The vehicle trips have been distributed based on Table WU03EW of the 2011 census data (Location of usual residence and place of work by method of travel to work - MSOA level). Although a residential site generates trips for all purposes, not just work purposes, the Census data is considered appropriate for use in distributing traffic associated with the development during the peak hours as a high proportion of vehicle trips would be for commuting purposes.
- 5.4.2 To capture an appropriate vehicular distribution, the Neath Port Talbot 020 Middle Super Output Area (MSOA) has been used, within which the site is located.
- 5.4.3 The most appropriate routes have been identified from the site based on distances and times between the site and destination, with the same distribution percentages used in the AM and PM peaks. This has been based on the residential peak hours of 0800-0900 and 1700-1800. The forecast percentage distribution is summarised in Table 5.4.

Table 5.4: Trip Distribution

Link	Distribution (%)
A4068	17
A4067 North	25
A4067 South	58



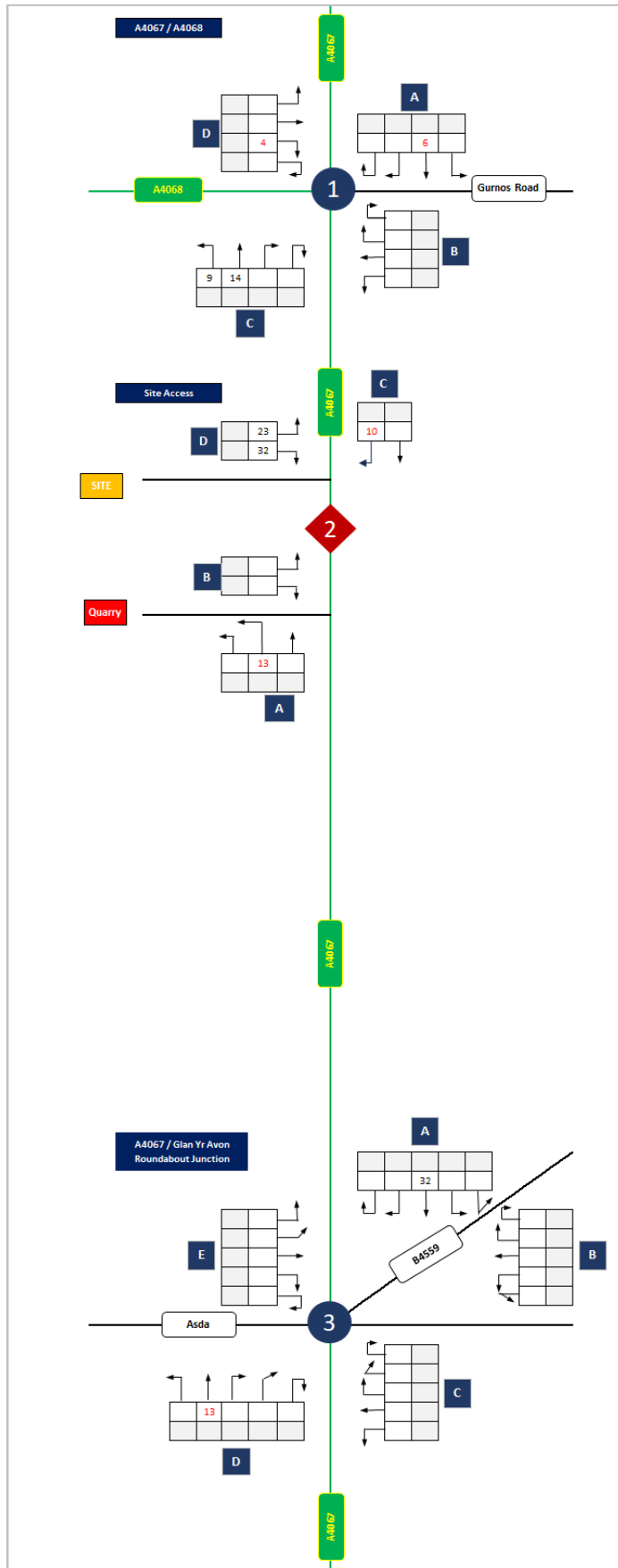


Figure 5.1: AM peak hour development trip assignment

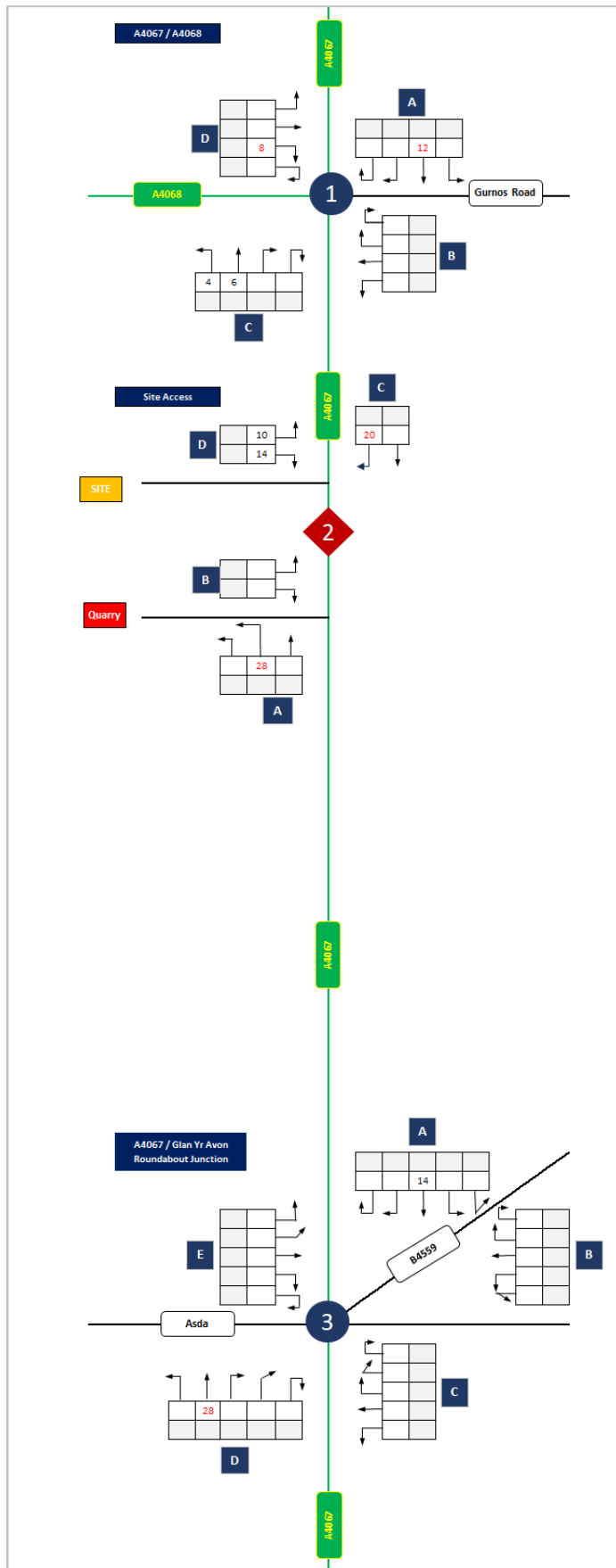


Figure 5.2: PM peak hour development trip assignment

6 Traffic impact assessment

6.1 Introduction

- 6.1.1 This section sets out the scope of the local highway network over which the impact of the proposed development has been assessed, the assessment scenarios and future year traffic flows.

6.2 Operational and network peak hours

- 6.2.1 The network peak hours were identified as 08:00-09:00 in the AM; for the PM peak hour, the results indicated that at the A4068 roundabout junction the peak hour fell between 16:15 and 17:15 and that at the Asda roundabout junction and quarry access junction the peak hour fell between 16:00 and 17:00. The AM and PM peak hours of 08:00 to 09:00 and 17:00 to 18:00 have been assessed for the proposed residential development.
- 6.2.2 For the purpose of providing a robust assessment it has been assumed that the network and proposed residential peak hours coincide, and so the network peak flows have been assessed with the development's peak site traffic generation.

6.3 Growth factors

- 6.3.1 The 2024 surveyed traffic flows have been factored to 2029 to provide a future year scenario (five years post submission).
- 6.3.2 These growth factors have been calculated using the TEMPro (v8.1). The TEMPRO growth factors for MSOA Neath Port Talbot 020 are summarised below:
- Weekday AM peak 2024 – 2029: 1.0512
 - Weekday PM peak 2024 – 2029: 1.0499

6.4 Junction capacity assessments

- 6.4.1 Assessments have been carried out to determine the design and performance of the following junctions to determine whether the proposed development would result in any of these exceeding their operational capacity:
- Signalised Site Access Junction (LinSig);
 - A4067 / A4068 / Gurnos Road 4-arm Roundabout Junction (ARCADY); and
 - A4067 / B4599 / Glan Yr Avon / Asda Access 5-arm Roundabout Junction (ARCADY).

6.5 Assessment scenarios

- 6.5.1 The following scenarios have been assessed within this transport assessment:
- 2024 Base
 - 2029 Base + background traffic growth (do minimum)
 - 2029 Base + background traffic growth + development (do something)
- 6.5.2 The traffic flow diagrams for the 2029 do minimum and do something scenarios are shown in Figure 6.1 to Figure 6.4. All flow diagrams are shown in full in Appendix G.



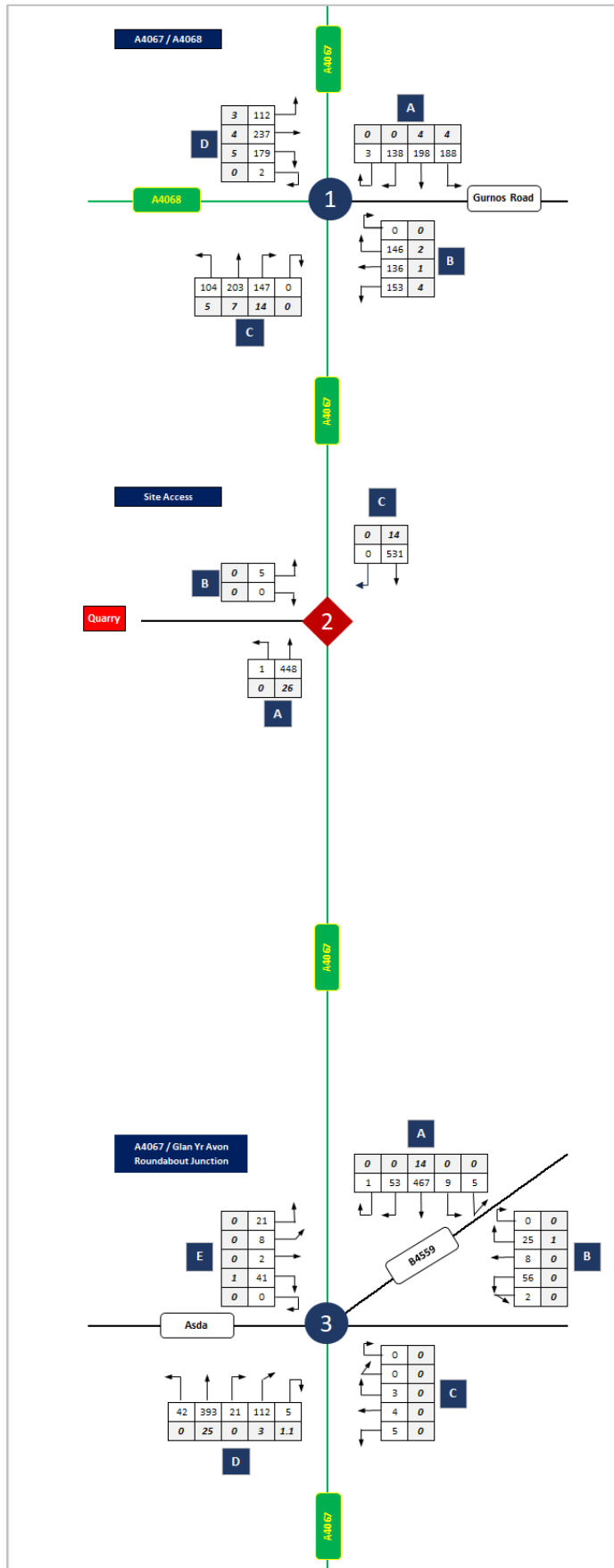


Figure 6.1: AM peak hour 2029 do minimum traffic flows (vehicles)

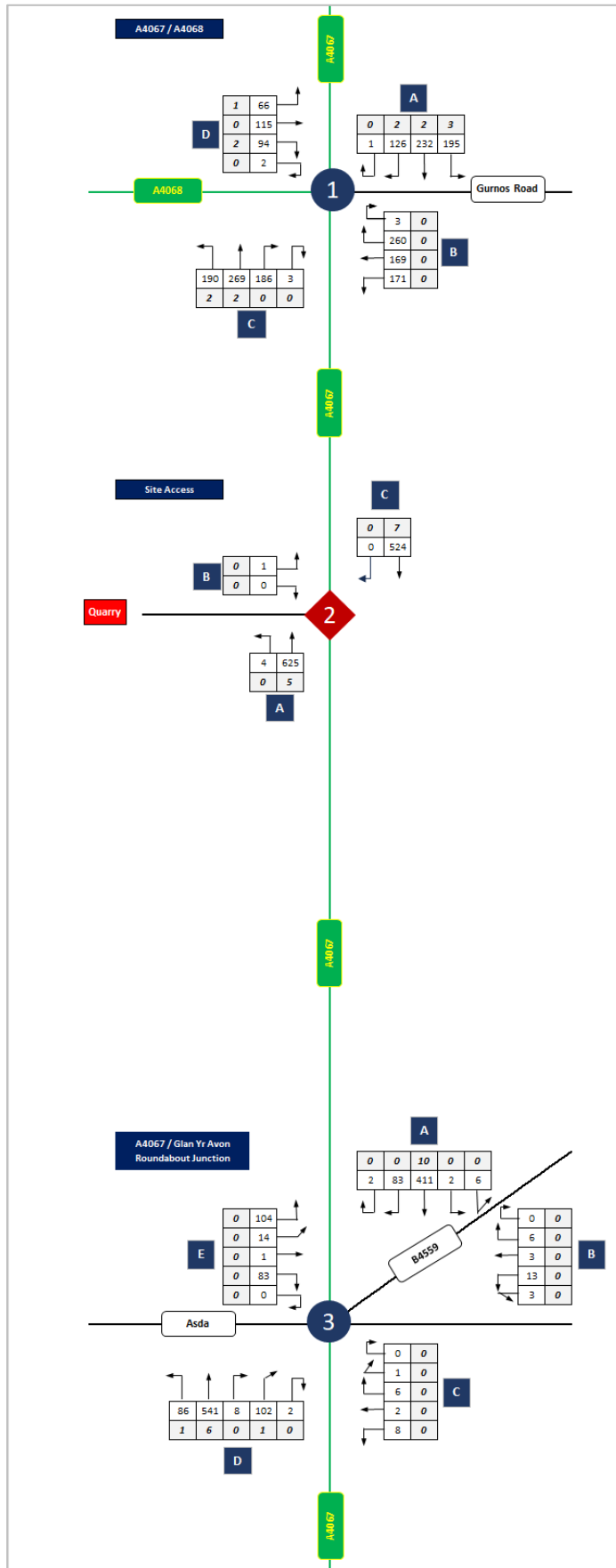


Figure 6.2: PM peak hour 2029 do minimum traffic flows (vehicles)

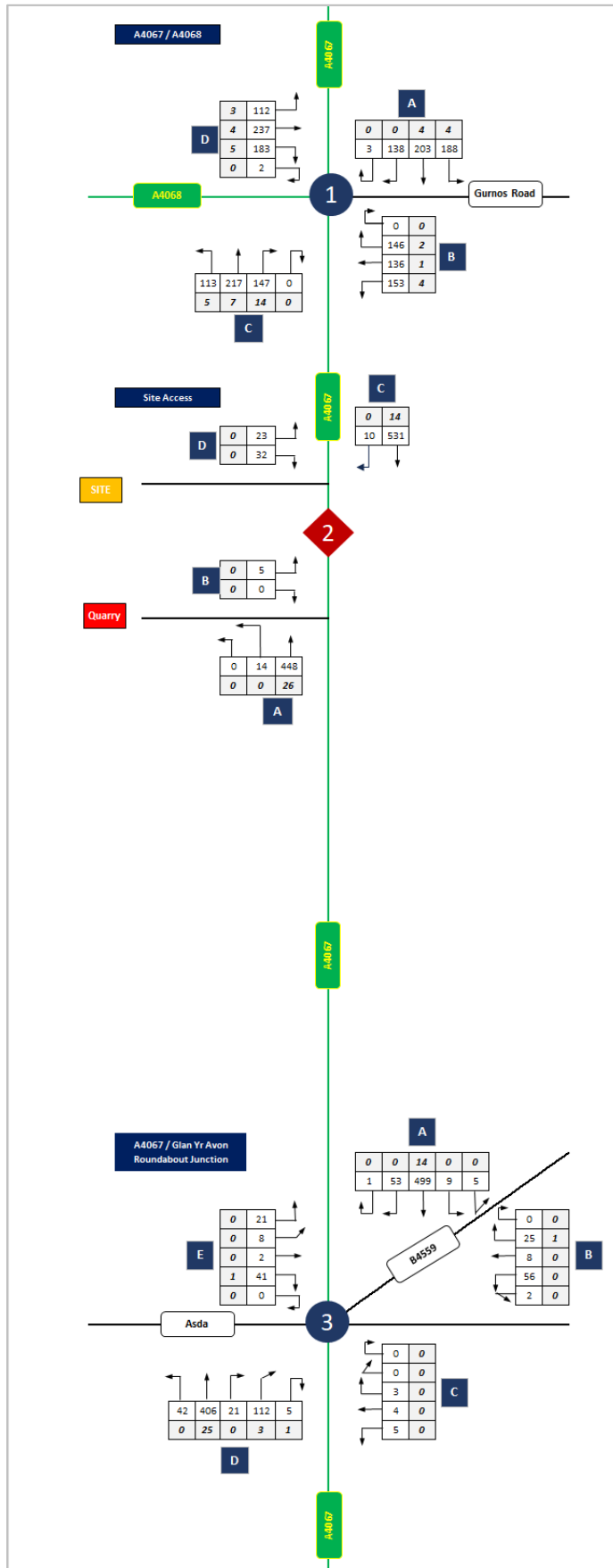


Figure 6.3: AM peak hour 2029 do something traffic flows (vehicles)

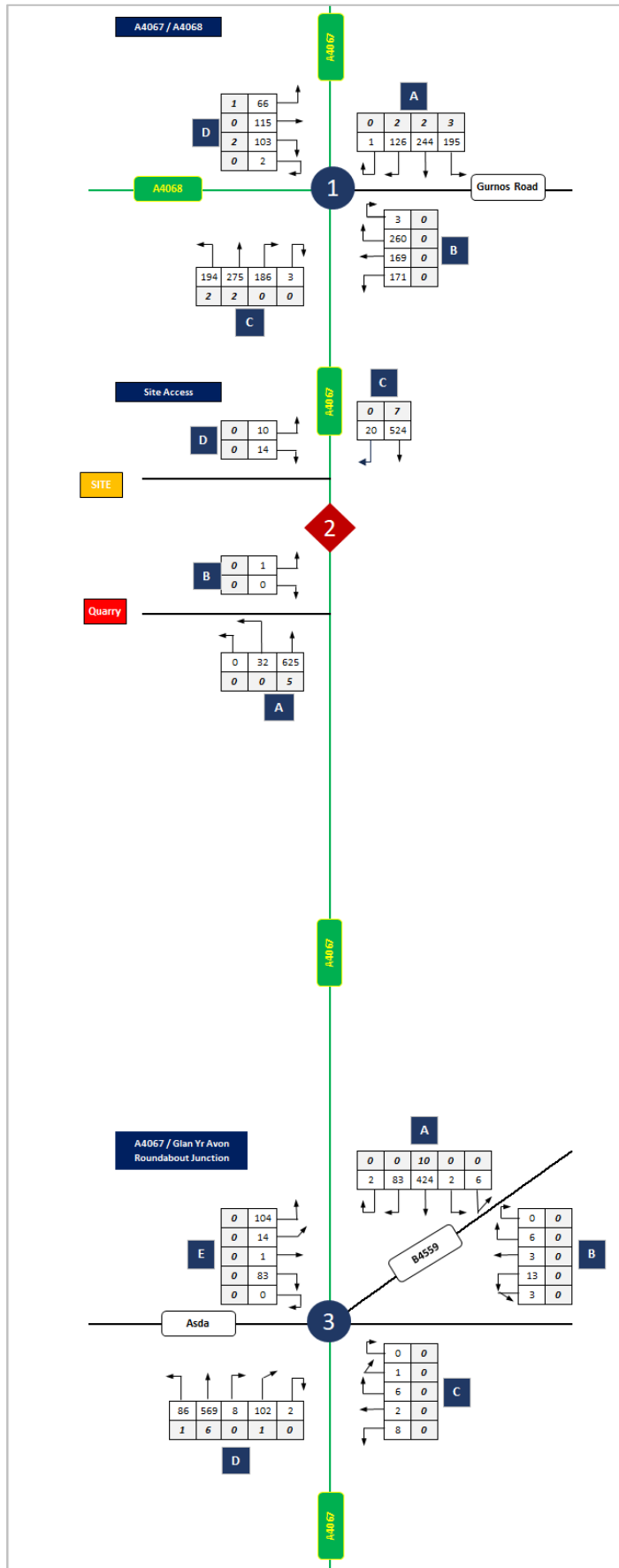


Figure 6.4: PM peak hour 2029 do something traffic flows (vehicles)

6.6 Junction modelling inputs and outputs

Site access/ quarry access/ A4067 signalised junction (modelled using LinSig)

- 6.6.1 An assessment of the proposed signalised site access junction has been undertaken using LinSig (V3). This included intergreen and stage sequence information which has been calculated as appropriate for the proposed junction arrangement.
- 6.6.2 It is assumed that the signals will operate on a vehicle actuated (VA) controller system. This is a form of intelligent signal control, able to react to traffic conditions as they occur. LinSig however operates on a fixed time system only and therefore is likely to underestimate the available capacity at the junction.
- 6.6.3 The output from LinSig V3 provides a number of measurements to provide information of a junction's operation. The key outputs considered in this assessment are;
- Practical Reserve Capacity (PRC)
 - Degree of Saturation (DoS)
 - Mean Maximum Queue (MMQ) length in PCUs
 - Delay in seconds per PCU
- 6.6.4 The 'PRC' gives the main indicator of the overall operation of a junction and this is reported for the junction as a whole as a positive or negative value. A value above '0' is therefore normally accepted as being within capacity. A Degree of Saturation (DoS) is reported for each junction arm, with a value of less than 90% generally considered acceptable. A value of 100% indicates that traffic demand is equal to capacity and represents the theoretical capacity of the junction.
- 6.6.5 It is noted that the traffic flows diagrams for the do minimum scenarios show the total flow entering and exiting both the site and quarry access road. During the design development of the access it was determined that the quarry access and the site access would need to be separated, with the quarry access remaining left in and left out and the site access all movements to and from the A4067.
- 6.6.6 It is also noted that the LinSig model traffic flows are required to be input in PCUs and therefore the traffic flows presented have been converted using PCU factors of a car and LGV being 1 PCU and HGV and bus being 2.3 PCUs. The conversion to PCUs is shown below. Given the signalised junction is only installed if the site is developed, this junction is only modelled in the do something scenarios.

Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	0	0	448	14	A	0	0	26	0	A	0%	0%	6%	0%	A	0	0	508	14
B	0	0	5	0	B	0	0	0	0	B	0%	0%	0%	0%	B	0	0	5	0
C	531	0	0	10	C	14	0	0	0	C	3%	0%	0%	0%	C	562	0	0	10
D	32	0	23	0	D	0	0	0	0	D	0%	0%	0%	0%	D	32	0	23	0

A	A4067 (northbound)
B	Quarry access
C	A4067 (southbound)
D	Site access

Figure 6.5: AM peak hour 2029 do something traffic flows (conversion to PCUs) – site access

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Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	0	0	625	32	A	0	0	5	0	A	0%	0%	1%	0%	A	0	0	637	32
B	0	0	1	0	B	0	0	0	0	B	0%	0%	0%	0%	B	0	0	1	0
C	524	0	0	20	C	7	0	0	0	C	1%	0%	0%	0%	C	541	0	0	20
D	14	0	10	0	D	0	0	0	0	D	0%	0%	0%	0%	D	14	0	10	0

A	A4067 (northbound)
B	Quarry access
C	A4067 (southbound)
D	Site access

Figure 6.6: PM peak hour 2029 do something traffic flows (conversion to PCUs) – site access

A4068 and Asda roundabouts (modelled using Junctions 9)

- 6.6.7 The capacity assessments of the roundabouts have been undertaken using the TRL software Junctions 9.
- 6.6.8 The key outputs of Junctions 9 which inform the operational assessment are as follows:
- 'Ratio of Flow to Capacity' (RFC);
 - Maximum queue length;
 - Delay in second per vehicle/ PCU; and
 - Level of service indicated by a letter between A (well within capacity) and F (at or over capacity).
- 6.6.9 The main indication of the performance of a junction is given by the RFC for each lane. The peak capacity is realised when the demand flow at the entry is great enough to cause a continuous queue of vehicles to wait on approach to the stop line. This is reached when the RFC attains a value of 1.
- 6.6.10 Queue lengths provide an indication of how the overall junction performance may affect adjacent junctions on the highway network. The queue lengths are presented as the maximum reported in the modelled period. Changes in queue lengths provide an indicator as to a development's impact on the operation of a junction.
- 6.6.11 When considering the change in the operation of junctions across the network all of these factors will be considered to form a view as to whether the impact of the development generated traffic would be severe and require mitigation.
- 6.6.12 For consistency within the junction modelling that has been undertaken, the traffic flows have been input into the roundabout models in PCUs. The conversion of the data is shown below.

Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	3	179	188	131	A	0	4	4	0	A	0%	2%	2%	0%	A	3	188	197	131
B	139	0	146	129	B	2	0	4	1	B	1%	0%	3%	1%	B	144	0	155	131
C	193	140	0	99	C	7	13	0	5	C	4%	9%	0%	5%	C	209	170	0	111
D	107	225	170	2	D	3	4	5	0	D	3%	2%	3%	0%	D	114	234	182	2

A	A4067 (southbound)
B	Gurnos Road
C	A4067 (northbound)
D	A4068

Figure 6.7: AM peak hour 2024 base traffic flows (conversion to PCUs) – A4068 roundabout



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Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	1	186	221	120	A	0	3	2	2	A	0%	2%	1%	2%	A	1	193	226	125
B	248	3	163	161	B	0	0	0	0	B	0%	0%	0%	0%	B	248	3	163	161
C	256	177	3	181	C	2	0	0	2	C	1%	0%	0%	1%	C	261	177	3	186
D	63	110	90	2	D	1	0	2	0	D	2%	0%	2%	0%	D	65	110	95	2

A	A4067 (southbound)
B	Gurnos Road
C	A4067 (northbound)
D	A4068

Figure 6.1: PM peak hour 2024 base traffic flows (conversion to PCUs) – A4068 roundabout

Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	3	188	198	138	A	0	4	4	0	A	0%	2%	2%	0%	A	3	198	207	138
B	146	0	153	136	B	2	0	4	1	B	1%	0%	3%	1%	B	151	0	163	138
C	203	147	0	104	C	7	14	0	5	C	4%	9%	0%	5%	C	220	179	0	116
D	112	237	179	2	D	3	4	5	0	D	3%	2%	3%	0%	D	120	246	191	2

A	A4067 (southbound)
B	Gurnos Road
C	A4067 (northbound)
D	A4068

Figure 6.2: AM peak hour 2029 do minimum traffic flows (conversion to PCUs) – A4068 roundabout

Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	1	195	232	126	A	0	3	2	2	A	0%	2%	1%	2%	A	1	203	237	131
B	260	3	171	169	B	0	0	0	0	B	0%	0%	0%	0%	B	260	3	171	169
C	269	186	3	190	C	2	0	0	2	C	1%	0%	0%	1%	C	274	186	3	195
D	66	115	94	2	D	1	0	2	0	D	2%	0%	2%	0%	D	69	115	99	2

A	A4067 (southbound)
B	Gurnos Road
C	A4067 (northbound)
D	A4068

Figure 6.3: PM peak hour 2029 do minimum traffic flows (conversion to PCUs) – A4068 roundabout

Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	3	188	203	138	A	0	4	4	0	A	0%	2%	2%	0%	A	3	198	213	138
B	146	0	153	136	B	2	0	4	1	B	1%	0%	3%	1%	B	151	0	163	138
C	217	147	0	113	C	7	14	0	5	C	3%	9%	0%	5%	C	234	179	0	126
D	112	237	183	2	D	3	4	5	0	D	3%	2%	3%	0%	D	120	246	195	2

A	A4067 (southbound)
B	Gurnos Road
C	A4067 (northbound)
D	A4068

Figure 6.4: AM peak hour 2029 do something traffic flows (conversion to PCUs) – A4068 roundabout

Total vehicles					HGV					HGV%					PCUs				
	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
A	1	195	244	126	A	0	3	2	2	A	0%	2%	1%	2%	A	1	203	249	131
B	260	3	171	169	B	0	0	0	0	B	0%	0%	0%	0%	B	260	3	171	169
C	275	186	3	194	C	2	0	0	2	C	1%	0%	0%	1%	C	280	186	3	199
D	66	115	103	2	D	1	0	2	0	D	2%	0%	2%	0%	D	69	115	107	2

A	A4067 (southbound)
B	Gurnos Road
C	A4067 (northbound)
D	A4068

Figure 6.5: PM peak hour 2029 do something traffic flows (conversion to PCUs) – A4068 roundabout



Transport Assessment

Total vehicles						HGV						HGV%						PCUs					
A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E	
1	5	9	444	50		0	0	0	13	0		0%	0%	0%	3%	0%		1	5	9	474	50	
24	0	2	53	8		1	0	0	0	0		4%	0%	0%	0%	0%		26	0	2	53	8	
3	0	0	5	4		0	0	0	0	0		0%	0%	0%	0%	0%		3	0	0	5	4	
374	107	20	5	40		24	3	0	1	0		6%	3%	0%	20%	0%		429	114	20	7	40	
20	8	2	39	0		0	0	0	1	0		0%	0%	0%	3%	0%		20	8	2	41	0	

A	A4067 (southbound)
B	B4559
C	Glan Yr Avon
D	A4067 (northbound)
E	Asda

Figure 6.6: AM peak hour 2024 base traffic flows (conversion to PCUs) – Asda roundabout

Total vehicles						HGV						HGV%						PCUs					
A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E	
2	6	2	391	79		0	0	0	10	0		0%	0%	0%	3%	0%		2	6	2	414	79	
6	0	3	12	3		0	0	0	0	0		0%	0%	0%	0%	0%		6	0	3	12	3	
6	1	0	8	2		0	0	0	0	0		0%	0%	0%	0%	0%		6	1	0	8	2	
515	97	8	2	82		6	1	0	0	1		1%	1%	0%	0%	1%		529	99	8	2	84	
99	13	1	79	0		0	0	0	0	0		0%	0%	0%	0%	0%		99	13	1	79	0	

A	A4067 (southbound)
B	B4559
C	Glan Yr Avon
D	A4067 (northbound)
E	Asda

Figure 6.7: PM peak hour 2024 base traffic flows (conversion to PCUs) – Asda roundabout

Total vehicles						HGV						HGV%						PCUs					
A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E	
1	5	9	467	53		0	0	0	14	0		0%	0%	0%	3%	0%		1	5	9	498	53	
25	0	2	56	8		1	0	0	0	0		4%	0%	0%	0%	0%		28	0	2	56	8	
3	0	0	5	4		0	0	0	0	0		0%	0%	0%	0%	0%		3	0	0	5	4	
393	112	21	5	42		25	3	0	1	0		6%	3%	0%	20%	0%		451	120	21	8	42	
21	8	2	41	0		0	0	0	1	0		0%	0%	0%	3%	0%		21	8	2	43	0	

A	A4067 (southbound)
B	B4559
C	Glan Yr Avon
D	A4067 (northbound)
E	Asda

Figure 6.8: AM peak hour 2029 do minimum traffic flows (conversion to PCUs) – Asda roundabout

Total vehicles						HGV						HGV%						PCUs					
A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E	
6	0	3	13	3		0	0	0	0	0		0%	0%	0%	0%	0%		6	0	3	13	3	
6	1	0	8	2		0	0	0	0	0		0%	0%	0%	0%	0%		6	1	0	8	2	
541	102	8	2	86		6	1	0	0	1		1%	1%	0%	0%	1%		555	104	8	2	89	
104	14	1	83	0		0	0	0	0	0		0%	0%	0%	0%	0%		104	14	1	83	0	

A	A4067 (southbound)
B	B4559
C	Glan Yr Avon
D	A4067 (northbound)
E	Asda

Figure 6.9: PM peak hour 2029 do minimum traffic flows (conversion to PCUs) – Asda roundabout

Total vehicles						HGV						HGV%						PCUs					
A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E	
1	5	9	499	53		0	0	0	14	0		0%	0%	0%	3%	0%		1	5	9	530	53	
25	0	2	56	8		1	0	0	0	0		4%	0%	0%	0%	0%		28	0	2	56	8	
3	0	0	5	4		0	0	0	0	0		0%	0%	0%	0%	0%		3	0	0	5	4	
406	112	21	5	42		25	3	0	1	0		6%	3%	0%	20%	0%		464	120	21	8	42	
21	8	2	41	0		0	0	0	1	0		0%	0%	0%	3%	0%		21	8	2	43	0	

A	A4067 (southbound)
B	B4559
C	Glan Yr Avon
D	A4067 (northbound)
E	Asda

Figure 6.10: AM peak hour 2029 do something traffic flows (conversion to PCUs) – Asda roundabout



Total vehicles						HGV						HGV%						PCUs					
	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
A	2	6	2	424	83	A	0	0	0	10	0	A	0%	0%	0%	2%	0%	A	2	6	2	448	83
B	6	0	3	13	3	B	0	0	0	0	0	B	0%	0%	0%	0%	0%	B	6	0	3	13	3
C	6	1	0	8	2	C	0	0	0	0	0	C	0%	0%	0%	0%	0%	C	6	1	0	8	2
D	569	102	8	2	86	D	6	1	0	0	1	D	1%	1%	0%	0%	1%	D	583	104	8	2	89
E	104	14	1	83	0	E	0	0	0	0	0	E	0%	0%	0%	0%	0%	E	104	14	1	83	0

A	A4067 (southbound)
B	B4559
C	Glan Yr Avon
D	A4067 (northbound)
E	Asda

Figure 6.11: PM peak hour 2029 do something traffic flows (conversion to PCUs) – Asda roundabout

6.7 Operational assessment results summary

6.7.1 All junction capacity modelling reports are included in the Appendices and the results have been discussed and summarised by junction as follows.

Signalised site access junction

6.7.2 The proposed signalised site access junction modelling results are shown below for the AM and PM peak hours. The output file from this modelling is included in Appendix H.

6.7.3 No lanes reach 100% degree of saturation in this scenario. As this is a new junction, this LinSig model demonstrates that the access junction design will operate within capacity for the proposed new development and will not result in a residual cumulative impact on the road network which could be considered severe.

Table 6.1: 2029 do something capacity analysis results - Site access (LinSig) AM peak hour assessment

Link	AM Peak		
	DoS (%)	Av Delay per PCU (s/pcu)	MMQ
A4067 S	48	20	11
Site	1	1	0
A4067 N	66	32	16
Quarry exit	4	66	1
Overall PRC: 36%			

Table 6.2: 2027 Baseline + Development Capacity Analysis Results - Site Access (LinSig) PM peak hour assessment

Link	AM Peak		
	DoS (%)	Av Delay per PCU (s/pcu)	MMQ
A4067 S	62	23	16
Site	3	1	0
A4067 N	81	45	19
Quarry exit	1	66	0
Overall PRC: 12%			

A4067 / A4068 / Gurnos Road 4-arm Roundabout Junction

- 6.7.4 The A4067 / A4068 / Gurnos Road 4-arm roundabout junction modelling results are shown below, and the junction model output file is included in Appendix I. The roundabout has been modelled using the ONE HOUR data entry methodology.
- 6.7.5 The results indicate that during all tested scenarios the junction performs within theoretical capacity. Therefore, the 4-arm roundabout to the north of the site is considered suitable to accommodate the forecast vehicles generated by the proposed site.

Table 6.3: 2024 base capacity analysis results - A4067 / A4068 / Gurnos Road 4-arm roundabout junction (ARCADY)

Arm	2024 Base							
	AM				PM			
	RFC	Max Delay (s)	Queue (veh)	LOS	RFC	Max Delay (s)	Queue (veh)	LOS
A4067 N	0.46	5.34	0.8	A	0.44	4.75	0.8	A
Gurnos Road	0.42	5.50	0.7	A	0.54	6.67	1.2	A
A4067 S	0.41	4.89	0.7	A	0.55	6.50	1.2	A
A4068	0.50	6.39	1.0	A	0.28	4.69	0.4	A

Table 6.4: 2029 do minimum capacity analysis results - A4067 / A4068 / Gurnos Road 4-arm Roundabout Junction (ARCADY)

Arm	2029 do minimum							
	AM				PM			
	RFC	Max Delay (s)	Queue (veh)	LOS	RFC	Max Delay (s)	Queue (veh)	LOS
A4067 N	0.49	5.76	1.0	A	0.46	5.01	0.9	A
Gurnos Road	0.44	5.83	0.8	A	0.57	7.24	1.3	A
A4067 S	0.43	5.15	0.8	A	0.59	7.12	1.4	A
A4068	0.54	6.92	1.2	A	0.30	4.89	0.4	A

Table 6.5: 2029 do something capacity analysis results - A4067 / A4068 / Gurnos Road 4-arm roundabout junction (ARCADY)

Arm	2029 do something							
	AM				PM			
	RFC	Max Delay (s)	Queue (veh)	LOS	RFC	Max Delay (s)	Queue (veh)	LOS
A4067 N	0.49	5.82	1.0	A	0.47	5.14	0.9	A
Gurnos Road	0.44	5.88	0.8	A	0.58	7.39	1.4	A
A4067 S	0.45	5.31	0.9	A	0.60	7.28	1.5	A
A4068	0.54	7.07	1.2	A	0.31	4.97	0.4	A

A4067 / B4599 / Glan Yr Avon / Asda Access 5-arm roundabout junction

- 6.7.6 The A4067 / B4599 / Glan Yr Avon / Asda access 5-arm roundabout junction modelling results are shown below and the junction capacity model outputs are included in Appendix J. The roundabout has been modelled using the ONE HOUR data entry methodology.
- 6.7.7 The results indicate that during all tested scenarios the junction performs within theoretical capacity. Therefore, the 5-arm roundabout to the south of the site is considered suitable to accommodate the forecast vehicles generated by the proposed site.

Table 6.6: 2024 Baseline Capacity Analysis Results - A4067 / B4599 / Glan Yr Avon / Asda Access 5-arm Roundabout Junction (ARCADY)

Arm	2024 Base							
	AM				PM			
	RFC	Max Delay (s)	Queue (veh)	LOS	RFC	Max Delay (s)	Queue (veh)	LOS
A4067 N	0.37	3.72	0.6	A	0.35	3.59	0.6	A
Heol Ynysydarren	0.09	3.70	0.1	A	0.02	3.38	0.0	A
Glan Yr Avon	0.02	4.70	0.0	A	0.02	4.56	0.06	A
A4067 S	0.35	2.98	0.6	A	0.41	3.19	0.7	A
Asda Access road	0.05	2.31	0.1	A	0.13	2.54	0.1	A

Table 6.7: 2027 Baseline Capacity Analysis Results - A4067 / B4599 / Glan Yr Avon / Asda Access 5-arm Roundabout Junction (ARCADY)

Arm	2029 Base							
	AM				PM			
	RFC	Max Delay (s)	Queue (veh)	LOS	RFC	Max Delay (s)	Queue (veh)	LOS
A4067 N	0.39	3.86	0.7	A	0.37	3.71	0.6	A
B4599	0.10	3.78	0.1	A	0.03	3.43	0.0	A
Glan Yr Avon	0.02	4.79	0.0	A	0.03	4.64	0.0	A
A4067 S	0.36	3.07	0.6	A	0.43	3.31	0.8	A
Asda Access Road	0.05	2.35	0.1	A	0.14	2.60	0.2	A

Table 6.8: 2027 Baseline + Development Capacity Analysis Results - A4067 / B4599 / Glan Yr Avon / Asda Access 5-arm Roundabout Junction (ARCADY)

Arm	2029 Base + Development							
	AM				PM			
	RFC	Max Delay (s)	Queue (veh)	LOS	RFC	Max Delay (s)	Queue (veh)	LOS
A4067 N	0.42	4.01	0.7	A	0.38	3.74	0.6	A
B4599	0.10	3.85	0.1	A	0.03	3.46	0.0	A
Glan Yr Avon	0.02	4.89	0.0	A	0.02	4.67	0.0	A
A4067 S	0.37	3.11	0.6	A	0.45	3.40	0.8	A
Asda Access Road	0.05	2.36	0.1	A	0.14	2.64	0.2	A

6.8 Development Traffic Impact Summary

- 6.8.1 The junctions that form a key route to/from the proposed new signalised site access junction with the A4067 have been capacity tested as part of this TA. The modelling included the proposed new site access junction, A4067 / A4068 / Gurnos Road 4-arm Roundabout Junction, and A4067 / B4599 / Glan Yr Avon / Asda Access 5-arm Roundabout Junction.
- 6.8.2 The assessment of the proposed new signalised access junction using the LinSig software indicates that it would operate with sufficient reserve capacity in both the AM and PM peak periods.
- 6.8.3 Similarly, the ARCADY analysis of the 4-arm roundabout to the north and the 5-arm roundabout to the south indicates that the junctions would operate satisfactorily within capacity.
- 6.8.4 The proposed development would therefore have a non-material impact on the operation of the local highway network and its impact would not be severe.

7 Summary and conclusions

7.1 Summary

- 7.1.1 This Transport Assessment has been produced by Stantec on behalf of Mr Robert Maggs in support of an outline planning application for the redevelopment of the former Tirbach Washery comprising of the construction of up to 160 residential dwellings and associated infrastructure works. This TA builds upon pre-application feedback received from the local highway authority on 2nd August 2023.
- 7.1.2 This TA has been produced to provide the necessary information for the local authority to consider the merits of the application in terms of accessibility, highway safety and the impact of the development traffic on the local highway network.

7.2 Conclusions

- 7.2.1 The conclusions of this TA are as follows:
- The site is situated in a sustainable location with pedestrian and cycle route improvement opportunities that would encourage the use of sustainable modes of transport.
 - PIA data has been examined in the vicinity of the application site and it is unlikely that any increase in development traffic would adversely affect the road safety record. It is considered that there are no overriding safety issues in the vicinity of the site that would be exacerbated by the proposals.
 - Vehicular access to the site will be provided via a new 4-arm traffic signal-controlled junction which is proposed to replace the existing left-in/left out only priority junction that provides access to Tirbach Road.
 - The application site is compatible with both local and national transport policy at all levels.
 - The proposed development based on the indicative layout is expected to generate 51 two-way movements in the AM Peak, 46 two-way movements in the PM Peak, and 476 daily two-way movements. This equates to approximately one vehicle every 1-2 minutes in both the AM and PM peak periods. This will result in a non-material impact on the existing local road network.
 - All local junctions assessed are shown to operate within capacity, and as a result the proposed scheme would not create or contribute to severe congestion and is therefore in accordance with policy.
- 7.2.2 As a result of the above, it is considered that the proposed development would not have a severe impact upon the operation of the local highway network. In addition, the site lies in a highly accessible location that provides excellent access by sustainable modes of travel.
- 7.2.3 Based on the findings within this TA it is considered that there are no transport-related reasons why the development should not be permitted.



Appendix A LHA Pre-Application Response



NEATH PORT TALBOT COUNTY BOROUGH COUNCIL

The Town and Country Planning (Development Management Procedure)
(Wales) Order 2015 (as amended)

HEAD OF ENGINEERING & TRANSPORT

OBSERVATIONS

PAC APPLICATION NO: N/3/23/0008/00
APPLICANT: RICHARD BOWEN - ASBRI PLANNING LTD
LOCATION: FORMER TIRBACH WASHERY, YSTALYFERA
PROPOSAL: PROPOSED CONSTRUCTION OF UP TO 160
RESIDENTIAL DWELLINGS & ASSOCIATED
INFRASTRUCTURE WORKS

The Highway/Drainage Authority, in responding to the above application, provides the following substantive response:

No comment	☐
No objection (subject to any specified conditions below)	☐
Concerns have been identified (see below for how those concerns can be addressed by the applicant)	☒
Objection – on the grounds set out below	☐
SAB (SAB approval is required)	☒

MY OBSERVATIONS ON THIS PAC ARE AS FOLLOWS:-

Any subsequent planning application submission will need to be compliant with the following documents and inclusive of the guidance conditions below:-

- Neath Port Talbot County Borough Council - Parking Standards (Oct 2016).
- Neath Port Talbot County Borough Council - Design Guide for Streets and Public Realm for Residential and Commercial Developments.
- Planning Policy Wales Technical Advice Note 18: Transport
- Schedule 3 of the Flood and Water Management Act (FWMA) 2010 requires surface water drainage for new developments to comply with Mandatory National Standards for Sustainable Drainage (SuDS). Reference to the Non-Statutory Ministerial National Standards and the CIRIA 753: The SuDS Manual is recommended.
- Welsh Government's Active Travel Guidance

There are highway concerns with the proposed access arrangements into the development site and the internal layout that has been provided as follows:

1. There are concerns with the introduction of a new controlled highway junction with the A4067 and a justification is required as to how this is the safest and most appropriate access arrangement into the development. Please provide your Road Safety Audit for this design (please see comment 3 for further information on the RSA requirement)

There is a conflict with the existing 'Quarry Haul Road' how will quarry traffic which includes large HGVs and cars negotiate the proposed controlled junction.

You are proposing that vehicles are unable to turn right into the development at the new traffic light controlled junction when approaching the site from the East (Ystradgynlais direction) and vehicles are required to travel down to the 'ASDA' roundabout to access the site from a Westerly direction based upon the 'Ahead only' annotations on the drawings provided. There are concerns that vehicles will simply make a right turn here regardless of the 'ahead only' road markings.

2. The new access junction of the site access with the existing highway will require vehicular visibility splays in accordance with TAN 18. It is recommended that during the proposed survey to collect vehicle trip data for the TIA it also collects vehicle speed data and the 85th percentile ascertained. Details of which can be provided to the Local Authority to agree the vision splay requirements of the junction.
3. Full construction details of the site access including long and cross sections and the tie in to the adopted highway is required.
4. A Transport Impact Assessment is required in accordance with TAN 18.
5. Any accommodation/alteration works required on the public highway shall be subject to Road safety Audits, stages 1 to 4 in accordance with GG 119 of the Design Manual for Roads and Bridges. Each stage of the Road safety Audit shall be submitted for approval in writing by the Local planning Authority. All issues highlighted at each stage, being addressed to the written approval of the Local Planning Authority within 3 months of that stage of that Road safety Audit has been approved.
6. All roads should be designed for a 20mph or less speed limited with bends having a centre line radius not less than 20m and any necessary bend sight line shown as being within the proposed footway.

Your proposed design has unrestrained straight lengths of highway that are non-compliant with a design speed of 20mph

7. All roads to be designed in accordance with Manual for Streets, the Authority's Design Guide
8. Parking provisions for each dwelling are to be in accordance with the approved Parking Guidelines document and are at a rate of one car parking space per bedroom up to a maximum of three.
9. All shared drives (serving a maximum of 5 dwellings) to have a gradient not exceeding 1 in 9 to be 4.5m wide have pedestrian vision splays of 2.4m by 2.4m (behind footway) which should be hard surfaced, and a turning facility provided so all vehicles can enter and leave in a forward gear. Shared drives should not exceed 30m in length (carrying distance for bins) and there will be a need to widen the footway or provide a bin parking area where bins/sacks can be placed on collection day without obstructing the footway.

The Authority operate a kerbside collection service only therefore will not traverse 3rd party land to collect refuse and recycling items.

10. Driveway car parking shall comply with the following:-

- I. Single driveway shall be 3.6m wide and 6m in length,
 - II. Parallel parking, the first space shall be 3.6m wide with the additional space or spaces thereafter being 2.6m (for example; parallel parking for two vehicle, the dimensions should be 6.2m wide (3.6m plus 2.6m) by 6m in length). For a third space you would add on an additional 2.6m wide.
 - III. Parking in tandem for a single driveway width would require a width of 3.6m wide, together with the first space being 6m in length and then other length(s) being 4.8 metres in addition (for example; two car parking in tandem would require a width of 3.6m and a length of 10.8m (6m plus 4.8m). For a third space you would add on an additional 4.8m.
11. All single garages shall have a minimum internal dimension of 3 metres width by 6 metres length or 6 metre width by 6 metre length for a double garage.
12. A visitor parking scheme is required at a rate of one space per five dwellings which shall be clearly shown on the submitted site layouts
13. No development shall commence (including any site clearance), until a Construction Environmental Management Plan has been submitted to and approved in writing by the Local Planning Authority. The approved Statement shall be adhered to throughout the construction phases. The Statement shall provide for:
- a. **Construction methods:** details of the extent and phasing of development; details for the storage and management of plant and materials used in constructing the development
 - b. **Drainage:** Details of drainage measures during construction phases to ensure that the drainage of any adjoining land, and land downstream is not interrupted or otherwise adversely affected by the development.
 - c. **General Site Management:**
 - i. details of the construction programme including timetable
 - ii. details of site clearance
 - iii. details for erection and maintenance of security hoarding including decorative displays and facilities for public viewing.
 - d. **Control of Nuisances:** Wheel washing facilities and measures to control light spill.
 - e. **Traffic Management:**
 - i. details of site deliveries including routes of vehicles, plus delivery and construction times, taking into account the proximity of residential dwellings and any school(s) along the proposed route. It may be applicable to restrict vehicular access such as:- no deliveries in excess of 3.5 tonnes shall access or leave the site via any route during the hours of 8am to 9.30am and 2.30pm to 4pm during school term times.
 - ii. details for the loading and unloading of plant and materials; details for the parking of vehicles of site operatives and visitors
 - iii. scheme for the erection of temporary/semi-temporary signage
 - iv. The frequency and size of vehicles used to transport the waste material arising from the construction works;
 - f. **Hours of working on site,** including specified hours for deliveries; details of restrictions to be applied during construction and demolition works (including timing, duration and frequency of works) to prevent noise or nuisance amenity issues to surrounding properties.
- Responsible Persons:** details of the persons and bodies responsible for activities associated with the CEMP and emergency contact

14. SAB approval will be required prior to any work commencing. To commence work is a breach of SAB approval required under Paragraph 7 (1) Schedule 3 of the Flood and Water Management Act 2010 whereby legal action will be taken by the Authority under The Sustainable Drainage (Enforcement) (Wales) Order 2018. Guidance and applications can be found on <https://www.npt.gov.uk/sab>

It is noted that a SAB layout and Technical Design Note has been included within this PAC submission however this will not be reviewed under any planning process only via the SAB.

15. Should any springs or ground water seepage be encountered the on site works in that area shall cease until a scheme for collection and disposal of the water has been submitted to and approved in writing by the Local Planning Authority. No ground water shall ever be discharged into the proposed drainage scheme.
16. There must be no interference, alteration or diversion of any ditch, watercourse, stream or culvert crossing or bordering the site, without prior consultation and agreement with the Authority.
17. Unless otherwise agreed in writing by the Local Planning Authority, foul water and surface water discharges shall be drained separately from the site.
18. No surface water or Land drainage run-off shall be allowed to connect, either directly or indirectly, to the public sewerage or Highway surface water system unless otherwise approved in writing by the Local Planning Authority.
19. Adequate provision shall be made for the drainage of the site, to ensure that the drainage of any adjoining land is not interrupted or otherwise adversely effected by the development during the life time of construction.

NOTES TO APPLICANT

SAB

Please note that from 7th January 2019, all new developments of more than 1 house, or where a construction area is of 100m² or more, plus if the SAB authority believe that any redevelopment of land has significant surface water drainage implications. This will require sustainable drainage - built in accordance with mandatory standards for sustainable drainage published by Welsh Ministers - to manage on-site surface water. More information is available in [Schedule 3 of the Flood & Water Management Act 2010](#).

These systems must be approved by the Council's Highway Development Control service acting in its SuDS Approving Body (SAB) role before construction work begins. In this respect it is essential that a developer of any such project gain SAB approval of its surface water drainage alongside any relevant planning permission. You will not be allowed to start construction until both permissions have been approved.

If you have not done so already, and your development would not fall into any of the relevant exceptions, you are therefore strongly encouraged to request further advice from the SAB. Involving the SAB Officers in pre-application discussions will allow for SuDS drainage matters (to ensure suitability of proposed SuDS design in line with national standards and adequate site layout) to be considered alongside the assessment of planning merits. There is an additional charge of £250 for this service. This can be as part of any agreed further pre-application submissions with the Planning Authority (recommended) or independently/ direct with the SAB. You are advised, however, that failing to engage in joint pre-application discussions has the potential to lead to delays and, most notably, the potential need to obtain

further planning permission should any agreed SuDS design not be compliant with any relevant planning permission. Further details are available at www.npt.gov.uk/sab .

ORDINARY WATERCOURSE CONSENT

Prior to commencement of any works within a watercourse, hereby approved permanent and temporary under Section 23 of the Land Drainage Act 1991 must be obtained from the Authority. You are therefore advised to contact the Development Management Senior Engineer, Mrs Delyth Thomas at The Quays, Brunel Way, Baglan Energy Park, Neath, SA11 2GG (Tel.No.01639 686404 e-mail d.a.thomas@npt.gov.uk Please note such consents can take up to 8 weeks to be processed after registration and early application is advised.

Notwithstanding the necessary consent required under section 23 of the Land Drainage Act 1991. The applicant must note that any culverts/ditches/open watercourses that conveys water through their land are to remain free from obstruction at all times. All tributary watercourses (culverted or not) located within the applicants land would be riparian responsibilities whereby the responsibility to sustain the flow of watercourse would remain with the land owner and subsequently passed on to the respective landowners thereafter should the land be sold. For further information on riparian responsibilities please contact Mrs Delyth Thomas, Senior Engineer – Team Leader (Tel: 01639 686404 or email d.a.thomas@npt.gov.uk), alternatively you could access the riparian booklet online using the following web-link <https://www.npt.gov.uk/2867>

WORKS TO THE EXISTING HIGHWAY

Developers' attention is drawn to the provisions of Section 278 of the Highways Act, 1980 in cases where a development would require access or other works to be carried out within the existing highway. Where highway works to benefit a development require land adjacent to an existing highway to be constructed upon together with works on the existing public maintained highway, a hybrid S38/278 shall be used. Works that are to be undertaken within the existing public maintained highway only will require a S278 agreement. No Work shall be undertaken on the existing public maintained highway until the appropriate legal agreement has been entered into.

Any works undertaken on the public highway without the appropriate legal agreement with the Highway Authority, the Highway Authority has the right to request the developer to remove and/or reinstate that part of the highway back to its original condition to the satisfaction of the Highway Authority.

A plan detailing the differences between the existing and proposed highway shall be submitted to form part of the legal agreement, this should be made up of two colours, green for the proposed area to be adopted and brown for the existing highway.

Developers are reminded that consent under the Town and Country Planning Act, 1990/91, conveys no approval for works to be undertaken affecting any part of the public highway, including verges and footways. The Developer must:-

- (i) Obtain the approval of Neath Port Talbot County Borough Council as Highway Authority for the details of any works to be undertaken in the Public Highway.
- (ii) Indemnify the Authority against all claims arising from such works, including claims under the Land Compensation Act.
- (iii) Give not less than 10 working days notice in writing of the date of commencement of the works.

As part of this process you are advised that only certain contractors are permitted to undertake the works on the public highway, a list of these contractors are available from the Highway Authority's Highway Development Control Section

ACTIVE TRAVEL

Development proposals must seek to maximise walking and cycling accessibility by prioritising the provision of appropriate on-site infrastructure and where necessary off-site infrastructure. Walking and cycling infrastructure and services should be prioritised and put in place from the outset, before people have moved in and travel patterns have been established, as per Planning Policy Wales, Edition 11 and Future Wales – the National Plan 2040. All new walking and cycling infrastructure should be built to standards set out in Welsh Government's Active Travel Guidance and off-site infrastructure should link to (where possible) routes on Neath Port Talbot Council's Active Travel Network Map. This shows where walking and cycling routes already exist (Existing Routes) and where upgrades or brand new routes are anticipated for the next 15 years (Future Routes) in built up areas. Further information on the Active Travel Guidance and Neath Port Talbot's Active Travel Network Map can be found here: www.npt.gov.uk/activetravel.

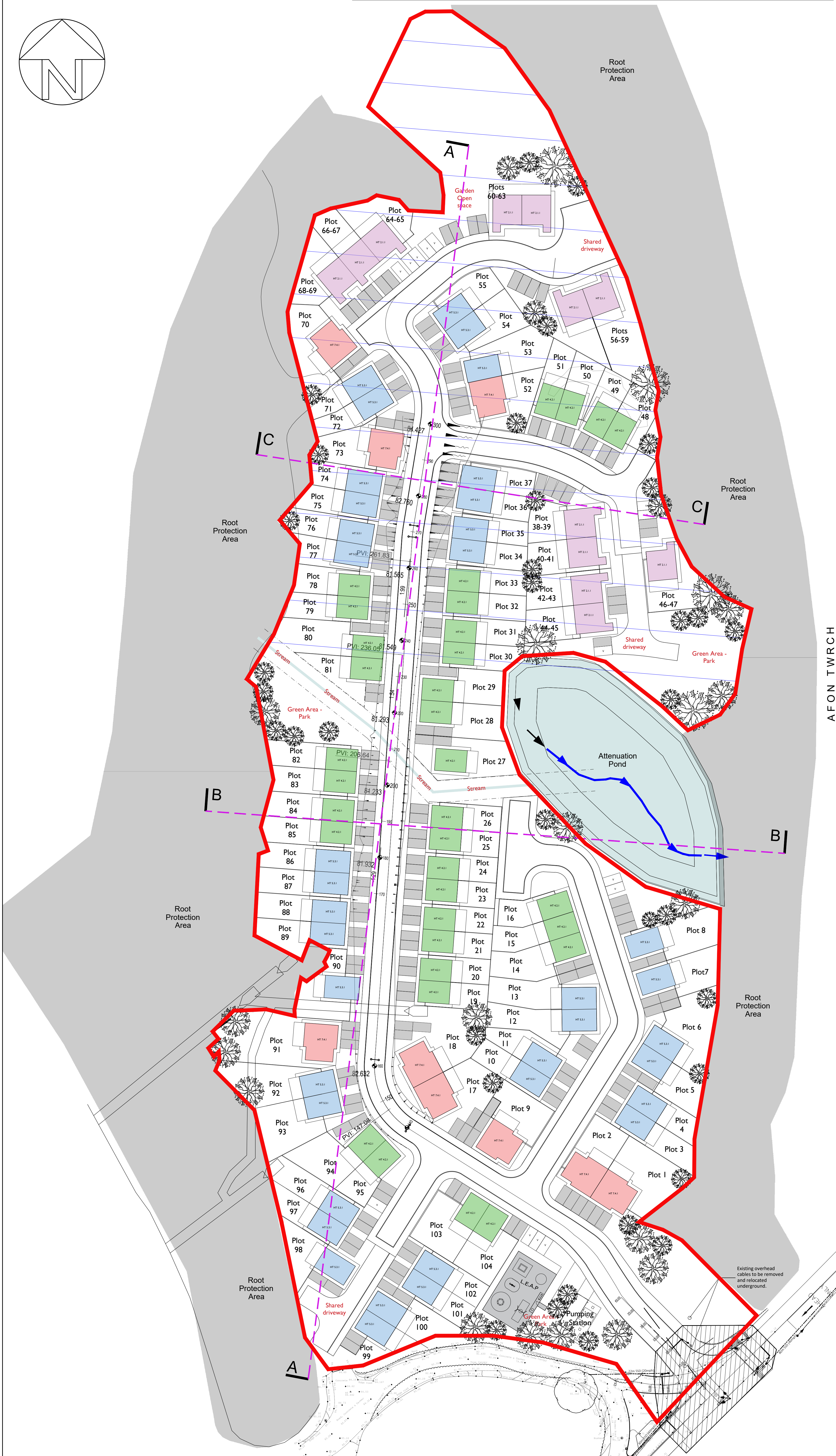
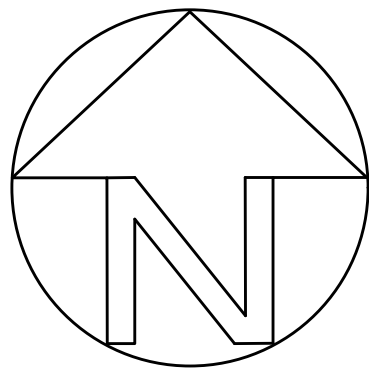
SIGNED:  DATE: 02/08/2023
pp HEAD OF ENGINEERING & TRANSPORT

PAC Ref: N423000800 – FORMER TIRBACH WASHERY

Appendix B Proposed Site Layout



LAND OFF TIRBACH ROAD, YSTALYFERA



CDM noted are provided to assist the contractor in managing residual hazards identified during the design stage. Any such notes do not relieve the contractor of their duties and they must provide a safe system of work based on method statements, risk assessments, etc.

Revision:	Description:	Date:
A	Additional 2no.plots added	18.08.2022
B	Further plots added	18.08.2022
C	Further plots added	22.09.2022
D	Attenuation pond location amended	26.09.2022
E	Attenuation pond & LEAP location amended, additional plot added	07.10.2022
F	Turning head amended next to plot 16.	13.10.2022
G	Junction design amended.	18.11.2022
H	Junction design amended.	19.12.2022
I	Pumping station diagram added.	09.01.2023
J	Ecology zone amended.	
	Audits added. Houses relocated to suit.	29.09.2023
K	Boundary line amended	17.03.2026

	HT 2.1.1 Walk up flats
	HT 4.2.1 2 bedroom house
	HT 5.3.1 3 bedroom house
	HT 7.4.1 4 bedroom house

3.5362 ha
8.738 acres
3536.23 m²

OUTLINE

PRIME
ARCHITECTURE

Client:
Mr Maggs

Mr Maggs

Outline Planning of Residential Development at Land Off Tirbach Road, Ystalyfera

Proposed Site Plan

Scale:
1:500 @ A1

Date: **August 2022**

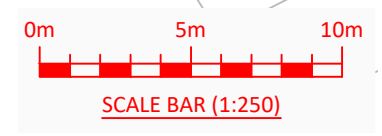
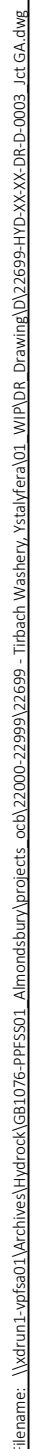
Job No:
1016

Drawing No:
02

Rev:
K

Appendix C Site Access Junction





NOTES

1. All dimensions are in metres unless indicated.
2. Topographical survey undertaken by Catling's Land Surveys Drawing 20-949/200A0/1.1A Dated Feb 2020

REVISIONS

P02	Amendments following RSA1	14/04/26	LR	EC EC
P01	First Issue	15/07/24	WG	SW SW
Rev.	Revision Notes	Date	Drawn By	Checked Approved



CLIENT

Mr Robert Maggs

PROJECT	
---------	--

TIRBACH WASHERY, YSTALYFERA

TITLE

PROPOSED SITE ACCESS TRAFFIC SIGNAL JUNCTION GENERAL ARRANGEMENT

STANTEC PROJECT NO.
332710131

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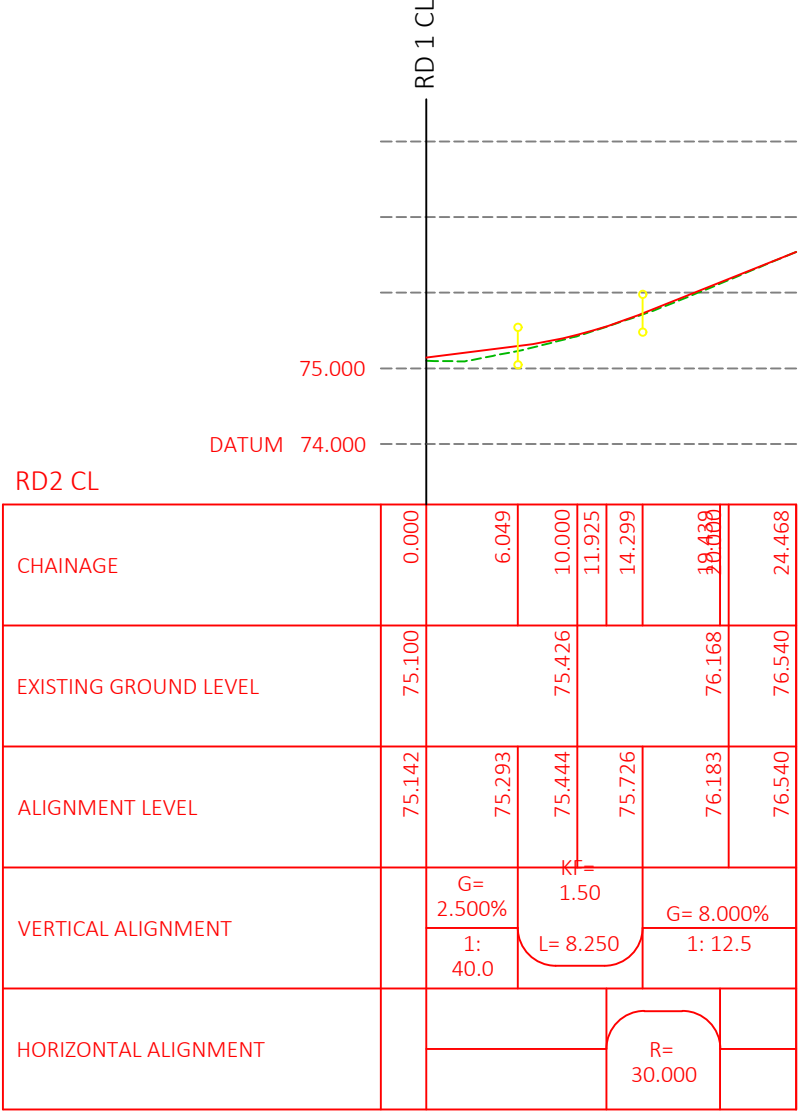
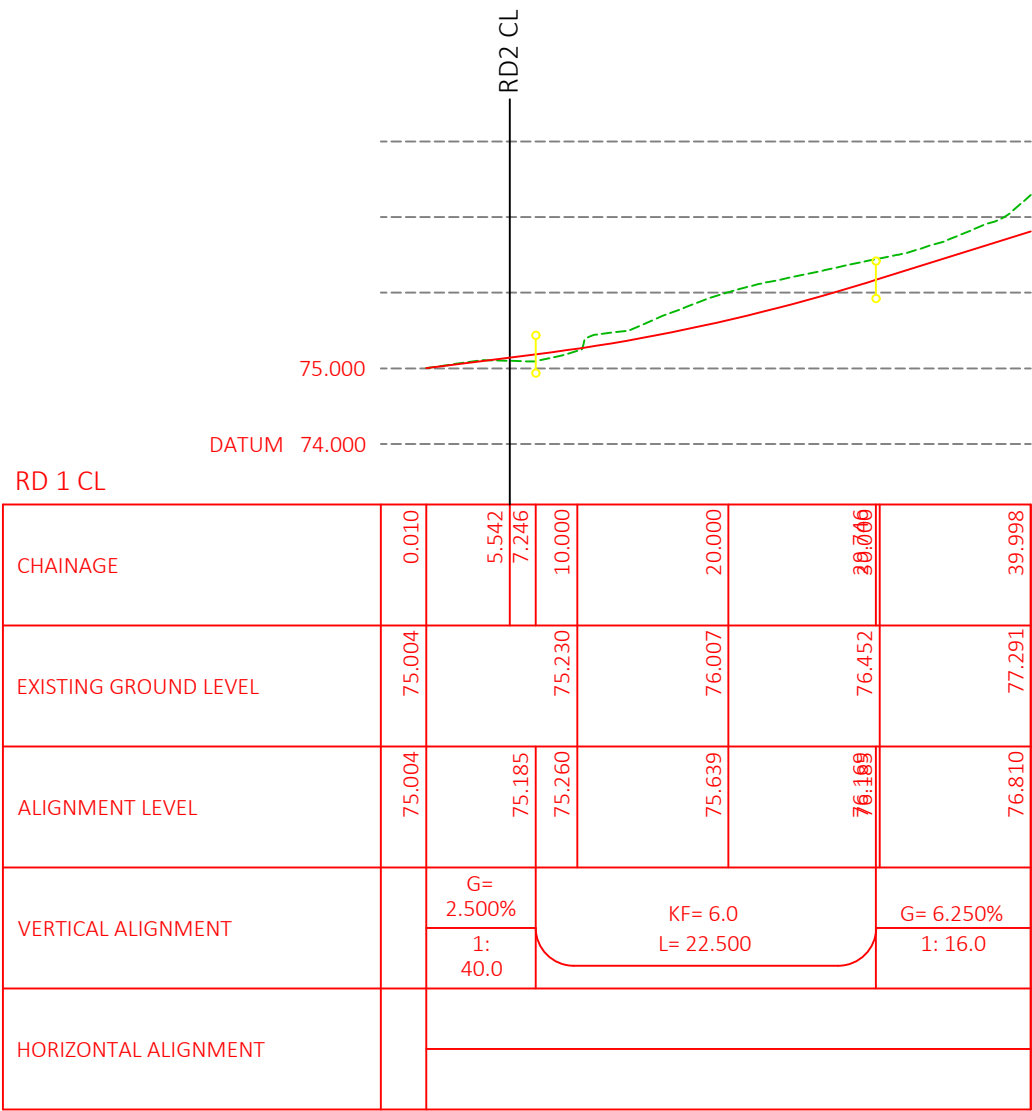
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DRAWING NO.
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REVISION
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DO NOT SCALE

NOTES

REVISIONS

P02	Amendment following RSA 1	14/04/26	LR	EC EC
P01	First Issue	15/07/24	WG	SW SW
Rev.	Revision Notes	Date	Drawn By	Checked Approved



Over Court Barns
Over Lane, Almondsbury
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t: +44(0)1454 619533
e: bristol@hydrock.com

CLIENT

Mr Robert Maggs

PROJECT

TIRBACH WASHERY, YSTALYFERA

TITLE

PROPOSED SITE ACCESS
TRAFFIC SIGNAL JUNCTION
ROAD LONG SECTION RD1 CL & RD2 CL

STANTEC PROJECT NO.

332710131

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STATUS DESCRIPTION

SUITABLE FOR INFORMATION

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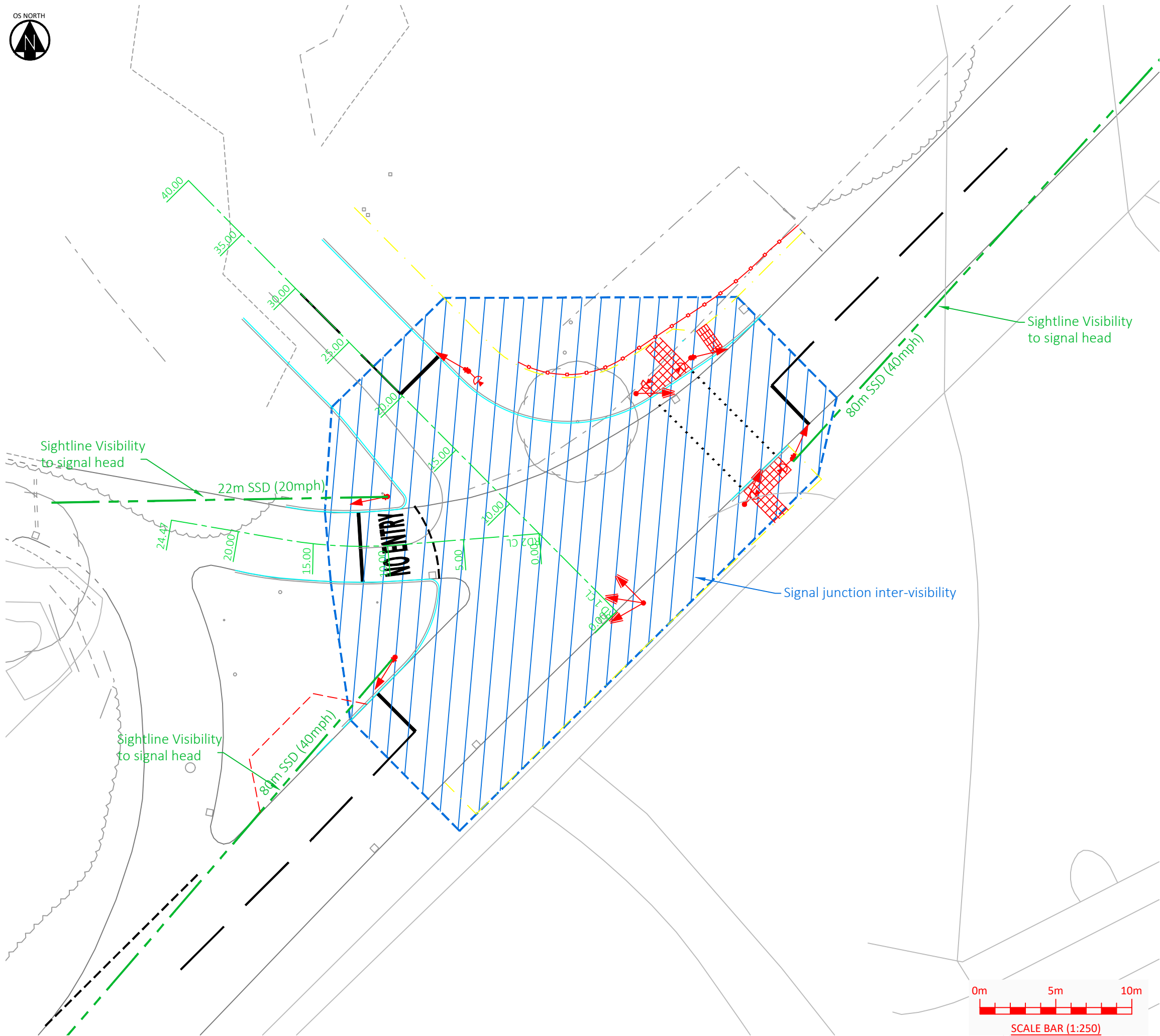
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REVISION

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DO NOT SCALE

NOTES

1. All dimensions are in metres unless indicated.
2. Topographical survey undertaken by Catling's Land Surveys Drawing 20-949/200A0/1.1A Dated Feb 2020.
3. Visibility taken from Traffic Signs Manuel Chapter 6.

REVISIONS

P01	First Issue	14/04/26	LR	EC EC
Rev.	Revision Notes	Date	Drawn By	Checked Approved



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CLIENT

Mr Robert Maggs

PROJECT

TIRBACH WASHERY, YSTALYFERA

TITLE

PROPOSED SITE ACCESS JUNCTION
TRAFFIC SIGNAL JUNCTION
VISIBILITY AND SIGHTLINES

STANTEC PROJECT NO.
332710131

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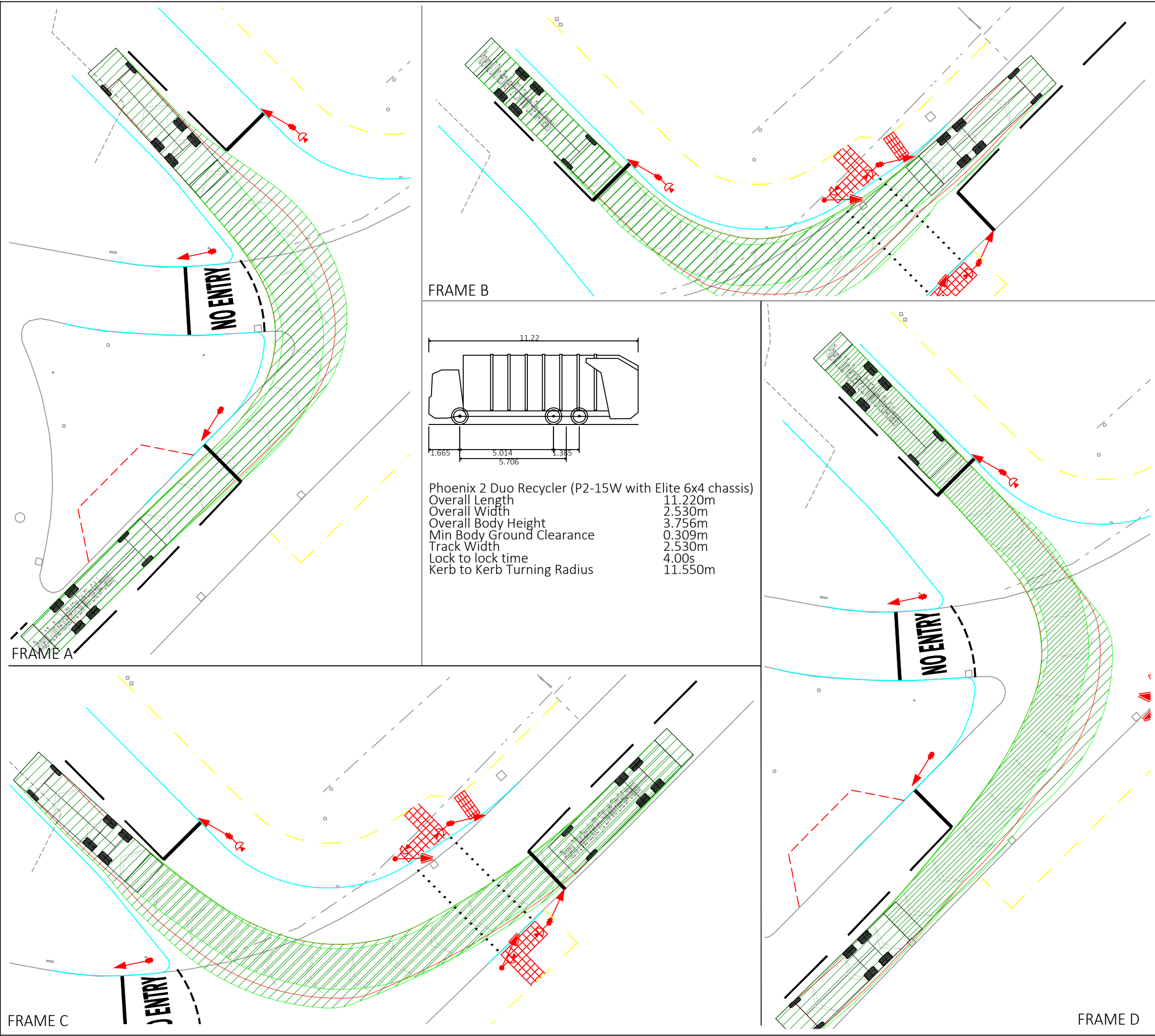
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REVISION
P01

Appendix D Vehicle Tracking



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DO NOT SCALE

NOTES

REVISIONS

P01	FIRST ISSUE	14/04/26	LR	EC EC
Rev.	Revision Notes	Date	Drawn By	Checked Approved



Over Court Barns
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CLIENT

Mr Robert Maggs

PROJECT

TIRBACH WASHERY, YSTALYFERA

TITLE

PROPOSED SITE ACCESS JUNCTION
TRAFFIC SIGNAL JUNCTION
SWEEP PATHS- REFUSE VEHICLE

STANTEC PROJECT NO.
332710131

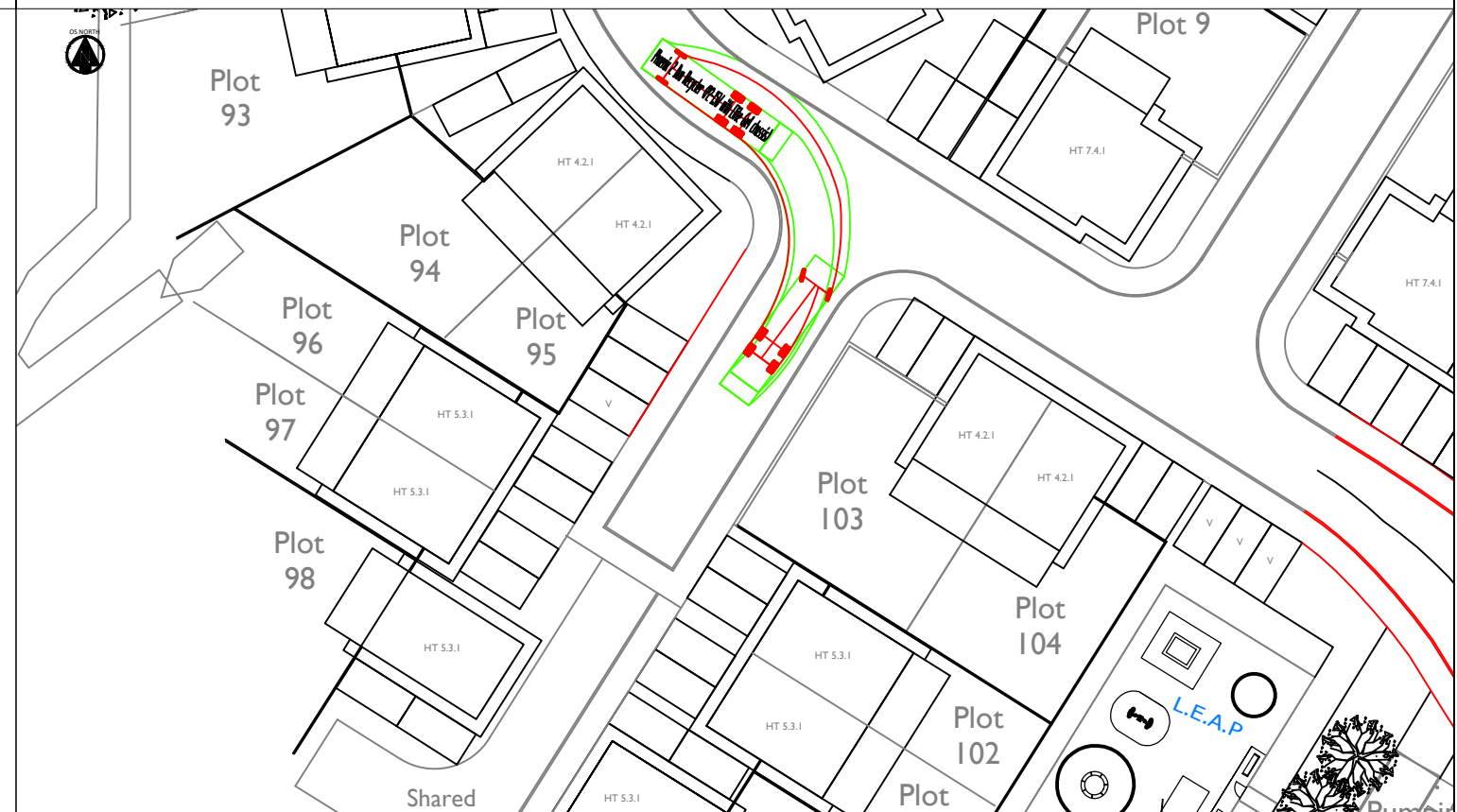
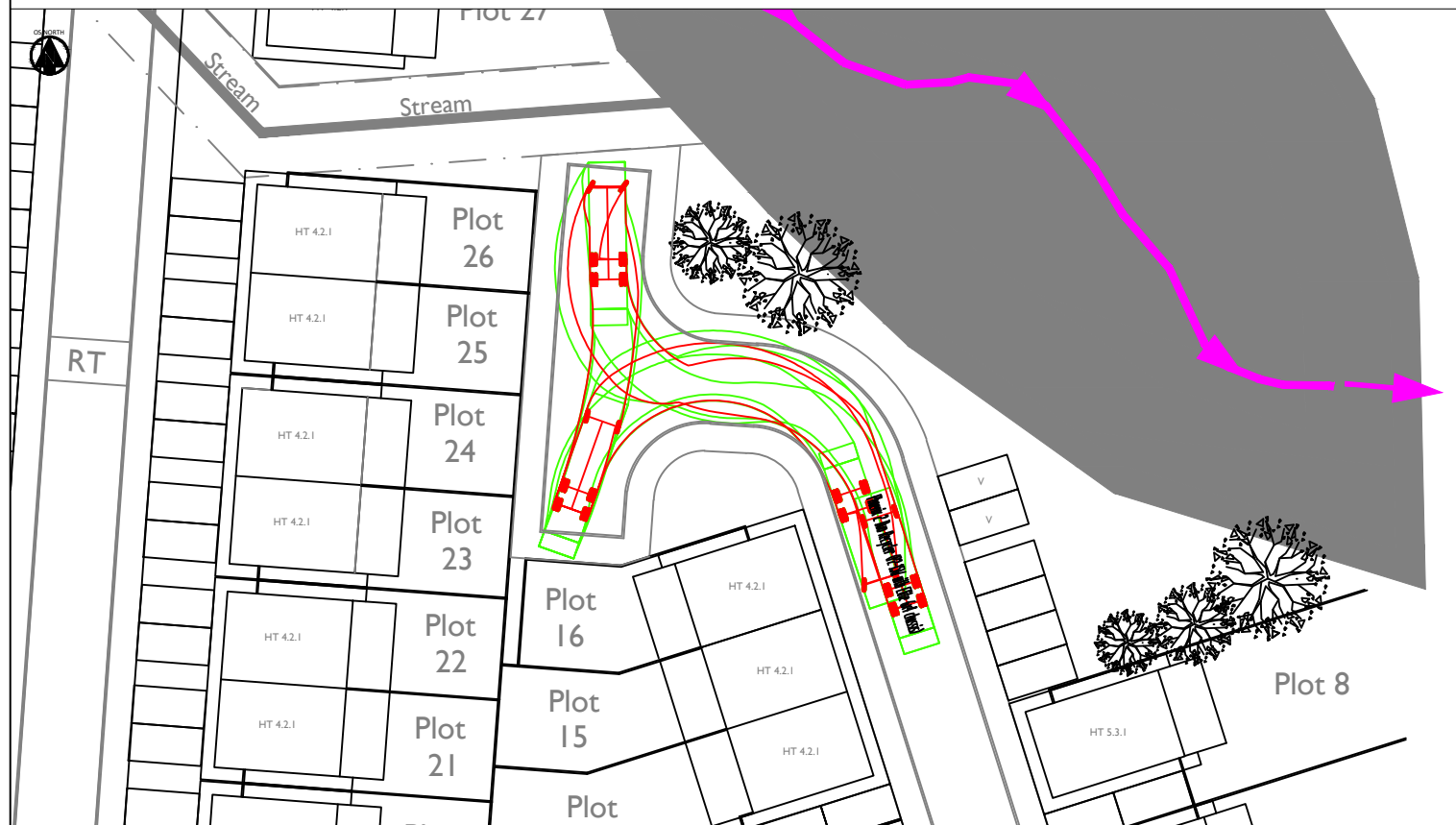
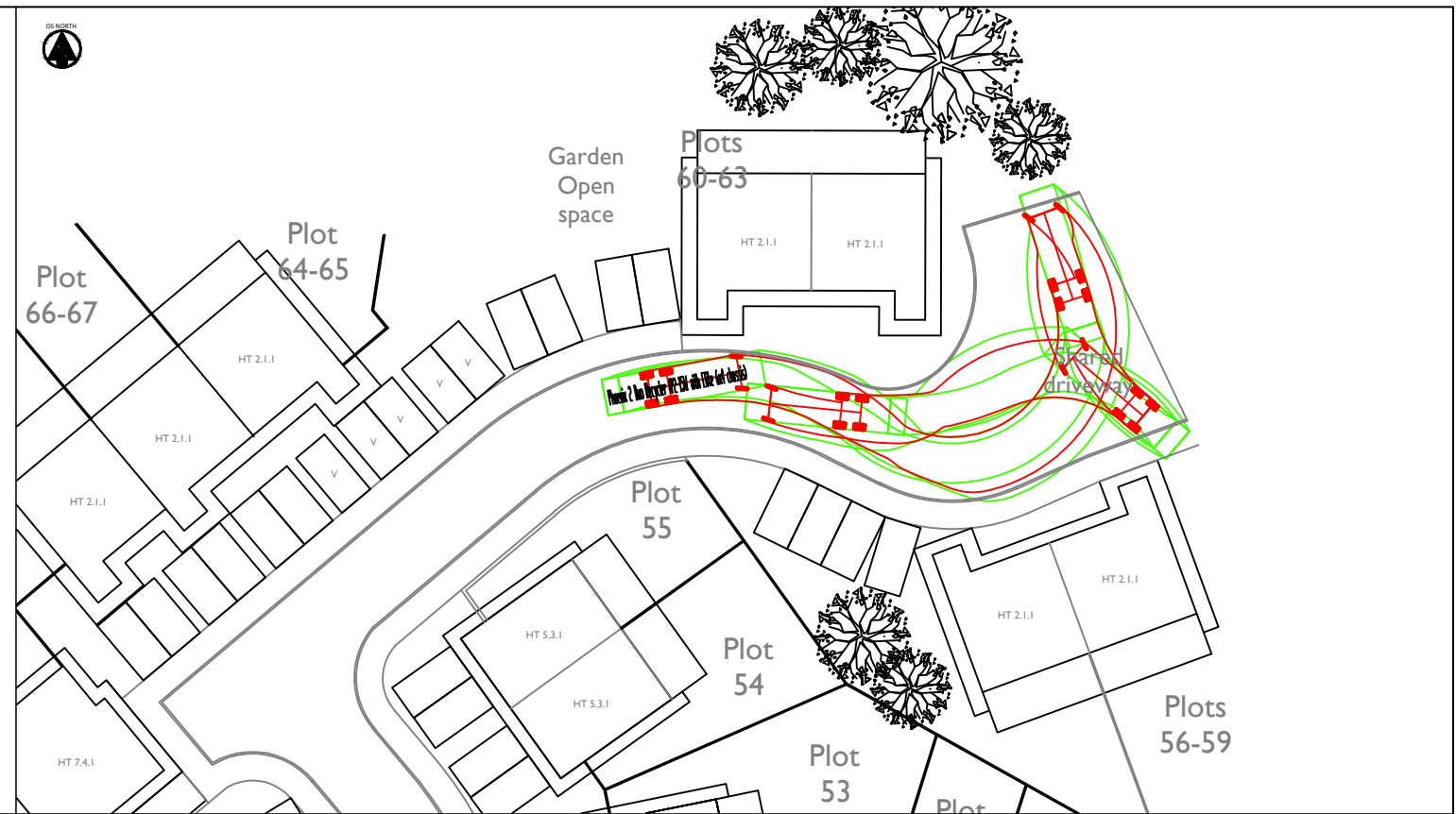
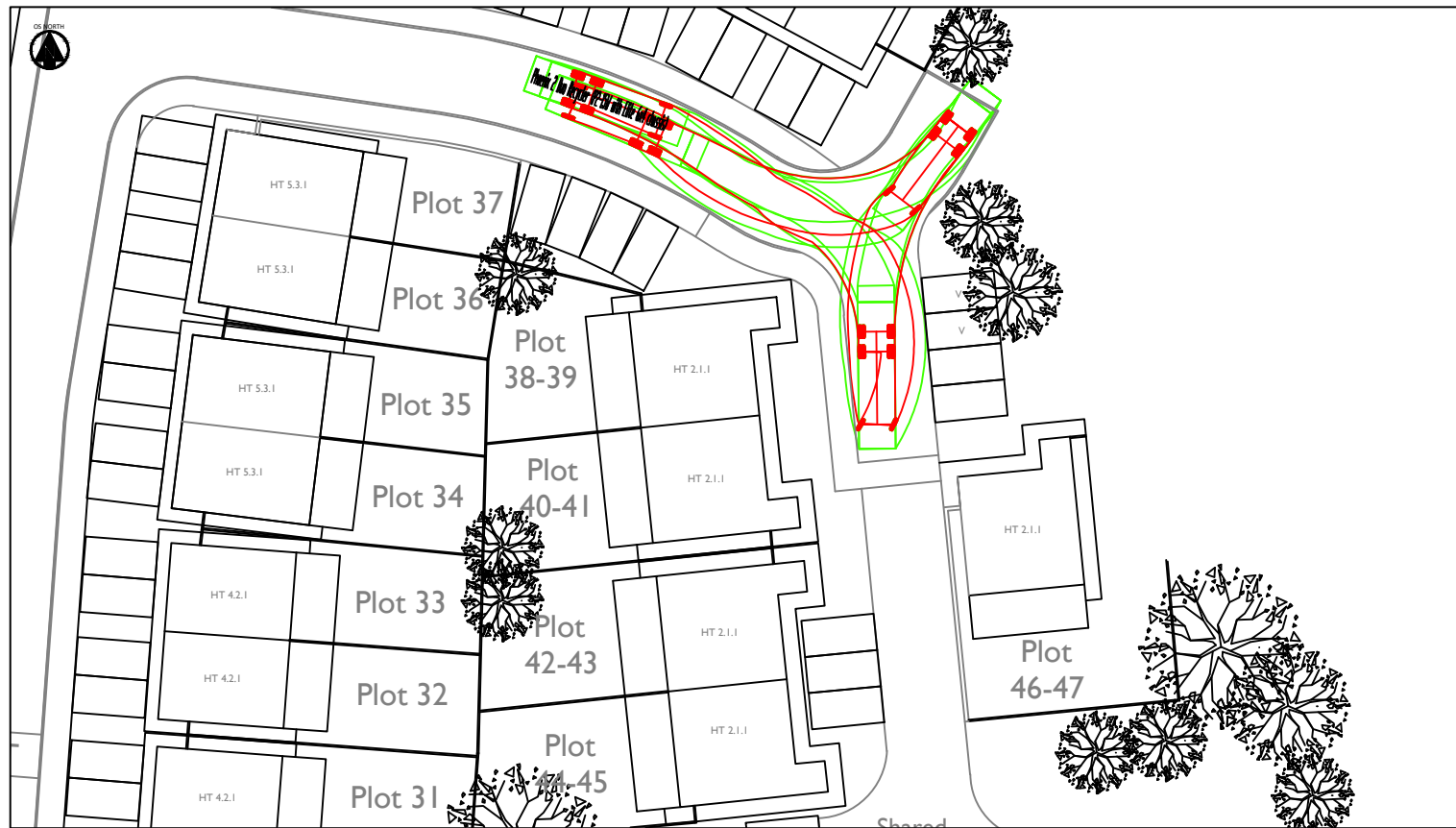
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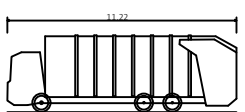
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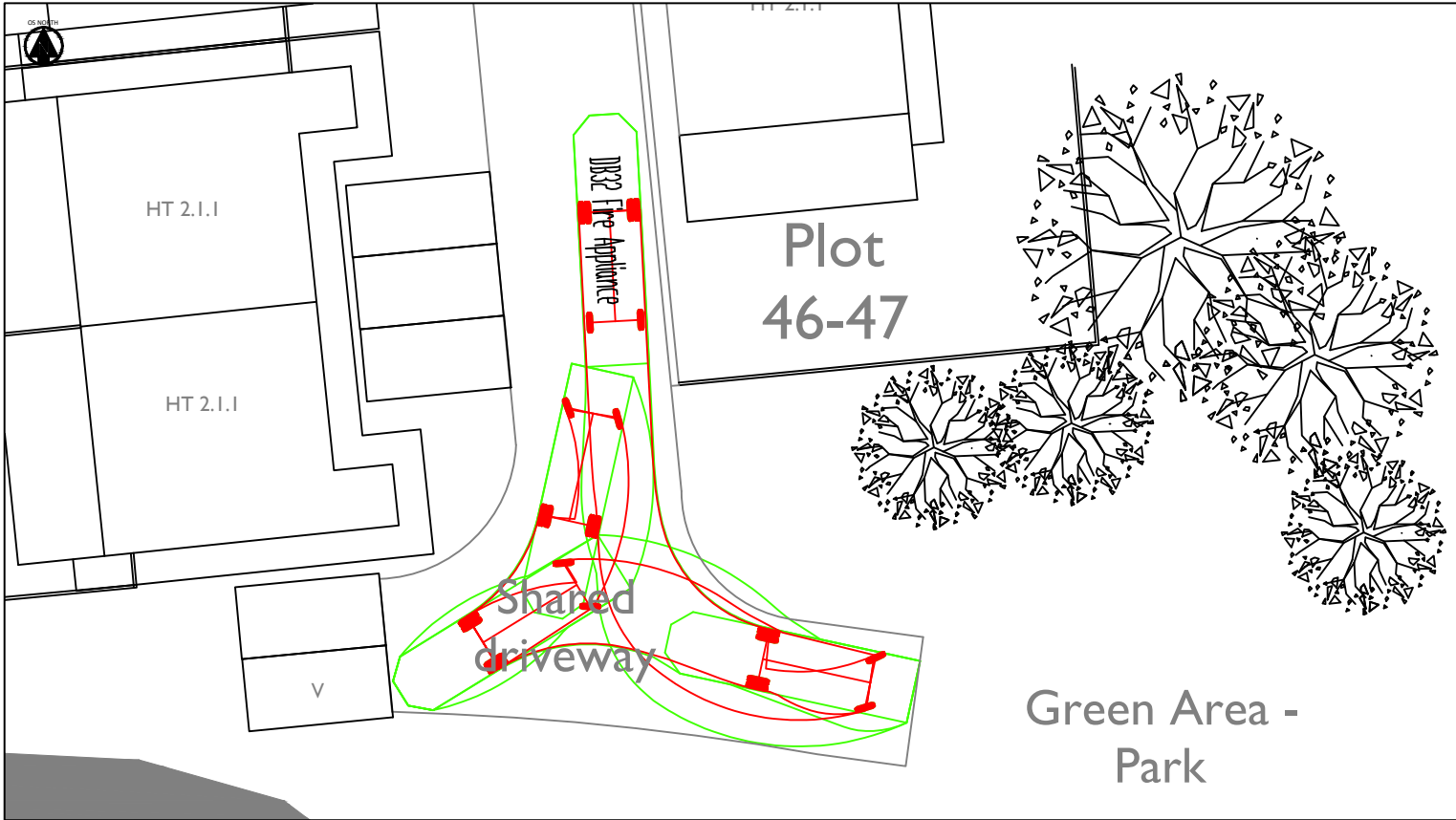
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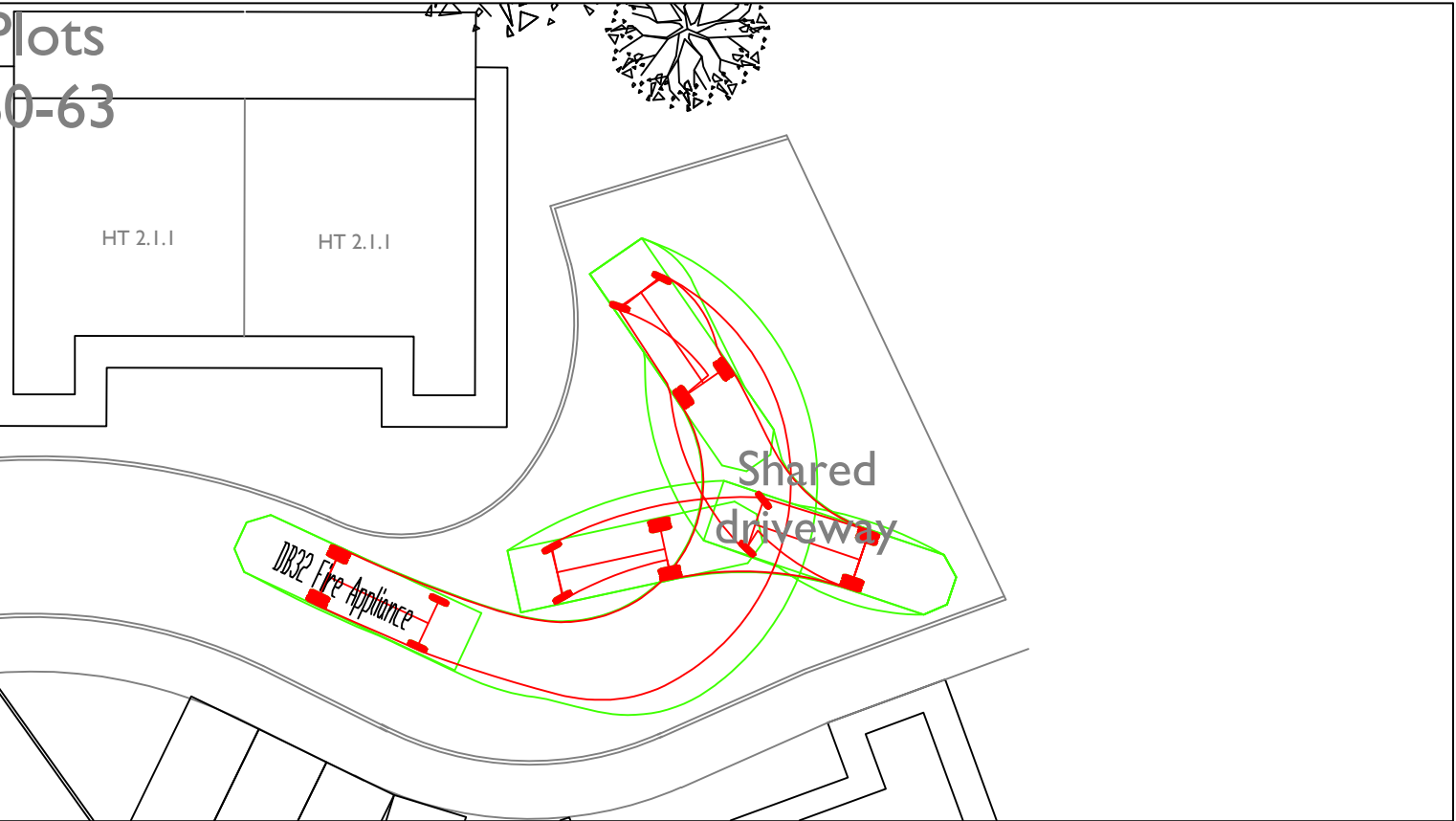
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P01



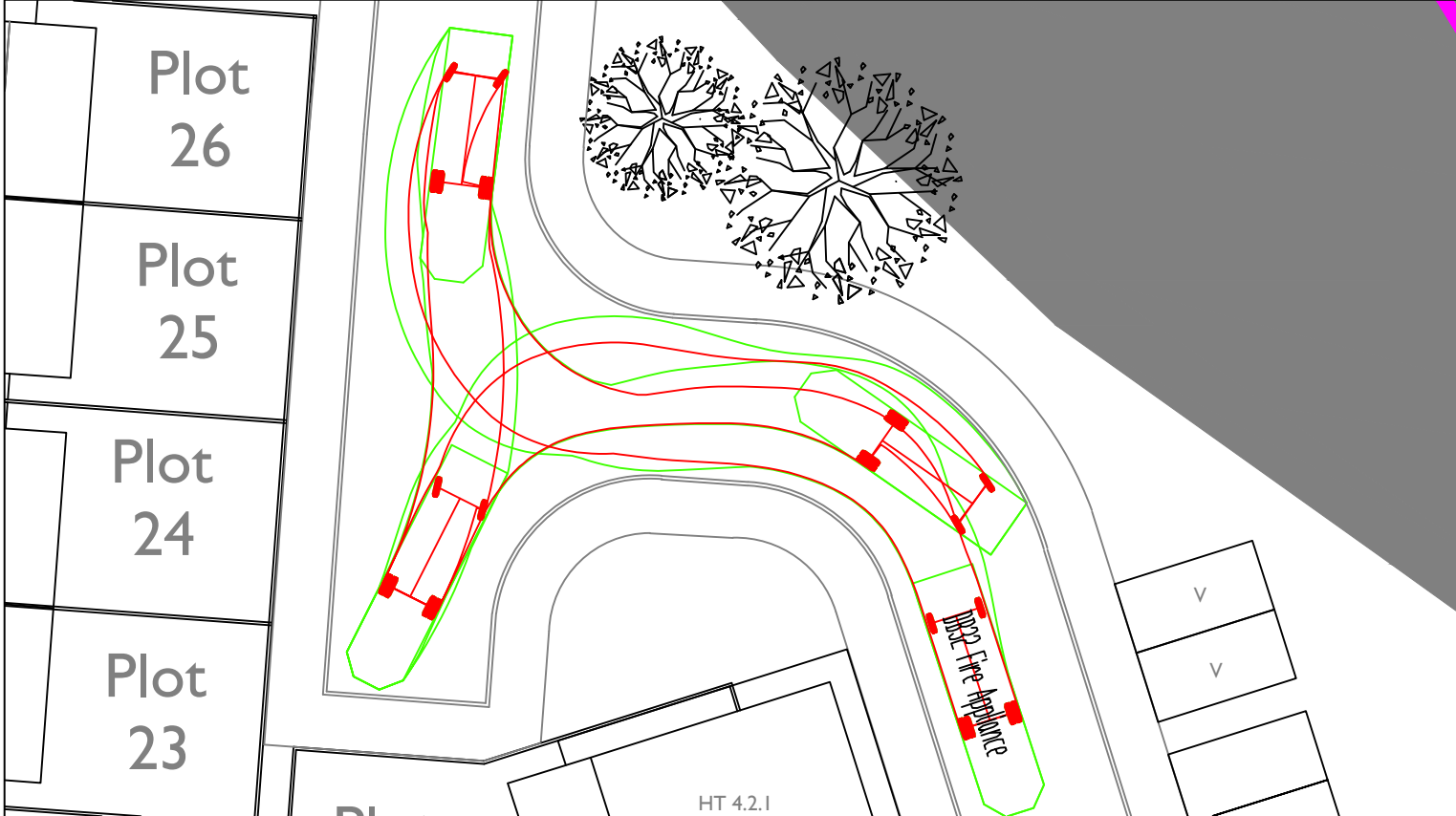
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P01	FIRST ISSUE	PREPARED S.ROSE	09/08/24	CHECKED S.MOODY	09/08/24	APPROVED S.MOODY	09/08/24																					
STANTEC PROJECT NO. 332710131	SCALE @ A3 1:500																											
STATUS DESCRIPTION INFORMATION	STATUS S2																											
DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) 332710131-STN-XX-XX-DR-TP-1001	REVISION P02																											



FIRE TRACKING AT PLOT 45



FIRE TRACKING AT PLOT 56



FIRE TRACKING AT PLOT 16

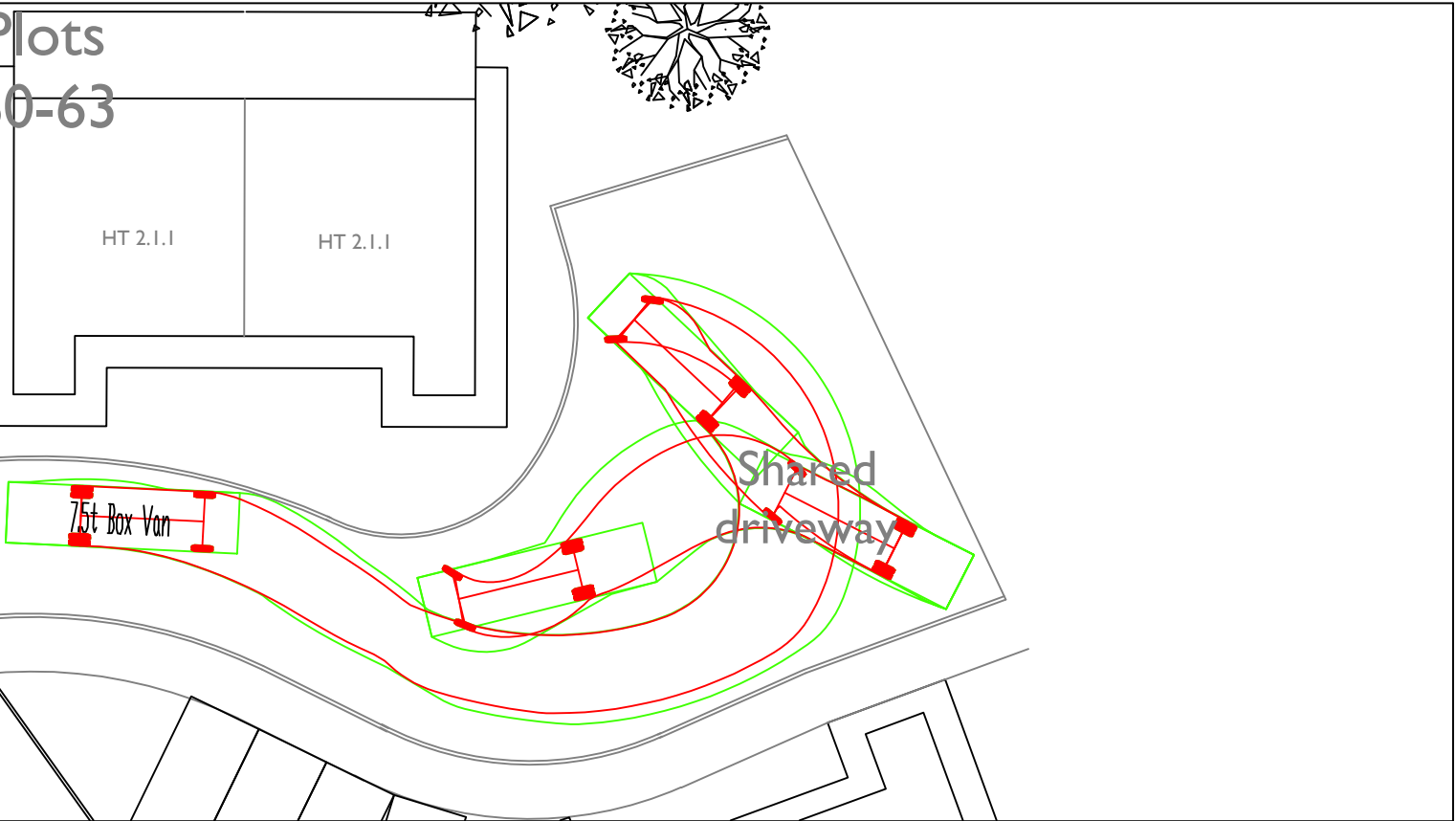


FIRE TRACKING AT PLOT 99

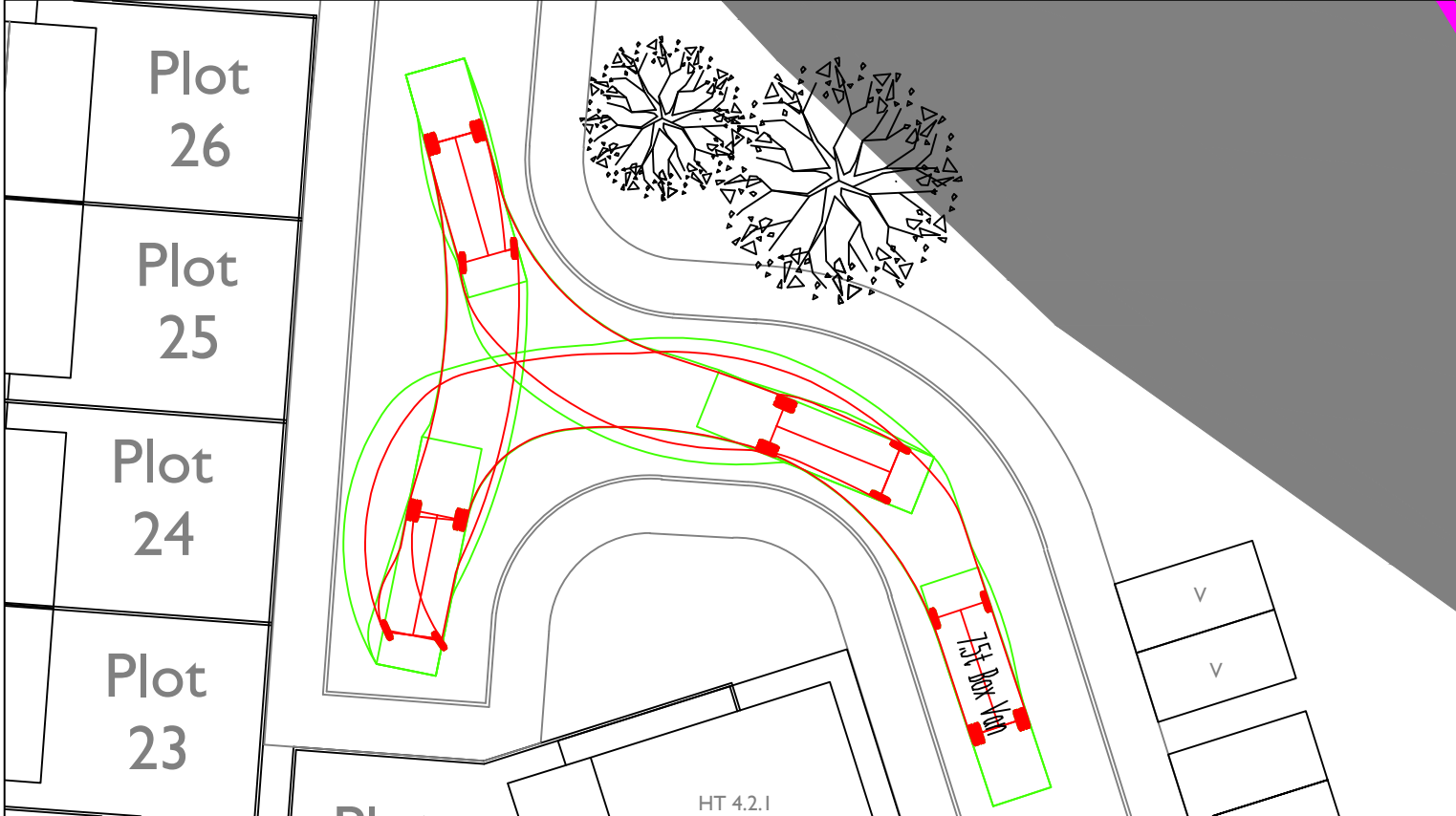
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										CLIENT Mr Robert Maggs			
DB32 Fire Appliance Overall Length Overall Width Overall Body Height Min Body Ground Clearance Max Track Width Lock to lock time Kerb to Kerb Turning Radius		8.680m 2.180m 3.452m 0.337m 2.121m 6.00s 7.910m								PROJECT TIRBACH WASHERY, YSTALYFERA		STANTEC PROJECT NO. 332710131	
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												REVISION P02	



FIRE TRACKING AT PLOT 45



FIRE TRACKING AT PLOT 56



FIRE TRACKING AT PLOT 16



FIRE TRACKING AT PLOT 99

VEHICLE MODEL USED FOR SWEEP PATH ANALYSIS		NOTES		NOTES (CONTINUED)		REVISIONS (CONTINUED)		REVISIONS		Stantec		7.5T DELIVERY BOX VAN	
										CLIENT Mr Robert Maggs		STANTEC PROJECT NO. 332710131	
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												REVISION P02	

Appendix E Site Access Road Safety Audit Stage 1



**TIRBACH WASHERY,
YSTALYFERA, SWANSEA**

PROPOSED HIGHWAY ACCESS

STAGE 1

ROAD SAFETY AUDIT REPORT

REQUESTED BY:

HYDROCK

AUGUST 2024



RKS
Associates

Project: Tirbach Washery, Ystalyfera, Swansea
Proposed Highway Access

Client: Hydrock

Document: Stage 1 Road Safety Audit

RKS Associates Ref: VRP1810 - RSA 1

Issue date: 23rd August 2024

Status: Final

Authorised by: VP/BN

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RKS
Associates

11 Falconer Road
Bushey
Hertfordshire
WD23 3AQ

CONTENTS

1 Introduction 1

2 Items Raised at Stage 1 Road Safety Audit 4

3 Audit Team Statement 7

Appendices

- Appendix A: Location of Problems Identified During Stage 1Road Safety Audit
- Appendix B: Designers Response



1 INTRODUCTION

1.1 This report results from a Stage 1 Road Safety Audit (RSA) carried out on the proposed highway access associated with the redevelopment of the former Tirbach Washery located on land on the north-eastern boundary of Ystalyfera in Swansea. The proposals seek to provide up to 160 residential dwellings, with the emerging layout currently accommodating 104 residential dwellings, comprising of a mixture of 1-bed flats and 2-, 3-, 4-bedroom houses.

1.2 The proposed highway works involve amendments to the existing access serving the site and the provision of a separate access serving the adjacent Quarry, both accesses are to be controlled by vehicle actuated traffic signals. The proposed layout indicates all arms of the junction are to be controlled by traffic signals with the exception of the left turn into the site access which is to operate as a give way. The proposed highway works also include the reduction in the speed limit along the A4067 in the immediate vicinity of the proposed highway access from national speed limit to a 40mph speed limit.

1.3 The proposed site is bounded by woodland to the north and west, the river Afon Twrch to the east and the A4067 to the south. The existing access serving the site comprises of a left in/left out priority junction located on the northern side of the A4067. The access road serving the site is unnamed, it is single two-way carriageway that is unlit with grass/hedgerows along both sides of the carriageway. The A4067 is a single two-way carriageway aligned in a northeast to southwest direction. The carriageway is lit and it is locally subject to a national speed limit which changes to a 40mph speed limit a short distance to the northeast and southwest of the existing site access.

1.4 The Stage 1 Road Safety Audit has been based on the information contained the Stage 1 RSA Brief prepared by Hydrock Reference: 22699-HYD-XX-XX-RP-TP-9001 P01 (23rd July 2024). The Audit Brief provides the following drawings which sets out the extent of the highway works:

- Hydrock Drawing Numbers:
 - 22699-HYD-XX-XX-DR-D-0003 Rev P01 – Proposed Site Access Junction General Arrangement Western Option; and
 - 22699-HYD-XX-XX-DR-D-0004 – Road Long Section Western Option

1.5 The main parties of this Road Safety Audit include the following:

Road Safety Audit Team Leader	Vimal Patel BEng (Hons), GMICE, FIHE, HE Cert Comp, Reg RSA (IHE)
Road Safety Audit Team Member	Beth Newiss MCIHT, MSoRSA
Overseeing Organisation	Neath and Port Talbot Highways Authority
Design Organisation	Hydrock

1.6 The Audit has been undertaken following examination of the submitted documents, including a site visit carried out on Wednesday 21st August 2024 between the hours of 2pm and 3pm. The weather was overcast with sunny intervals, and the road surface was damp following earlier rainfall, moderate traffic flows and no pedestrians or cyclists were observed along the A4607 no road users were observed along the unnamed site access.



Terms of Reference

- 1.7** The Audit Team is independent of the project design team and has no other involvement with the project. This Stage 1 RSA has been undertaken in accordance with the relevant sections of GG-119, part of the Design Manual for Roads and Bridges (DMRB).
- 1.8** The Safety Audit Team has examined only matters relating to road safety implications of the scheme and has not verified compliance of the design to any other criteria. The extent of the Audit is limited to the scheme proposals as shown on the drawings contained in Appendix A.
- 1.9** The Audit Team has been made aware within the RSA Brief that there are no departures from standards and that the proposed junction has been designed in accordance with DMRB CD123 - Geometric design of at grade priority and signal controlled junctions and DMRB GG101 - Introduction to the Design Manual for Roads and Bridges.
- 1.10** All of the problems identified in this report are considered by the Audit Team to require action in order to improve the safety of the scheme and to minimise accident occurrence for all users. The extent of the highway works associated with the proposed development is limited to the problem location plan contained in **Appendix A** where the reference numbers relate to the problems identified in this report.
- 1.11** The recommendations in this report are aimed at addressing the identified road safety problems; however, there may be other alternative acceptable ways to overcome a specific problem, when other practical issues are considered. The recommendations contained herein do not absolve the Designer of his/her responsibilities. The Auditors would be pleased to discuss the acceptability of alternative solutions to problems identified during the Audit and would encourage the Designer to consult them on this matter.
- 1.12** The LHA response to the RSA should be formally recorded and reported to the Designer and the RSA Team so that a record of the Audit process is contained in the As Built design pack to be provided and retained by the Local Highway Authority on completion.

Collision Data

- 1.13** The Personal Injury Collision (PIC) information obtained from the publicly available collision data contained on the *Crashmap* database (www.crashmap.co.uk). The collision data for the 5-year period up to December 2022 indicates that no collisions have been recorded along the A4607 in the immediate vicinity of the highway works



Traffic/Trip Generation Data

- 1.14** The Stage 1 Road Safety Audit Brief prepared by Hydrock provides details of the likely trip generation associated with the proposed development. Based on the information contained in the Audit Brief it is anticipated that the proposed development would result in 78 and 72 two-way vehicle trips between 8am and 9am and 5pm and 6pm respectively. In addition Manual and Automated Traffic Counts (ATC) carried out during April 2024 indicate that the 5-day average two-way flows of 958 and 1,083 were recorded along the A4607 and the 85th percentile speeds of 36mph and 37mph were recorded on the A4607 northbound and southbound direction respectively.



2 ITEMS RAISED AT STAGE 1 ROAD SAFETY AUDIT

2.1 Problem:

Summary: Potential collisions due to standing water

Location: *General*

No details have been provided in respect of surface water drainage or other services and it is therefore not possible to ascertain whether or not there will be any safety implications. Poor drainage may result in the collection of surface water which could increase the risk of loss of control collisions particularly during icy weather conditions.

Recommendation:

Ensure that adequate surface water drainage is provided, if necessary, provide additional drainage.

2.2 Problem:

Summary: Potential collisions associated with overhanging vegetation

Location: *General traffic signal controlled junction*

No details of site clearance have been provided, however observations during the site inspection noted existing vegetation adjacent to the respective site access overhang the carriageway. This may restrict forward visibility to the traffic signal heads or result in high sided vehicles to veer onto the opposing carriageway to avoid tree branches. A combination of both issues may increase the risk of collisions.

Recommendation:

Ensure that vegetation overhanging the carriageway is cut back and regularly maintained, or alternatively replaced with a low level variety.

2.3 Problem:

Summary: Potential vehicle collisions due to poor visibility

Location: *General traffic signal controlled junction*

The scheme drawings do not provide details of the traffic signal inter-visibility, observations during the site inspection noted that the traffic signal inter-visibility would be difficult to achieve caused by vegetation adjacent to the junction. Poor traffic signal inter-visibility may increase the risk of vehicle collisions particularly during times when the traffic signals are non-operational.

Recommendation:

Ensure that the traffic signal inter-visibility for the proposed junction can be achieved, an alternative mode of control for the junction should be explored if this cannot be achieved.



- 2.4 Problem:**
Summary: Potential risk of pedestrian collisions associated with absence of provision
Location: *Pedestrian/cycle accessibility to proposed development*
- No details relating to pedestrian/cycle accessibility have been provided and it is therefore not possible to ascertain whether there will be any safety implications. The absence of a safe and suitable pedestrian/cycle access to and from the development to connect with wider footway network may encourage pedestrians/cyclist to enter the carriageway where the risk of being struck by passing/turning traffic will be greater.
- Recommendation:**
Ensure that a safe pedestrian/cycle access to and from the proposed development is provided.
- 2.5 Problem:**
Summary: Potential risk of collisions associated with inefficient carriageway space
Location: *Development Access/Quarry Access/ A4607 junction*
- No details relating to vehicle swept path analysis for the proposed junction have been provided, it is therefore not possible to ascertain whether there will be any safety implications. However, there is concern that insufficient carriageway space may result in large vehicles overrunning opposing traffic lanes to negotiate a turning manoeuvre or overrunning traffic islands where the risk of colliding with traffic signal heads will be greater.
- Recommendation:**
Undertake swept path analysis for the appropriate vehicles negotiating the proposed junction, if necessary modify the layout to accommodate the safe movement of vehicles using the junction.
- 2.6 Problem:**
Summary: Potential risk of collisions associated vertical alignment
Location: *Unnamed site access road & Quarry Access*
- Observations during the site inspection and the Quarry Access long section drawing indicates a steep vertical gradient entering/exiting the respective site accesses. There is concern that the steep gradient may encourage greater speeds on the approach to the respective site access traffic signal stop lines. In addition vehicles entering the respective sites will have to negotiate an incline where the risk of stalling and rolling backwards may increase the risk of collisions with other road users.
- Recommendation:**
Review the levels along the proposed site access roads, if possible the gradients should be reduced, if this is not possible measures to reduce vehicle speeds on the downhill approach to the traffic signal stop lines should be provided.



2.7

Problem:

Summary: Potential collisions associated with injudicious vehicle manoeuvres

Location: *Proposed layout of traffic signal controlled junction*

There is concern that the proposed layout of traffic signal junction is unorthodox with a combination of a Y-junction and T-junction layout located adjacent to each other. There is concern that the absence of clear road signs and carriageway markings may increase the risk of collisions associated with inadvertent vehicle manoeuvres. For example motorists wishing to turn right into the proposed development may inadvertently enter the Quarry Access at times when then there are no vehicles waiting on at the Quarry Access traffic signal stop line.

Recommendation:

Ensure that clear signs and markings are provided to improve the layout of the proposed traffic signal controlled junction. Alternatively, if possible the layout should be amended with a simple access arrangement where the quarry access is incorporated into the site access or vice-a-versa.

2.8

Problem:

Summary: Potential risk of injury resulting from the removal of safety fencing

Location: *Vehicle Restraint System (VRS) northern side of A4607 east of proposed development access*

The propose introduction of the traffic signal controlled site access results in the removal of the existing VRS along the northern side of A4607 east of proposed development access. The absence of VRS may increase the severity of a loss of control collision if a vehicle were to lose control and deviate off the carriageway down the embankment.

Recommendation:

Ensure that VRS is provided to mitigate the risk of vehicles losing control and falling down the embankment.

2.9

Problem:

Summary: Potential risk of injury to maintenance operatives

Location: *Proposed traffic signal controlled junction*

No details of the traffic signal controller or safe area for traffic signal maintenance operatives have been provided. The absence of a safe facility may increase the risk of injury to maintenance operatives when servicing the traffic signals. In addition, the traffic signal controller should be placed in a location where it provides good visibility to the signal heads and does not cause an obstruction for non-motorised users.

Recommendation:

Ensure that the traffic signal controller is located in an area where it does not create an obstruction for non-motorised users and where visibility to the traffic signal heads is not compromised. In addition a safe area for maintenance vehicles should be provided.



3 AUDIT TEAM STATEMENT

- 3.1** We certify that this audit has been carried out in accordance with GG-119 of Design Manual for Roads & Bridges Volume 5 Section 2 - Road Safety Audits. Its sole purpose being to identify features of the scheme that could be removed or modified to improve safety. No member of the Audit Team has been involved in the scheme design.

Audit Team Leader

Vimal Patel
BEng (Hons), GMICE, FIHE, RegRSA (IHE), HE Cert Comp

Signed:

Date: 23rd August 2024

Audit Team Member

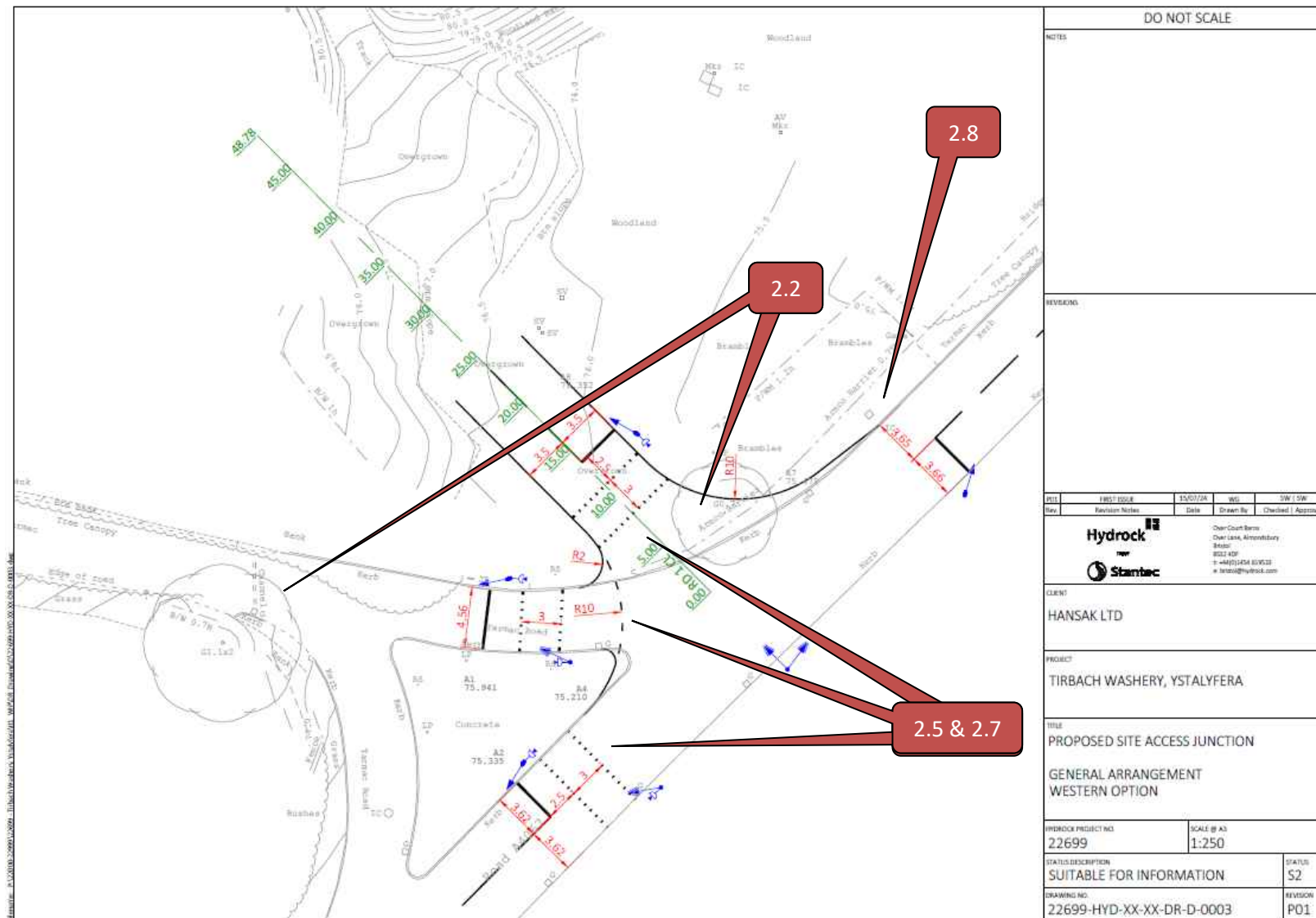
Beth Newiss
MCIHT, MSoRSA

Signed:

Date: 23rd August 2024



Appendix A



2.1

2.3

2.4

2.9

General Points



Appendix B



Issue N°	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
2.1	Ensure that adequate surface water drainage is provided, if necessary, provide additional drainage.	Agreed. As part of the detailed design, the designer must ensure appropriate drainage to prevent standing water and effectively drain the highway.		
2.2	Ensure that vegetation overhanging the carriageway is cut back and regularly maintained, or alternatively replaced with a low level variety.	Agreed. As part of the detailed design, the designer must maintain visibility. The designer will need to consider the future maintenance requirements of any new planting.		
2.3	Ensure that the traffic signal inter-visibility for the proposed junction can be achieved, an alternative mode of control for the junction should be explored if this cannot be achieved.	Agreed. Inter-visibility and visibility sightlines in accordance with Traffic Signs Manual Chapter 6 have been provided on drawing 22699-HYD-XX-XX-D-0005. Existing vegetation impedes visibility to be reviewed at the detailed design stage and, if necessary, cut back/removed.		
2.4	Ensure that a safe pedestrian/cycle access to and from the proposed development is provided.	Agreed. Pedestrian/cycle access has been added to the general arrangement drawing. The shared footway and crossing point routes have been amended to achieve appropriate gradients.		
2.5	Undertake swept path analysis for the appropriate vehicles negotiating the proposed junction, if necessary modify the layout to accommodate the safe movement of vehicles using the junction.	Agreed. Swept Paths for a large refuse vehicle are shown on drawing 22699-HYD-XX-XX-D-0006.1. The drawing demonstrates that the vehicle can manoeuvre without conflicting with vehicles waiting at the stop lines, or overrunning/hanging kerb lines.		
2.6	Review the levels along the proposed site access roads, if possible the gradients should be reduced, if this is not possible measures to reduce vehicle speeds on the downhill approach to the traffic signal stop lines should be provided.	Noted. The development arm of the junction has been amended to have a gradient of 1:20 at the stop-line and 1:16 on the approach to the stop-line. This gradient is not considered to have the risk of vehicle stalling. The approach arm from the quarry has an existing gradient of 1:12.5 on the exit. Both arms achieve a gradient of 1:40 before tying in with the existing carriageway. See drawing 22699-HYD-XX-XX-D004 for gradients. For detailed design, the designer should consider using a surface course with a PSV of 68+ on approaches to stop lines to improve stopping distances.		



Issue N°	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
2.7	Ensure that clear signs and markings are provided to improve the layout of the proposed traffic signal controlled junction. Alternatively, if possible the layout should be amended with a simple access arrangement where the quarry access is incorporated into the site access or vice-a-versa.	Noted. The design is based on the land available within the developer's control. Road markings have been added to the signal arms to aid drivers in navigating the junction. The designer will consider additional signs in the detailed design.		
2.8	Ensure that VRS is provided to mitigate the risk of vehicles losing control and falling down the embankment.	Agreed. VRS has been added to the General Arrangement plan to ensure the designer considers the hazard and provides appropriate barriers as part of the detailed design.		
2.9	Ensure that the traffic signal controller is located in an area where it does not create an obstruction for non-motorised users and where visibility to the traffic signal heads is not compromised. In addition a safe area for maintenance vehicles should be provided.	Agreed. A possible location of the signal junction maintenance bay was added to the drawing. Location may vary on detailed design.		

Designer's Statement:

I certify that I have considered the items that have arisen in the Stage 1 Road Safety Audit Report and my response to its recommendations are set out above.

.....
Designer

Date:



Project Sponsor/ Client Organisation Statement:

I accept/do not accept the Designer's Response (please delete as appropriate)

.....

Date:

5.0 ROAD SAFETY AUDIT DECISION LOG

Audit Ref	VRP1810 - RSA 1					
Project Title	Tirbach Washery, Ystalyfera, Swansea Proposed Highway Access					
Project Ref	C-22699					
Author/Date	RKS / August 2024					
Hydrock Ref	22699-HYD-XX-XX-RP-D-0001	Revision	P01			
Problem Ref	RSA Recommendation			Design organisation response (Hydrock-RJP)	Overseeing Organisation Response	Agreed RSA action
Matters Arising from Stage 1 Audit						
2.1	Ensure that adequate surface water drainage is provided, if necessary, provide additional drainage.			Agreed. As part of the detailed design, the designer must ensure appropriate drainage to prevent standing water and effectively drain the highway.		
2.2	Ensure that vegetation overhanging the carriageway is cut back and regularly maintained, or alternatively replaced with a low level variety.			Agreed. As part of the detailed design, the designer must maintain visibility. The designer will need to consider the future maintenance requirements of any new planting.		
2.3	Ensure that the traffic signal inter-visibility for the proposed junction can be achieved, an alternative mode of control for the junction should be explored if this cannot be achieved.			Agreed. Inter-visibility and visibility sightlines in accordance with Traffic Signs Manual Chapter 6 have been provided on drawing 22699-HYD-XX-XX-D-0005. Existing vegetation impedes visibility to be reviewed at the detailed design stage and, if necessary, cut back/removed.		
2.4	Ensure that a safe pedestrian/cycle access to and from the proposed development is provided.			Agreed. Pedestrian/cycle access has been added to the general arrangement drawing. The shared footway and crossing point routes have been amended to achieve appropriate gradients.		
2.5	Undertake swept path analysis for the appropriate vehicles negotiating the proposed junction, if necessary modify the layout to accommodate the safe movement of vehicles using the junction.			Agreed. Swept Paths for a large refuse vehicle are shown on drawing 22699-HYD-XX-XX-D-0006.1. The drawing demonstrates that the vehicle can manoeuvre without conflicting with vehicles waiting at the stop lines, or overrunning/hanging kerb lines.		
2.6	Review the levels along the proposed site access roads, if possible the gradients should be reduced, if this is not possible measures to reduce vehicle speeds on the downhill approach to the traffic signal stop lines should be provided.			Noted. The development arm of the junction has been amended to have a gradient of 1:20 at the stop-line and 1:16 on the approach to the stop-line. This gradient is not considered to have the risk of vehicle stalling. The approach arm from the quarry has an existing gradient of 1:12.5 on the exit. Both arms achieve a gradient of 1:40 before tying in with the existing carriageway. See drawing 22699-HYD-XX-XX-D004 for gradients. For detailed design, the designer should consider using a surface course with a PSV of 68+ on approaches to stop lines to improve stopping distances.		
2.7	Ensure that clear signs and markings are provided to improve the layout of the proposed traffic signal-controlled junction. Alternatively, if possible the layout should be amended with a simple access arrangement where the quarry access is incorporated into the site access or vice-a-versa.			Noted. The design is based on the land available within the developer's control. Road markings have been added to the signal arms to aid drivers in navigating the junction. The designer will consider additional signs in the detailed design.		
2.8	Ensure that VRS is provided to mitigate the risk of vehicles losing control and falling down the embankment.			Agreed. VRS has been added to the General Arrangement plan to ensure the designer considers the hazard and provides appropriate barriers as part of the detailed design.		
2.9	Ensure that the traffic signal controller is located in an area where it does not create an obstruction for non-motorised users and where visibility to the traffic signal heads is not compromised. In addition a safe area for maintenance vehicles should be provided.			Agreed. A possible location of the signal junction maintenance bay was added to the drawing. Location may vary on detailed design.		

Appendix F TRICS Data



Calculation Reference: AUDIT-540501-240503-0556

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	SC SURREY	1 days
	WS WEST SUSSEX	3 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	1 days
	NF NORFOLK	1 days
05	EAST MIDLANDS	
	LE LEICESTERSHIRE	1 days
09	NORTH	
	DH DURHAM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
 Actual Range: 57 to 480 (units:)
 Range Selected by User: 6 to 1817 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/16 to 14/11/23

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	1 days
Wednesday	1 days
Thursday	5 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	8 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Neighbourhood Centre (PPS6 Local Centre)	8
--	---

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	1
Village	7

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	9 days - Selected
Servicing vehicles Excluded	21 days - Selected

Secondary Filtering selection:

Use Class:

C3	8 days
----	--------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

1,001 to 5,000	3 days
5,001 to 10,000	5 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	4 days
50,001 to 75,000	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	4 days
1.6 to 2.0	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	5 days
No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	8 days
-----------------	--------

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	CA-03-A-08 GIDDING ROAD SAWTRY	DETACHED & SEMI-DETACHED	CAMBRIDGESHIRE
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 83 Survey date: THURSDAY 13/10/22		Survey Type: MANUAL
2	DH-03-A-02 LEAZES LANE BISHOP AUCKLAND ST HELEN AUCKLAND	MIXED HOUSES	DURHAM
	Neighbourhood Centre (PPS6 Local Centre) Residential Zone Total No of Dwellings: 125 Survey date: MONDAY 27/03/17		Survey Type: MANUAL
3	LE-03-A-02 MELBOURNE ROAD IBSTOCK	DETACHED & OTHERS	LEICESTERSHIRE
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 85 Survey date: THURSDAY 28/06/18		Survey Type: MANUAL
4	NF-03-A-27 YARMOUTH ROAD NEAR NORWICH BLOFIELD	MIXED HOUSES & FLATS	NORFOLK
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 93 Survey date: THURSDAY 16/09/21		Survey Type: MANUAL
5	SC-03-A-09 AMLETS LANE CRANLEIGH	MIXED HOUSES & FLATS	SURREY
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 136 Survey date: TUESDAY 24/05/22		Survey Type: MANUAL
6	WS-03-A-07 EMMS LANE NEAR HORSHAM BROOKS GREEN	BUNGALOWS	WEST SUSSEX
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 57 Survey date: THURSDAY 19/10/17		Survey Type: MANUAL
7	WS-03-A-16 BRACKLESHAM LANE BRACKLESHAM BAY	DETACHED & SEMI-DETACHED	WEST SUSSEX
	Neighbourhood Centre (PPS6 Local Centre) Village Total No of Dwellings: 58 Survey date: WEDNESDAY 09/11/22		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 WS-03-A-21 MIXED HOUSES WEST SUSSEX
HILLAND ROAD
BILLINGSHURST

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 480
Survey date: THURSDAY 09/11/23 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
AC-03-A-05	Covid-19
CA-03-A-07	Covid-19
ES-03-A-06	Covid-19
KC-03-A-08	Railway station nearby
SF-03-A-06	Railway station nearby

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period
 Total People to Total Vehicles ratio (all time periods and directions): 1.77

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.064	8	140	0.210	8	140	0.274
08:00 - 09:00	8	140	0.121	8	140	0.261	8	140	0.382
09:00 - 10:00	8	140	0.129	8	140	0.135	8	140	0.264
10:00 - 11:00	8	140	0.102	8	140	0.120	8	140	0.222
11:00 - 12:00	8	140	0.090	8	140	0.115	8	140	0.205
12:00 - 13:00	8	140	0.121	8	140	0.115	8	140	0.236
13:00 - 14:00	8	140	0.124	8	140	0.132	8	140	0.256
14:00 - 15:00	8	140	0.124	8	140	0.131	8	140	0.255
15:00 - 16:00	8	140	0.191	8	140	0.137	8	140	0.328
16:00 - 17:00	8	140	0.215	8	140	0.149	8	140	0.364
17:00 - 18:00	8	140	0.243	8	140	0.124	8	140	0.367
18:00 - 19:00	8	140	0.191	8	140	0.107	8	140	0.298
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.715			1.736			3.451

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	57 - 480 (units:)
Survey date date range:	01/01/16 - 14/11/23
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	3
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL TAXIS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.003	8	140	0.004	8	140	0.007
08:00 - 09:00	8	140	0.004	8	140	0.004	8	140	0.008
09:00 - 10:00	8	140	0.001	8	140	0.001	8	140	0.002
10:00 - 11:00	8	140	0.001	8	140	0.001	8	140	0.002
11:00 - 12:00	8	140	0.001	8	140	0.001	8	140	0.002
12:00 - 13:00	8	140	0.000	8	140	0.000	8	140	0.000
13:00 - 14:00	8	140	0.001	8	140	0.001	8	140	0.002
14:00 - 15:00	8	140	0.001	8	140	0.001	8	140	0.002
15:00 - 16:00	8	140	0.003	8	140	0.003	8	140	0.006
16:00 - 17:00	8	140	0.002	8	140	0.002	8	140	0.004
17:00 - 18:00	8	140	0.004	8	140	0.003	8	140	0.007
18:00 - 19:00	8	140	0.001	8	140	0.000	8	140	0.001
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.022			0.021			0.043

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL OGVS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.001	8	140	0.001	8	140	0.002
08:00 - 09:00	8	140	0.002	8	140	0.001	8	140	0.003
09:00 - 10:00	8	140	0.004	8	140	0.004	8	140	0.008
10:00 - 11:00	8	140	0.003	8	140	0.002	8	140	0.005
11:00 - 12:00	8	140	0.004	8	140	0.004	8	140	0.008
12:00 - 13:00	8	140	0.004	8	140	0.004	8	140	0.008
13:00 - 14:00	8	140	0.003	8	140	0.004	8	140	0.007
14:00 - 15:00	8	140	0.001	8	140	0.001	8	140	0.002
15:00 - 16:00	8	140	0.001	8	140	0.001	8	140	0.002
16:00 - 17:00	8	140	0.001	8	140	0.001	8	140	0.002
17:00 - 18:00	8	140	0.001	8	140	0.001	8	140	0.002
18:00 - 19:00	8	140	0.001	8	140	0.001	8	140	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.026			0.025			0.051

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL PSVS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.000	8	140	0.000	8	140	0.000
08:00 - 09:00	8	140	0.000	8	140	0.000	8	140	0.000
09:00 - 10:00	8	140	0.000	8	140	0.000	8	140	0.000
10:00 - 11:00	8	140	0.000	8	140	0.000	8	140	0.000
11:00 - 12:00	8	140	0.001	8	140	0.001	8	140	0.002
12:00 - 13:00	8	140	0.000	8	140	0.000	8	140	0.000
13:00 - 14:00	8	140	0.000	8	140	0.000	8	140	0.000
14:00 - 15:00	8	140	0.001	8	140	0.001	8	140	0.002
15:00 - 16:00	8	140	0.000	8	140	0.000	8	140	0.000
16:00 - 17:00	8	140	0.000	8	140	0.000	8	140	0.000
17:00 - 18:00	8	140	0.000	8	140	0.000	8	140	0.000
18:00 - 19:00	8	140	0.000	8	140	0.000	8	140	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.002			0.002			0.004

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.002	8	140	0.004	8	140	0.006
08:00 - 09:00	8	140	0.002	8	140	0.011	8	140	0.013
09:00 - 10:00	8	140	0.000	8	140	0.003	8	140	0.003
10:00 - 11:00	8	140	0.001	8	140	0.001	8	140	0.002
11:00 - 12:00	8	140	0.001	8	140	0.001	8	140	0.002
12:00 - 13:00	8	140	0.002	8	140	0.002	8	140	0.004
13:00 - 14:00	8	140	0.004	8	140	0.002	8	140	0.006
14:00 - 15:00	8	140	0.002	8	140	0.003	8	140	0.005
15:00 - 16:00	8	140	0.004	8	140	0.002	8	140	0.006
16:00 - 17:00	8	140	0.009	8	140	0.004	8	140	0.013
17:00 - 18:00	8	140	0.004	8	140	0.003	8	140	0.007
18:00 - 19:00	8	140	0.003	8	140	0.002	8	140	0.005
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.034			0.038			0.072

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL VEHICLE OCCUPANTS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.073	8	140	0.299	8	140	0.372
08:00 - 09:00	8	140	0.143	8	140	0.427	8	140	0.570
09:00 - 10:00	8	140	0.150	8	140	0.173	8	140	0.323
10:00 - 11:00	8	140	0.120	8	140	0.148	8	140	0.268
11:00 - 12:00	8	140	0.110	8	140	0.143	8	140	0.253
12:00 - 13:00	8	140	0.147	8	140	0.151	8	140	0.298
13:00 - 14:00	8	140	0.165	8	140	0.167	8	140	0.332
14:00 - 15:00	8	140	0.167	8	140	0.171	8	140	0.338
15:00 - 16:00	8	140	0.315	8	140	0.191	8	140	0.506
16:00 - 17:00	8	140	0.330	8	140	0.196	8	140	0.526
17:00 - 18:00	8	140	0.374	8	140	0.178	8	140	0.552
18:00 - 19:00	8	140	0.274	8	140	0.149	8	140	0.423
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.368			2.393			4.761

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL PEDESTRIANS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.022	8	140	0.042	8	140	0.064
08:00 - 09:00	8	140	0.032	8	140	0.089	8	140	0.121
09:00 - 10:00	8	140	0.052	8	140	0.050	8	140	0.102
10:00 - 11:00	8	140	0.026	8	140	0.034	8	140	0.060
11:00 - 12:00	8	140	0.027	8	140	0.026	8	140	0.053
12:00 - 13:00	8	140	0.033	8	140	0.040	8	140	0.073
13:00 - 14:00	8	140	0.046	8	140	0.035	8	140	0.081
14:00 - 15:00	8	140	0.047	8	140	0.055	8	140	0.102
15:00 - 16:00	8	140	0.094	8	140	0.061	8	140	0.155
16:00 - 17:00	8	140	0.051	8	140	0.036	8	140	0.087
17:00 - 18:00	8	140	0.042	8	140	0.039	8	140	0.081
18:00 - 19:00	8	140	0.040	8	140	0.029	8	140	0.069
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.512			0.536			1.048

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.000	8	140	0.026	8	140	0.026
08:00 - 09:00	8	140	0.000	8	140	0.017	8	140	0.017
09:00 - 10:00	8	140	0.000	8	140	0.007	8	140	0.007
10:00 - 11:00	8	140	0.003	8	140	0.008	8	140	0.011
11:00 - 12:00	8	140	0.002	8	140	0.004	8	140	0.006
12:00 - 13:00	8	140	0.006	8	140	0.003	8	140	0.009
13:00 - 14:00	8	140	0.006	8	140	0.002	8	140	0.008
14:00 - 15:00	8	140	0.003	8	140	0.001	8	140	0.004
15:00 - 16:00	8	140	0.024	8	140	0.002	8	140	0.026
16:00 - 17:00	8	140	0.011	8	140	0.000	8	140	0.011
17:00 - 18:00	8	140	0.013	8	140	0.002	8	140	0.015
18:00 - 19:00	8	140	0.008	8	140	0.003	8	140	0.011
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.076			0.075			0.151

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL TOTAL RAIL PASSENGERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.000	8	140	0.017	8	140	0.017
08:00 - 09:00	8	140	0.000	8	140	0.011	8	140	0.011
09:00 - 10:00	8	140	0.000	8	140	0.003	8	140	0.003
10:00 - 11:00	8	140	0.002	8	140	0.003	8	140	0.005
11:00 - 12:00	8	140	0.001	8	140	0.004	8	140	0.005
12:00 - 13:00	8	140	0.000	8	140	0.001	8	140	0.001
13:00 - 14:00	8	140	0.001	8	140	0.000	8	140	0.001
14:00 - 15:00	8	140	0.000	8	140	0.000	8	140	0.000
15:00 - 16:00	8	140	0.003	8	140	0.001	8	140	0.004
16:00 - 17:00	8	140	0.008	8	140	0.000	8	140	0.008
17:00 - 18:00	8	140	0.016	8	140	0.000	8	140	0.016
18:00 - 19:00	8	140	0.012	8	140	0.000	8	140	0.012
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.043			0.040			0.083

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL PUBLIC TRANSPORT USERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.000	8	140	0.043	8	140	0.043
08:00 - 09:00	8	140	0.000	8	140	0.028	8	140	0.028
09:00 - 10:00	8	140	0.000	8	140	0.010	8	140	0.010
10:00 - 11:00	8	140	0.004	8	140	0.011	8	140	0.015
11:00 - 12:00	8	140	0.003	8	140	0.008	8	140	0.011
12:00 - 13:00	8	140	0.006	8	140	0.004	8	140	0.010
13:00 - 14:00	8	140	0.007	8	140	0.002	8	140	0.009
14:00 - 15:00	8	140	0.003	8	140	0.001	8	140	0.004
15:00 - 16:00	8	140	0.027	8	140	0.003	8	140	0.030
16:00 - 17:00	8	140	0.019	8	140	0.000	8	140	0.019
17:00 - 18:00	8	140	0.030	8	140	0.002	8	140	0.032
18:00 - 19:00	8	140	0.020	8	140	0.003	8	140	0.023
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.119			0.115			0.234

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period
 Total People to Total Vehicles ratio (all time periods and directions): 1.77

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.098	8	140	0.389	8	140	0.487
08:00 - 09:00	8	140	0.177	8	140	0.554	8	140	0.731
09:00 - 10:00	8	140	0.202	8	140	0.235	8	140	0.437
10:00 - 11:00	8	140	0.151	8	140	0.193	8	140	0.344
11:00 - 12:00	8	140	0.141	8	140	0.178	8	140	0.319
12:00 - 13:00	8	140	0.188	8	140	0.197	8	140	0.385
13:00 - 14:00	8	140	0.222	8	140	0.205	8	140	0.427
14:00 - 15:00	8	140	0.219	8	140	0.229	8	140	0.448
15:00 - 16:00	8	140	0.440	8	140	0.256	8	140	0.696
16:00 - 17:00	8	140	0.409	8	140	0.235	8	140	0.644
17:00 - 18:00	8	140	0.449	8	140	0.222	8	140	0.671
18:00 - 19:00	8	140	0.337	8	140	0.182	8	140	0.519
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.033			3.075			6.108

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CARS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.052	8	140	0.173	8	140	0.225
08:00 - 09:00	8	140	0.102	8	140	0.223	8	140	0.325
09:00 - 10:00	8	140	0.105	8	140	0.108	8	140	0.213
10:00 - 11:00	8	140	0.081	8	140	0.104	8	140	0.185
11:00 - 12:00	8	140	0.065	8	140	0.085	8	140	0.150
12:00 - 13:00	8	140	0.100	8	140	0.096	8	140	0.196
13:00 - 14:00	8	140	0.106	8	140	0.107	8	140	0.213
14:00 - 15:00	8	140	0.098	8	140	0.110	8	140	0.208
15:00 - 16:00	8	140	0.166	8	140	0.120	8	140	0.286
16:00 - 17:00	8	140	0.178	8	140	0.125	8	140	0.303
17:00 - 18:00	8	140	0.207	8	140	0.110	8	140	0.317
18:00 - 19:00	8	140	0.175	8	140	0.097	8	140	0.272
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.435			1.458			2.893

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL LGVS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.009	8	140	0.030	8	140	0.039
08:00 - 09:00	8	140	0.013	8	140	0.030	8	140	0.043
09:00 - 10:00	8	140	0.018	8	140	0.021	8	140	0.039
10:00 - 11:00	8	140	0.016	8	140	0.013	8	140	0.029
11:00 - 12:00	8	140	0.017	8	140	0.023	8	140	0.040
12:00 - 13:00	8	140	0.015	8	140	0.014	8	140	0.029
13:00 - 14:00	8	140	0.013	8	140	0.017	8	140	0.030
14:00 - 15:00	8	140	0.021	8	140	0.015	8	140	0.036
15:00 - 16:00	8	140	0.020	8	140	0.013	8	140	0.033
16:00 - 17:00	8	140	0.031	8	140	0.021	8	140	0.052
17:00 - 18:00	8	140	0.029	8	140	0.011	8	140	0.040
18:00 - 19:00	8	140	0.014	8	140	0.009	8	140	0.023
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.216			0.217			0.433

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL MOTOR CYCLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

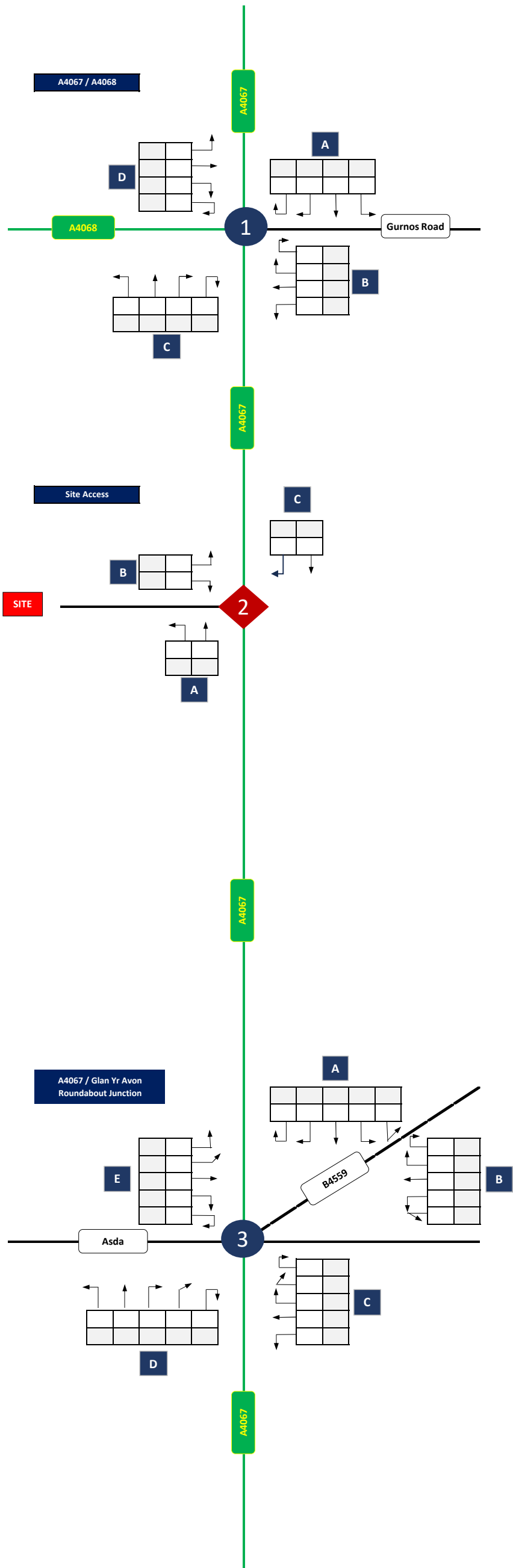
Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	140	0.000	8	140	0.004	8	140	0.004
08:00 - 09:00	8	140	0.000	8	140	0.004	8	140	0.004
09:00 - 10:00	8	140	0.002	8	140	0.002	8	140	0.004
10:00 - 11:00	8	140	0.001	8	140	0.000	8	140	0.001
11:00 - 12:00	8	140	0.001	8	140	0.001	8	140	0.002
12:00 - 13:00	8	140	0.002	8	140	0.000	8	140	0.002
13:00 - 14:00	8	140	0.001	8	140	0.002	8	140	0.003
14:00 - 15:00	8	140	0.003	8	140	0.003	8	140	0.006
15:00 - 16:00	8	140	0.002	8	140	0.001	8	140	0.003
16:00 - 17:00	8	140	0.003	8	140	0.000	8	140	0.003
17:00 - 18:00	8	140	0.003	8	140	0.000	8	140	0.003
18:00 - 19:00	8	140	0.000	8	140	0.001	8	140	0.001
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.018			0.018			0.036

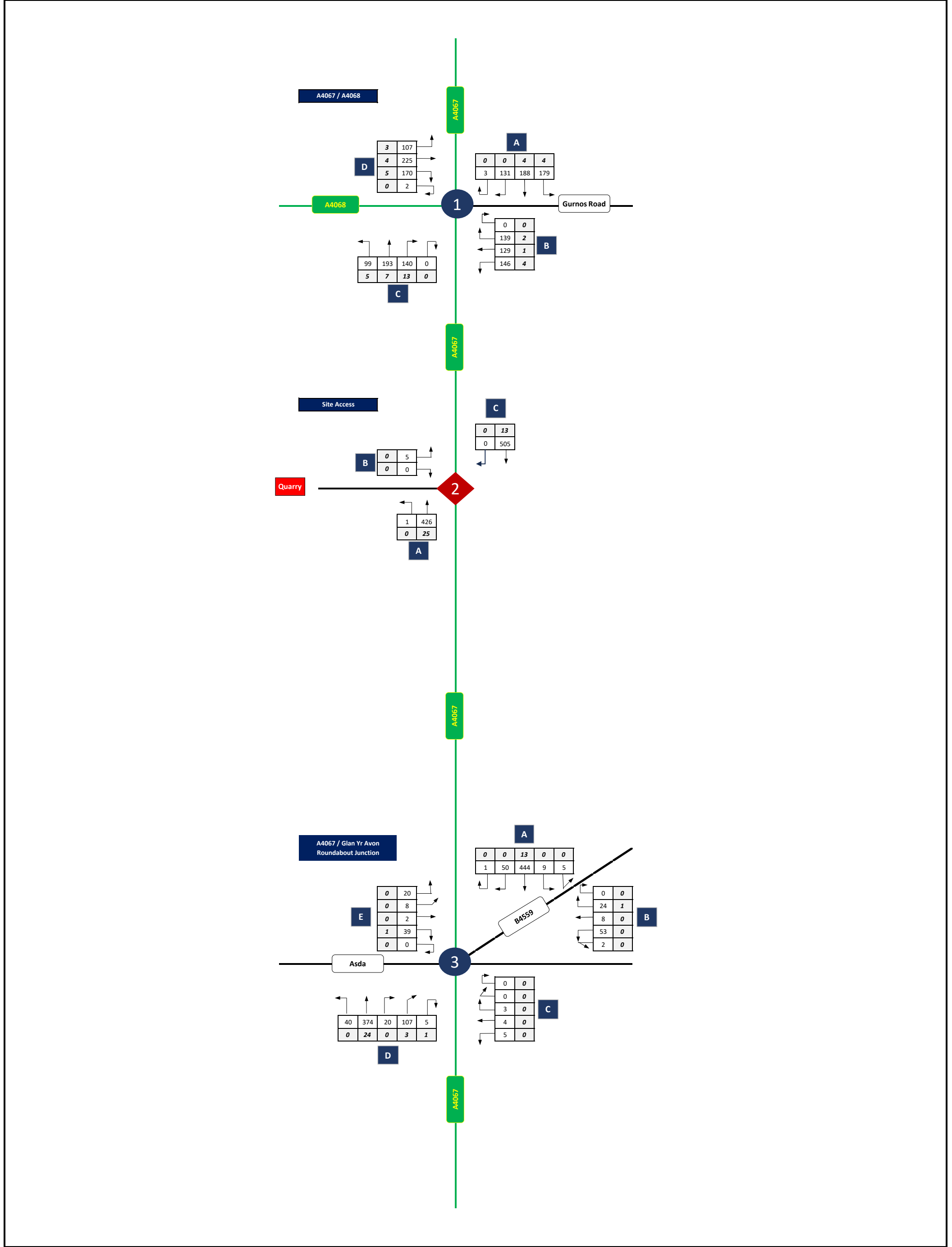
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

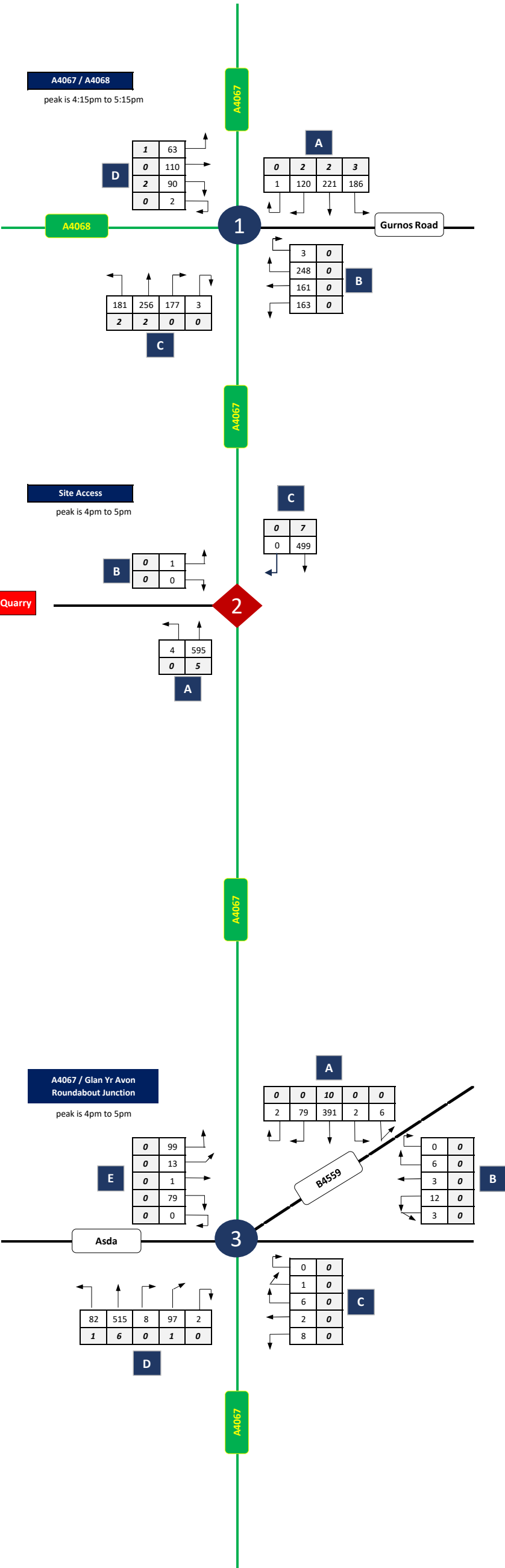
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Appendix G Traffic Flow Diagrams









NOTES:

PROJECT:

Tirbach Washery, Ystalyfera

TIME PERIOD:

DATE:

October 2022

JOB NUMBER:

22699

PLAN TITLE:

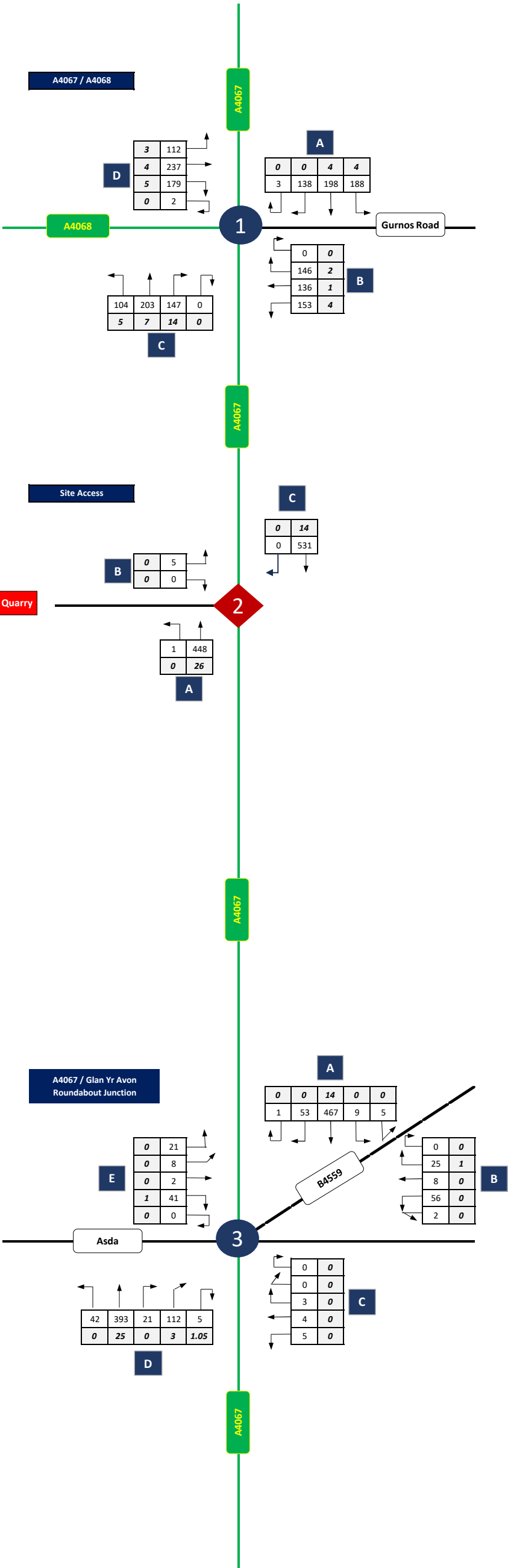
Traffic Figure Diagrams

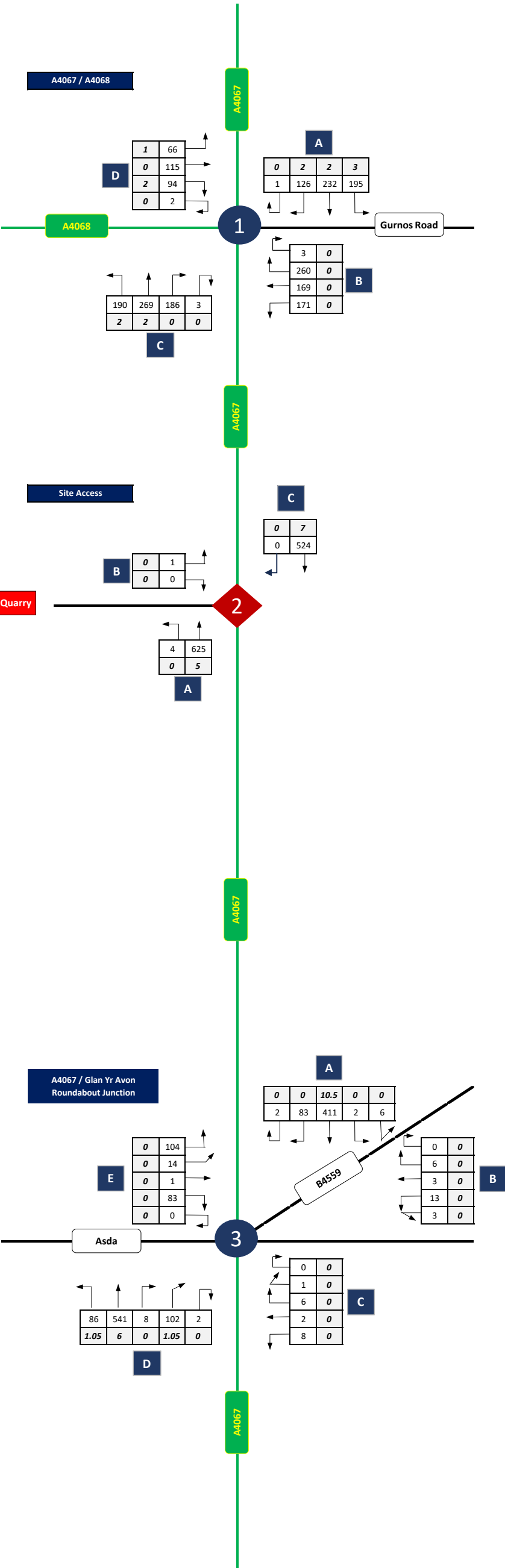
DRAWN BY:

AC

FIGURE:

001





NOTES:

PROJECT:

Tirbach Washery, Ystalyfera

TIME PERIOD:

DATE:

October 2022

JOB NUMBER:

22699

PLAN TITLE:

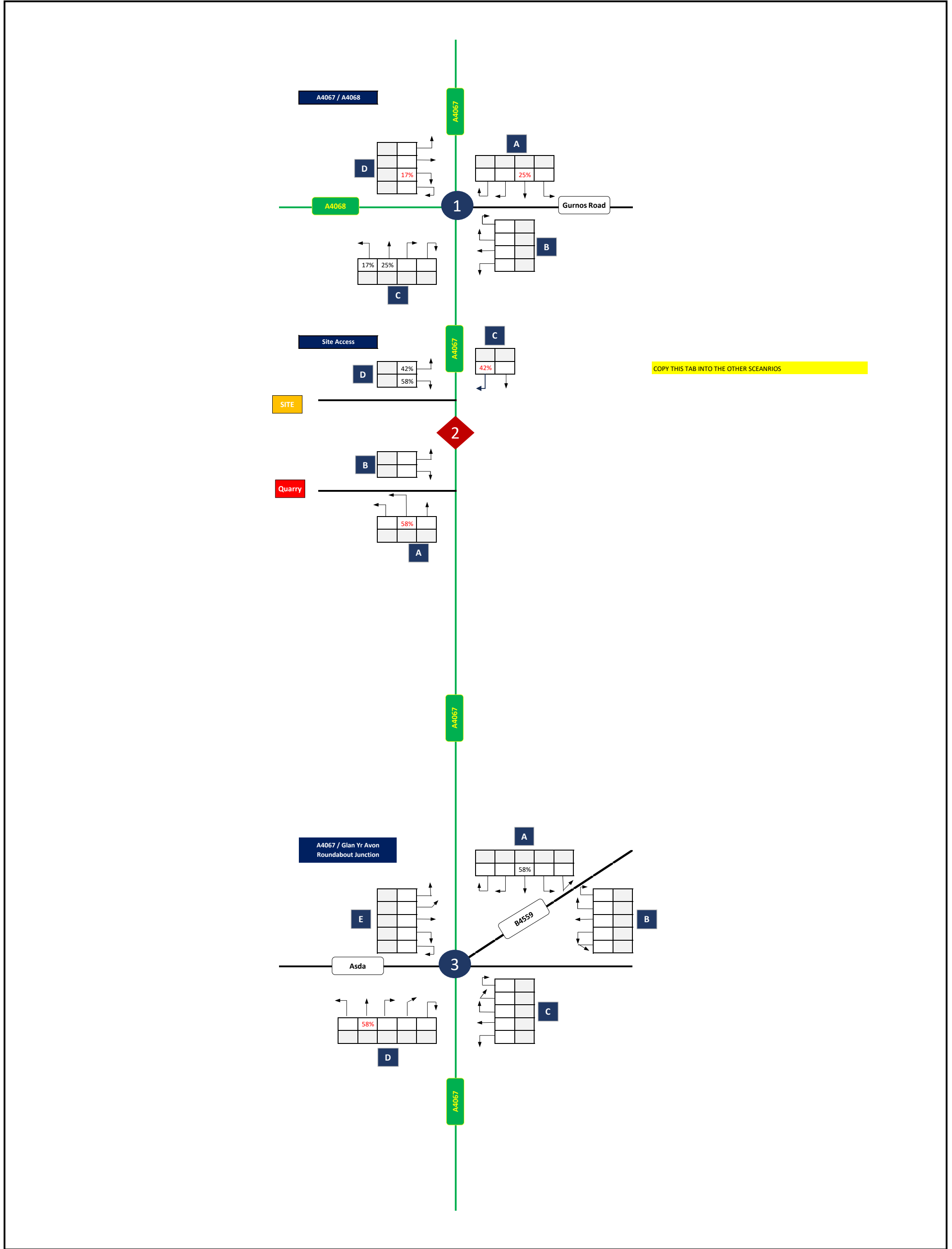
Traffic Figure Diagrams

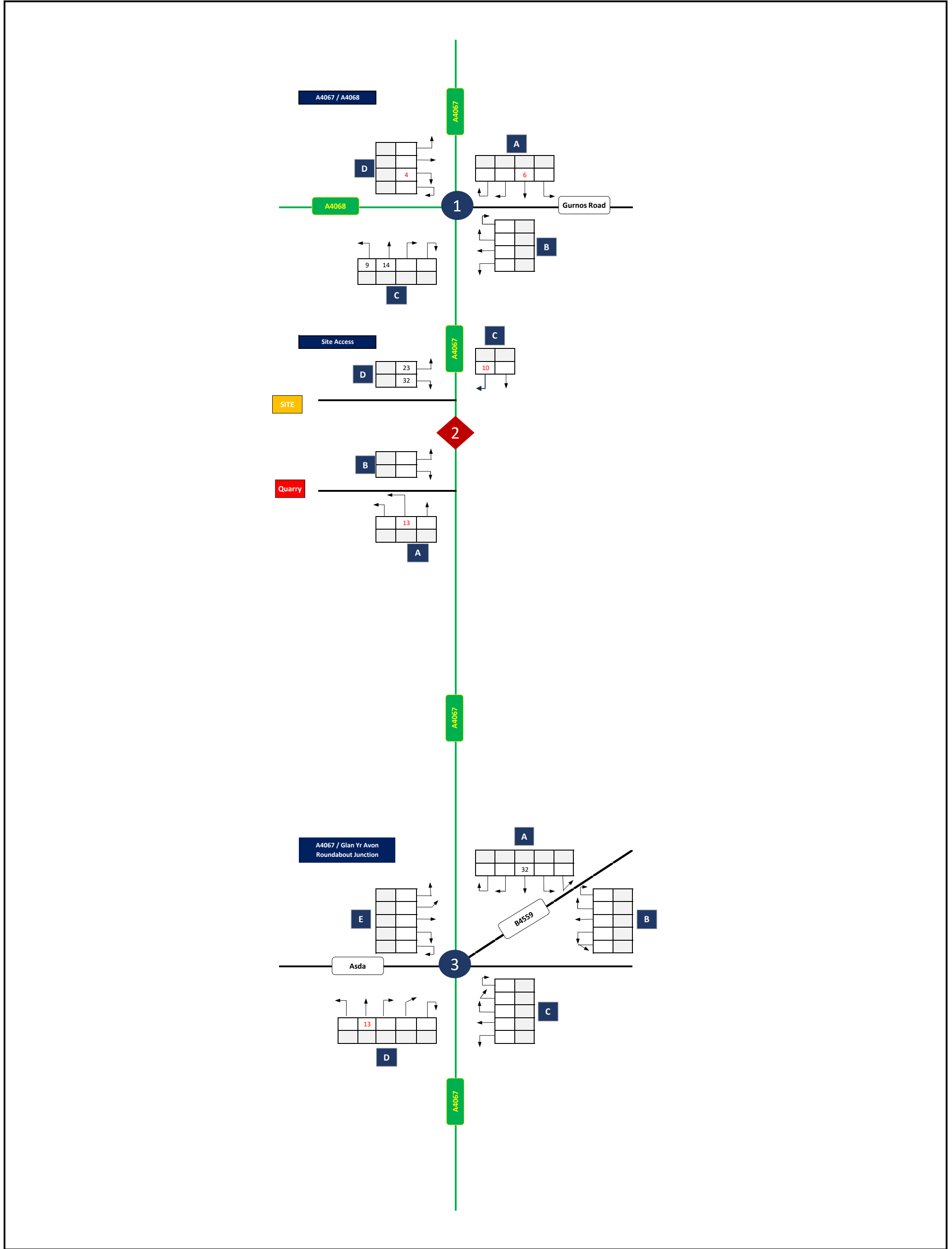
DRAWN BY:

AC

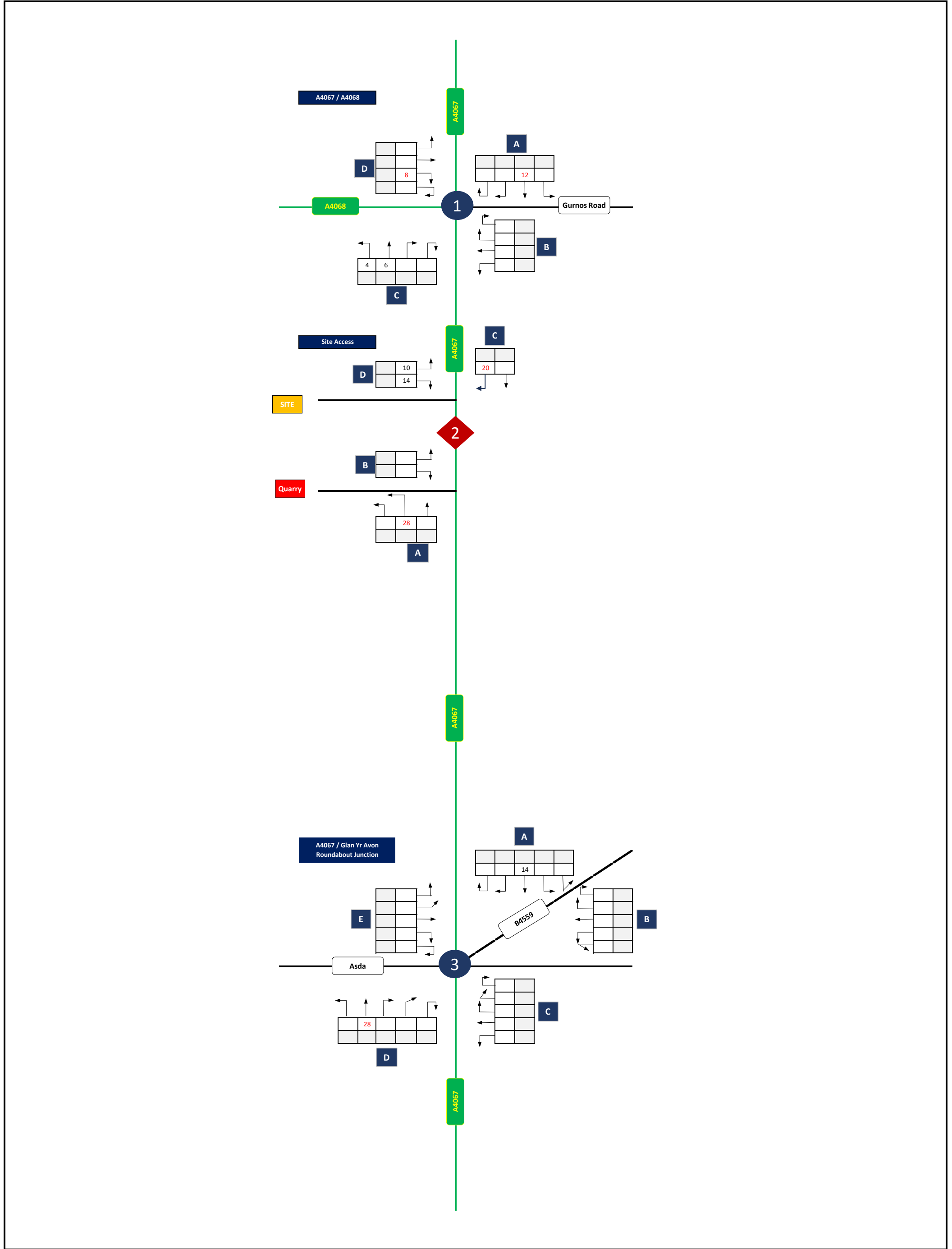
FIGURE:

001

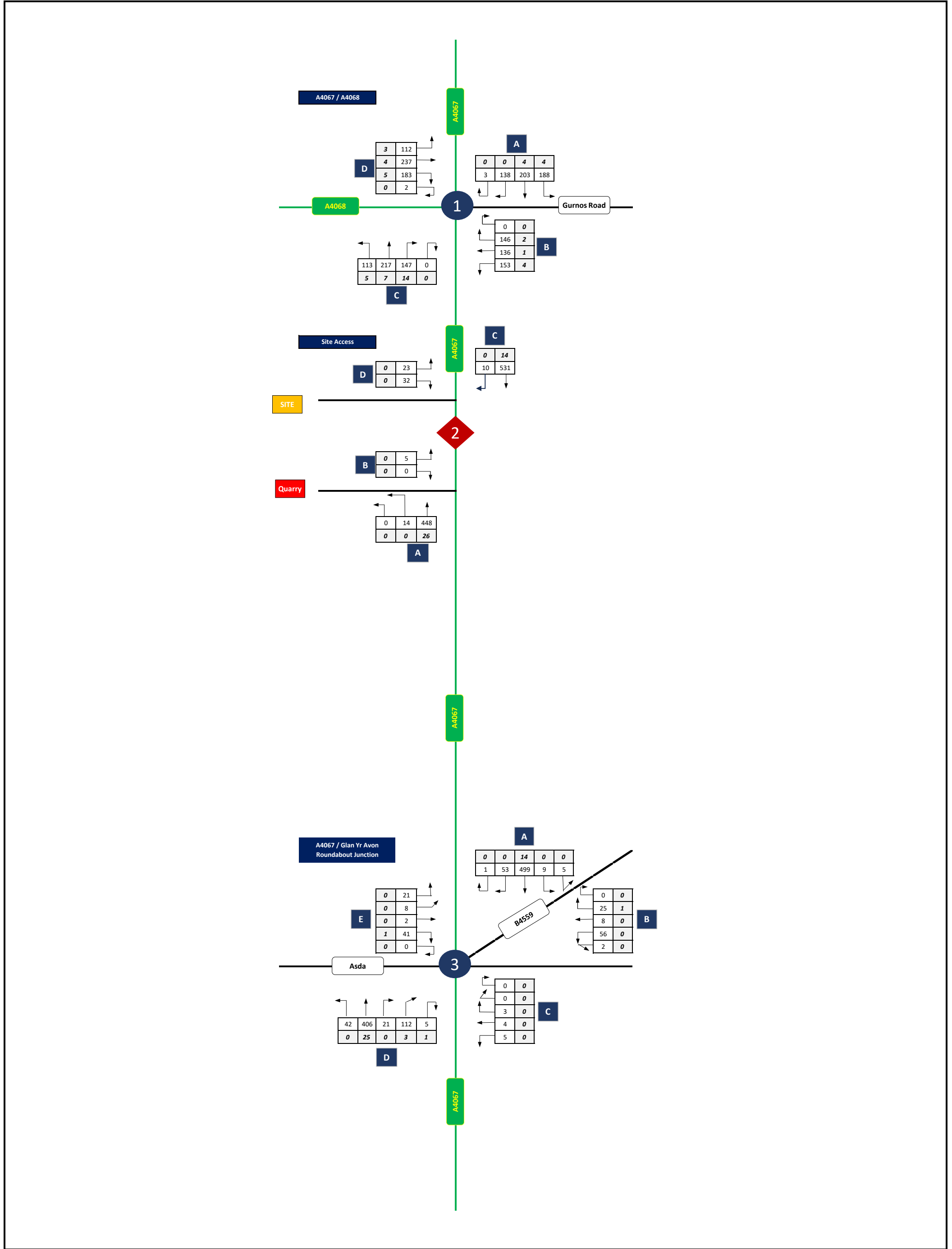


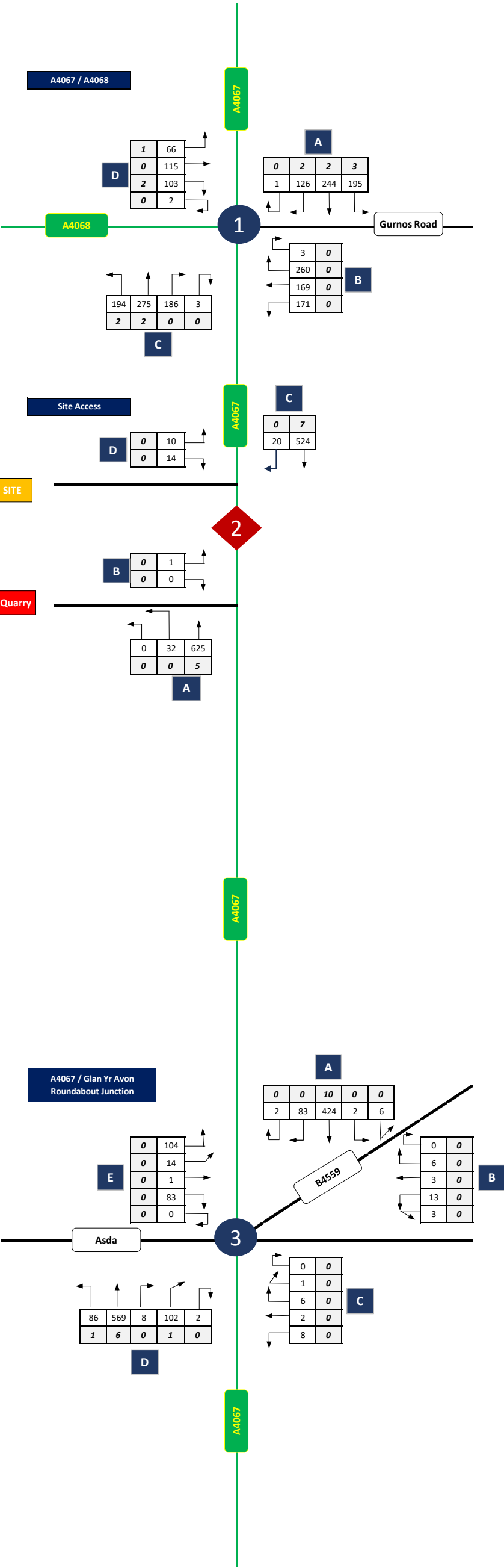


	NOTES:	PROJECT: Tirbach Washery, Ystalyfera		PLAN TITLE: Traffic Figure Diagrams	
		TIME PERIOD: AM and PM Peak		Development Distribution %	
		DATE: October 2022	JOB NUMBER: 22699	DRAWN BY: AC	FIGURE: 007



	NOTES:	PROJECT: Tirbach Washery, Ystalyfera		PLAN TITLE: Traffic Figure Diagrams	
		TIME PERIOD: AM and PM Peak		Development Distribution %	
		DATE: October 2022	JOB NUMBER: 22699	DRAWN BY: AC	FIGURE: 007





NOTES:

PROJECT:

Tirbach Washery, Ystalyfera

TIME PERIOD:

AM and PM Peak

DATE:

October 2022

JOB NUMBER:

22699

PLAN TITLE:

Traffic Figure Diagrams

Development Distribution %

DRAWN BY:

AC

FIGURE:

007

Appendix H Junction Modelling – Site Access

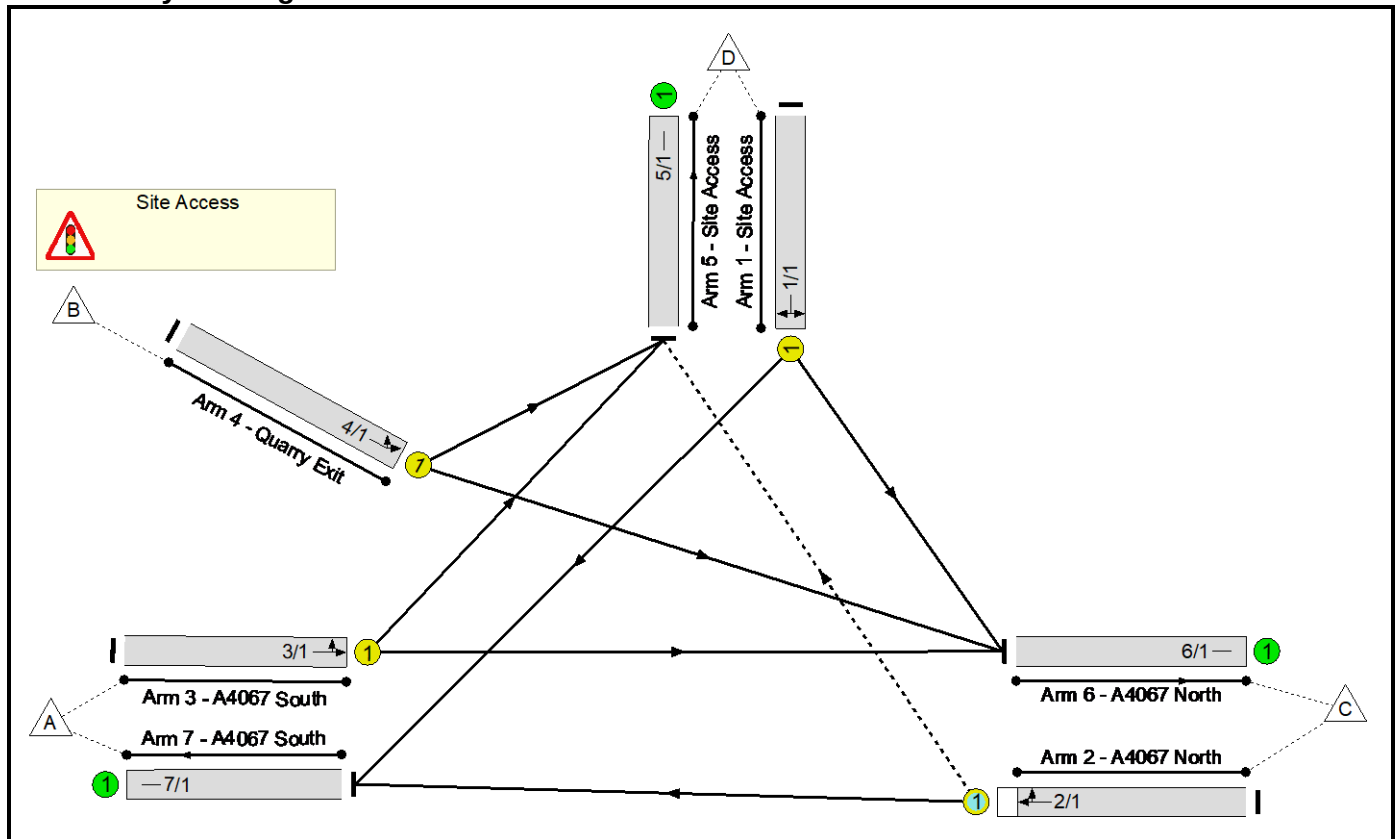


Full Input Data And Results
Full Input Data And Results

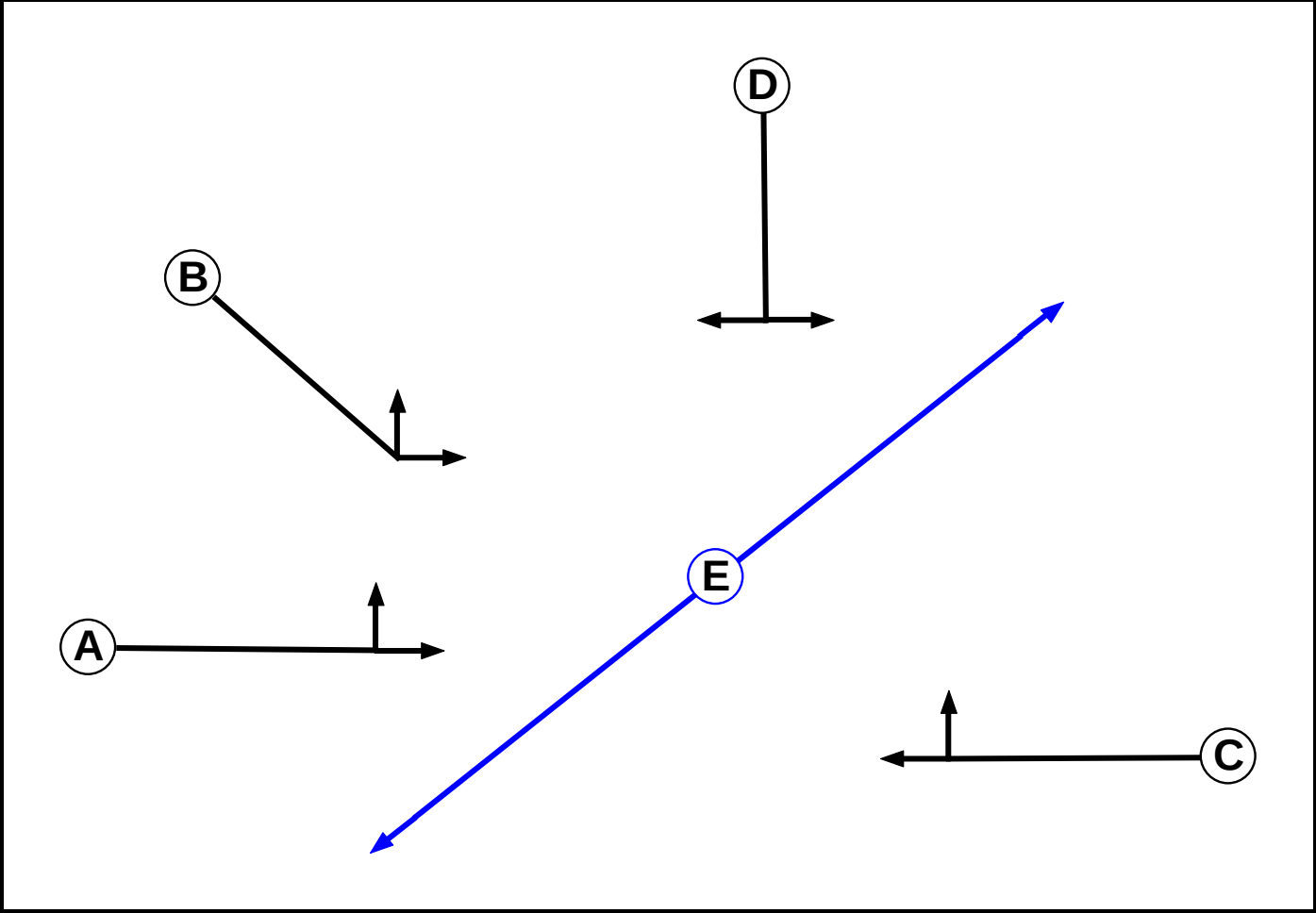
User and Project Details

Project:	22699 Tirbach Washery, Ystalyfera
Title:	Site Access Junction
Location:	A4067 Ystalyfera
File name:	Site Access Model_Updated 2024_0002.lsg3x
Company:	Hydrock now Stantec

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		7	7

Full Input Data And Results

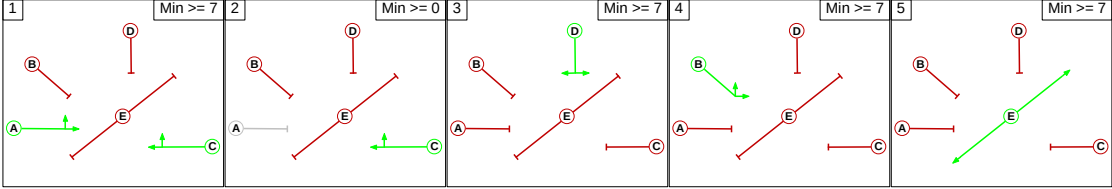
Phase Intergreens Matrix

Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		5	-	6	8
	B	5		5	6	8
	C	-	5		5	8
	D	6	6	5		8
	E	8	8	8	8	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	C
3	D
4	B
5	E

Stage Diagram



Phase Delays

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

Prohibited Stage Change

From Stage	To Stage					
		1	2	3	4	5
	1		0	6	5	8
	2	2		5	5	8
	3	6	5		6	8
	4	5	5	6		8
	5	8	8	8	8	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Site Access											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (A4067 North)	5/1 (Right)	1439	0	3/1	1.09	All	1.00	-	0.50	1	1.00

Full Input Data And Results

Lane Input Data

Junction: Site Access												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Site Access)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Left	10.00
											Arm 7 Right	8.00
2/1 (A4067 North)	O	C	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Right	8.00
3/1 (A4067 South)	U	A	2	3	60.0	Geom	-	3.62	0.00	Y	Arm 7 Ahead	Inf
											Arm 5 Left	Inf
											Arm 6 Ahead	Inf
4/1 (Quarry Exit)	U	B	2	3	60.0	Geom	-	4.56	0.00	Y	Arm 5 Left	2.00
											Arm 6 Ahead	Inf
5/1 (Site Access)	U		2	3	60.0	Geom	-	3.50	0.00	Y		
6/1 (A4067 North)	U		2	3	60.0	Geom	-	3.65	0.00	Y		
7/1 (A4067 South)	U		2	3	60.0	Geom	-	3.62	0.00	Y		

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2029 Do Something AM'	08:00	09:00	01:00	
2: '2029 Do Something PM'	17:00	18:00	01:00	

Scenario 1: '2029 Do Something AM' (FG1: '2029 Do Something AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	0	508	14	522
	B	0	0	5	0	5
	C	562	0	0	10	572
	D	32	0	23	0	55
	Tot.	594	0	536	24	1154

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2029 Do Something AM
Junction: Site Access	
1/1	55
2/1	572
3/1	522
4/1	5
5/1	24
6/1	536
7/1	594

Lane Saturation Flows

Junction: Site Access								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Site Access)	3.50	0.00	Y	Arm 6 Left Arm 7 Right	10.00 8.00	41.8 % 58.2 %	1677	1677
2/1 (A4067 North)	3.65	0.00	Y	Arm 5 Right	8.00	1.7 %	1974	1974
3/1 (A4067 South)	3.62	0.00	Y	Arm 7 Ahead Arm 5 Left Arm 6 Ahead	Inf Inf Inf	98.3 % 2.7 % 97.3 %	1977	1977
4/1 (Quarry Exit)	4.56	0.00	Y	Arm 5 Left Arm 6 Ahead	2.00 Inf	0.0 % 100.0 %	2071	2071
5/1 (Site Access)	3.50	0.00	Y				1965	1965
6/1 (A4067 North)	3.65	0.00	Y				1980	1980
7/1 (A4067 South)	3.62	0.00	Y				1977	1977

Scenario 2: '2029 Do Something PM' (FG2: '2029 Do Something PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	0	637	32	669
	B	0	0	1	0	1
	C	541	0	0	20	561
	D	14	0	10	0	24
	Tot.	555	0	648	52	1255

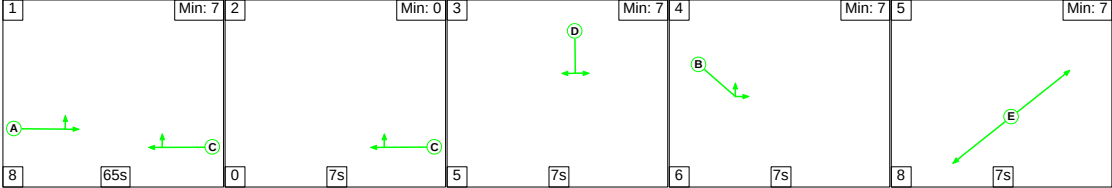
Traffic Lane Flows

Lane	Scenario 2: 2029 Do Something PM
Junction: Site Access	
1/1	24
2/1	561
3/1	669
4/1	1
5/1	52
6/1	648
7/1	555

Lane Saturation Flows

Junction: Site Access								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Site Access)	3.50	0.00	Y	Arm 6 Left Arm 7 Right	10.00 8.00	41.7 % 58.3 %	1677	1677
2/1 (A4067 North)	3.65	0.00	Y	Arm 5 Right	8.00	3.6 %	1967	1967
3/1 (A4067 South)	3.62	0.00	Y	Arm 7 Ahead Arm 5 Left Arm 6 Ahead	Inf Inf Inf	96.4 % 4.8 % 95.2 %	1977	1977
4/1 (Quarry Exit)	4.56	0.00	Y	Arm 5 Left Arm 6 Ahead	2.00 Inf	0.0 % 100.0 %	2071	2071
5/1 (Site Access)	3.50	0.00	Y				1965	1965
6/1 (A4067 North)	3.65	0.00	Y				1980	1980
7/1 (A4067 South)	3.62	0.00	Y				1977	1977

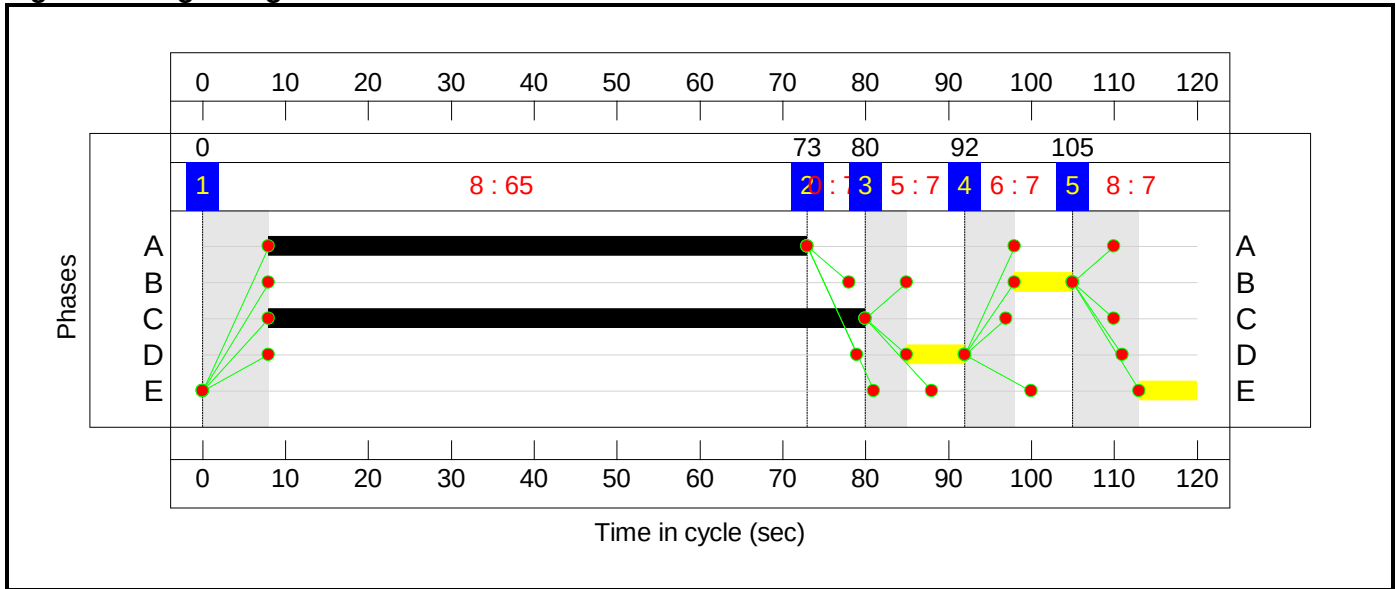
Scenario 1: '2029 Do Something AM' (FG1: '2029 Do Something AM', Plan 1: 'Network Control Plan 1')
Stage Sequence Diagram



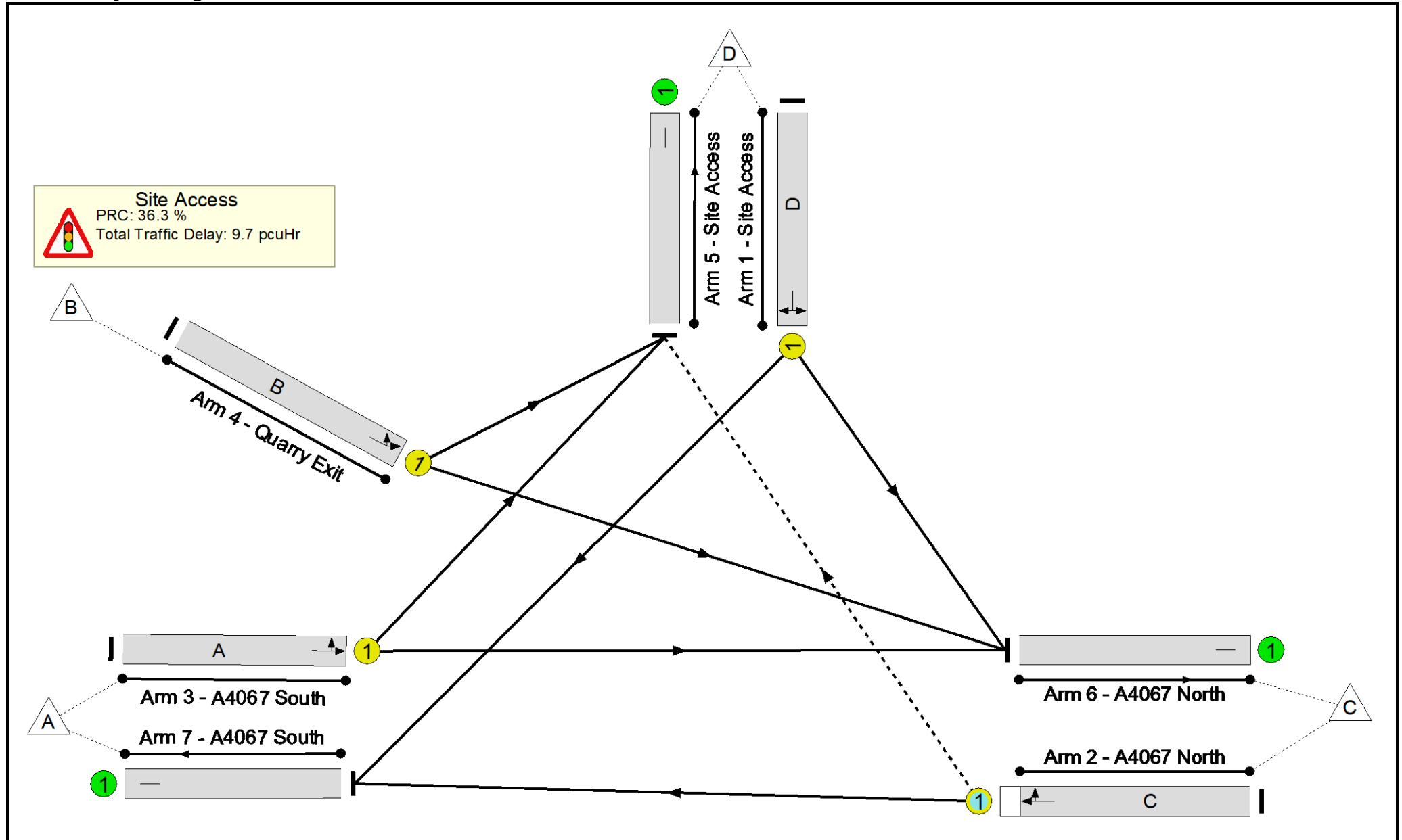
Stage Timings

Stage	1	2	3	4	5
Duration	65	7	7	7	7
Change Point	0	73	80	92	105

Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram



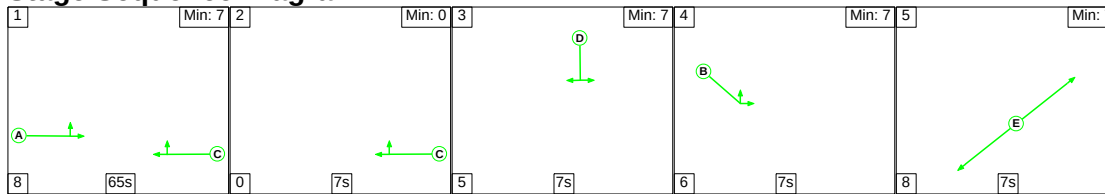
Network Results

Network Results

Full Input Data And Results

Scenario 2: '2029 Do Something PM' (FG2: '2029 Do Something PM', Plan 1: 'Network Control Plan 1')

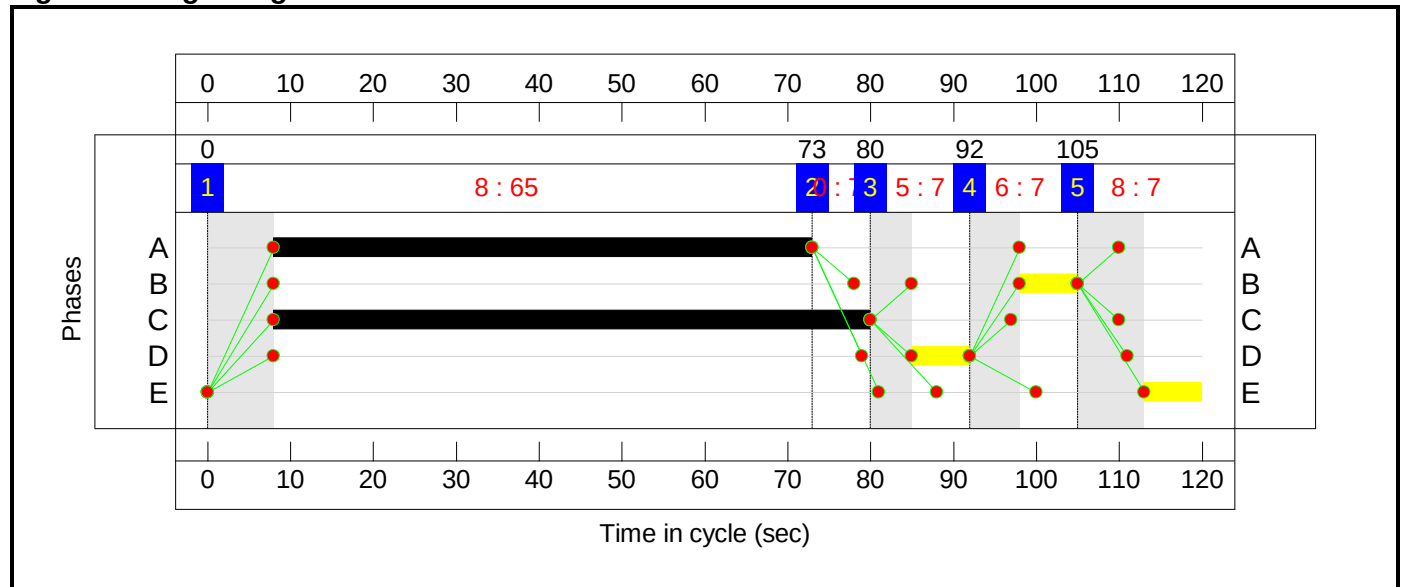
Stage Sequence Diagram



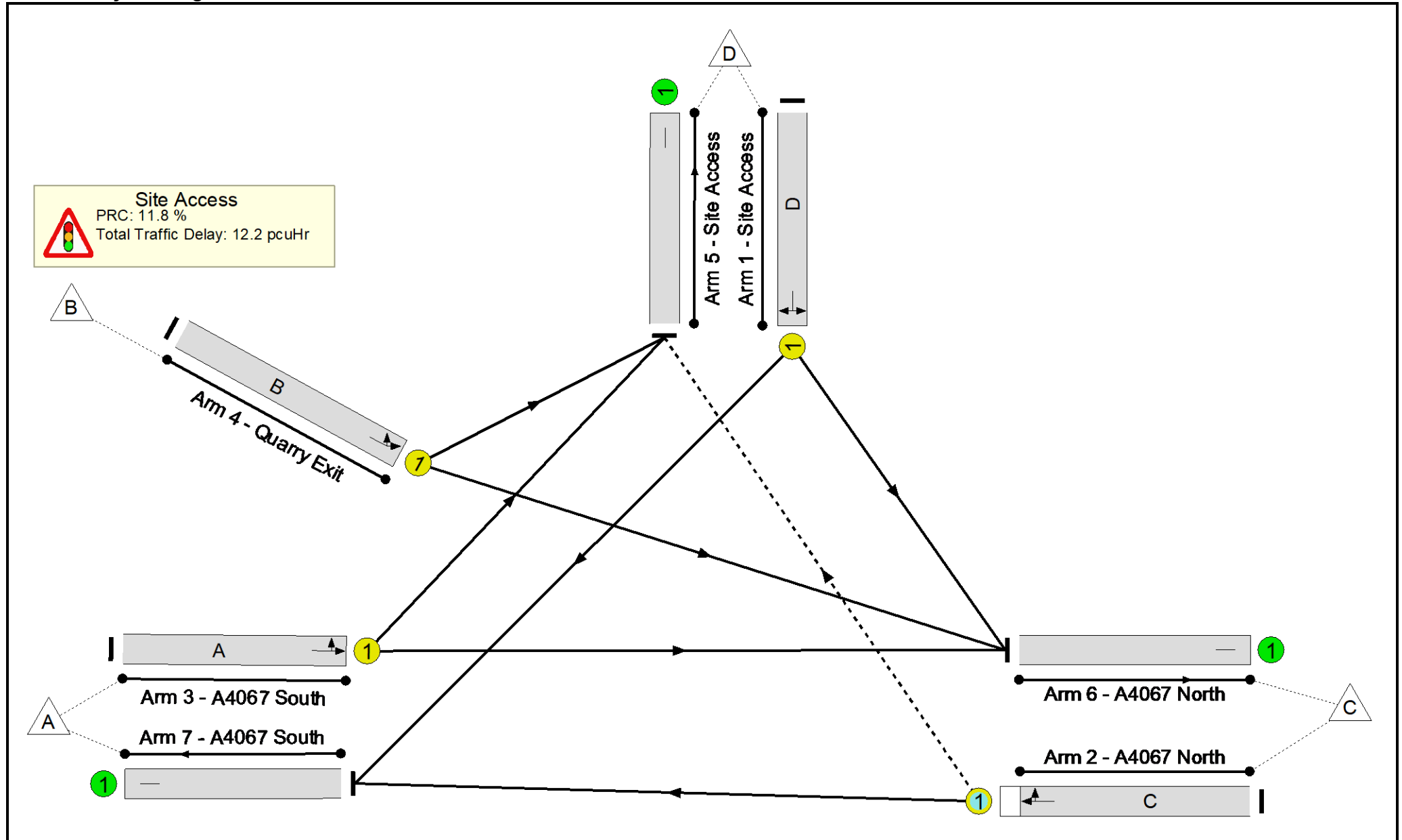
Stage Timings

Stage	1	2	3	4	5
Duration	65	7	7	7	7
Change Point	0	73	80	92	105

Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram



Network Results

Appendix I Junction Modelling – A4067/Gurnos Road Roundabout



Junctions 9							
ARCADY 9 - Roundabout Module							
Version: 9.5.0.6896 © Copyright TRL Limited, 2018							
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk							
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: Tirbach A4067 A4068 Gurnos Road.j9

Path: Y:\22000-22999\22699 - Tirbach Washery, Ystalyfera\01_WIP\CA_Calculation\TP\Modelling

Report generation date: 14/05/2024 14:33:42

- »A4067 / A4068 / Gurnos Road - 2024 Base, AM
- »A4067 / A4068 / Gurnos Road - 2024 Base, PM
- »A4067 / A4068 / Gurnos Road - 2029 Base, AM
- »A4067 / A4068 / Gurnos Road - 2029 Base , PM
- »A4067 / A4068 / Gurnos Road - 2029 Base + Dev, AM
- »A4067 / A4068 / Gurnos Road - 2029 Base + Dev, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
A4067 / A4068 / Gurnos Road - 2024 Base								
Arm 1	0.8	5.34	0.46	A	0.8	4.75	0.44	A
Arm 2	0.7	5.50	0.42	A	1.2	6.67	0.54	A
Arm 3	0.7	4.89	0.41	A	1.2	6.50	0.55	A
Arm 4	1.0	6.39	0.50	A	0.4	4.69	0.28	A
A4067 / A4068 / Gurnos Road - 2029 Base								
Arm 1	1.0	5.76	0.49	A	0.9	5.01	0.46	A
Arm 2	0.8	5.83	0.44	A	1.3	7.24	0.57	A
Arm 3	0.8	5.15	0.43	A	1.4	7.12	0.59	A
Arm 4	1.2	6.92	0.54	A	0.4	4.89	0.30	A
A4067 / A4068 / Gurnos Road - 2029 Base + Dev								
Arm 1	1.0	5.82	0.49	A	0.9	5.14	0.47	A
Arm 2	0.8	5.88	0.44	A	1.4	7.39	0.58	A
Arm 3	0.9	5.31	0.45	A	1.5	7.28	0.60	A
Arm 4	1.2	7.07	0.54	A	0.4	4.97	0.31	A

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

File summary

File Description

Title	A4067 / A4068 / Gurnos Road
Location	Ystalyfera
Site number	1
Date	14/05/2024
Version	A
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	HYDROCK\jackdalley
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	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

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	2024 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2024 Base	PM	ONE HOUR	16:45	18:15	15	✓
D3	2029 Base	AM	ONE HOUR	07:45	09:15	15	✓
D4	2029 Base	PM	ONE HOUR	16:45	18:15	15	✓
D5	2029 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2029 Base + Dev	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	A4067 / A4068 / Gurnos Road	✓	100.000	100.000

A4067 / A4068 / Gurnos Road - 2024 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	A4067 / A4068 / Gurnos Road	Standard Roundabout		1, 2, 3, 4	5.55	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4067 N	
2	Gurnos Road	
3	A4067 S	
4	A4068	

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)	Exit only
1	3.78	6.39	6.8	28.2	65.7	16.0	
2	3.71	6.70	4.1	15.9	65.7	23.0	
3	3.67	6.05	10.4	21.0	65.7	27.0	
4	3.63	6.32	7.9	22.9	65.7	42.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.525	1595
2	0.482	1412
3	0.504	1548
4	0.475	1438

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	2024 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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	519	100.000
2		ONE HOUR	✓	430	100.000
3		ONE HOUR	✓	490	100.000
4		ONE HOUR	✓	532	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
	1	2	3	4	
From	1	3	188	197	131
	2	144	0	155	131
	3	209	170	0	111
	4	114	234	182	2

Vehicle Mix

Heavy Vehicle Percentages

	To				
	1	2	3	4	
From	1	0	2	2	0
	2	1	0	3	1
	3	4	9	0	5
	4	3	2	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.46	5.34	0.8	A	476	714
2	0.42	5.50	0.7	A	395	592
3	0.41	4.89	0.7	A	450	674
4	0.50	6.39	1.0	A	488	732

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	391	98	441	1364	0.287	389	352	0.0	0.4	3.742	A
2	324	81	386	1226	0.264	322	444	0.0	0.4	4.044	A
3	369	92	308	1392	0.265	367	400	0.0	0.4	3.716	A
4	401	100	394	1251	0.320	399	281	0.0	0.5	4.322	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	467	117	528	1318	0.354	466	422	0.4	0.6	4.285	A
2	387	97	462	1189	0.325	386	531	0.4	0.5	4.555	A
3	440	110	369	1362	0.324	440	479	0.4	0.5	4.136	A
4	478	120	472	1214	0.394	478	337	0.5	0.7	5.008	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	571	143	646	1256	0.455	570	516	0.6	0.8	5.319	A
2	473	118	566	1140	0.415	473	650	0.5	0.7	5.481	A
3	540	135	452	1320	0.409	539	587	0.5	0.7	4.876	A
4	586	146	578	1164	0.503	584	412	0.7	1.0	6.357	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	571	143	647	1255	0.455	571	517	0.8	0.8	5.341	A
2	473	118	567	1139	0.416	473	652	0.7	0.7	5.501	A
3	540	135	453	1319	0.409	539	588	0.7	0.7	4.888	A
4	586	146	579	1163	0.504	586	413	1.0	1.0	6.392	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	467	117	530	1317	0.354	468	424	0.8	0.6	4.309	A
2	387	97	464	1189	0.325	387	534	0.7	0.5	4.575	A
3	440	110	370	1361	0.324	441	481	0.7	0.5	4.150	A
4	478	120	474	1213	0.394	480	338	1.0	0.7	5.044	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	391	98	443	1362	0.287	391	354	0.6	0.4	3.767	A
2	324	81	388	1225	0.264	324	446	0.5	0.4	4.068	A
3	369	92	310	1391	0.265	369	403	0.5	0.4	3.732	A
4	401	100	397	1250	0.320	401	283	0.7	0.5	4.355	A

A4067 / A4068 / Gurnos Road - 2024 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	A4067 / A4068 / Gurnos Road	Standard Roundabout		1, 2, 3, 4	5.83	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2024 Base	PM	ONE HOUR	16:45	18:15	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	545	100.000
2		ONE HOUR	✓	575	100.000
3		ONE HOUR	✓	627	100.000
4		ONE HOUR	✓	272	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	1	193	226	125
	2	248	3	163	161
	3	261	177	3	186
	4	65	110	95	2

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	2	1	2
	2	0	0	0	0
	3	1	0	0	1
	4	2	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.44	4.75	0.8	A	500	750
2	0.54	6.67	1.2	A	528	791
3	0.55	6.50	1.2	A	575	863
4	0.28	4.69	0.4	A	250	374

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	410	103	292	1441	0.285	409	431	0.0	0.4	3.537	A
2	433	108	339	1249	0.347	431	362	0.0	0.5	4.389	A
3	472	118	405	1344	0.351	470	365	0.0	0.5	4.140	A
4	205	51	519	1192	0.172	204	355	0.0	0.2	3.684	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	490	122	350	1411	0.347	489	516	0.4	0.5	3.964	A
2	517	129	406	1217	0.425	516	434	0.5	0.7	5.132	A
3	564	141	485	1303	0.433	563	437	0.5	0.8	4.891	A
4	245	61	622	1143	0.214	244	426	0.2	0.3	4.052	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	600	150	429	1370	0.438	599	631	0.5	0.8	4.737	A
2	633	158	497	1173	0.540	631	531	0.7	1.2	6.628	A
3	690	173	593	1248	0.553	688	535	0.8	1.2	6.452	A
4	299	75	761	1077	0.278	299	521	0.3	0.4	4.678	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	600	150	429	1370	0.438	600	633	0.8	0.8	4.751	A
2	633	158	498	1172	0.540	633	532	1.2	1.2	6.674	A
3	690	173	595	1248	0.553	690	536	1.2	1.2	6.503	A
4	299	75	763	1076	0.278	299	522	0.4	0.4	4.690	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	490	122	351	1410	0.347	491	519	0.8	0.5	3.980	A
2	517	129	407	1216	0.425	519	435	1.2	0.7	5.175	A
3	564	141	487	1302	0.433	566	439	1.2	0.8	4.934	A
4	245	61	625	1141	0.214	245	427	0.4	0.3	4.066	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	410	103	294	1441	0.285	411	434	0.5	0.4	3.555	A
2	433	108	341	1248	0.347	434	364	0.7	0.5	4.427	A
3	472	118	407	1342	0.352	473	367	0.8	0.6	4.174	A
4	205	51	523	1190	0.172	205	357	0.3	0.2	3.697	A

A4067 / A4068 / Gurnos Road - 2029 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	A4067 / A4068 / Gurnos Road	Standard Roundabout		1, 2, 3, 4	5.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	546	100.000
2		ONE HOUR	✓	452	100.000
3		ONE HOUR	✓	515	100.000
4		ONE HOUR	✓	559	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	3	198	207	138
	2	151	0	163	138
	3	220	179	0	116
	4	120	246	191	2

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	2	3	0
	2	1	0	3	1
	3	4	9	0	5
	4	3	2	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.49	5.76	1.0	A	501	752
2	0.44	5.83	0.8	A	415	622
3	0.43	5.15	0.8	A	473	709
4	0.54	6.92	1.2	A	513	769

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	411	103	463	1352	0.304	409	370	0.0	0.4	3.883	A
2	340	85	405	1217	0.280	339	467	0.0	0.4	4.162	A
3	388	97	324	1384	0.280	386	420	0.0	0.4	3.813	A
4	421	105	415	1241	0.339	419	295	0.0	0.5	4.478	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	491	123	555	1304	0.376	490	443	0.4	0.6	4.502	A
2	406	102	486	1178	0.345	406	559	0.4	0.5	4.738	A
3	463	116	388	1352	0.342	462	504	0.4	0.5	4.283	A
4	503	126	497	1202	0.418	502	354	0.5	0.7	5.262	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	679	1239	0.485	600	543	0.6	0.9	5.727	A
2	498	124	594	1126	0.442	497	684	0.5	0.8	5.810	A
3	567	142	475	1308	0.433	566	616	0.5	0.8	5.129	A
4	615	154	608	1150	0.535	614	433	0.7	1.2	6.867	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	601	150	680	1238	0.486	601	544	0.9	1.0	5.757	A
2	498	124	596	1125	0.442	498	686	0.8	0.8	5.834	A
3	567	142	476	1308	0.434	567	618	0.8	0.8	5.147	A
4	615	154	609	1149	0.536	615	434	1.2	1.2	6.917	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	491	123	557	1302	0.377	492	445	1.0	0.6	4.533	A
2	406	102	488	1177	0.345	407	562	0.8	0.5	4.764	A
3	463	116	389	1351	0.343	464	506	0.8	0.6	4.303	A
4	503	126	498	1202	0.418	504	355	1.2	0.7	5.306	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	411	103	466	1350	0.304	412	373	0.6	0.4	3.909	A
2	340	85	408	1216	0.280	341	470	0.5	0.4	4.188	A
3	388	97	326	1383	0.280	388	423	0.6	0.4	3.833	A
4	421	105	417	1240	0.339	422	297	0.7	0.5	4.516	A

A4067 / A4068 / Gurnos Road - 2029 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	A4067 / A4068 / Gurnos Road	Standard Roundabout		1, 2, 3, 4	6.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 Base	PM	ONE HOUR	16:45	18:15	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	572	100.000
2		ONE HOUR	✓	603	100.000
3		ONE HOUR	✓	658	100.000
4		ONE HOUR	✓	285	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	1	203	237	131
	2	260	3	171	169
	3	274	186	3	195
	4	69	115	99	2

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	2	1	2
	2	0	0	0	0
	3	1	0	0	1
	4	2	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.46	5.01	0.9	A	525	787
2	0.57	7.24	1.3	A	553	830
3	0.59	7.12	1.4	A	604	906
4	0.30	4.89	0.4	A	262	392

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	431	108	306	1434	0.300	429	453	0.0	0.4	3.630	A
2	454	114	355	1241	0.366	452	380	0.0	0.6	4.547	A
3	495	124	424	1334	0.371	493	382	0.0	0.6	4.300	A
4	215	54	545	1179	0.182	214	372	0.0	0.2	3.767	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	514	129	366	1403	0.367	514	542	0.4	0.6	4.111	A
2	542	136	425	1208	0.449	541	455	0.6	0.8	5.395	A
3	592	148	508	1291	0.458	591	458	0.6	0.8	5.166	A
4	256	64	653	1128	0.227	256	446	0.2	0.3	4.174	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	630	157	448	1360	0.463	629	663	0.6	0.9	4.987	A
2	664	166	520	1162	0.572	662	557	0.8	1.3	7.176	A
3	724	181	622	1234	0.587	722	560	0.8	1.4	7.052	A
4	314	78	798	1059	0.296	313	546	0.3	0.4	4.879	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	630	157	449	1359	0.463	630	665	0.9	0.9	5.013	A
2	664	166	521	1161	0.572	664	558	1.3	1.3	7.239	A
3	724	181	623	1233	0.587	724	561	1.4	1.4	7.122	A
4	314	78	801	1058	0.297	314	547	0.4	0.4	4.892	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	514	129	368	1402	0.367	515	545	0.9	0.6	4.131	A
2	542	136	426	1207	0.449	544	457	1.3	0.8	5.450	A
3	592	148	511	1290	0.459	594	460	1.4	0.9	5.222	A
4	256	64	656	1127	0.227	257	448	0.4	0.3	4.190	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	431	108	308	1433	0.300	431	456	0.6	0.4	3.653	A
2	454	114	357	1240	0.366	455	382	0.8	0.6	4.589	A
3	495	124	427	1332	0.372	496	385	0.9	0.6	4.342	A
4	215	54	549	1178	0.182	215	375	0.3	0.2	3.782	A

A4067 / A4068 / Gurnos Road - 2029 Base + Dev, 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	A4067 / A4068 / Gurnos Road	Standard Roundabout		1, 2, 3, 4	6.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 Base + Dev	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	552	100.000
2		ONE HOUR	✓	452	100.000
3		ONE HOUR	✓	539	100.000
4		ONE HOUR	✓	563	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	3	198	213	138
	2	151	0	163	138
	3	234	179	0	126
	4	120	246	195	2

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	2	2	0
	2	1	0	3	1
	3	3	9	0	5
	4	3	2	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.49	5.82	1.0	A	507	760
2	0.44	5.88	0.8	A	415	622
3	0.45	5.31	0.9	A	495	742
4	0.54	7.07	1.2	A	517	775

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	416	104	466	1350	0.308	414	381	0.0	0.4	3.894	A
2	340	85	413	1213	0.280	339	467	0.0	0.4	4.179	A
3	406	101	324	1384	0.293	404	428	0.0	0.4	3.863	A
4	424	106	425	1236	0.343	422	303	0.0	0.5	4.520	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	496	124	558	1302	0.381	496	456	0.4	0.6	4.526	A
2	406	102	495	1174	0.346	406	559	0.4	0.5	4.764	A
3	485	121	388	1352	0.358	484	513	0.4	0.6	4.368	A
4	506	127	509	1196	0.423	505	363	0.5	0.7	5.335	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	608	152	683	1237	0.492	606	558	0.6	1.0	5.784	A
2	498	124	605	1121	0.444	497	684	0.5	0.8	5.859	A
3	593	148	475	1308	0.454	592	627	0.6	0.9	5.290	A
4	620	155	623	1142	0.543	618	444	0.7	1.2	7.018	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	608	152	685	1236	0.492	608	559	1.0	1.0	5.818	A
2	498	124	607	1120	0.444	498	686	0.8	0.8	5.884	A
3	593	148	476	1308	0.454	593	629	0.9	0.9	5.311	A
4	620	155	624	1142	0.543	620	445	1.2	1.2	7.073	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	496	124	561	1301	0.382	498	458	1.0	0.6	4.559	A
2	406	102	497	1173	0.346	407	562	0.8	0.5	4.792	A
3	485	121	389	1351	0.359	486	515	0.9	0.6	4.388	A
4	506	127	511	1196	0.423	508	364	1.2	0.8	5.382	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	416	104	469	1349	0.308	416	383	0.6	0.5	3.920	A
2	340	85	416	1212	0.281	341	470	0.5	0.4	4.206	A
3	406	101	326	1383	0.293	406	431	0.6	0.4	3.886	A
4	424	106	428	1235	0.343	425	305	0.8	0.5	4.562	A

A4067 / A4068 / Gurnos Road - 2029 Base + Dev, 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	A4067 / A4068 / Gurnos Road	Standard Roundabout		1, 2, 3, 4	6.41	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 Base + Dev	PM	ONE HOUR	16:45	18:15	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	584	100.000
2		ONE HOUR	✓	603	100.000
3		ONE HOUR	✓	668	100.000
4		ONE HOUR	✓	293	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	1	203	249	131
	2	260	3	171	169
	3	280	186	3	199
	4	69	115	107	2

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	2	1	2
	2	0	0	0	0
	3	1	0	0	1
	4	2	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.47	5.14	0.9	A	536	804
2	0.58	7.39	1.4	A	553	830
3	0.60	7.28	1.5	A	613	919
4	0.31	4.97	0.4	A	269	403

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	440	110	312	1431	0.307	438	457	0.0	0.4	3.675	A
2	454	114	370	1234	0.368	452	380	0.0	0.6	4.589	A
3	503	126	424	1334	0.377	500	397	0.0	0.6	4.340	A
4	221	55	549	1177	0.187	220	375	0.0	0.2	3.800	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	525	131	373	1399	0.375	524	548	0.4	0.6	4.178	A
2	542	136	443	1199	0.452	541	455	0.6	0.8	5.466	A
3	601	150	508	1291	0.465	599	476	0.6	0.9	5.233	A
4	263	66	658	1126	0.234	263	450	0.2	0.3	4.222	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	643	161	457	1355	0.475	642	670	0.6	0.9	5.118	A
2	664	166	542	1151	0.577	662	557	0.8	1.3	7.329	A
3	735	184	622	1234	0.596	733	582	0.9	1.5	7.202	A
4	323	81	805	1056	0.305	322	550	0.3	0.4	4.959	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	643	161	458	1355	0.475	643	672	0.9	0.9	5.138	A
2	664	166	543	1151	0.577	664	558	1.3	1.4	7.394	A
3	735	184	623	1233	0.596	735	584	1.5	1.5	7.280	A
4	323	81	807	1055	0.306	323	552	0.4	0.4	4.973	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	525	131	375	1398	0.376	526	551	0.9	0.6	4.201	A
2	542	136	444	1198	0.453	544	457	1.4	0.8	5.522	A
3	601	150	511	1290	0.466	603	478	1.5	0.9	5.293	A
4	263	66	662	1124	0.234	264	452	0.4	0.3	4.237	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	440	110	314	1430	0.307	440	460	0.6	0.5	3.698	A
2	454	114	372	1233	0.368	455	382	0.8	0.6	4.634	A
3	503	126	427	1332	0.378	504	400	0.9	0.6	4.383	A
4	221	55	553	1176	0.188	221	378	0.3	0.2	3.819	A

Appendix J Junction Modelling – A4067/Glan Yr Avon



Junctions 9			
ARCADY 9 - Roundabout Module			
Version: 9.5.0.6896 © Copyright TRL Limited, 2018			
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Filename: Tirbach A4067 Glan Yr Avon_2024 update.j9

Path: Y:\22000-22999\22699 - Tirbach Washery, Ystalyfera\01_WIP\CA_Calculation\TP\Modelling\Modelling 2024

Report generation date: 14/05/2024 14:25:46

- »A4067 / B4599 / Glan Yr Avon / Asda Access - 2024 Base, AM
- »A4067 / B4599 / Glan Yr Avon / Asda Access - 2024 Base, PM
- »A4067 / B4599 / Glan Yr Avon / Asda Access - 2029 Base , AM
- »A4067 / B4599 / Glan Yr Avon / Asda Access - 2029 Base, PM
- »A4067 / B4599 / Glan Yr Avon / Asda Access - 2029 Base + Dev, AM
- »A4067 / B4599 / Glan Yr Avon / Asda Access - 2029 Base + Dev, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
A4067 / B4599 / Glan Yr Avon / Asda Access - 2024 Base								
Arm 1	0.6	3.72	0.37	A	0.6	3.59	0.35	A
Arm 2	0.1	3.70	0.09	A	0.0	3.38	0.02	A
Arm 3	0.0	4.70	0.02	A	0.0	4.56	0.02	A
Arm 4	0.6	2.98	0.35	A	0.7	3.19	0.41	A
Arm 5	0.1	2.31	0.05	A	0.1	2.54	0.13	A
A4067 / B4599 / Glan Yr Avon / Asda Access - 2029 Base								
Arm 1	0.7	3.86	0.39	A	0.6	3.71	0.37	A
Arm 2	0.1	3.78	0.10	A	0.0	3.43	0.03	A
Arm 3	0.0	4.79	0.02	A	0.0	4.64	0.02	A
Arm 4	0.6	3.07	0.36	A	0.8	3.31	0.43	A
Arm 5	0.1	2.35	0.05	A	0.2	2.60	0.14	A
A4067 / B4599 / Glan Yr Avon / Asda Access - 2029 Base + Dev								
Arm 1	0.7	4.01	0.42	A	0.6	3.74	0.38	A
Arm 2	0.1	3.85	0.10	A	0.0	3.46	0.03	A
Arm 3	0.0	4.89	0.02	A	0.0	4.67	0.02	A
Arm 4	0.6	3.11	0.37	A	0.8	3.40	0.45	A
Arm 5	0.1	2.36	0.05	A	0.2	2.64	0.14	A

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

File summary

File Description

Title	A4067 / B4599 / Glan Yr Avon / Asda Access
Location	Ystalyfera
Site number	2
Date	14/05/2024
Version	A
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	HYDROCK\jackdalley
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	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

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	2024 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2024 Base	PM	ONE HOUR	16:45	18:15	15	✓
D3	2029 Base	AM	ONE HOUR	07:45	09:15	15	✓
D4	2029 Base	PM	ONE HOUR	16:45	18:15	15	✓
D5	2029 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2029 Base + Dev	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	A4067 / B4599 / Glan Yr Avon / Asda Access	✓	100.000	100.000

A4067 / B4599 / Glan Yr Avon / Asda Access - 2024 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	3.31	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	A4067 N	
2	B4599	
3	Glan Yr Avon	
4	A4067 S	
5	Asda Access	

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)	Exit only
1	3.65	7.59	15.7	26.4	64.0	45.0	
2	3.66	6.35	6.3	11.3	64.1	30.0	
3	3.49	4.81	1.8	11.5	64.1	44.0	
4	3.75	7.72	15.1	37.1	64.1	2.0	
5	4.89	7.53	9.5	20.0	64.1	5.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.524	1697
2	0.475	1397
3	0.410	1078
4	0.615	2003
5	0.618	2070

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	2024 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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	539	100.000
2		ONE HOUR	✓	89	100.000
3		ONE HOUR	✓	12	100.000
4		ONE HOUR	✓	610	100.000
5		ONE HOUR	✓	71	100.000

Origin-Destination Data

Demand (PCU/hr)

	To					
		1	2	3	4	5
From	1	1	5	9	474	50
	2	26	0	2	53	8
	3	3	0	0	5	4
	4	429	114	20	7	40
	5	20	8	2	41	0

Vehicle Mix

Heavy Vehicle Percentages

	To					
		1	2	3	4	5
From	1	0	0	0	3	0
	2	4	0	0	0	0
	3	0	0	0	0	0
	4	6	3	0	20	0
	5	0	0	0	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.37	3.72	0.6	A	495	742
2	0.09	3.70	0.1	A	82	123
3	0.02	4.70	0.0	A	11	17
4	0.35	2.98	0.6	A	560	840
5	0.05	2.31	0.1	A	65	98

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	406	101	144	1622	0.250	404	360	0.0	0.3	3.032	A
2	67	17	453	1182	0.057	67	95	0.0	0.1	3.264	A
3	9	2	495	875	0.010	9	25	0.0	0.0	4.158	A
4	459	115	69	1960	0.234	458	435	0.0	0.3	2.512	A
5	53	13	450	1792	0.030	53	77	0.0	0.0	2.105	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	485	121	173	1607	0.302	484	430	0.3	0.4	3.290	A
2	80	20	543	1140	0.070	80	114	0.1	0.1	3.435	A
3	11	3	593	835	0.013	11	30	0.0	0.0	4.369	A
4	548	137	83	1952	0.281	548	521	0.3	0.4	2.691	A
5	64	16	539	1737	0.037	64	92	0.0	0.0	2.187	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	593	148	211	1587	0.374	593	527	0.4	0.6	3.716	A
2	98	24	664	1082	0.091	98	140	0.1	0.1	3.699	A
3	13	3	726	780	0.017	13	36	0.0	0.0	4.694	A
4	672	168	101	1940	0.346	671	638	0.4	0.6	2.974	A
5	78	20	660	1662	0.047	78	112	0.0	0.1	2.310	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	593	148	211	1587	0.374	593	527	0.6	0.6	3.719	A
2	98	24	665	1081	0.091	98	140	0.1	0.1	3.701	A
3	13	3	727	780	0.017	13	36	0.0	0.0	4.696	A
4	672	168	101	1940	0.346	672	639	0.6	0.6	2.977	A
5	78	20	661	1662	0.047	78	112	0.1	0.1	2.311	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	485	121	173	1607	0.302	485	431	0.6	0.4	3.297	A
2	80	20	544	1139	0.070	80	114	0.1	0.1	3.440	A
3	11	3	594	834	0.013	11	30	0.0	0.0	4.372	A
4	548	137	83	1952	0.281	549	522	0.6	0.4	2.693	A
5	64	16	540	1737	0.037	64	92	0.1	0.0	2.190	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	406	101	145	1622	0.250	406	361	0.4	0.3	3.040	A
2	67	17	455	1181	0.057	67	96	0.1	0.1	3.270	A
3	9	2	497	874	0.010	9	25	0.0	0.0	4.164	A
4	459	115	69	1960	0.234	460	437	0.4	0.3	2.518	A
5	53	13	452	1791	0.030	53	77	0.0	0.0	2.108	A

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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	3.26	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2024 Base	PM	ONE HOUR	16:45	18:15	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	503	100.000
2		ONE HOUR	✓	24	100.000
3		ONE HOUR	✓	17	100.000
4		ONE HOUR	✓	722	100.000
5		ONE HOUR	✓	192	100.000

Origin-Destination Data

Demand (PCU/hr)

	To					
	1	2	3	4	5	
From	1	2	6	2	414	79
	2	6	0	3	12	3
	3	6	1	0	8	2
	4	529	99	8	2	84
	5	99	13	1	79	0

Vehicle Mix

Heavy Vehicle Percentages

	To					
From		1	2	3	4	5
	1	0	0	0	3	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	1	1	0	0	1
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.35	3.59	0.6	A	462	692
2	0.02	3.38	0.0	A	22	33
3	0.02	4.56	0.0	A	16	23
4	0.41	3.19	0.7	A	663	994
5	0.13	2.54	0.1	A	176	264

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	379	95	152	1617	0.234	377	482	0.0	0.3	2.972	A
2	18	5	441	1188	0.015	18	89	0.0	0.0	3.076	A
3	13	3	448	894	0.014	13	11	0.0	0.0	4.085	A
4	544	136	74	1957	0.278	542	386	0.0	0.4	2.567	A
5	145	36	490	1767	0.082	144	126	0.0	0.1	2.218	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	452	113	182	1602	0.282	452	577	0.3	0.4	3.207	A
2	22	5	527	1147	0.019	22	107	0.0	0.0	3.198	A
3	15	4	536	858	0.018	15	13	0.0	0.0	4.272	A
4	649	162	89	1948	0.333	649	463	0.4	0.5	2.798	A
5	173	43	587	1708	0.101	173	151	0.1	0.1	2.344	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	554	138	223	1580	0.350	553	706	0.4	0.5	3.589	A
2	26	7	646	1091	0.024	26	131	0.0	0.0	3.381	A
3	19	5	657	808	0.023	19	15	0.0	0.0	4.558	A
4	795	199	109	1936	0.411	794	566	0.5	0.7	3.183	A
5	211	53	718	1626	0.130	211	185	0.1	0.1	2.543	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	554	138	224	1580	0.350	554	707	0.5	0.6	3.592	A
2	26	7	646	1090	0.024	26	131	0.0	0.0	3.382	A
3	19	5	657	808	0.023	19	15	0.0	0.0	4.559	A
4	795	199	109	1936	0.411	795	567	0.7	0.7	3.186	A
5	211	53	719	1626	0.130	211	185	0.1	0.1	2.544	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	452	113	183	1602	0.282	453	578	0.6	0.4	3.211	A
2	22	5	528	1146	0.019	22	107	0.0	0.0	3.199	A
3	15	4	537	857	0.018	15	13	0.0	0.0	4.275	A
4	649	162	89	1948	0.333	650	464	0.7	0.5	2.804	A
5	173	43	588	1707	0.101	173	151	0.1	0.1	2.347	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	379	95	153	1617	0.234	379	484	0.4	0.3	2.981	A
2	18	5	442	1187	0.015	18	90	0.0	0.0	3.078	A
3	13	3	450	893	0.014	13	11	0.0	0.0	4.090	A
4	544	136	75	1957	0.278	544	388	0.5	0.4	2.573	A
5	145	36	492	1766	0.082	145	127	0.1	0.1	2.219	A

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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	3.42	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	566	100.000
2		ONE HOUR	✓	94	100.000
3		ONE HOUR	✓	12	100.000
4		ONE HOUR	✓	642	100.000
5		ONE HOUR	✓	74	100.000

Origin-Destination Data

Demand (PCU/hr)

	To					
		1	2	3	4	5
From	1	1	5	9	498	53
	2	28	0	2	56	8
	3	3	0	0	5	4
	4	451	120	21	8	42
	5	21	8	2	43	0

Vehicle Mix

Heavy Vehicle Percentages

	To					
		1	2	3	4	5
From	1	0	0	0	3	0
	2	4	0	0	0	0
	3	0	0	0	0	0
	4	6	3	0	20	0
	5	0	0	0	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.39	3.86	0.7	A	519	779
2	0.10	3.78	0.1	A	86	129
3	0.02	4.79	0.0	A	11	17
4	0.36	3.07	0.6	A	589	884
5	0.05	2.35	0.1	A	68	102

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	426	107	152	1618	0.263	425	378	0.0	0.4	3.092	A
2	71	18	476	1171	0.060	71	100	0.0	0.1	3.309	A
3	9	2	521	864	0.010	9	26	0.0	0.0	4.211	A
4	483	121	73	1958	0.247	482	458	0.0	0.3	2.558	A
5	56	14	474	1777	0.031	56	80	0.0	0.0	2.126	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	509	127	181	1602	0.318	508	453	0.4	0.5	3.375	A
2	85	21	570	1126	0.075	84	119	0.1	0.1	3.494	A
3	11	3	624	822	0.013	11	31	0.0	0.0	4.439	A
4	577	144	87	1949	0.296	577	548	0.3	0.4	2.753	A
5	67	17	568	1719	0.039	66	96	0.0	0.0	2.215	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	623	156	222	1581	0.394	622	554	0.5	0.7	3.851	A
2	103	26	698	1066	0.097	103	146	0.1	0.1	3.783	A
3	13	3	764	764	0.017	13	37	0.0	0.0	4.792	A
4	707	177	107	1937	0.365	706	671	0.4	0.6	3.068	A
5	81	20	695	1641	0.050	81	118	0.0	0.1	2.348	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	623	156	222	1581	0.394	623	555	0.7	0.7	3.857	A
2	103	26	699	1065	0.097	103	146	0.1	0.1	3.785	A
3	13	3	765	764	0.017	13	37	0.0	0.0	4.795	A
4	707	177	107	1937	0.365	707	672	0.6	0.6	3.071	A
5	81	20	696	1640	0.050	81	118	0.1	0.1	2.348	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	509	127	182	1602	0.318	510	454	0.7	0.5	3.383	A
2	85	21	572	1126	0.075	85	120	0.1	0.1	3.497	A
3	11	3	626	821	0.013	11	31	0.0	0.0	4.442	A
4	577	144	87	1949	0.296	578	549	0.6	0.4	2.756	A
5	67	17	569	1719	0.039	67	96	0.1	0.0	2.216	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	426	107	152	1618	0.263	427	380	0.5	0.4	3.102	A
2	71	18	479	1170	0.060	71	100	0.1	0.1	3.312	A
3	9	2	524	863	0.010	9	26	0.0	0.0	4.217	A
4	483	121	73	1958	0.247	484	460	0.4	0.3	2.563	A
5	56	14	476	1776	0.031	56	81	0.0	0.0	2.130	A

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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	3.37	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 Base	PM	ONE HOUR	16:45	18:15	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	528	100.000
2		ONE HOUR	✓	25	100.000
3		ONE HOUR	✓	17	100.000
4		ONE HOUR	✓	758	100.000
5		ONE HOUR	✓	202	100.000

Origin-Destination Data

Demand (PCU/hr)

	To					
	1	2	3	4	5	
From	1	2	6	2	435	83
	2	6	0	3	13	3
	3	6	1	0	8	2
	4	555	104	8	2	89
	5	104	14	1	83	0

Vehicle Mix

Heavy Vehicle Percentages

	To					
		1	2	3	4	5
From	1	0	0	0	3	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	1	1	0	0	1
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.37	3.71	0.6	A	485	727
2	0.03	3.43	0.0	A	23	34
3	0.02	4.64	0.0	A	16	23
4	0.43	3.31	0.8	A	696	1043
5	0.14	2.60	0.2	A	185	278

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	398	99	160	1614	0.246	396	505	0.0	0.3	3.027	A
2	19	5	462	1178	0.016	19	94	0.0	0.0	3.105	A
3	13	3	471	885	0.015	13	11	0.0	0.0	4.128	A
4	571	143	77	1955	0.292	569	406	0.0	0.4	2.619	A
5	152	38	513	1753	0.087	152	133	0.0	0.1	2.248	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	475	119	191	1597	0.297	474	605	0.3	0.4	3.285	A
2	22	6	553	1135	0.020	22	112	0.0	0.0	3.236	A
3	15	4	563	847	0.018	15	13	0.0	0.0	4.329	A
4	681	170	93	1946	0.350	681	486	0.4	0.5	2.872	A
5	182	45	614	1691	0.107	181	159	0.1	0.1	2.385	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	581	145	234	1575	0.369	581	740	0.4	0.6	3.709	A
2	28	7	677	1076	0.026	28	138	0.0	0.0	3.434	A
3	19	5	690	795	0.024	19	15	0.0	0.0	4.638	A
4	835	209	113	1933	0.432	834	595	0.5	0.8	3.303	A
5	222	56	752	1605	0.139	222	195	0.1	0.2	2.602	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	581	145	235	1574	0.369	581	741	0.6	0.6	3.713	A
2	28	7	678	1075	0.026	28	138	0.0	0.0	3.435	A
3	19	5	690	795	0.024	19	15	0.0	0.0	4.639	A
4	835	209	113	1933	0.432	835	596	0.8	0.8	3.309	A
5	222	56	753	1605	0.139	222	195	0.2	0.2	2.603	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	475	119	192	1597	0.297	475	606	0.6	0.4	3.289	A
2	22	6	554	1134	0.020	22	113	0.0	0.0	3.240	A
3	15	4	564	846	0.018	15	13	0.0	0.0	4.332	A
4	681	170	93	1946	0.350	682	487	0.8	0.5	2.881	A
5	182	45	616	1690	0.107	182	159	0.2	0.1	2.388	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	398	99	161	1613	0.246	398	507	0.4	0.3	3.035	A
2	19	5	464	1177	0.016	19	94	0.0	0.0	3.108	A
3	13	3	472	884	0.015	13	11	0.0	0.0	4.132	A
4	571	143	78	1955	0.292	571	408	0.5	0.4	2.627	A
5	152	38	515	1752	0.087	152	133	0.1	0.1	2.252	A

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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	3.51	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 Base + Dev	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	598	100.000
2		ONE HOUR	✓	94	100.000
3		ONE HOUR	✓	12	100.000
4		ONE HOUR	✓	655	100.000
5		ONE HOUR	✓	74	100.000

Origin-Destination Data

Demand (PCU/hr)

	To					
		1	2	3	4	5
From	1	1	5	9	530	53
	2	28	0	2	56	8
	3	3	0	0	5	4
	4	464	120	21	8	42
	5	21	8	2	43	0

Vehicle Mix

Heavy Vehicle Percentages

	To					
		1	2	3	4	5
From	1	0	0	0	3	0
	2	4	0	0	0	0
	3	0	0	0	0	0
	4	6	3	0	20	0
	5	0	0	0	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.42	4.01	0.7	A	549	823
2	0.10	3.85	0.1	A	86	129
3	0.02	4.89	0.0	A	11	17
4	0.37	3.11	0.6	A	601	902
5	0.05	2.36	0.1	A	68	102

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	450	113	152	1618	0.278	449	388	0.0	0.4	3.156	A
2	71	18	500	1160	0.061	71	100	0.0	0.1	3.343	A
3	9	2	545	854	0.011	9	26	0.0	0.0	4.260	A
4	493	123	73	1958	0.252	492	482	0.0	0.4	2.575	A
5	56	14	484	1771	0.031	56	80	0.0	0.0	2.134	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	538	134	181	1602	0.336	537	464	0.4	0.5	3.467	A
2	85	21	599	1113	0.076	84	119	0.1	0.1	3.540	A
3	11	3	653	810	0.013	11	31	0.0	0.0	4.504	A
4	589	147	87	1949	0.302	588	577	0.4	0.5	2.777	A
5	67	17	579	1712	0.039	66	96	0.0	0.0	2.224	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	658	165	222	1581	0.416	658	569	0.5	0.7	3.999	A
2	103	26	733	1049	0.099	103	146	0.1	0.1	3.851	A
3	13	3	799	750	0.018	13	37	0.0	0.0	4.886	A
4	721	180	107	1937	0.372	721	706	0.5	0.6	3.105	A
5	81	20	709	1632	0.050	81	118	0.0	0.1	2.361	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	658	165	222	1581	0.417	658	569	0.7	0.7	4.006	A
2	103	26	734	1049	0.099	103	146	0.1	0.1	3.853	A
3	13	3	800	749	0.018	13	37	0.0	0.0	4.889	A
4	721	180	107	1937	0.372	721	707	0.6	0.6	3.107	A
5	81	20	710	1631	0.050	81	118	0.1	0.1	2.362	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	538	134	182	1602	0.336	538	465	0.7	0.5	3.478	A
2	85	21	601	1112	0.076	85	120	0.1	0.1	3.546	A
3	11	3	655	809	0.013	11	31	0.0	0.0	4.508	A
4	589	147	87	1949	0.302	589	578	0.6	0.5	2.780	A
5	67	17	580	1712	0.039	67	96	0.1	0.0	2.227	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	450	113	152	1618	0.278	451	390	0.5	0.4	3.167	A
2	71	18	503	1159	0.061	71	100	0.1	0.1	3.350	A
3	9	2	548	853	0.011	9	26	0.0	0.0	4.267	A
4	493	123	73	1958	0.252	494	484	0.5	0.4	2.581	A
5	56	14	486	1770	0.031	56	81	0.0	0.0	2.135	A

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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	3.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

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	2029 Base + Dev	PM	ONE HOUR	16:45	18:15	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 (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	541	100.000
2		ONE HOUR	✓	25	100.000
3		ONE HOUR	✓	17	100.000
4		ONE HOUR	✓	786	100.000
5		ONE HOUR	✓	202	100.000

Origin-Destination Data

Demand (PCU/hr)

	To					
		1	2	3	4	5
From	1	2	6	2	448	83
	2	6	0	3	13	3
	3	6	1	0	8	2
	4	583	104	8	2	89
	5	104	14	1	83	0

Vehicle Mix

Heavy Vehicle Percentages

	To					
From		1	2	3	4	5
	1	0	0	0	2	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	1	1	0	0	1
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.38	3.74	0.6	A	496	745
2	0.03	3.46	0.0	A	23	34
3	0.02	4.67	0.0	A	16	23
4	0.45	3.40	0.8	A	721	1082
5	0.14	2.64	0.2	A	185	278

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	407	102	160	1614	0.252	406	526	0.0	0.3	3.028	A
2	19	5	472	1173	0.016	19	94	0.0	0.0	3.118	A
3	13	3	480	881	0.015	13	11	0.0	0.0	4.147	A
4	592	148	77	1955	0.303	590	416	0.0	0.4	2.659	A
5	152	38	534	1740	0.087	152	133	0.0	0.1	2.266	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	486	122	191	1597	0.305	486	630	0.3	0.4	3.293	A
2	22	6	565	1129	0.020	22	112	0.0	0.0	3.252	A
3	15	4	575	842	0.018	15	13	0.0	0.0	4.354	A
4	707	177	93	1946	0.363	706	498	0.4	0.6	2.931	A
5	182	45	640	1675	0.108	181	159	0.1	0.1	2.410	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	596	149	234	1575	0.378	595	771	0.4	0.6	3.734	A
2	28	7	692	1069	0.026	28	138	0.0	0.0	3.456	A
3	19	5	704	789	0.024	19	15	0.0	0.0	4.673	A
4	865	216	113	1933	0.448	864	609	0.6	0.8	3.399	A
5	222	56	783	1586	0.140	222	195	0.1	0.2	2.639	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	596	149	235	1574	0.378	596	772	0.6	0.6	3.737	A
2	28	7	693	1068	0.026	28	138	0.0	0.0	3.457	A
3	19	5	705	789	0.024	19	15	0.0	0.0	4.675	A
4	865	216	113	1933	0.448	865	610	0.8	0.8	3.404	A
5	222	56	784	1586	0.140	222	195	0.2	0.2	2.640	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	486	122	192	1597	0.305	487	631	0.6	0.4	3.298	A
2	22	6	566	1128	0.020	22	113	0.0	0.0	3.257	A
3	15	4	576	841	0.018	15	13	0.0	0.0	4.359	A
4	707	177	93	1946	0.363	708	499	0.8	0.6	2.938	A
5	182	45	641	1674	0.108	182	159	0.2	0.1	2.413	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	407	102	161	1613	0.252	408	528	0.4	0.3	3.038	A
2	19	5	474	1172	0.016	19	94	0.0	0.0	3.123	A
3	13	3	482	880	0.015	13	11	0.0	0.0	4.151	A
4	592	148	78	1955	0.303	592	417	0.6	0.4	2.668	A
5	152	38	537	1739	0.087	152	133	0.1	0.1	2.270	A