

Industrial Unit at J38 Margam

Transport Assessment

Sandvik Osprey Ltd

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1. INTRODUCTION

1.1 Background

- 1.1.1 Apex Transport Planning Ltd ('Apex TP') has been commissioned by Boyer to produce a Transport Assessment (TA) on behalf of Sandvik Osprey to accompany a full planning application for a proposed industrial unit on a site situated to the northwest of Junction 38 of the M4 in Margam, Port Talbot.
- 1.1.2 The proposals are for a full application for a new metal processing facility (Use Classes B1, B2 and B8). Industrial processes to be carried out on site would consist of the melting and atomizing of raw materials to manufacture metal powder for use in other industry. Metals on-site include (but not limited to) stainless steels, nickel alloys, cobalt alloys aluminium alloys and copper. The site would be operational for 24 hours a day between 6 and 7 days a week.
- 1.1.3 The site is accessed from an unadopted road which links to the A48 / A4241 roundabout and is within close proximity of the strategic road network, which will assist in minimising the impact of the development on the local network.
- 1.1.4 The site is allocated under Policy EC1/2 of the Neath Port Talbot County Borough Council (NPTCBC) Local Development Plan (LDP) as a Strategic Employment Site. As such, the location has been accepted as suitable for employment uses by NPTCBC.
- 1.1.5 This TA provides an assessment of the sustainable connectivity and transport impacts of the proposed development and sets out details of the proposed parking and access arrangements. This TA has been produced to inform the local highway authority, NPTCBC, of the highways and transport implications of the proposals.

1.2 Scope of Report

- 1.2.1 The scope of the report and extent of junction assessments has been discussed with the highway authority, NPTCBC as well as Welsh Government (WG) with the scoping discussions included in Appendix A.
- 1.2.2 This version of the TA also considers consultation comments made by the highway authority in relation to the pre-application consultation submission.
- 1.2.3 The TA broadly includes the following:
 - Description of the existing site use and location, including relevant planning allocations.
 - Review of the existing conditions, including a review of relevant planning applications / committed developments, highway network characteristics, highway safety and existing travel behaviour
 - Review of the sustainable connectivity of the site including walking and cycling routes and public transport connections
 - Description of the development proposals, demonstrating safe and appropriate access by all modes, car and cycle parking and servicing and delivery arrangements
 - Forecast of vehicle trip generation in the peak hours
 - Consideration of the impact of the proposals on the local highway network including junction assessments at the locations agreed with the highway authority

1.3 Relevant Planning Policies

- 1.3.1 Key policy and guidance documents in relation to transport at a national and local level have been considered when assessing the impact of the development proposals which include:
- Future Wales: The National Plan 2040 (February 2021)
 - Planning Policy Wales 11 (PPW11) (February 2021)
 - NPTCBC Local Development Plan 2011-2026 (Adopted 2016)
 - NPTCBC Supplementary Planning Guidance – SP20 Parking Standards
 - Manual for Streets (2007)
- 1.3.2 The key policy documents promote development where there is a choice of sustainable transport modes such as walking, cycling, public transport and electric vehicles.
- 1.3.3 The NPTCBC LDP Policy EC1/2 relates to the site and states that the site is allocated for 6 hectares of employment use for B1, B2 and B8 uses. It specifically states that *“The strategic employment allocation at J38 lies to the south of Harbour Way and adjacent to the A48 and M4 and thus benefits from excellent road transport links.”* These links are therefore considered to be a benefit of the development, as this will minimise the operational traffic through residential or sensitive areas.

2. EXISTING CONDITIONS

2.1 Site Location, Use and Access

- 2.1.1 The site is located approximately 4.5km to the south of Port Talbot centre. It is situated to the northwest of Junction 38 of the M4 and is accessed from an unadopted road which links to the A48 / A4241 roundabout at its northern end.
- 2.1.2 The site is currently used for agricultural purposes and has a gated access from its southern side onto Heol Cae'r Bont as well as a spur access from the north via the unadopted road. To the immediate west of the site are Margam Green Energy Plant and Western Wood Energy Plant and to the southwest is a further large industrial unit. As such, there are existing industrial units situated within the immediate vicinity of the site.
- 2.1.3 The indicative location of the site is shown in Figure 2-1.

Figure 2-1: Indicative Site Location



Source: Google Maps

2.2 Planning Use

- 2.2.1 The site is allocated for employment use in the NPTCBC LDP within Policy EC1/2. Details of this have been summarised within Section 1.3 of this TA. As such, movements associated with an employment use have been accepted by NTPCBC through the strategic planning process.

2.3 Committed Development

- 2.3.1 An application was submitted on the adjacent Tyn-Y-Caeau site in July 2020 for a "Change of use from a dwelling house and annex building into a mixed used development consisting of guest house

accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces” (App Ref: P2020/0601).

- 2.3.2 The application was refused in October 2020 and is the subject of an ongoing appeal. There was a highways objection to the proposals on the basis of highway safety. As the application is proposing lorry parking and a small guest house type development, the level of additional vehicle movements on the network would be minimal and this is not currently a ‘committed’ development.
- 2.3.3 There was minimal information provided in the application in relation to transport movements on the network, however it would likely be generating c.50 movements a day from the 16 bedroom accommodation (only around 5 to 6 movements in the peak hours) and the lorry movements would likely be pass-by or diverted trips already on the network.
- 2.3.4 As such, although the application has been considered within this assessment, the level of trips would be minimal and any increase in background traffic on the network from this scheme (which currently does not have a planning consent) has been assumed to be included within growth rates, as set out in more detail in Section 7.

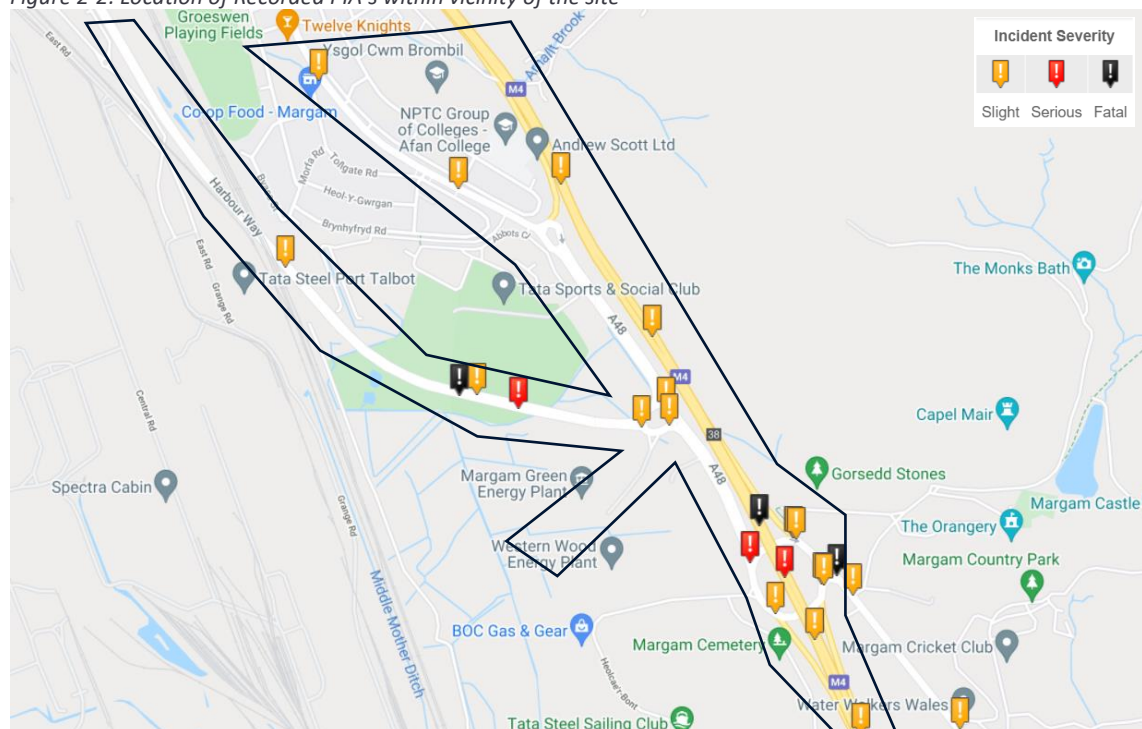
2.4 Local Highway Network

- 2.4.1 The site is situated to the northwest of Junction 38 of the M4 and is accessed from an unadopted road which links to the A48 / A4241 roundabout. These junctions and roads accommodate a significant level of traffic, including a high level of industrial traffic and HGVs.
- 2.4.2 The access road linking to the site is an unadopted road which forms the southern arm of a four armed roundabout with the A48 and the A4241 Harbour Way (henceforth known as the ‘site access road’). This also provides access to the Margam Green Energy Plant situated to the west of the site. The site access road is a single carriageway with footways on each side. It is c.11m wide and designed to accommodate HGVs and incorporates a ghost island right turn lane to each of the spur access provided along its length.
- 2.4.3 The A4241 Harbour Way and the A48 are both dual carriageway roads with two lanes in each direction and the A48 provides a direct route linking to the M4 J38. Both of these roads carry high levels of traffic, including HGVs. On the key operational routes from the site to the M4, there are minimal sensitive receptors with a single property access from the A48 to the south of the site access road, however this is set well back from the highway. To the north of the site access road, the A48 passes within 25m of properties on Abbots Close and Tygroes Drive. There is also a footway/cycleway to the west of the carriageway although this is separated from the carriageway with a barrier.
- 2.4.4 The section of road adjacent to Tygroes Drive is the northbound on-slip onto the M4 and therefore does not have any pedestrian and cyclist provision. The key routes to and from the M4 are therefore considered to be appropriate for accommodating operational traffic associated with the site.
- 2.4.5 The majority of traffic generated by the site is likely to use the key strategic routes to and from the M4 and there would be a lower impact on the other local routes.
- 2.4.6 The A4241 Harbour Way forms a key dual carriageway link which routes to the south of Margam and Port Talbot connecting to industrial areas and Baglan. It also connects to Junction 41 of the M4. This accommodates a high level of traffic, including HGVs.
- 2.4.7 Other routes to and from the site would accommodate traffic generated by employees to and from the site and would be more residential in nature, such as the A48 Margam Road. The A48 Margam Road is also a wide single carriageway road which is a key route linking Margam to Port Talbot.

2.5 Road Safety

- 2.5.1 Personal Injury Accident (PIA) data has been obtained from road safety data published annually by the Department for Transport (DfT). The statistics provide PIA data which has been recorded using the STATS19 accident reporting form. The annual dataset is typically released in June each year. As such, the most recently available five-year dataset covers between 1st January 2015 and 31st December 2019. Provisional data from 2020 has also been reviewed.
- 2.5.2 The study area considered within the analysis covers the local highway network within the vicinity of the site and the M4 Junction 38 and slip roads, with the entire study area shown in Figure 2-2.

Figure 2-2: Location of Recorded PIA's within vicinity of the site



Source: Crashmap.co.uk

- 2.5.3 Over the five-year period there were a total of 21 PIAs within the entire study area. Two of these were fatal, two were classified as serious and 17 were classified as slight injury accidents. One fatal, one serious and one slight incident occurred on the M4 mainline away from the slip roads at J38 and these are not included in the analysis as this section of the M4 would not be utilised by site traffic.
- 2.5.4 No PIA's occurred adjacent to the site boundary or along the site access road linking to the A48 roundabout.
- 2.5.5 Four of the incidents involved HGVs, in different locations and all resulted in slight injuries. As such, based on all the analysis and the data available, this does not suggest there is a specific safety issue for HGV routing within the vicinity of the site.
- 2.5.6 None of the PIA's involved a pedestrian or a cyclist. As such, there is no evidence to suggest there is a safety issue relating to vulnerable road users, at pedestrian crossings or in relation to HGVs.
- 2.5.7 There were no clusters of four or more PIAs occurring in the same location, therefore no evidence to suggest a re-occurring road safety issue.

2.5.8 Although all incidents are regrettable, the PIAs that occurred do not indicate a specific pattern of issue with the geometry of the highway, particularly for vulnerable road users, that would be exacerbated by the proposals.

2.6 Traffic Flows

2.6.1 To establish a baseline traffic position on the network against which the development proposals can be assessed, surveys were undertaken at the key junctions, as agreed with NPTCBC and WG during scoping discussions.

2.6.2 The two junctions which were considered to require assessment were the site access road / A48 / A4241 Harbour Way roundabout and the M4 J38. Turning count and queue length surveys were commissioned to be undertaken at these two junctions by independent traffic survey specialists (PCC Traffic Information Consultancy).

2.6.3 To establish a baseline traffic position the surveys were carried out at the junctions on Thursday 9th September 2021 between the hours of 0700 – 1000 and 1600 – 1900. This identified that the peak hourly flows occurred between 0730 and 0830 in the morning and between 1630 and 1730 in the evening.

2.6.4 The full base traffic and queue length data is included within Appendix B, with the base peak hour traffic flows included in a traffic flow diagram within Appendix C.

2.6.5 The survey data shows that in the AM network peak hour there were 14 vehicular movements into the site access road and 3 vehicle movements out of the site access road (17 two-way movements). In the PM peak network hour there were 12 vehicular movements out of the site access road and 6 into the site access road (18 two-way movements). It is assumed these would relate to the Margam Energy Plant. As such, the site access road currently has a low level of traffic flows but has been designed to accommodate significantly higher levels of traffic.

2.7 Modal Share

2.7.1 The site is located within the Neath Port Talbot 019 middle layer super output area (MSOA). Census 2011 data has been analysed for the Neath Port Talbot 019 MSOA to establish the journey to work modal split for the workplace population. This has been compared with the data for the entire of NPTCBC. The analysis is shown in Table 2-2.

Table 2-1: Journey to Work Mode Split (Census 2011)

Mode	Neath Port Talbot 019 %	NPTCBC %
Public Transport	1.8%	4.0%
Car Driver	82.6%	75.3%
Car Passenger	8.0%	8.4%
Motorcycle	1.5%	0.8%
Bicycle	2.7%	1.5%
On Foot	3.1%	9.1%
Other	0.2%	1.0%
Total	100%	100%

2.7.2 Table 2-2 shows that 83% of existing employees travel to work to the Neath Port Talbot 019 MSOA as a car or motorcycle driver and an additional 8% travel to work as a car passenger. A total of 8% travel by sustainable modes of transport, of which 3% travel on foot, 2% travel by public transport and 3% by bicycle.

- 2.7.3 The data shows that the method of travel is similar in Neath Port Talbot 019 MSOA and across the wider NPTCBC area.
- 2.7.4 The data shows that employees in this area travel by sustainable modes and the level of cycling is higher than across the wider NPTCBC area. As such, this demonstrates that there is potential for walking, cycling, and public transport trips to be made to and from the site and that these movements already occur in this area.

3. PLANNING POLICY

3.1 Planning Policy

Future Wales: The National Plan 2040

- 3.1.1 This is the national development framework, setting the direction for development in Wales to 2040. It provides an overarching development plan with a strategy for addressing key national priorities through the planning system. Planning decisions at every level of the planning system in Wales must be taken in accordance with the development plan as a whole.
- 3.1.2 In relation to transport, it states on page 51 that *“Growth should be shaped around sustainable forms of transport and places that make us and the environment healthier”*. Page 55 continues on to state that *“Development will focus on active travel and public transport, allied with a reduced reliance on private vehicles”*.
- 3.1.3 On page 174, supporting Policy 36, it is stated that *“Welsh Government wishes to see development built in sustainable locations that are supported by the active travel and public transport infrastructure and services needed to enable people to live active and healthy lives.”*
- 3.1.4 As such, the key themes are that development should be sited where it can benefit from active travel and public transport connections and reduce the need to travel by car.

Planning Policy Wales 11th Edition (PPW11)

- 3.1.5 PPW11 provides overarching Welsh Government policies with transport policies set out in Section 4.1. This states in paragraph 4.1.10 *“The planning system has a key role to play in reducing the need to travel, particularly by private car, and supporting sustainable transport, by facilitating developments which:*
 - * are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car*
 - * make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.”*
- 3.1.6 PPW11 sets out a *“Sustainable Transport Hierarchy for Planning”* in Figure 9. This states in paragraph 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.”*
- 3.1.7 It continues to state that *“The sustainable transport hierarchy should be used to reduce the need to travel [and] prevent car-dependent developments in unsustainable locations”*.
- 3.1.8 PPW11 also states in paragraph 3.39 that development should *“where possible, offer good active travel connections to the centres of settlements to reduce the need to travel by car for local journeys.”*
- 3.1.9 The site is situated in a location which is accessible by walking, cycling and public transport, with good active travel links and the proposals are fully compliant with PPW11 as demonstrated in Section 4.

Technical Advice Note 18: Transport (TAN18)

- 3.1.10 The importance of walking and cycling in contributing towards sustainable travel patterns is detailed in the guidance contained within TAN18: Transport (March 2007). The guidance emphasises not only the role walking and cycling can have as main modes of transport for local journeys but also the considerable contribution they play in forming parts of longer journeys by public transport.
- 3.1.11 Paragraph 3.8 states that *“Locations that are highly accessible by a variety of travel modes offer significant opportunities to make travel patterns more sustainable.”* As such it is recognised by TAN18 that the sustainable location of a site can assist in facilitating sustainable travel habits.

4. SUSTAINABLE CONNECTIVITY

4.1 Introduction

- 4.1.1 This section describes the opportunities to make trips to and from the site by non-car modes. It considers the likelihood of trips being made on foot, by cycle, bus and rail.
- 4.1.2 The site is allocated under Policy EC1/2 of the Neath Port Talbot LDP as a Strategic Employment Site. As such, the sustainable connectivity of the site has been accepted for employment uses by NPTCBC. Notwithstanding this, the sustainable links to the site have been analysed within this section.
- 4.1.3 There are alternative modes to the car available to potential employees of the site which will assist in minimising the level of vehicle trips to and from the site. Public transport services can be accessed by continuous walking and cycling routes.

4.2 Walking and Cycling

- 4.2.1 At the top of the PPW11 hierarchy is the consideration of active travel (walking and cycling). Walking is the most important mode of travel at a local level and offers the greatest potential to replace short car journeys.

Infrastructure

- 4.2.2 The site is connected by footways which run adjacent to the site access road connecting to the A48 roundabout. These connect to a shared footway / cycleway which routes adjacent to the A48 and this forms part of the Wales Coastal Path. The route crosses the site access road and the A4241 Harbour Way at dropped kerbs with central refuges provided at each crossing. Tactile paving is provided at each crossing to aid movements by people with visual impairments. This crossing is considered suitable and safe to accommodate all movements. The review of road safety data does not show a safety issue in relation to pedestrians and cyclists and as such, there is no evidence that these crossings are unsafe.
- 4.2.3 There are no public rights of way which cross any of the key routes within the vicinity of the site.

Routes

- 4.2.4 The shared footway / cycleway provides a link into Margam and then onto Port Talbot, where footways are provided adjacent to most residential roads. The NPTCBC cycle routes map shows that National Cycle Network Route 4 runs adjacent to the A48 past the site access road, utilising the off-carriageway shared footway / cycleway. This connects with other routes to the north and south of the site on the A48, including connecting to Port Talbot Parkway Rail Station, providing a key cycling link for movements to and from the site.
- 4.2.5 The cycle routes within the vicinity of the site, taken from the NPTCBC cycle routes map, are shown in Figure 4-1.

Figure 4-1: Cycle Routes within vicinity of the site

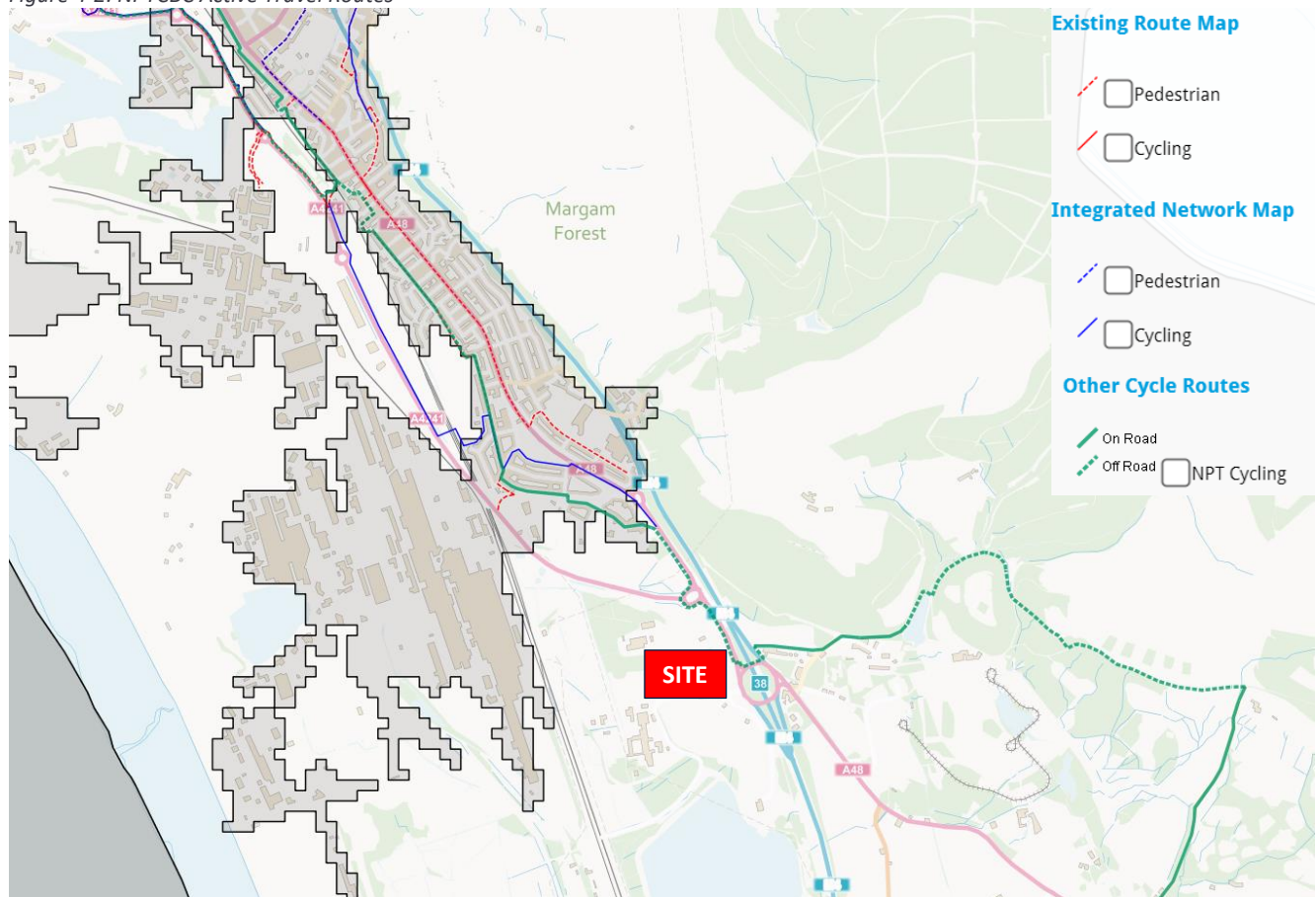


Source: NPTCBC Cycle Map

4.2.6 NPTCBC have produced active travel maps to identify existing suitable routes for walkers and cyclists. The NPTCBC active travel online map shows the active travel routes within the vicinity of the site, as well as cycle routes. This shows the shared footway / cycleway route past the site access road, which links to other cycle routes and active travel routes to the north within Margam, which continue into Port Talbot. The mapping shows that the site has continuous active travel routes connecting to the key local residential areas.

4.2.7 A snapshot of the active travel routes within the vicinity of the site are shown in Figure 4-1.

Figure 4-2: NPTCBC Active Travel Routes



Source: NPTCBC Active Travel Routes Map

4.2.8 The active travel routes have been considered appropriate by NPTCBC for walking and cycling. The site is therefore well positioned to benefit from existing and proposed good quality links, which connect to further routes, as well as key local areas. This will encourage potential future employees to walk and cycle to and from the site and reduce the reliance on travelling by car.

4.3 Distances

Overview

4.3.1 To enable an assessment of the viability of walking between the site and residential areas, it is appropriate to establish the maximum distance that people are generally prepared to walk or cycle for work purposes.

4.3.2 There are a number of publications which suggest guidance for appropriate and acceptable walking and cycling distances. For reference, these have been summarised as follows.

- Welsh Government - Active Travel (Wales) Act 2013: Within the ATADG it is stated within paragraph 4.1.4 that “walking as a mode of travel predominates for journeys of less than two miles whilst cycling is more convenient for longer journeys, typically of up to five miles for regular journeys”. This equates to distances for walking of up to 3.2km and cycling of up to 8km.
- Department for Transport (DfT) – Manual for Streets (2007): MfS states that ‘walkable neighbourhoods’ are typically characterised by having a range of facilities within 10 minutes walking distance (c. 800 metres) – i.e. this would include employment uses. MfS also acknowledges that this is not an upper limit and references previous planning policy guidance in

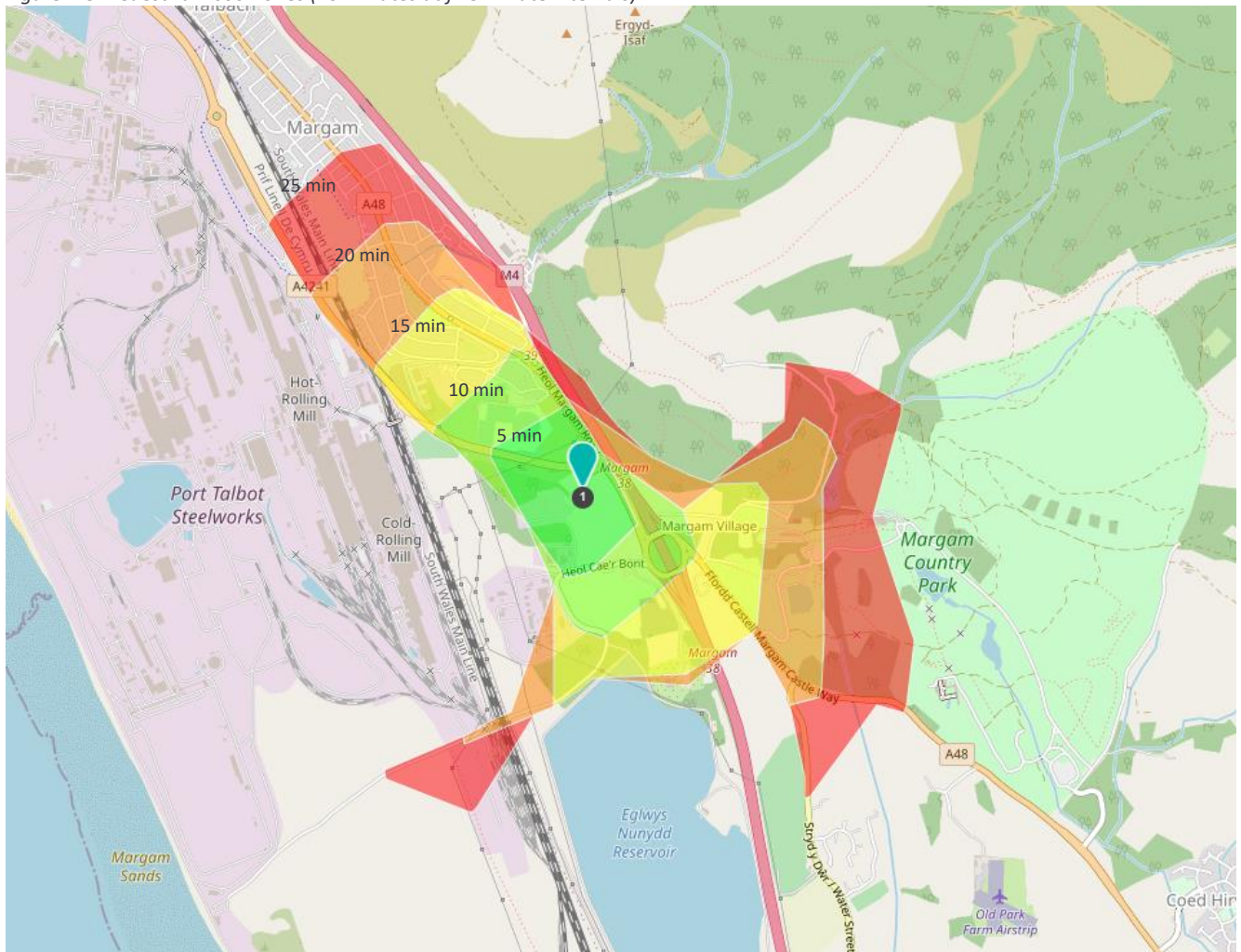
that it is generally acknowledged that walking offers the greatest potential to replace short car trips, particularly under 2km.

- 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’*.
- CIHT - Guidelines for Providing for Journeys on Foot (2000): suggests preferred maximum distances for commuting journeys are up to 2km.
- DfT – LTN1/20 Cycle Infrastructure Design (paragraph 2.2.2) – states that *“Two out of every three personal trips are less than five miles in length, an achievable distance to cycle for most people”* (c.8km).

Walking

- 4.3.3 Based on guidance, it is considered that suitable walking distances could be up to 3.2km. This equates to around a 40-minute walk travelling at 3mph. However, distances of 2km are considered more likely for walking journeys and residential areas within 800 metres are considered to be within ‘walkable neighbourhood’ distances.
- 4.3.4 Openroute Service has been used to generate pedestrian isochrones at five minute (c.400m) intervals from the main site access as shown in Figure 4-3. This is based on walking speeds of 5km per hour (c. 3mph) via the road network.
- 4.3.5 It demonstrates a significant proportion of Margam is accessible within a 25 minute walk from the site (c. 2km). This includes Margam Village, the southern half of Margam and Margam Country Park. This shows that there is a potential for employees to be situated within potential walking distance of the site. As such, some employees (and visitors) could travel to the site on foot.

Figure 4-3: Pedestrian Isochrones (25 minutes at five minute intervals)



Source: Openroute Service

4.3.6 As such, travelling to the site by walking is considered a feasible and realistic option for employees of the site and visitors. As shown in Section 2, there are already journeys made by walking for work purposes in this area.

Cycling

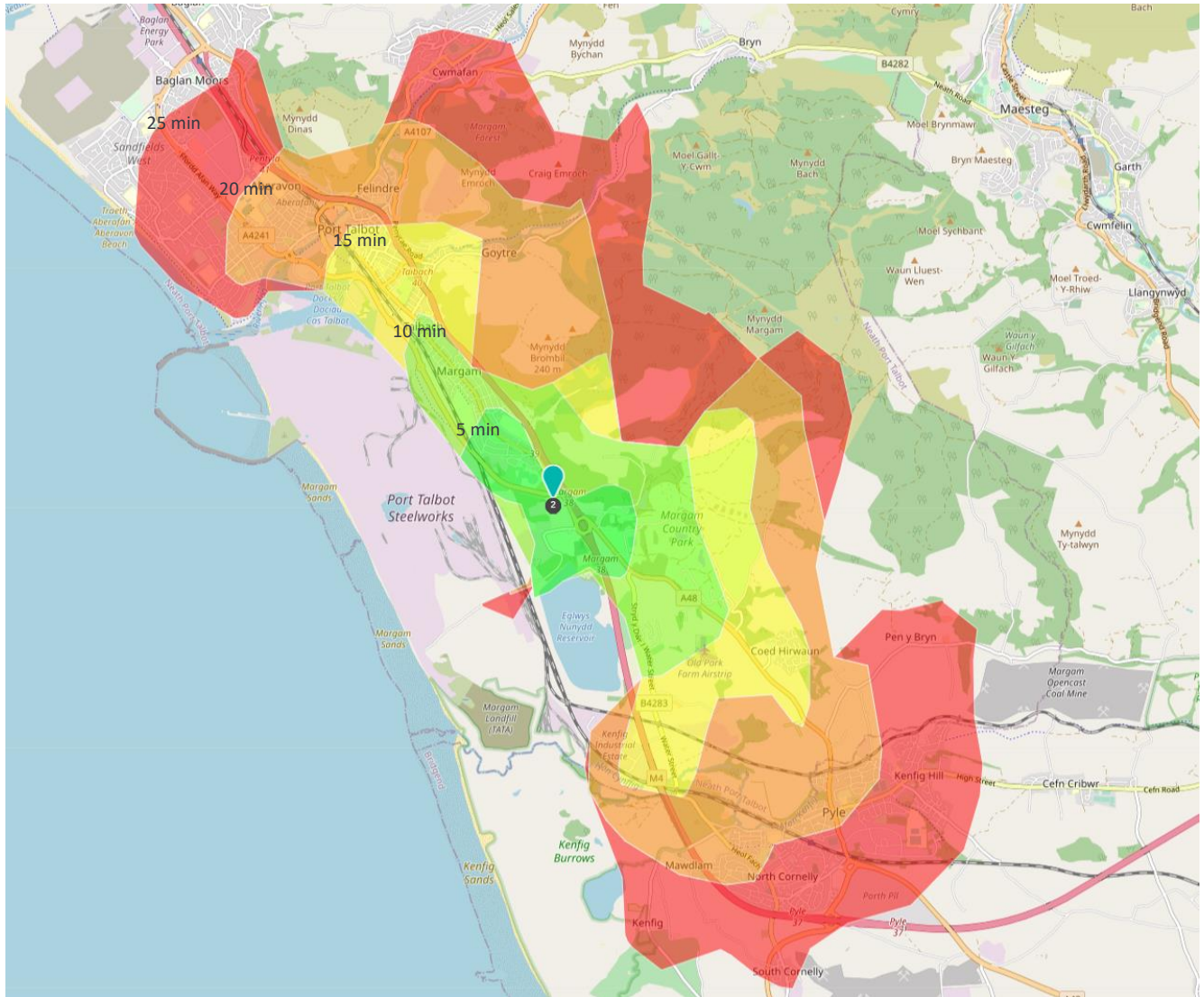
4.3.7 It has been assumed that journeys of up to 8km are within an acceptable cycling distance. A cycling journey of 8km would equate to approximately a 25 minute trip.

4.3.8 The Openroute Service has been used to generate cycle isochrones at five minute intervals up to a total of 25 minutes (c.8km) using roads and cycle routes (i.e. not straight line distances) from the main site access. This has been shown in Figure 4-4.

4.3.9 The isochrones are generated based on speeds dependent on the surface and highway type. The majority (if not all) of the routes used would be paved and as such would be subject to an 18kph speed based on the parameters in the software. A five minute isochrone would therefore cover a distance of c. 1.5km, with a 25 minute isochrone covering a distance of c.7.5km. As such, this is broadly in accordance with the relevant design guidance (indeed, cycle journeys to the site could originate from slightly greater distances, up to 8km from the site, in accordance with the guidance).

- 4.3.10 The isochrones show the entire of Margam is accessible within an appropriate cycling distance in addition to Port Talbot, Sanfields, Baglan Moors, Goytre, Cornelly, Cwmafan and Kenfig. Most of the areas within and around Port Talbot can be accessed by suitable and recommended cycling routes, as shown within Figure 4-1.

Figure 4-4: Cycle Isochrones (25 minutes at five minute intervals)



Source: Openroute Service

- 4.3.11 As such, travelling to the site by cycle is considered a feasible and realistic option for employees of the site. As shown in Section 2, there are already journeys made by cycle for work purposes in this area.

4.4 Public Transport

Bus

- 4.4.1 The closest bus stops to the site are situated within a 425m - 475m walk from the southern pedestrian access on the A48 to the southeast of the site, adjacent to J38 of the M4. Further stops are available on the A48 Margam Road approximately 1.2km to the northwest of the main site access. The closest stops are served by the X1 with the stops on Margam Road also served by the 87. Bus shelters, seating and lighting are provided at all stops closest to the site.
- 4.4.2 The services provide a link into Port Talbot centre within approximately 8-10 minutes.

- 4.4.3 A summary of the services in provided within the vicinity of the site are provided in Table 4-1. These are shown in a single direction, with the other direction providing the same frequency of service.

Table 4-1: Local Bus Services

No.	Route Summary	Weekday Start and Finish		Frequency		
		First Service	Last Service	Monday-Friday	Saturday	Sunday
87	Neath Bus Station to Port Talbot Bus Station and Margam via Baglan Energy Park and General Hospital.	08:41	18:44	Every 20 minutes	Every 20 minutes	Hourly
X1	Swansea City Bus Station to Bridgend Bus Station via Port Talbot Bus Station, Margam Park and Pyle.	07:46	20.21	Half Hourly	Half Hourly	Hourly

- 4.4.4 Both of the bus services connect to Port Talbot bus station as well as Port Talbot Parkway Rail Station, both of which offer interchange opportunities to a significant number of other services to wider destinations.
- 4.4.5 The site is served by buses which connect to Bridgend, Port Talbot and Swansea throughout the day, which provide start and finish times suitable for commuting. As such, travelling by bus would be suitable option for some commuting journeys to and from the site as well as for journeys by visitors.

Rail

- 4.4.6 Port Talbot Parkway Rail Station is situated approximately 4.2km to the northwest of the site. It can be accessed via the cycle routes connecting to the site access road, as well as by bus services 87 and X1. The station provides cycle parking which enables access to and from the station by cycle for employees who wish to leave a cycle at the station.
- 4.4.7 Port Talbot Rail Station provides services to local and regional destinations. These services include trains routing to/from London Paddington, Manchester Piccadilly, Carmarthen, Milford Haven, Cardiff Central and Swansea. It is a c. 30 minute journey to Cardiff Central from Port Talbot Rail Station.
- 4.4.8 There are four rail services per hour throughout the day provided within two in each direction from the station.
- 4.4.9 As such, travelling by rail and cycle (or bus) to the site provides a reasonable alternative for some employees, particularly those travelling longer journeys to the site.

4.5 Summary

- 4.5.1 The site is situated in a sustainable location, it is well suited to accommodate the proposals, being located in an area surrounded by existing industrial uses. It is connected by existing pedestrian, cycle and public transport networks. The site also has an allocation for employment use and therefore the connectivity for this use has been accepted previously.
- 4.5.2 There is a choice of modes of travel for all journey purposes, which will assist in constraining the level of vehicle generation from the site and minimise the impact of the development.
- 4.5.3 The site location will encourage sustainable travel behaviour, attract some employees who choose to travel by sustainable modes and is fully in accordance with transport policies in Future Wales, PPW11, TAN18 and the Active Travel Act.

5. DEVELOPMENT PROPOSALS

5.1 Overview

- 5.1.1 The proposals are for a full application for a new metal processing facility (Use Classes B1, B2 and B8). Industrial processes to be carried out on site would consist of the melting and atomizing of raw materials to manufacture metal powder for use in other industry. Metals on-site include (but not limited to) stainless steels, nickel alloys, cobalt alloys aluminium alloys and copper. The site would be operational for 24 hours a day between 6 and 7 days a week.
- 5.1.2 The site would comprise of one large main building which incorporates the furnace, warehousing, engineering areas, welding bays and the atomising area. There would also be two smaller amenity blocks which would comprise of the administration, HR and support buildings. Maximum building heights would be approximately 19m. There would also be four car parking areas and separate service yards adjacent to the main building. The exact description of the development is as follows:
- “Development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV and parking on-site at J38, M4, Margam, Port Talbot.”*
- 5.1.3 Approximately 150 full-time equivalent (FTE) staff would be employed at the site on both shift and standard working patterns. It is also forecast that there would be between c.2-10 HGV vehicle movements per day.
- 5.1.4 In addition, an argon tank will be added to the services building. This will measure 16.16m in height with a 3m diameter, which is the same height of the eaves of the main building. The tank itself has no moving parts but will supply a number of pumps. Lorries from BOC will use the operational vehicle access to deliver the argon once/twice a week.
- 5.1.5 The site masterplan is provided within Appendix D.

5.2 Site Layout

- 5.2.1 The site layout has been designed to accommodate HGV traffic and separate pedestrians from vehicle movements. In addition, the HGV traffic has been separated from light vehicle traffic and will be accommodated from a new priority junction obtained on the northern boundary. This connects to the site access road and is situated around 60m to the west of the main site access.
- 5.2.2 The main site access is obtained directly from the existing spur onto the site access road. The spur would continue into the site and connect to the four main car parking areas. The internal access road would be subject to 20mph speed restrictions along its length, with short straight sections and deviations provided to slow vehicle speeds within the site. Signage and road markings can also be provided indicating that the speed limit is 20mph, although the geometry of the access road will assist in enforcing these speeds. As well as the car parking areas, this main access provides a secondary / emergency route to the service areas, if the secondary operational access is blocked.
- 5.2.3 The main internal access road is an appropriate width to accommodate the vehicle movements safely, minimise vehicle speeds and ensure that pedestrians and cyclists can be accommodated safely.
- 5.2.4 All vehicles can enter and exit the site in forward gear and manoeuvre within the site appropriately. The swept paths are shown in Appendix E.

- 5.2.5 A footway will be provided adjacent to the main access road along its southern side, which provides a continuous route to access the buildings within the site. Crossings are also provided at appropriate locations within the site and pedestrian routes are available on both sides of the car parking areas to further separate vehicles and pedestrians. All crossings will provide suitable inter-visibility between pedestrians and vehicles for at least 25 metres, consistent with 20mph speeds (based on Manual for Streets). As such, there is a suitable and continuous pedestrian route linking to all parts of the site from the main access and from the car parks.

5.3 Access

- 5.3.1 The main access junction adjoins the site access road via an extension to the existing spur. This has a carriageway width of approximately 7.3m and radii on each corner of 15m. There is also a right turn lane provided into the access, although all vehicle movements would be to and from the north, so unlikely to use this lane. Visibility in each direction is in excess of 120m from an x-distance of 2.4m which is appropriate for a 40mph speed limit based on guidance in TAN18 and is acceptable in this location.
- 5.3.2 The footways from the spur are also extended into the site. Dropped kerb crossings with tactile paving are provided at the spur which enable pedestrians (both site users and existing movements) to cross safely within the mouth of the junction.
- 5.3.3 A secondary access is provided on the northern boundary of the site which will accommodate operational vehicles. This will be a new junction onto the site access road. Visibility can be obtained at 2.4m x 43m in each direction from the access, which is appropriate for 30mph speeds in accordance with TAN18 and Manual for Streets.
- 5.3.4 The access junction has been discussed with highway officers at NPTCBC and has a 15m radii on the eastern side and a 6m radii on the west side. The junction has suitable separation from the opposite access (at 29m), as well as from the main access into the site (at approximately 60m). The carriageway is 7.8m wide within the proximity of the site access road to accommodate passing HGVs safely and provide a suitable angle close to perpendicular where the junction adjoins the site access road. The geometry enables all vehicle movements to turn into and out of the site appropriately.
- 5.3.5 All movements would be to and from the north, particularly HGV's, and suitable signage would be provided within the site to advise drivers of HGVs that left turn movements are not allowed.
- 5.3.6 The access layout, visibility and HGV swept paths at the junction are shown in Appendix F.
- 5.3.7 This operational access road allows two HGVs to pass along its length and is therefore considered appropriate to accommodate HGV movements associated with the proposals.
- 5.3.8 Dropped kerb crossings with tactile paving will be provided at the junction to enable pedestrians (both site users and existing movements) to cross safely within the mouth of the junction.
- 5.3.9 The access arrangements are considered safe and suitable for accommodating all movements to and from the proposed development.
- 5.3.10 The primary pedestrian access into the site would be via the main access point and then via the continuous footways that are provided within the site. This is suitable for accommodating all movements safely and appropriately.
- 5.3.11 In addition, there is a further pedestrian access from the south onto Heolcae'r Bont. This connects to the footways on the northern side of Heolcae'r Bont, which in turn connect to footways crossing the

M4 slip roads to and from the southbound carriageway. This forms part of a route to and from the closest northbound bus stops.

5.4 Parking

Car Parking

5.4.1 The following parking provision is proposed on the site:

- Southern car park – 10 spaces
- Main car park – 98 spaces (6 disabled, 10 electric vehicle charging)
- Secondary car park – 55 spaces (4 disabled, 6 electric vehicle charging)
- Northern car park – 7 spaces (1 disabled, 2 electric vehicle charging)
- **Total car parking – 170 spaces (11 disabled, 18 electric vehicle charging)**

5.4.2 The parking standards within NPTCBC are provided within Supplementary Planning Guidance – SP20 Parking Standards. The site is within a Zone 4 location based on the maps shown in the SPG. The standards for industry use in a Zone 4 location state 1 space per 120sqm for non-operational use.

5.4.3 Applying the standards to the proposed development would equate to a maximum requirement for 238 spaces considering a total floorspace of 28,500 sqm. The provision of parking is therefore within the standards set out in the SPG. A provision slightly below the maximum levels is also in accordance with policies in Future Wales.

5.4.4 All spaces on the site have dimensions of 2.6m x 4.8m which is in accordance with the SPG, with some wider spaces at the end of aisles to ensure vehicles can turn in and out appropriately. Swept path analysis has been undertaken to demonstrate that vehicles can turn into and out of spaces and this is provided in Appendix E.

Disabled Parking

5.4.5 The SPG states that 5% of the total allocation of car parking spaces should be provided as disabled parking.

5.4.6 A total of 11 disabled parking spaces are provided on the site, which equates to 6% of the total provision, which is therefore in excess of the guidance in the SPG.

5.4.7 The spaces allow for an additional 1.2m hatched area around the side and rear of the space to enable safe access to vehicles for people with mobility impairments. The spaces are situated close to the amenity building entrances and will have step free access from the spaces to the building entrance via suitable dropped kerbs and crossings, where needed.

Electric Vehicle Charging

5.4.8 The Parking Standards SPG does not provide standards for the provision of electric vehicle charging spaces. However, providing electric parking on new developments is an aspiration within Future Wales with a target of 10% of spaces for non-residential uses and as such, infrastructure will be provided on the site for electric vehicle charging for 10% of the spaces (18 spaces).

5.4.9 This is considered appropriate and further encourages more sustainable travel to and from the site.

Operational Parking

5.4.10 The operational parking standards are provided in the SPG with the provision stated as 10% of the GFA. The operator has set out that the development would generate c.2-10 HGV movements per day

so there would not be a significant demand for operational parking for large vehicles. However, a large area for operational parking is provided on the east and west sides of the building which will appropriately accommodate the demand.

Cycle Parking

- 5.4.11 The cycle parking standards are provided in the SPG which states for industrial use that 1 space per 500 sqm for long stay parking and 1 space per 1000 sqm for short stay parking should be provided. Applying the standards to the site floorspace, excluding the sub-station and servicing area as these would not have employees based within, of 27,923 sqm would equate to a requirement for 56 long stay spaces and 28 short stay spaces (84 spaces total).
- 5.4.12 The site is providing secure and covered cycle shelters which can accommodate 56 cycles in two separate locations within close proximity of the amenity blocks. In addition, 28 further cycle stands are provided for visitor use. This is consistent with the required level of provision based on the SPG. The shelters are provided close to the building entrances.
- 5.4.13 The cycle parking will be monitored as part of the travel plan and, if demand dictates, additional provision will be considered.

5.5 Deliveries and Servicing

- 5.5.1 The site layout allows for HGVs to turn appropriately and enter and exit in forward gear. Vehicles are able to reverse against each proposed service bay throughout the site and turn in the areas provided without conflict.
- 5.5.2 Swept path analysis has been undertaken to demonstrate the service and delivery movements can be accommodated appropriately and this is shown in Appendix E.
- 5.5.3 In addition, there is space provided in the northern car park for accommodating some delivery vehicles, for example postal deliveries, which can park and turn within the area in the north of the site and access the northern amenity block.

6. TRIP GENERATION AND DISTRIBUTION

6.1 Introduction

6.1.1 This section has considered the trip generation for the proposed site use based on analysis of the Trip Rate Information Computer System (TRICS) for industrial units. The TRICS database has been analysed for sites with similar characteristics in terms of scale and location.

6.1.2 The analysis considers the trip generation during network and development peak hours on a weekday as well as over a daily period.

6.2 Proposed Trip Generation

6.2.1 The analysis has considered the trip generation of the proposed development during network peak hours on a weekday and over a daily period.

6.2.2 The following search criteria have been applied in TRICS to obtain surveys of similar uses:

- 02 – Employment/C – Industrial Unit
- Located in England and Wales (excluding London)
- Surveys from Monday to Friday
- Sites with a GFA of between 10,000sqm and 30,000 sqm
- Suburban Area / Edge of Town / Free Standing locations
- Vehicle surveys carried out since 2000

6.2.3 The above search criteria resulted in the identification of 11 similar sites. The forecast vehicle trip rates per 100sqm GFA and trip generation are set out in Table 6-1. The full TRICS reports are included within Appendix G.

Table 6-1: Proposed Industrial Use development – Vehicle Trip Generation

Time Period	Trip Rates (per 100m2 GFA)			Trip Generation (28,500 sqm)		
	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way
AM Peak (07:00-08:00)	0.370	0.107	0.477	105	30	135
AM Peak (08:00-09:00)	0.345	0.068	0.413	98	19	117
PM Peak (16:00-17:00)	0.080	0.328	0.408	23	93	116
PM Peak (17:00-18:00)	0.073	0.438	0.511	21	125	146
12 Hours	1.920	2.147	4.067	547	612	1159
Daily	2.279	2.299	4.578	650	655	1305

6.2.4 The proposed use is forecast to generate 135 two-way vehicle movements in the AM network peak hour (0700-0800) and 146 two-way vehicle movements in the PM network peak hour (1700-1800).

6.2.5 Across a daily period it is forecast to generate 1,305 two-way vehicle movements.

6.2.6 The level of HGV movements has been considered separately based on the operator provided information. It is forecast that the site would generate 2-10 HGV's per day and as such, for robustness, it has been assumed that there would be 10 HGV arrivals per day and that these would be distributed evenly throughout the day. Considering the same peak and daily hours, the HGV movements are shown in Table 6-2.

Table 6-2: Proposed Industrial Use development – HGV Trip Generation

Time Period	Trip Generation (28,500 sqm)		
	Arrivals	Departures	Two-way
AM Peak (07:00-08:00)	1	1	2
AM Peak (08:00-09:00)	1	1	2
PM Peak (16:00-17:00)	1	1	2
PM Peak (17:00-18:00)	1	1	2
12 Hours	10	10	20
Daily	10	10	20

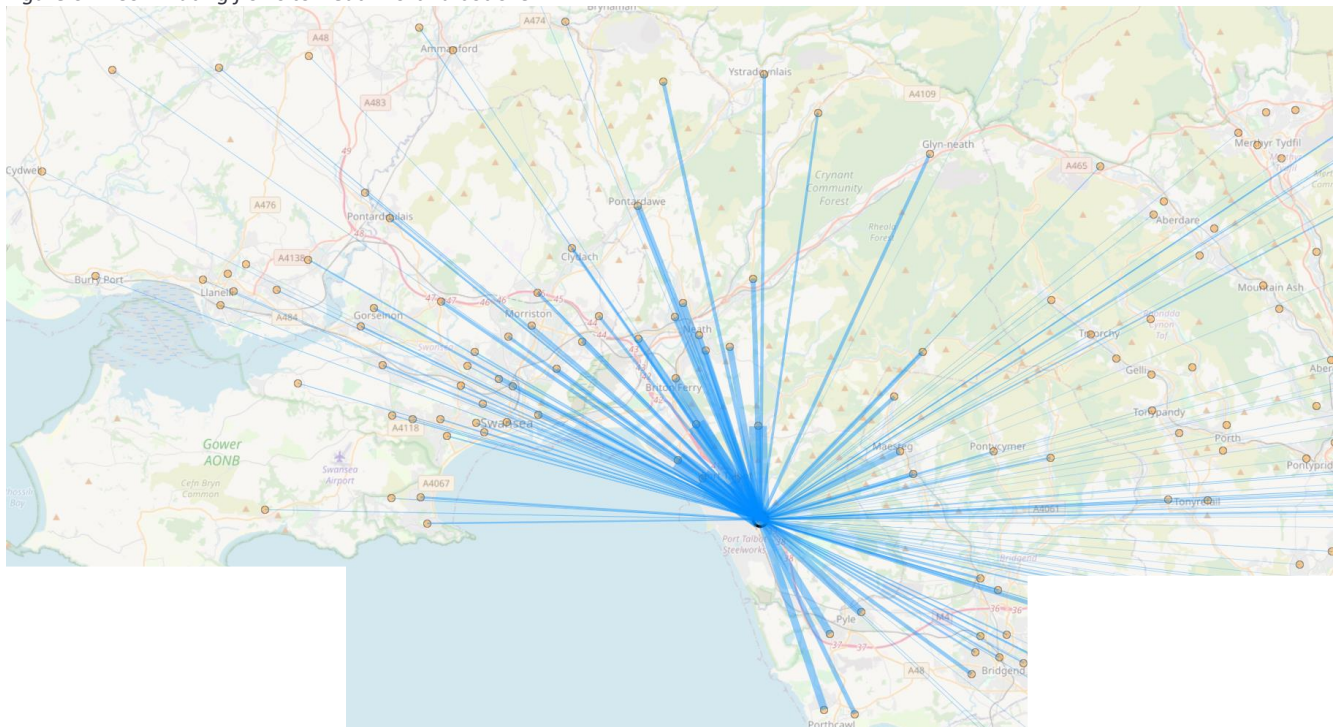
6.2.7 The proposals are forecast to generate a total of two HGV movements in the peak hours (one arrival and one departure), with the remaining vehicle trips all assumed to be light vehicles.

6.3 Trip Distribution and Assignment

6.3.1 Trip distribution and assignment analysis has been undertaken to demonstrate the number of vehicle movements on the network at the key local junctions.

6.3.2 For light vehicle distribution, the Census origin-destination data has been analysed for all journeys to work into Middle Layer Super Output Area (MSOA) Neath Port Talbot 019 (in which the site is situated). The directions of travel for commuting journeys are shown in Figure 6-1 obtained from the Datashine website. The thickness of the line indicates the number of people travelling from the MSOA in which they live to where they work, in Neath Port Talbot 019. This shows that there are journeys in all directions from the site as such, vehicles are likely to disperse across the network, minimising the impacts of the development generated traffic.

Figure 6-1: Commuting flows to Neath Port Talbot 019



Source: <https://commute.datashine.org.uk>

6.3.3 The Datashine website provides a table of the number of journeys into Neath Port Talbot 019 from each MSOA using the 2011 Census data. This has been utilised to determine the percentage of journeys on each route to the site. Journeys have been distributed based on the most likely routes from the home origin MSOA's to the site. The route choices and calculation of the distribution on the local highway network is shown in Appendix H.

6.3.4 A summary of the distribution is set out as follows:

- A48 between site access road and M4 J38 57.4%
- A48 between the site access road and Margam Road 30.0%
- Harbour Way 12.6%
- M4 northwest bound on-slip 25.7%
- Margam Road 4.3%
- M4 southeast 44.4%

6.3.5 This has been worked back to percentage turning movements on the network at the key local junctions, with the network distribution percentages shown within Appendix C. All vehicle movements to and from the site have been assumed to use the site access road and enter and exit onto the Harbour Way / A48 roundabout.

6.3.6 For ease, all light vehicle movements have been assumed to have this distribution, including employees, visitors and operational vehicles (i.e. panel vans).

6.3.7 The HGV traffic flows have been based on an assumed routing considering the strategic road network and likely destinations. The majority of vehicles are assumed to travel to and from the M4, with 10% of vehicles assumed to travel via Harbour Way. The assumed distribution is therefore as follows:

- M4 northwest 40%
- M4 southeast 50%
- Harbour Way 10%

6.3.8 All M4 northwest movements will arrive via J38 and depart via the northwest bound on-slip to the north of the site access road.

6.3.9 The resultant HGV turning movement distribution percentages on the network are also shown within Appendix C.

6.3.10 The development peak hour generation has been assignment onto the network based on these turning movements, with the resultant vehicle assignment shown for the AM and PM peak hours within Appendix C. This has been based on the worst case hourly flows from TRICS, as obtained from Table 6-1.

6.4 Multi-modal trips

6.4.1 The trip generation by each mode of travel has been considered based on the Census analysis for the MSOA in which the site is situated, Neath Port Talbot 019. The vehicle trips have been based on the trip generation in Table 6-1 and the remaining trips have been estimated accordingly. The resultant modal split is set out within Table 6-3.

Table 6-3: Modal Split

Mode of Travel	Modal Split	No. of Movements		
	Neath Port Talbot 019 %	AM Peak	PM Peak	Daily
Public Transport	1.8%	3	3	29
Car Driver	82.6%	135	146	1,305
Car Passenger	8.0%	13	14	126
Motorcycle	1.5%	2	3	24
Bicycle	2.7%	4	5	43
On Foot	3.1%	5	6	49
Other	0.2%	0	0	4
Total		163	177	1580

- 6.4.2 As shown within Table 6-3 the site would generate a number of sustainable travel movements in the peak hours and across a daily period. In addition, due to the location within close proximity of a key cycle route and the high level of cycle parking on the site, it is considered likely that the cycle movements would also be higher than shown. Sustainable modes of travel will be encouraged through measures in the Travel Plan which also contains targets for reducing the level of vehicle use against this baseline level.

7. FUTURE YEAR TRAFFIC FLOWS

7.1 Overview

- 7.1.1 This section outlines the future year traffic flows against which the impact of the development will be considered. This includes consideration of committed developments and TEMPRO growth factors.

7.2 Future Year Baseline Traffic Flows

- 7.2.1 In addition to a base year assessment, future years of 2026 and 2036 have been assessed. The assessment of 2026 is five years after the date of the registration of the planning application and in accordance with the end date of the LDP. The assessment of 2036 has been requested by NTPCBC being 15 years from the date of the planning application.
- 7.2.2 To take account of background traffic growth on the local highway network within the vicinity of the site between 2021 and 2026 / 2036, growth factors have been applied to the obtained 2021 base flow data. These growth factors have been calculated using the TEMPRO computer programme which consider growth in population, employment, and car ownership based on information derived from the National Trip Ends Model (NTEM).
- 7.2.3 Growth rates within Neath Port Talbot 019 have been considered based on all road types. The growth rates used in the AM and PM peak hours are summarised as follows:
- 2021-2026 – AM Peak: 1.0381
 - 2021-2026 – PM Peak: 1.0372
 - 2021-2036 – AM Peak: 1.1131
 - 2021-2036 – PM Peak: 1.1106
- 7.2.4 TEMPRO guidance specifies that the growth factors for individual areas are derived from forecasts at a local authority level which are informed by allocated housing and employment sites within the associated local development plans. As the site is allocated for employment use itself, there would be an element of double counting in the factored background traffic flows through the application of growth rates in addition to the distribution of development traffic. For robustness the growth rates have not been adjusted for the jobs created by the proposed development.
- 7.2.5 In addition, the long term effects of the pandemic on travel behaviour, particularly for commuting are not yet known. There is likely to be an increase in homeworking and reduction in peak hour vehicle movements into the future, particularly with technological and infrastructure improvements and efficiencies. A significant increase in homeworking would also be in accordance with the aspirations of Welsh Government.
- 7.2.6 As such, the application of unfettered growth rates based on traffic projections, is considered a robust method of obtaining future year traffic flows.
- ### 7.3 Committed Developments
- 7.3.1 The planning authority at NPTCBC has provided the details of committed developments which should be considered within the assessment. This required the consideration of the adjacent Tyn Y Caeau application.
- 7.3.2 As set out in Section 2, the Tyn Y Caeau application was refused and is currently subject to appeal. As the application is proposing lorry parking and a small guest house type development, the level of additional vehicle movements would be minimal, particularly during the peak hours and no transport

analysis was provided in support of the application. As such, the application of growth rates to the base data is considered to allow for the minimal increase in movements which may result from this development, if it is approved on appeal. On this basis, separate additional vehicle movements specifically from this proposed scheme have not been considered within the analysis.

7.4 Future Year Traffic Flows and Assessment Scenarios

7.4.1 The 2021 base traffic flows have been factored by the calculated growth rates. The resultant future year baseline and baseline plus development traffic flow diagrams in the AM and PM peak hours are set out within Appendix C:

- 2026 Forecast Baseline – AM Peak Hour (0730-0830)
- 2026 Forecast Baseline – PM Peak Hour (1630-1730)
- 2036 Forecast Baseline – AM Peak Hour (0730-0830)
- 2036 Forecast Baseline – PM Peak Hour (1630-1730)
- 2026 Forecast Baseline plus development – AM Peak Hour (0730-0830)
- 2026 Forecast Baseline plus development – PM Peak Hour (1630-1730)
- 2036 Forecast Baseline plus development – AM Peak Hour (0730-0830)
- 2036 Forecast Baseline plus development – PM Peak Hour (1630-1730)

7.4.2 For further robustness, the worst case development peak hour flows (0700-0800 and 1700-1800) have been added to the worst case background flow peak hours.

8. OPERATIONAL ASSESSMENTS

8.1 Overview

- 8.1.1 This section sets out the extent of the highway network over which the impact of the proposed development has been assessed, the assessment scenarios and details of the operational assessments of key junctions.

8.2 Extent of Assessment

- 8.2.1 The study area has been agreed with NPTCBC and WG and considers the impact of the development at the following junctions.

1. M4 Junction 38
2. A48 / Harbour Way / Site Access Road roundabout

8.3 Assessment Scenarios

- 8.3.1 Assessments have been undertaken during the AM (0730 - 0830) and PM (1630 - 1730) peak hours. The resultant scenarios which have been assessed within this TA are summarised as follows:

- 2021 Base
- 2026 Baseline
- 2026 Baseline + Development
- 2036 Baseline
- 2036 Baseline + Development

8.4 Model Inputs

- 8.4.1 Assessment of both of the junctions has been undertaken using the TRL software Junctions 9. Modelling has been undertaken using total traffic flows and HGV percentages.
- 8.4.2 A comparison of the 2021 base modelled queue lengths against the surveyed queue lengths has been made to assist with model validation and to ensure that the models robustly represent existing conditions. It is noted that the queue lengths in both the model and from the surveys represent average conditions on one day and that there are typical daily fluctuations in queues and flows, however, it is considered that this is an appropriate and accepted method to determine the impact of the development at a junction and identify potential mitigation.
- 8.4.3 The modelling has been based on geometric measurements using OS Mapping supplemented with aerial imagery, where required.

8.5 Model Reporting Outputs

- 8.5.1 The outputs of Junctions 9 provide a number of measurements to ascertain information of a junction's operation. The key measurements which are considered in this assessment are:
- 'Ratio of Flow to Capacity' (RFC)
 - Maximum queue length in PCUs
 - Delay in seconds per vehicle
 - Level of service indicated by a letter between A (well within capacity) and F (at or over capacity)
- 8.5.2 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, although a value of 0.85 to 0.9 is typically considered the upper level of capacity at priority junctions.

- 8.5.3 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 over an hourly period. Changes in queue lengths provide a useful indicator as to a development's impact on the operation of a junction and the wider network.
- 8.5.4 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 development generated traffic would be material and require mitigation.

8.6 Operational Assessment Results Summary

- 8.6.1 The junction modelling has been set out and summarised by junction as follows. The queue survey data is shown in Appendix B.
- 8.6.2 Prior to undertaking future year models, the advice contained within TRL's Junctions 9 user guide has been followed, which states that *"In general, for any use of the program, you should check wherever possible that the results approximately match observed behaviour at the junction before modelling other scenarios"*.
- 8.6.3 All base models have been reviewed to ensure, as far as possible, they reasonably represent the observed operation of the junction. This process has been informed by junction video surveys recorded during the traffic surveys. Queue length surveys are a snapshot of one specific day and as such have not been relied upon for validation purposes and have been treated with caution. The queue length surveys have been used as a reference point alongside the video observations.
- 8.6.4 Where changes have been made to the base model, these are to ensure a robust base model is provided for future year assessments, and changes have been stated and justified.

Junction 1: M4 Junction 38

- 8.6.5 The model has been set up using the large roundabout option and using the estimated circulating flows option.
- 8.6.6 The observation of the base traffic flow data showed that on the southbound off-slip road there was a high level of left turning traffic onto the A48 which would use the left lane only, with a lower flow using the right lane. As such, queue lengths were longer in the nearside lane than the offside lane. On this basis, for a robust analysis, the model has considered each lane independently to model the effects of unequal lane usage.
- 8.6.7 All traffic going ahead/right has been assumed to use the right lane and all traffic turning left, the left lane. In order to accurately model the effects of the unequal lane usage, the left turn lane has been modelled on the 'right' of the ahead/right lanes, with the left turning traffic exiting the model before passing the ahead/right entry lane and therefore not adding traffic to the circulatory flow. The Arms have been modelled as follows:
- Arm A LL – M4 North – Left Turn
 - Arm A RL – M4 North – Ahead/Right
 - Arm B – A48 SE
 - Arm C – M4 South
 - Arm D – Heolcaer Bont

- Arm E – A48 NW

- 8.6.8 As an example, Arm A LL flows have been modelled exiting at Arm A RL so that left turning movements are not included within the circulatory traffic past the ahead/right turning movements from the same Entry Arm. Arm A RL traffic is then distributed around the roundabout to the relevant exit arm. In reality the Arm A LL traffic would be exiting at Arm B, but this does not affect the entry capacity calculations and allows separate calculations to be determined for each lane.
- 8.6.9 In addition, to ensure robustness in the model, all arms with two lane approaches have been assumed to have no calculated flare length and the approach road half-width (m) and entry width (m) have been set as the same value. This reflects how the junction operates as there is no usable flare length for vehicles on these arms.
- 8.6.10 The results of the 2021 Base assessment are summarised in Table 8-1. The full outputs are included in Appendix I.

Table 8-1: 2021 Base Junction Analysis – M4 J38

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A LL – M4 North – Left Turn	1	4.59	0.32	A	0	4.92	0.27	A
Arm A RL – M4 North – Ahead/Right	0	3.62	0.12	A	0	4.05	0.05	A
Arm B – A48 SE	0	1.95	0.18	A	1	2.30	0.32	A
Arm C – M4 South	1	2.86	0.33	A	0	2.91	0.29	A
Arm D – Heolcaer Bont	0	3.59	0.02	A	0	2.97	0.05	A
Arm E – A48 NW	0	1.60	0.17	A	0	1.61	0.24	A

- 8.6.11 Table 8-1 demonstrates that the site access roundabout junction currently operates well within its maximum theoretical capacity (RFC of 1) with a maximum RFC of 0.32 reported in the AM peak on Arm C – M4 South. There is minimal queueing shown in the model.
- 8.6.12 Table 8-2 provides a comparison between the modelled queue length outputs shown in Table 8-1 and the queue survey data.

Table 8-2: Maximum average queue length comparison – M4 J38

Arm	AM Peak (0730 – 0830)			PM Peak (1630 – 1730)		
	Observed (vehicles)	Model (vehicles)	+ / -	Observed (vehicles)	Model (vehicles)	+ / -
Arm A LL – M4 North – Left Turn	2	1	-1	2	0	-2
Arm A RL – M4 North – Ahead/Right	1	0	-1	0	0	0
Arm B – A48 SE	2	0	-2	4	1	-3
Arm C – M4 South	4	1	-3	3	0	-3
Arm D – Heolcaer Bont	0	0	0	1	0	-1
Arm E – A48 NW	0	0	0	1	0	-1

- 8.6.13 Table 8-2 demonstrates that the modelled and observed queues are within typical daily variations in queue lengths. There is minimal queueing at this junction in both peak hours.
- 8.6.14 It is considered that the base model reflects the existing operation of the junction and is therefore valid and acceptable to assess future year conditions.
- 8.6.15 In addition, the base model has been set up with robust geometric parameters and has considered unequal lane usage and is therefore considered appropriate to robustly consider the impact of the proposals.

8.6.16 The results of the operational assessments for the 2026 future years are summarised in Table 8-3 for the 2026 baseline scenario (without development) and in Table 8-4 for the 2026 baseline plus development scenario.

Table 8-3: 2026 Baseline Junction Analysis Results – M4 J38

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A LL – M4 North – Left Turn	1	4.76	0.33	A	0	5.13	0.29	A
Arm A RL – M4 North – Ahead/Right	0	3.68	0.12	A	0	4.14	0.06	A
Arm B – A48 SE	0	1.99	0.19	A	1	2.37	0.33	A
Arm C – M4 South	1	2.96	0.34	A	0	3.01	0.30	A
Arm D – Heolcaer Bont	0	3.63	0.03	A	0	3.05	0.05	A
Arm E – A48 NW	0	1.61	0.17	A	0	1.63	0.25	A

Table 8-4: 2026 Baseline plus Development Junction Analysis – M4 J38

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A LL – M4 North – Left Turn	1	4.82	0.34	A	0	5.41	0.30	A
Arm A RL – M4 North – Ahead/Right	0	3.90	0.17	A	0	4.29	0.07	A
Arm B – A48 SE	0	2.06	0.19	A	1	2.45	0.34	A
Arm C – M4 South	1	3.19	0.37	A	0	3.07	0.31	A
Arm D – Heolcaer Bont	0	3.84	0.03	A	0	3.09	0.05	A
Arm E – A48 NW	0	1.62	0.18	A	0	1.67	0.26	A

8.6.17 Table 8-4 demonstrates that the M4 J38 is forecast to operate well within its maximum theoretical capacity in all scenarios, with a maximum RFC of 0.37 reported in the AM peak hour on Arm C – M4 South.

8.6.18 Minimal increases in delay and RFC are experienced as a result of the proposed development and there are no increases in queue lengths.

8.6.19 The results of the operational assessments for the 2036 future years are summarised in Table 8-5 for the 2036 baseline scenario (without development) and in Table 8-6 for the 2036 baseline plus development scenario.

Table 8-5: 2036 Baseline Junction Analysis – M4 J38

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A LL – M4 North – Left Turn	1	5.17	0.37	A	1	5.68	0.32	A
Arm A RL – M4 North – Ahead/Right	0	3.87	0.13	A	0	4.34	0.06	A
Arm B – A48 SE	0	2.07	0.20	A	1	2.52	0.36	A
Arm C – M4 South	1	3.19	0.38	A	1	3.27	0.33	A
Arm D – Heolcaer Bont	0	3.95	0.03	A	0	3.24	0.06	A
Arm E – A48 NW	0	1.64	0.19	A	0	1.68	0.27	A

Table 8-6: 2036 Baseline plus Development Junction Analysis – M4 J38

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A LL – M4 North – Left Turn	1	5.24	0.37	A	1	5.98	0.33	A
Arm A RL – M4 North – Ahead/Right	0	4.10	0.19	A	0	4.52	0.08	A
Arm B – A48 SE	0	2.15	0.21	A	1	2.62	0.37	A
Arm C – M4 South	1	3.46	0.41	A	1	3.33	0.34	A
Arm D – Heolcaer Bont	0	4.20	0.03	A	0	3.28	0.06	A
Arm E – A48 NW	0	1.65	0.19	A	0	1.72	0.28	A

8.6.20 Table 8-4 demonstrates that the M4 J38 is forecast to operate well within its maximum theoretical capacity in all scenarios, with a maximum RFC of 0.41 reported in the AM peak hour on Arm C – M4 South.

8.6.21 Minimal increases in delay and RFC are experienced as a result of the proposed development and there are no increases in queue lengths.

8.6.22 The results of the junction modelling show that the proposed development will not have a material impact on the operation of the M4 J38 junction in the peak hours and no mitigation is required.

Junction 2: A48 / Harbour Way / Site Access Road roundabout

8.6.23 To ensure robustness in the model, all arms with two lane approaches have been assumed to have no calculated flare length and the approach road half-width (m) and entry width (m) have been set as the same value. This reflects how the junction operates as there is no usable flare length for vehicles on these arms.

8.6.24 The results of the 2021 Base assessment are summarised in Table 8-7. The full outputs are included in Appendix J.

Table 8-7: 2021 Base Junction Analysis – A48 / Harbour Way / Site Access Road

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A – A48 North	0	2.02	0.11	A	0	2.08	0.10	A
Arm B – Harbour Way	1	3.41	0.50	A	1	3.68	0.55	A
Arm C – Site Access Road	0	0.00	0.00	A	0	2.81	0.01	A
Arm D – A48 South	0	2.54	0.19	A	1	3.19	0.36	A

8.6.25 Table 8-7 demonstrates that the A48 / Harbour Way / site access roundabout currently operates well within its maximum theoretical capacity (RFC of 1) with a maximum RFC of 0.55 reported in the PM peak on Arm B – Harbour Way. There is minimal queueing shown in the model.

8.6.26 Table 8-8 provides a comparison between the modelled queue length outputs shown in Table 8-7 and the queue survey data.

Table 8-8: Maximum average queue length comparison – A48 / Harbour Way / Site Access Road

Arm	AM Peak (0730 – 0830)			PM Peak (1630 – 1730)		
	Observed (vehicles)	Model (vehicles)	+ / -	Observed (vehicles)	Model (vehicles)	+ / -
Arm A – A48 North	1	0	-1	1	0	-1
Arm B – A48 South	1	1	0	0	1	+1
Arm C – Site Access Road	0	0	0	0	0	0
Arm D – Harbour Way	1	0	-1	5	1	-4

Note: Vehicle queues reported from the model have been rounded for ease of comparison purposes

8.6.27 Table 8-8 demonstrates that the modelled and observed queues are within typical daily variations in queue lengths. There is minimal queueing at this junction in both peak hours.

8.6.28 It is considered that the base model reflects the existing operation of the junction and is therefore valid and acceptable to assess future year conditions.

8.6.29 In addition, the base model has been set up with robust geometric parameters and is therefore considered appropriate to robustly consider the impact of the proposals.

8.6.30 The results of the operational assessments for the 2026 future years are summarised in Table 8-9 for the 2026 baseline scenario (without development) and in Table 8-10 for the 2026 baseline plus development scenario.

Table 8-9: 2026 Baseline Junction Analysis – A48 / Harbour Way / Site Access Road

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A – A48 North	0	2.04	0.12	A	0	2.10	0.11	A
Arm B – A48 South	1	3.58	0.52	A	1	3.85	0.57	A
Arm C – Site Access Road	0	0.00	0.00	A	0	2.86	0.01	A
Arm D – Harbour Way	0	2.61	0.20	A	1	3.30	0.37	A

Table 8-10: 2026 Baseline plus Development Junction Analysis – A48 / Harbour Way / Site Access Road

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A – A48 North	0	2.06	0.12	A	0	2.13	0.11	A
Arm B – A48 South	1	3.97	0.56	A	1	3.94	0.58	A
Arm C – Site Access Road	0	2.88	0.03	A	0	3.24	0.12	A
Arm D – Harbour Way	0	2.66	0.21	A	1	3.53	0.39	A

8.6.31 Table 8-10 demonstrates that the A48 / Harbour Way / site access roundabout is forecast to operate well within its maximum theoretical capacity in all scenarios, with a maximum RFC of 0.58 reported in the PM peak hour on Arm B – A48 South.

8.6.32 Minimal increases in delay and RFC are experienced as a result of the proposed development and there are no increases in queue lengths.

8.6.33 The results of the operational assessments for the 2036 future years are summarised in Table 8-11 for the 2036 baseline scenario (without development) and in Table 8-12 for the 2036 baseline plus development scenario.

Table 8-11: 2036 Baseline Junction Analysis – A48 / Harbour Way / Site Access Road

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A – A48 North	0	2.07	0.13	A	0	2.14	0.12	A
Arm B – A48 South	1	3.90	0.56	A	2	4.25	0.61	A
Arm C – Site Access Road	0	0.00	0.00	A	0	2.98	0.01	A
Arm D – Harbour Way	0	2.69	0.22	A	1	3.56	0.41	A

Table 8-12: 2036 Baseline plus Development Junction Analysis – A48 / Harbour Way / Site Access Road

Arm	AM Peak (0730 – 0830)				PM Peak (1630 – 1730)			
	Queue (veh)	Max Delay (s)	RFC	LOS	Queue (veh)	Max Delay (s)	RFC	LOS
Arm A – A48 North	0	2.07	0.13	A	0	2.18	0.12	A
Arm B – A48 South	2	3.90	0.56	A	2	4.37	0.62	A
Arm C – Site Access Road	0	0.00	0.00	A	0	3.39	0.13	A
Arm D – Harbour Way	0	2.69	0.22	A	1	3.83	0.42	A

8.6.34 Table 8-10 demonstrates that the A48 / Harbour Way / site access roundabout is forecast to operate well within its maximum theoretical capacity in all scenarios, with a maximum RFC of 0.62 reported in the PM peak hour on Arm B – A48 South.

8.6.35 Minimal increases in delay and RFC are experienced as a result of the proposed development and there is an increase in queue length of just one vehicle in the AM peak on the A48 South.

8.6.36 The results of the junction modelling show that the proposed development will not have a material impact on the operation of the A48 / Harbour Way / site access roundabout in the peak hours and no mitigation is required.

8.7 M4 J38 Slip Road Percentage Impacts

8.7.1 Although the junction assessments show that the development would not have a material impact at the M4 J38 and would not increase queue lengths, WG have requested an analysis of the flow changes on the slip roads. These have been considered against the 2021 base flows for a robust worst case analysis. A summary of the flow changes is set out in Table 8-13. The northbound on-slip base flows have been obtained from the DfT road traffic statistics website and are utilising 2019 data.

Table 8-13: Percentage Change in M4 J38 Slip Road Flows

Arm	AM Peak (0730 – 0830)			PM Peak (1630 – 1730)		
	2021 Base	Dev Flow	% Change	2021 Base	Dev Flow	% Change
Southbound off-slip	448	53	11.8%	289	10	3.5%
Southbound on-slip	313	10	3.2%	448	40	8.9%
Northbound off-slip	554	34	6.1%	449	7	1.6%
Northbound on-slip	327	15	4.6%	508	64	12.6%

8.7.2 As shown in Table 8-13 there are low development flows on each of the slip roads during the peak hours. The maximum percentage change in traffic flow is 11.8% in the AM peak and 12.6% in the PM peak, both in relation to vehicles travelling to and from the M4 to the northwest.

8.7.3 As shown in Section 8.6, the development traffic would not have a material impact on the operation of the junctions or slip roads and there is spare capacity on the WG trunk road network to accommodate these flows.

- 8.7.4 The development would not have an unacceptable impact on road safety, or a material impact on highway capacity, particularly given that the site is allocated for employment use.

9. TRANSPORT IMPLEMENTATION STRATEGY

9.1 Overview

- 9.1.1 The objective of the Transport Implementation Strategy (TIS) is to promote sustainable modes including walking, cycling and public transport and set out mitigation required to accommodate the development on the highway network. This has been considered against the transport hierarchy and sustainable transport policies in PPW11 to reflect the WG commitment to reduce reliance on the private car.

9.2 Active Travel

Walking

- 9.2.1 Walking has the potential of providing an alternative mode of transport to undertake shorter journeys typically under 2km in distance, although the Active Travel Act suggests journeys of up to 3.2km are acceptable.
- 9.2.2 The benefits of walking include that it is free, convenient, good for health and environmentally friendly.
- 9.2.3 The proposed development will facilitate journeys on foot through the footways running within the site which connect to the existing active travel network on the shared footway / cycleway running along the A48. This connects the site to the surrounding residential areas in Margam and Port Talbot.
- 9.2.4 Footways will also be provided within the site to encourage walking. This reflects the user hierarchy as set out in PPW11 and Manual for Streets guidance.

Cycling

- 9.2.5 Secure and covered cycle parking will be provided on the site in accordance with the NPTCBC guidance.
- 9.2.6 Cycling has the potential of providing an alternative mode of transport to undertaken journeys up to a distance of approximately 8km. The site benefits from being situated within close proximity to a good quality cycle route (National Cycle Network Route 4) which links to the site access road.
- 9.2.7 A Travel Plan will provide measures to encourage cycling, such as information on cycling routes and cycling clubs. In addition, a Travel Plan Coordinator will seek to obtain discounts for employees for the purchase of cycling equipment from local cycling shops.

Consideration of PPW11

- 9.2.8 The development is in a location which is not car dependent as it is possible to walk or cycle to residential areas via suitable routes within appropriate distances in accordance with the transport hierarchy in PPW11.

9.3 Public Transport

- 9.3.1 Public Transport provides an opportunity to replace car trips with it being possible to access existing bus stops and routes. The development is access by footways and linked to a shared footway / cycleway which link to the closest bus stops. The closest stops are situated within 425m walking distance of the site. Further stops with additional services are located within 1.2km.

- 9.3.2 The stops are served by two routes with a good frequency of service, which both link to the Port Talbot bus station and the Port Talbot Parkway Rail Station. Potential future employees of the site could therefore use bus services as an alternative to travelling by car.
- 9.3.3 Walking distances to stops are also only on part of the overall journey by public transport and therefore only one aspect to encourage travel via buses. CIHT guidance "*Planning for public transport in developments*" suggests that as important as the walking distance to a stop are information on services available (for example real time information and timetable information), waiting time at stops (which can be influenced by the provision of real time information or phone apps linked to GPS bus data), the directness and quality of the walking route to stops and the directness and journey time of the bus journey itself.
- 9.3.4 The routes from the site are convenient, direct, of good quality and flat and the good frequency of services will reduce waiting times for buses. As such, the good quality walking routes to the local bus stops will encourage employees to access the services.
- 9.3.5 The Travel Plan will ensure that the services are fully promoted to employees, including any discounts or travel passes obtained. Any websites or mobile applications at the time of occupation which provide real time information will be promoted. This will ensure that the wait time at the stop will be minimised as employees can leave the site at the correct time to meet their preferred service, which reduces dwell time at stops. This will reduce the overall travel time from the origin to the end destination.
- 9.3.6 The closest stops are served by bus number X1. This provides a 30 minute frequency of service of c. 2- in each direction throughout the day. The journey time is around 10 minutes to the centre of Port Talbot. As such this service offers a direct (quick journey time) and convenient (frequent services) route.
- 9.3.7 In addition there is a 20 minute frequency of service to the stops within a 1.2km walk of the site.
- 9.3.8 The X1 service to the closest stops to the site connects to the bus station and the Port Talbot Parkway Rail Station. As such, this offers convenient access to further bus and rail services. This convenient interchange would be attractive to those travelling from more regional destinations.
- 9.3.9 A public transport journey should be considered in the context of the entire journey. The walk to the stops will be via direct and high quality routes and be well lit, real time information websites will be promoted to employees and the services provide a fast and direct journey into Port Talbot (where further services can be accessed). As such, employees are more likely to be walk the 425m (or 1.2km) distances from the site to use the bus services.
- 9.3.10 Based on the three strands of a journey (walking, waiting and on-bus travel) and allowing for the promotion of public transport and real-time information, bus travel is considered to be a realistic alternative mode of travel to and from the site. The site location is appropriate for public transport use which is in accordance with the sustainable transport policies in PPW11.

9.4 Vehicular Access

- 9.4.1 The main vehicular access for the site will be provided via an extension to an existing spur from the site access road from the northern boundary of the site. In addition, a separate new access junction will be provided which will accommodate the operational traffic generated by the site. The access arrangements are safe and suitable and can accommodate the vehicle movements generated by the site appropriately.

9.5 Travel Plan

- 9.5.1 A Travel Plan has been produced and submitted separately with the application to encourage travel by sustainable modes and further minimise the impact of the development on the network.

10. SUMMARY AND CONCLUSIONS

10.1 Summary

- 10.1.1 Apex Transport Planning has been commissioned to produce a Transport Assessment (TA) to accompany a full planning application for a proposed industrial unit on a site situated to the northwest of Junction 38 of the M4 in Margam, Port Talbot.
- 10.1.2 The proposals are for a full application for a new metal processing facility (Use Classes B1, B2 and B8). Industrial processes to be carried out on site would consist of the melting and atomizing of raw materials to manufacture metal powder for use in other industry. Metals on-site include (but not limited to) stainless steels, nickel alloys, cobalt alloys aluminium alloys and copper. The site would be operational for 24 hours a day between 6 and 7 days a week.
- 10.1.3 The site is allocated under Policy EC1/2 of the Neath Port Talbot County Borough Council (NPTCBC) Local Development Plan (LDP) as a Strategic Employment Site. As such, the location has been accepted as suitable for employment uses by NPTCBC.
- 10.1.4 This TA has been produced to inform the local highway authority, Neath Port Talbot County Borough Council (NPTCBC), of the highways and transport implications of the proposals.
- 10.1.5 The site is accessed from an unadopted road which links to the A48 / A4241 roundabout and is within close proximity of the strategic road network, which will assist in minimising the impact of the development on the local network. The main site access would be an extension to an existing spur on the northern boundary and a secondary access will accommodate the operational traffic from approximately 60m to the west of the main access. Both accesses provide appropriate geometry and visibility and are considered safe and suitable to accommodate the development proposals.
- 10.1.6 A total of 170 car parking spaces are proposed on the site which is in accordance with the guidance in the Parking Standards SPG. This includes a provision of 11 disabled parking bays and 10% of spaces accommodating electric vehicle charging.
- 10.1.7 The proposals can accommodate service and delivery vehicles appropriately and these vehicles can enter and exit the site in forward gear.
- 10.1.8 The site is well connected to existing walking and cycling routes. Bus stops are also located within walking distance and these provide a good frequency of service to residential areas, suitable for some commuting journeys. The surrounding area has a good level of sustainable travel, as would be expected in an existing employment area and walking, cycling and public transport journeys are already accommodated on the network.
- 10.1.9 The site is well situated to accommodate the proposals, being located in an established industrial area, which is allocated for employment use. The location will encourage and promote sustainable travel behaviour and attract employees who choose to travel by sustainable modes. This will assist in constraining the level of vehicle generation from the site and minimise the impact of the site on the highway network.
- 10.1.10 Road safety data has been analysed and there is no evidence of a highway safety issue within the vicinity of the site which would be exacerbated by the proposals.
- 10.1.11 Operational assessments have been undertaken on the key junctions on the local highway network, as requested by NPTCBC. The assessments are robust and have been undertaken in a 2026 and 2036 future year considering unfettered traffic growth (which may not occur). The assessments

demonstrated that the development would not have a material impact at any junction and no mitigation is required to accommodate the development traffic.

10.2 Conclusions

- 10.2.1 The proposals are appropriately located for access by sustainable modes, considering this is an allocated employment site, in an existing employment area, where movements have been accommodated safely. In this regard the proposals are in accordance with transport policies in Future Wales, TAN18, PPW11 and the NPTCBC LDP.
- 10.2.2 Data does not indicate a road safety issue which would be exacerbated by the proposals. The development would not have a material impact on road safety and the access arrangements are appropriate and safe.
- 10.2.3 The proposed parking provision is appropriate and acceptable across the site and is in accordance with the NPTCBC Parking Standards as well as the objectives for encouraging sustainable travel and reducing car use as set out in PPW11 and Future Wales.
- 10.2.4 The proposals will not have a material impact on the operation of the highway network and no highway mitigation is required.
- 10.2.5 As such, the analysis presented within this TA allows the highway authority to provide a positive recommendation on the planning application.

Appendix A Scoping Discussions

David Chapman

Subject: FW: Pre-Application Advice - Industrial Unit at M4 J38 Margam

From: Justin W. Griffiths <j.griffiths4@npt.gov.uk>
Sent: 07 September 2021 12:59
To: David Chapman <davidchapman@apextp.co.uk>
Cc: Joanna Weeks <j.weeks@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi Dave – yes that fine

Cofion cynnes / Kind regards

Justin W. Griffiths

BSc(Hons), MSc, FCABE, C.Build E, FIHE MCI0B.

SAB & Highway Development Control Manager/ SAB a Rheolwr Rheoli Datblygu Priffyrdd
Neath Port Talbot County Borough Council/ Cyngor Bwrdeistref Sirol Castell-nedd Port Talbot

Tel/Ffôn: 01639 686397

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The Quays, Brunel Way, Neath SA11 2GG
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We welcome correspondence in Welsh and will deal with Welsh and English correspondence to the same standards and timescales.

Croesewir gohebiaeth yn y Gymraeg a byddwn yn ymdrin â gohebiaeth Gymraeg a Saesneg i'r un safonau ac amserlenni

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Mae'r e-bost hwn ac unrhyw ffeiliau a drosglwyddir gydag ef yn gyfrinachol ac at ddefnydd yr unigolyn neu'r corff y cyfeiriwyd hwy atynt yn unig. Os ydych wedi derbyn yr e-bost hwn mewn camgymeriad, dylech hysbysu'r person a anfonodd yr e-bost ar unwaith. Hefyd, sylwer nad oes unrhyw sicrwydd nad yw'r e-bost hwn neu unrhyw ymgysylltiad yn rhydd o firws ac nad yw chwaith wedi'i ryng-gipio na'i newid.

From: David Chapman <davidchapman@apex.tp.co.uk>
Sent: 07 September 2021 12:24
To: Justin W. Griffiths <j.griffiths4@npt.gov.uk>
Cc: Joanna Weeks <j.weeks@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Thank you, I assume Junctions 9 is the appropriate tool?

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
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From: Justin W. Griffiths <j.griffiths4@npt.gov.uk>
Sent: 07 September 2021 12:17
To: David Chapman <davidchapman@apex.tp.co.uk>
Cc: Joanna Weeks <j.weeks@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi David junction modelling please.

Cofion cynnes / Kind regards

Justin W. Griffiths

BSc(Hons), MSc, FCABE, C.Build E, FIHE MCIQB.

SAB & Highway Development Control Manager/ SAB a Rheolwr Rheoli Datblygu Priffyrdd
Neath Port Talbot County Borough Council/ Cyngor Bwrdeistref Sirol Castell-nedd Port Talbot

Tel/Ffôn: 01639 686397

Email / E-bost: j.griffiths4@npt.gov.uk

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From: David Chapman <davidchapman@apex.tp.co.uk>
Sent: 07 September 2021 11:35
To: Justin W. Griffiths <j.griffiths4@npt.gov.uk>
Cc: Joanna Weeks <j.weeks@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Thanks Justin

In relation to this, are you happy for a percentage impact assessment, or do you require a junction model – i.e. Junctions 9 for this junction as well?

Surveys are being undertaken on Thursday.

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
www.apex.tp.co.uk

From: Justin W. Griffiths <j.griffiths4@npt.gov.uk>
Sent: 07 September 2021 11:26
To: David Chapman <davidchapman@apex.tp.co.uk>
Cc: Joanna Weeks <j.weeks@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Dear David

Thank you for the email.

I can confirm that whilst the slip roads off the M4 are to be discounted in terms of survey would still require a survey of the gyratory and the county roads.

In respect of junction analysis for the Harbour Way Roundabout, we are currently using Junction 9 Arcady model.

Regards

Cofion cynnes / Kind regards

Justin W. Griffiths

BSc(Hons), MSc, FCABE, C.Build E, FIHE MCI0B.

SAB & Highway Development Control Manager/ SAB a Rheolwr Rheoli Datblygu Priffyrdd
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From: David Chapman <davidchapman@apextp.co.uk>

Sent: 02 September 2021 16:42

To: Justin W. Griffiths <j.griffiths4@npt.gov.uk>

Cc: Joanna Weeks <j.weeks@npt.gov.uk>

Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Thanks Justin,

I have contacted Richard Jones at WG and will keep you updated with any response received.

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
www.apextp.co.uk

From: Justin W. Griffiths <j.griffiths4@npt.gov.uk>
Sent: 02 September 2021 16:28
To: David Chapman <davidchapman@apextp.co.uk>
Cc: Joanna Weeks <j.weeks@npt.gov.uk>
Subject: FW: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Dear David

Thank you for your email

I will be on leave tomorrow and next Monday, however on my return to work I shall review the attached document and provide comments accordingly.

In the interim, would you be so kind as to provide with your contact in Welsh Government in respect of the comments you have provided below. Thanks.

Cofion cynnes / Kind regards

Justin W. Griffiths

BSc(Hons), MSc, FCABE, C.Build E, FIHE MCIOB.

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Email / E-bost: j.griffiths4@npt.gov.uk

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unigolyn neu'r corff y cyfeiriwyd hwy atynt yn unig. Os ydych wedi derbyn yr e-bost hwn mewn camgymeriad, dylech hysbysu'r person a anfonodd yr e-bost ar unwaith. Hefyd, sylwer nad oes unrhyw sicrwydd nad yw'r e-bost hwn neu unrhyw ymgysylltiad yn rhydd o firws ac nad yw chwaith wedi'i ryng-gipio na'i newid.

From: David Chapman <davidchapman@apexpt.co.uk>
Sent: 01 September 2021 23:44
To: HDC <hdc@npt.gov.uk>
Subject: FW: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi

In Terry's absence, is someone else able to assist with my email below?

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
www.apexpt.co.uk

From: David Chapman
Sent: 01 September 2021 23:42
To: Terry J. Davies <t.davies2@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi Terry

I have been considering the trip distribution on the network in the peak hours in more detail and we are obtaining traffic survey data on the 8th September at the two junctions you requested in your email below.

I would assume J38 would be a Welsh Government junction? We have received the attached ES Scoping Opinion and the Welsh Government have specifically stated the following:

"Given the numbers referenced for HGV use and the likely employee traffic generation they do not foresee impacts to their M4 slip roads at Margam. The associated forthcoming transport details should however confirm this and may be best as a simple line on percentage impact to the on and off-slips at Junction 38."

As such, we will still need to obtain a traffic survey of this junction, but we'd propose to provide simple diagrams setting out the low percentage impacts at this junction, as opposed to a full junction assessment. Would this be acceptable?

For the other Harbour Way roundabout, I assume a Junctions 10 Arcady model would be acceptable?

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
www.apextp.co.uk

From: Terry J. Davies <t.davies2@npt.gov.uk>
Sent: 09 August 2021 10:59
To: David Chapman <davidchapman@apextp.co.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Dave,

I would accept your argument.

Regards

Terry Davies

SAB & Highway Development Senior Engineer -Team Leader /SAB a Uwch Beiriannydd Datblygu
Priffyrdd – Arweinydd Tam
SAB & Highway Development Control Section/SAB a Rheoli Datblygu Priffyrdd Adran
Neath Port Talbot County Borough Council/ Cyngor Bwrdeistref Sirol Castell-nedd Port Talbot
Tel/Ffôn: 01639 686392

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From: David Chapman <davidchapman@apextp.co.uk>
Sent: 09 August 2021 10:08
To: Terry J. Davies <t.davies2@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Thanks Terry, on the basis of this not being a through route and our site generating traffic only through junctions 1 and 2, do we need to do an assessment of 3 Heol Cae'r Bont junction? We won't have an impact at this junction?

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
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From: Terry J. Davies <t.davies2@npt.gov.uk>
Sent: 09 August 2021 09:48
To: David Chapman <davidchapman@apexpt.co.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi Dave,

I'm happy with what you have indicated. Heol Cae'r Bont the access into the original biomass should have been closed off and all access should then be off the access road to margam green energy plant. Currently you are correct this access road is not used.

Regards

Terry Davies

SAB & Highway Development Senior Engineer -Team Leader /SAB a Uwch Beiriannydd Datblygu Priffyrdd – Arweinydd Tam
SAB & Highway Development Control Section/SAB a Rheoli Datblygu Priffyrdd Adran
Neath Port Talbot County Borough Council/ Cyngor Bwrdeistref Sirol Castell-nedd Port Talbot
Tel/Ffôn: 01639 686392

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From: David Chapman <davidchapman@apexpt.co.uk>
Sent: 09 August 2021 09:29
To: Terry J. Davies <t.davies2@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi Terry

Can you just confirm that it would be the following that you would require assessing as I can't find the Harbourside roundabout – only the Harbour Way Roundabout?

I have also assumed that the Heolcae'r Bont junction would be the one shown as '3' below, although I wasn't sure that the site would be able to access from this direction?

I assume that surveys undertaken on 7th September would be acceptable?

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
www.apexpt.co.uk

From: Terry J. Davies <t.davies2@npt.gov.uk>
Sent: 09 August 2021 09:14
To: David Chapman <davidchapman@apexpt.co.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Dave,

In this instance I would require harbourside roundabout and Jct 38 roundabout and and Heol Cae'r Bont.

Regards

Terry Davies

SAB & Highway Development Senior Engineer -Team Leader /SAB a Uwch Beiriannydd Datblygu Priffyrdd – Arweinydd Tam
SAB & Highway Development Control Section/SAB a Rheoli Datblygu Priffyrdd Adran
Neath Port Talbot County Borough Council/ Cyngor Bwrdeistref Sirol Castell-nedd Port Talbot
Tel/Ffôn: 01639 686392

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From: David Chapman <davidchapman@apexpt.co.uk>
Sent: 06 August 2021 12:23
To: Terry J. Davies <t.davies2@npt.gov.uk>; Delyth A. Thomas <d.a.thomas@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi both

Just following up on this again, we are very keen to agree the scope of work required, including junction assessments so we can commission surveys for September, if needed.

If you are able to respond, it would be greatly appreciated.

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
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From: David Chapman
Sent: 08 July 2021 21:55
To: t.davies2@npt.gov.uk; Delyth A. Thomas <d.a.thomas@npt.gov.uk>
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi both

I'm just following up on this one as I understand that the client has engaged in pre-app advice discussions, so I was hoping to confirm the scope of assessment, particularly in relation to traffic surveys.

I understand that we may not be able to obtain traffic data until September, based on our discussions on other sites, but if you are able to confirm this, it would be greatly appreciated.

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Tel: 02920 619 361 | **Mob:** 07843 621 638
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From: David Chapman
Sent: 05 July 2021 20:07
To: Terry Davies <t.davies2@npt.gov.uk>; Delyth A. Thomas <d.a.thomas@npt.gov.uk>
Subject: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi both

We have been appointed to provide transport support for this project and I was looking to agree the scope of works required to support the application. I believe you are the correct contact for this area Terry and hopefully you are able to assist?

The site location is here in Google Maps: <https://goo.gl/maps/goxefRNM3jb8BBEF9>

The site is situated to the northwest of Junction 38 of the M4 and is accessed from a private road which links to the A48 / A4241 roundabout and within close proximity of the strategic road network which will assist in minimising the impact of the development on the local network.

The proposals are for a full application for a new metal processing facility (Use Classes B1, B2 and B8). Industrial processes to be carried out on site would consist of the melting and atomizing of raw materials to manufacture metal powder for use in other industry. Metals on-site include (but not limited to) stainless steels, nickle alloys, cobalt alloys aluminium alloys and copper. The site would be operational for 24 hours a day between 6 and 7 days a week.

The maximum floor space of all buildings for the development would be ca. 20,100m²; the operations buildings would be 18,250m², while there would be an additional 1,848m² of administration, HR and support buildings. Maximum building heights would be approximately 19m. Approximately 150 full-time equivalent (FTE) staff would be employed at the site on both shift and standard working patterns. It is also forecast that there would be between c.2-10 HGV vehicle movements per day.

The indicative site layout is attached (which is subject to change and refinement as the project progresses).

The site is allocated under Policy EC1/2 of the Neath Port Talbot LDP as a Strategic Employment Site. As such, the location has been accepted for employment uses by NPTCBC.

There would be up to c.300 parking spaces on-site which would be accessed from a priority junction which links to the unadopted access road. This in turn connects to the A48 / Harbour Way roundabout at its northern end.

The site is considered to be within a Zone 4 location. The standards for industry use in a Zone 4 location state 1 space per 120sqm for non-operational use which would equate to 168 spaces if applied to the site. The parking provision is in excess of the standards, which would accommodate staff movements at shift change over times.

Initial trip generation analysis using TRICS demonstrates that the site could generate around 80 vehicle movements in the peak hours, although this would also depend partly on staff shift times. Initial trip distribution analysis suggests that the significant majority of vehicles would route via the M4 either through J38 or the northbound slip road. As such, there would be a minimal impact of vehicles on Margam Road and Harbour Way.

Based on this trip generation and assignment, it is not considered that the development would have a material impact at key junctions on the A4241 to the west of the site or the M4. As such, it is proposed to undertake junction assessments at the following location:

- . A48 / Harbour Way / Site Access road roundabout

Can you confirm whether you have traffic survey data available for this junction and if not, whether survey data obtained in the next two weeks (before school holidays) would be accepted?

Based on the scale and location of the proposals and the forecast trip generation, I would consider it appropriate to submit a Transport Assessment (TA) with the application. The scope we consider suitable for a TA report has been set out as follows:

- . Review of Existing site use, location, and access
- . Planning context – i.e. surrounding proposals / applications and the allocation, from a transport perspective
- . Site connectivity analysis – undertaking an audit of key routes and infrastructure. This would consider whether there are any significant issues which require mitigation (although given the site is situated in an existing allocated industrial area, no mitigation is anticipated)
- . Public transport accessibility analysis
- . Brief statement on the characteristics of the existing highway network and details of baseline traffic flows on the local highway network, where these are publicly available and details of baseline traffic obtained at the key junction
- . Road safety analysis within the vicinity of the site (using the most recent five years publicly available STATS19 data), particularly considering key routes and the site access
- . Committed transport improvements surrounding the site, if any
- . Development proposals including; layout, operational hours, staff numbers and shifts
- . Demonstrating that the site access has appropriate geometry and visibility. A spur has already been constructed so no access designs are proposed.

- Description of access by non-car modes (including access to the building and from the car parks for those with impaired mobility)
- Parking provision and layout and justifying in accordance with standards. This includes swept path analysis of the parking and site layout, as needed
- Details of servicing arrangements and access for large vehicles, including undertaking swept path analysis of the site layout for articulated vehicles
- Summary of construction and potential measures to minimise the impact of construction (from a transport perspective)
- Forecast vehicle trip generation using applicable TRICS sites for network peak hours and over a daily period (initial analysis is above)
- Forecast a modal split for all modes of travel
- Trip Distribution and Assignment on the network based on Census journey to work data for existing employment trips
- Consideration and inclusion of committed development traffic, as required – if you could confirm relevant committed developments for consideration it would be appreciated
- Factoring obtained traffic survey data to a future assessment year – considered as 2026, five years from now and the end of the LDP period
- Junction modelling as set out above, using JUNCTIONS 9 for a 2021 base year and 2026 future year plus development
- Set out details of potential impacts on road safety, highway capacity and sustainable travel based on all analysis. This would be summarised within a Transport Implementation Strategy

In addition, we would also produce a Travel Plan for submission with the application.

I trust this is enough information to enable you to provide a response? Given the tight timescales for obtaining traffic survey data before the summer holidays, if you are able to review and confirm the scope is appropriate ASAP that would be greatly appreciated.

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
Director | Apex Transport Planning Ltd
Mob: 07843 621 638

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David Chapman

From: Richard.Jones7@gov.wales
Sent: 07 September 2021 11:45
To: David Chapman
Cc: LGC_Development_Control-South@gov.wales
Subject: RE: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Good morning David,

In terms of the gyratory, a requirement for a full junction assessment would be driven by the local highway authority which in this case is Neath Port Talbot CBC. Any assessment should be adequately robust in order to accurately best quantify impacts on the J38 M4 slips.

Kind regards
Richard

From: David Chapman <davidchapman@apexpt.co.uk>
Sent: 02 September 2021 16:41
To: Jones, Richard (EST - Transport) <Richard.Jones7@gov.wales>
Subject: Pre-Application Advice - Industrial Unit at M4 J38 Margam

Hi Richard

I was looking to agree the scope of assessment for a proposed industrial unit development at Margam. Hopefully you are the correct contact, or would be able to forward on for me?

I have attached comments which have been received in relation to the ES Scoping Document. The proposals are for a metal processing facility comprising operational building (18,250sq.m) plus administration and amenity buildings (1,848sq.m).

The Welsh Government have specifically stated the following in response to the ES Scoping:

"Given the numbers referenced for HGV use and the likely employee traffic generation they do not foresee impacts to their M4 slip roads at Margam. The associated forthcoming transport details should however confirm this and may be best as a simple line on percentage impact to the on and off-slips at Junction 38."

The highway authority (NPTCBC) have stated that they would like us to do an assessment of J38 in relation to the proposals. In the context of your comments, we'd propose to provide simple diagrams setting out the low percentage impacts at this junction.

As such, we will still need to obtain a traffic survey of this junction to provide analysis of the percentage impacts, but would not propose undertaking a full junction assessment. Would this be acceptable?

Please let me know if you need any further information, as we can also provide traffic flow data through the junction, if needed.

Many thanks

Dave

David Chapman BA(Hons) MSc FCIHT CMILT
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Appendix B Traffic Survey and Queue Length Data

Junction: 1 (YELLOW)

Approach: A48 North

TIME	To A48 (S)								To Site Access								To A4241 Harbour Way							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	1	7	7	0	0	0	15	0	0	0	0	0	0	0	0	0	1	4	0	0	1	0	6
07:15 - 07:30	0	0	16	8	0	0	0	24	0	0	2	0	0	0	0	2	0	0	6	1	0	0	0	7
07:30 - 07:45	0	1	29	5	1	1	0	37	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12
07:45 - 08:00	0	0	28	9	1	0	1	39	0	0	1	1	0	0	0	2	0	0	11	1	0	1	0	13
Hourly Total	0	2	80	29	2	1	1	115	0	0	3	1	0	0	0	4	0	1	31	4	0	2	0	38
08:00 - 08:15	0	1	31	1	0	0	2	35	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	10
08:15 - 08:30	0	2	37	6	0	0	1	46	0	0	1	0	0	0	0	1	0	0	12	0	0	0	0	12
08:30 - 08:45	0	0	43	3	1	0	0	47	0	0	6	1	0	0	0	7	0	0	18	1	0	0	0	19
08:45 - 09:00	0	0	19	6	0	0	0	25	0	0	3	0	2	0	0	5	0	0	7	0	0	1	0	8
Hourly Total	0	3	130	16	1	0	3	153	0	0	10	1	2	0	0	13	0	0	47	1	0	1	0	49
09:00 - 09:15	0	0	24	4	0	0	0	28	0	0	0	0	0	0	0	0	0	0	6	4	0	1	0	11
09:15 - 09:30	0	0	12	5	0	0	0	17	0	0	1	2	0	0	0	3	0	0	6	2	0	0	0	8
09:30 - 09:45	0	0	10	4	0	0	1	15	0	0	3	0	0	0	0	3	0	0	10	1	0	0	0	11
09:45 - 10:00	0	0	17	5	0	0	1	23	0	0	1	1	0	0	0	2	0	0	7	2	0	1	0	10
Hourly Total	0	0	63	18	0	0	2	83	0	0	5	3	0	0	0	8	0	0	29	9	0	2	0	40
TOTAL	0	5	273	63	3	1	6	351	0	0	18	5	2	0	0	25	0	1	107	14	0	5	0	127
16:00 - 16:15	0	0	31	6	0	0	1	38	0	0	0	0	0	0	0	0	0	0	8	0	0	0	1	9
16:15 - 16:30	0	0	32	8	0	1	1	42	0	0	1	0	0	0	0	1	0	0	4	0	0	0	0	4
16:30 - 16:45	0	0	36	7	0	0	0	43	0	0	0	1	0	0	0	1	0	0	5	0	0	0	0	5
16:45 - 17:00	0	0	31	4	0	0	1	36	0	0	1	0	0	0	0	1	0	0	7	0	0	0	0	7
Hourly Total	0	0	130	25	0	1	3	159	0	0	2	1	0	0	0	3	0	0	24	0	0	0	1	25
17:00 - 17:15	0	0	33	3	1	0	0	37	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
17:15 - 17:30	0	0	23	3	0	0	1	27	0	0	1	0	0	0	0	1	0	0	14	0	0	0	0	14
17:30 - 17:45	0	0	30	0	0	0	1	31	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	5
17:45 - 18:00	0	0	33	1	0	0	1	35	0	0	1	0	0	0	0	1	0	0	6	0	0	0	0	6
Hourly Total	0	0	119	7	1	0	3	130	0	0	2	0	0	0	0	2	0	0	32	1	0	0	0	33
18:00 - 18:15	1	3	26	1	1	0	1	33	0	0	1	0	0	0	0	1	0	1	9	1	0	0	0	11
18:15 - 18:30	0	1	29	3	0	0	1	34	0	0	0	1	0	0	0	1	0	0	10	0	0	0	0	10
18:30 - 18:45	0	0	22	2	0	0	0	24	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6
18:45 - 19:00	0	0	23	4	0	0	0	27	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
Hourly Total	1	4	100	10	1	0	2	118	0	0	1	1	0	0	0	2	0	1	30	2	0	0	0	33
TOTAL	1	4	349	42	2	1	8	407	0	0	5	2	0	0	0	7	0	1	86	3	0	0	1	91

Junction: 1 (YELLOW)

Approach: A48 South

TIME	To Site Access								To A4241 Harbour Way								To A48 (N)							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	0	5	0	0	0	0	5	0	0	63	14	1	15	0	93	0	0	36	20	2	1	0	59
07:15 - 07:30	0	0	5	1	0	0	0	6	0	0	80	14	1	11	0	106	0	0	45	12	4	3	0	64
07:30 - 07:45	0	0	1	1	0	0	0	2	1	0	116	18	2	9	0	146	0	3	49	15	1	2	0	70
07:45 - 08:00	0	0	0	1	0	0	0	1	0	0	124	31	1	6	0	162	0	0	58	17	4	1	1	81
Hourly Total	0	0	11	3	0	0	0	14	1	0	383	77	5	41	0	507	0	3	188	64	11	7	1	274
08:00 - 08:15	0	0	2	1	0	0	0	3	0	0	103	12	1	3	0	119	0	0	94	10	1	0	2	107
08:15 - 08:30	0	0	1	3	0	0	0	4	0	0	121	14	3	6	0	144	0	1	80	11	4	2	5	103
08:30 - 08:45	0	0	0	1	0	0	0	1	0	0	83	11	2	5	0	101	0	0	69	16	2	2	0	89
08:45 - 09:00	0	0	0	1	0	0	0	1	0	1	79	16	2	5	0	103	0	0	82	19	3	2	1	107
Hourly Total	0	0	3	6	0	0	0	9	0	1	386	53	8	19	0	467	0	1	325	56	10	6	8	406
09:00 - 09:15	0	0	1	0	0	0	0	1	0	0	55	15	3	5	0	78	0	0	61	13	6	2	0	82
09:15 - 09:30	0	0	0	0	0	0	0	0	0	0	40	11	1	6	0	58	0	0	53	31	1	0	2	87
09:30 - 09:45	0	0	1	0	0	0	0	1	0	0	39	9	2	5	0	55	0	1	62	17	2	2	0	84
09:45 - 10:00	0	0	0	0	0	0	0	0	0	0	36	8	1	5	0	50	0	0	49	33	2	2	0	86
Hourly Total	0	0	2	0	0	0	0	2	0	0	170	43	7	21	0	241	0	1	225	94	11	6	2	339
TOTAL	0	0	16	9	0	0	0	25	1	1	939	173	20	81	0	1215	0	5	738	214	32	19	11	1019
16:00 - 16:15	0	0	1	0	0	0	0	1	0	0	56	12	0	3	1	72	0	0	96	18	1	2	1	118
16:15 - 16:30	0	0	0	0	0	0	0	0	0	0	66	27	1	6	0	100	0	1	92	23	1	0	1	118
16:30 - 16:45	0	0	1	0	0	0	0	1	1	1	73	21	0	4	0	100	0	2	123	27	1	2	1	156
16:45 - 17:00	0	0	1	0	0	0	0	1	1	0	78	14	0	2	0	95	0	1	154	21	1	1	0	178
Hourly Total	0	0	3	0	0	0	0	3	2	1	273	74	1	15	1	367	0	4	465	89	4	5	3	570
17:00 - 17:15	0	0	1	0	0	0	0	1	0	0	78	18	1	3	0	100	0	2	171	21	1	1	0	196
17:15 - 17:30	0	0	0	0	0	0	0	0	0	0	95	6	0	1	0	102	0	3	124	22	0	1	1	151
17:30 - 17:45	0	0	4	0	0	0	0	4	0	4	71	10	0	3	0	88	0	0	92	10	1	2	1	106
17:45 - 18:00	0	0	0	0	0	0	0	0	0	3	62	9	0	2	1	77	0	0	80	13	0	4	1	98
Hourly Total	0	0	5	0	0	0	0	5	3	4	306	43	1	9	1	367	0	5	467	66	2	8	3	551
18:00 - 18:15	0	0	0	0	0	0	0	0	0	0	67	6	3	4	0	80	1	0	71	16	0	3	0	91
18:15 - 18:30	0	0	0	0	0	0	0	0	1	0	51	3	0	1	0	56	1	0	70	3	0	1	1	76
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	51	7	0	2	1	61	0	2	64	5	0	1	1	73
18:45 - 19:00	0	0	1	0	0	0	0	1	2	0	38	6	0	4	0	50	0	0	52	5	1	1	0	59
Hourly Total	0	0	1	0	0	0	0	1	3	0	207	22	3	11	1	247	2	2	257	29	1	6	2	299
TOTAL	0	0	9	0	0	0	0	9	8	5	786	139	5	35	3	981	2	11	1189	184	7	19	8	1420

Junction: 1 (YELLOW)

Approach: Site Access

TIME	To A4241 Harbour Way								To A48 (N)								To A48 (S)							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:15 - 07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 - 07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
07:45 - 08:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	2
08:00 - 08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 - 08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
08:30 - 08:45	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
08:45 - 09:00	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Hourly Total	0	0	1	1	0	0	0	2	0	0	2	1	0	0	0	3	0	0	0	1	0	0	0	1
09:00 - 09:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1
09:15 - 09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3
09:30 - 09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
09:45 - 10:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	0	1
Hourly Total	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	4	2	0	0	0	6
TOTAL	0	0	1	1	0	0	0	2	0	0	5	2	0	0	0	7	0	0	5	3	0	1	0	9
16:00 - 16:15	0	0	1	1	0	0	0	2	0	0	1	0	0	0	0	1	0	0	2	0	0	0	0	2
16:15 - 16:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
16:30 - 16:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	0	1
16:45 - 17:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	1	0	0	0	3
Hourly Total	0	0	1	1	0	0	0	2	0	0	3	1	1	0	0	5	0	0	5	1	0	0	0	6
17:00 - 17:15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	0	1
17:15 - 17:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1
17:30 - 17:45	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	6	0	0	0	0	6
17:45 - 18:00	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4	0	0	3	1	0	0	0	4
Hourly Total	0	0	1	0	0	0	0	1	0	0	4	3	1	0	0	8	0	0	11	1	0	0	0	12
18:00 - 18:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	2	0	0	0	0	2
18:15 - 18:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
18:45 - 19:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	3	1	0	0	0	4
TOTAL	0	0	2	1	0	0	0	3	0	0	11	4	2	0	0	17	0	0	19	3	0	0	0	22

Junction: 1 (YELLOW)

Approach: A4241 Harbour Way

TIME	To A48 (N)								To A48 (S)								To Site Access							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	0	1	0	0	0	0	1	0	0	32	11	0	5	0	48	0	0	0	0	0	0	0	0
07:15 - 07:30	0	0	2	0	0	0	0	2	0	2	36	13	3	2	0	56	0	0	0	0	0	0	0	0
07:30 - 07:45	0	0	6	0	0	0	2	8	0	0	57	10	0	9	0	76	0	0	1	0	0	0	0	1
07:45 - 08:00	0	0	6	2	0	0	0	8	1	0	34	24	1	8	0	68	0	0	0	0	0	0	0	0
Hourly Total	0	0	15	2	0	0	2	19	1	2	159	58	4	24	0	248	0	0	1	0	0	0	0	1
08:00 - 08:15	0	0	14	1	0	0	0	15	0	0	37	16	2	12	0	67	0	0	0	0	0	0	0	0
08:15 - 08:30	0	0	15	3	1	0	0	19	0	0	27	10	1	8	0	46	0	0	0	0	0	0	0	0
08:30 - 08:45	0	0	12	2	1	1	0	16	0	0	34	13	2	6	0	55	0	0	0	0	0	0	0	0
08:45 - 09:00	0	0	7	3	0	0	0	10	0	0	29	8	0	5	0	42	0	0	0	0	0	0	0	0
Hourly Total	0	0	48	9	2	1	0	60	0	0	127	47	5	31	0	210	0	0	0	0	0	0	0	0
09:00 - 09:15	0	0	12	2	0	0	0	14	0	0	30	11	3	4	1	49	0	0	0	0	0	0	0	0
09:15 - 09:30	0	0	4	4	0	1	0	9	0	1	36	21	2	8	0	68	0	0	0	0	0	0	0	0
09:30 - 09:45	0	0	3	0	0	1	0	4	0	0	32	7	5	6	0	50	0	0	0	0	0	1	0	1
09:45 - 10:00	0	0	9	0	0	0	0	9	0	0	19	10	3	6	1	39	0	0	0	0	0	0	0	0
Hourly Total	0	0	28	6	0	2	0	36	0	1	117	49	13	24	2	206	0	0	0	0	0	1	0	1
TOTAL	0	0	91	17	2	3	2	115	1	3	403	154	22	79	2	664	0	0	1	0	0	1	0	2
16:00 - 16:15	0	0	13	6	0	0	2	21	0	0	113	21	2	4	0	140	0	0	0	0	0	0	0	0
16:15 - 16:30	0	0	29	0	0	1	0	30	1	0	100	10	1	3	0	115	0	0	1	0	0	0	0	1
16:30 - 16:45	0	1	16	2	0	1	0	20	1	2	100	16	3	1	0	123	0	0	0	0	0	0	0	0
16:45 - 17:00	0	0	21	1	0	0	0	22	0	2	97	20	0	1	0	120	0	0	0	0	0	0	0	0
Hourly Total	0	1	79	9	0	2	2	93	2	4	410	67	6	9	0	498	0	0	1	0	0	0	0	1
17:00 - 17:15	0	0	11	2	0	0	0	13	0	0	122	14	1	2	0	139	0	0	0	0	0	0	0	0
17:15 - 17:30	0	0	14	0	0	0	0	14	2	0	95	14	0	2	0	113	0	0	0	0	0	0	0	0
17:30 - 17:45	0	0	11	1	1	0	0	13	1	0	82	7	1	1	0	92	0	0	0	0	0	0	0	0
17:45 - 18:00	0	0	17	3	0	1	0	21	3	0	80	7	0	4	0	94	0	0	0	0	0	0	0	0
Hourly Total	0	0	53	6	1	1	0	61	6	0	379	42	2	9	0	438	0	0	0	0	0	0	0	0
18:00 - 18:15	0	0	23	1	0	0	0	24	0	0	89	10	0	5	0	104	0	0	0	0	0	0	0	0
18:15 - 18:30	0	0	20	1	1	1	1	24	0	0	62	4	0	0	0	66	0	0	2	0	0	0	0	2
18:30 - 18:45	0	0	15	2	0	0	0	17	0	0	61	1	0	1	0	63	0	0	0	0	0	0	0	0
18:45 - 19:00	0	0	13	0	0	0	0	13	0	2	25	3	0	3	0	33	0	0	0	0	0	0	0	0
Hourly Total	0	0	71	4	1	1	1	78	0	2	237	18	0	9	0	266	0	0	2	0	0	0	0	2
TOTAL	0	1	203	19	2	4	3	232	8	6	1026	127	8	27	0	1202	0	0	3	0	0	0	0	3

Junction: 2 (YELLOW)
Approach: M4 North

TIME	To A48 (E)								To M4 (S)								To Heolcae'r-Bont								To A48 (N)								
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	
07:00 - 07:15	0	0	42	15	0	0	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	
07:15 - 07:30	0	0	71	16	1	0	0	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	8	
07:30 - 07:45	0	0	56	19	0	0	0	75	0	0	0	0	0	0	0	0	0	0	1	15	0	0	0	1	0	0	15	4	1	1	0	21	
07:45 - 08:00	0	0	75	20	0	0	1	96	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	15	3	0	1	0	19	
Hourly Total	0	0	244	70	1	0	1	316	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	39	8	1	2	0	50	
08:00 - 08:15	0	0	57	19	3	0	1	80	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	34	4	0	0	0	38	
08:15 - 08:30	0	0	49	28	2	0	0	79	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	28	2	1	1	0	32	
08:30 - 08:45	0	0	48	29	2	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	1	1	0	0	19	
08:45 - 09:00	0	1	50	27	1	0	0	79	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	21	4	0	2	0	27	
Hourly Total	0	1	204	103	8	0	1	317	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	7	0	0	100	11	2	3	0	116	
09:00 - 09:15	0	0	53	19	1	0	0	73	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	21	3	1	0	0	25	
09:15 - 09:30	0	0	26	23	0	0	0	49	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	12	3	0	0	0	16	
09:30 - 09:45	0	0	17	19	2	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	0	0	7	7	
09:45 - 10:00	0	0	21	17	3	1	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	2	2	0	9	
Hourly Total	0	0	117	78	6	1	0	202	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	40	10	4	2	1	57	
TOTAL	0	1	565	251	15	1	2	835	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	11	0	0	179	29	7	7	1	223	
16:00 - 16:15	0	0	41	15	1	1	1	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	1	0	9	
16:15 - 16:30	0	0	55	16	1	0	0	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	4	
16:30 - 16:45	0	0	52	15	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	5	
16:45 - 17:00	0	0	47	11	1	0	0	59	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	16	1	0	0	0	17	
Hourly Total	0	0	195	57	3	1	1	257	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	28	5	1	1	0	35	
17:00 - 17:15	0	0	51	8	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	1	0	12	
17:15 - 17:30	0	0	49	11	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	7	0	0	1	0	8	
17:30 - 17:45	0	0	67	13	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	0	0	0	1	8
17:45 - 18:00	0	0	39	11	0	0	0	50	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	7	1	0	2	0	10	
Hourly Total	0	0	206	43	0	0	0	249	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	28	5	0	4	1	18	
18:00 - 18:15	0	0	30	8	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	0	1	0	11	
18:15 - 18:30	0	0	46	6	0	0	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6	
18:30 - 18:45	0	0	18	2	1	1	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	
18:45 - 19:00	0	3	39	7	0	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	
Hourly Total	0	3	133	23	1	1	0	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	1	0	1	0	26	
TOTAL	0	3	534	123	4	2	1	667	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	80	11	1	6	1	99	

Junction: 2 (YELLOW)
Approach: A48 East

TIME	To M4 (S)								To Heolcae'r-Bont								To A48 (N)								To M4 (N)							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	0	1	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0	41	20	0	1	0	62	0	0	0	0	0	0	0	0
07:15 - 07:30	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	63	12	2	1	0	78	0	0	0	0	0	0	0	0
07:30 - 07:45	0	0	5	4	1	0	0	10	0	0	2	1	0	0	0	3	1	3	59	12	0	0	0	75	0	0	0	0	0	0	0	0
07:45 - 08:00	0	0	2	0	0	0	0	2	0	0	2	1	0	0	0	3	0	0	69	15	0	0	1	85	0	0	0	0	0	0	0	0
Hourly Total	0	0	8	6	2	0	0	16	0	0	4	2	0	0	0	6	1	3	232	59	2	2	1	300	0	0	0	0	0	0	0	0
08:00 - 08:15	0	0	1	1	0	0	0	2	0	0	3	2	0	0	0	5	0	0	74	7	0	0	2	83	0	0	0	0	0	0	0	0
08:15 - 08:30	0	0	3	1	0	0	0	4	0	0	3	2	0	0	1	6	0	1	70	7	2	1	4	85	0	0	0	0	0	0	0	0
08:30 - 08:45	0	0	3	0	0	0	0	3	0	0	1	1	0	0	0	2	0	0	62	15	3	0	0	80	0	0	0	0	0	0	0	0
08:45 - 09:00	0	0	6	0	0	1	0	7	0	0	1	1	0	0	0	2	0	1	72	12	1	0	1	87	0	0	0	0	0	0	0	0
Hourly Total	0	0	13	2	0	1	0	16	0	0	8	6	0	0	1	15	0	2	278	41	6	1	7	335	0	0	0	0	0	0	0	0
09:00 - 09:15	0	0	2	2	1	0	0	5	0	0	2	0	0	0	0	2	0	0	51	11	5	0	0	67	0	0	0	0	0	0	0	0
09:15 - 09:30	0	0	3	0	0	0	0	3	0	0	2	0	0	0	0	2	0	0	46	32	2	0	1	81	0	0	0	0	0	0	0	0
09:30 - 09:45	0	0	5	1	0	0	0	6	0	0	0	2	0	0	0	2	0	1	66	14	2	1	0	84	0	0	0	0	0	0	0	0
09:45 - 10:00	0	0	2	0	0	0	0	2	0	0	2	0	0	0	0	2	0	0	46	36	1	0	0	83	0	0	0	0	0	0	0	0
Hourly Total	0	0	12	3	1	0	0	16	0	0	6	2	0	0	0	8	0	1	209	93	10	1	1	315	0	0	0	0	0	0	0	0
TOTAL	0	0	33	11	3	1	0	48	0	0	18	10	0	0	1	29	1	6	719	193	18	4	9	950	0	0	0	0	0	0	0	0
16:00 - 16:15	0	0	3	1	0	0	0	4	0	0	2	0	0	0	0	2	0	0	86	15	0	2	2	105	0	0	0	0	0	0	0	0
16:15 - 16:30	0	0	4	2	0	3	0	9	0	0	2	0	0	0	0	2	0	1	112	29	1	0	1	144	0	0	0	0	0	0	0	0
16:30 - 16:45	0	0	5	0	0	0	0	5	0	0	2	0	0	0	0	2	2	2	127	21	1	0	0	154	0	0	0	0	0	0	0	0
16:45 - 17:00	0	0	9	0	0	2	0	11	0	0	2	0	0	0	0	2	0	1	131	24	0	0	0	156	0	0	0	0	0	0	0	0
Hourly Total	0	0	21	3	0	5	0	29	0	0	8	0	0	0	0	8	2	4	496	89	2	2	4	559	0	0	0	0	0	0	0	0
17:00 - 17:15	0	0	3	0	1	0	0	4	0	0	4	0	0	0	0	4	0	2	150	22	1	0	0	175	0	0	0	0	0	0	0	0
17:15 - 17:30	0	0	6	0	0	0	0	6	0	0	1	0	0	0	0	1	0	3	115	17	1	0	1	137	0	0	0	0	0	0	0	0
17:30 - 17:45	0	0	4	1	0	0	0	5	0	0	2	0	0	1	0	3	0	2	88	11	0	3	0	104	0	0	0	0	0	0	0	0
17:45 - 18:00	0	0	2	0	0	0	0	2	0	1	2	0	0	0	0	3	3	0	70	11	0	0	1	85	0	0	0	0	0	0	0	0
Hourly Total	0	0	15	1	1	0	0	17	0	1	9	0	0	1	0	11	3	7	423	61	2	3	2	501	0	0	0	0	0	0	0	0
18:00 - 18:15	0	0	3	0	0	0	0	3	1	0	0	0	0	0	0	1	1	0	80	13	0	0	1	95	0	0	0	0	0	0	0	0
18:15 - 18:30	0	0	4	0	0	0	0	4	0	0	4	0	0	0	0	4	1	0	74	6	0	0	0	81	0	0	0	0	0	0	0	0
18:30 - 18:45	0	0	1	0	0	0	0	1	0	0	3	0	0	0	0	3	1	2	77	8	0	0	1	89	0	0	0	0	0	0	0	0
18:45 - 19:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0	53	7	1	1	0	64	0	0	0	0	0	0	0	0
Hourly Total	0	0	8	0	0	0	0	8	1	0	8	0	0	0	0	9	5	2	284	34	1	1	2	329	0	0	0	0	0	0	0	0
TOTAL	0	0	44	4	1	5	0	54	1	1	25	0	0	1	0	28	10	13	1163	184	5	6	8	1389	0	0	0	0	0	0	0	0

Junction: 2 (YELLOW)
Approach: M4 South

TIME	To Heolcae'r-Bont								To A48 (N)								To M4 (N)								To A48 (E)							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	0	3	1	0	2	0	6	0	0	58	14	2	14	0	88	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	7
07:15 - 07:30	0	0	2	1	0	1	0	4	0	0	56	15	2	12	0	85	0	0	0	0	0	0	0	0	0	0	9	3	0	0	0	12
07:30 - 07:45	0	0	4	0	0	0	0	4	0	0	95	19	1	7	0	122	0	0	0	0	0	0	0	0	0	0	9	1	0	0	0	10
07:45 - 08:00	0	0	3	0	1	0	0	4	0	0	97	32	4	7	0	140	0	0	0	0	0	0	0	0	0	0	7	4	0	1	0	12
Hourly Total	0	0	12	2	1	3	0	18	0	0	306	80	9	40	0	435	0	0	0	0	0	0	0	0	0	0	20	10	0	1	0	41
08:00 - 08:15	0	0	2	1	0	0	0	3	0	0	86	10	2	2	0	100	0	0	0	0	0	0	0	0	0	0	9	2	0	1	1	13
08:15 - 08:30	0	0	2	3	0	0	0	5	0	0	104	14	3	6	0	127	0	0	0	0	0	0	0	0	0	0	9	2	3	0	0	14
08:30 - 08:45	0	0	2	4	0	0	0	6	0	0	64	13	0	7	0	84	0	0	0	0	0	0	0	0	0	0	9	3	0	0	0	12
08:45 - 09:00	0	0	1	0	0	1	0	2	0	0	68	14	3	5	0	90	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12
Hourly Total	0	0	7	8	0	1	0	16	0	0	322	51	8	29	0	401	0	0	0	0	0	0	0	0	0	0	27	9	3	1	1	51
09:00 - 09:15	0	0	1	0	0	0	0	1	0	0	43	7	3	6	0	58	0	0	0	0	0	0	0	0	0	0	8	2	0	0	0	10
09:15 - 09:30	0	0	0	0	0	0	0	0	0	0	28	6	1	7	0	42	0	0	0	0	0	0	0	0	0	0	6	2	0	0	0	8
09:30 - 09:45	0	0	0	3	0	1	0	4	0	0	31	7	1	5	0	44	0	0	0	0	0	0	0	0	0	0	5	1	2	0	0	8
09:45 - 10:00	0	0	1	1	0	2	0	4	0	0	30	5	0	6	0	41	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	8
Hourly Total	0	0	2	4	0	3	0	9	0	0	132	25	4	24	0	185	0	0	0	0	0	0	0	0	0	0	26	6	2	0	0	34
TOTAL	0	0	21	14	1	7	0	43	0	0	760	156	21	84	0	1021	0	0	0	0	0	0	0	0	0	0	83	25	5	2	1	126
16:00 - 16:15	0	0	0	1	0	0	0	1	0	0	53	13	0	2	0	68	0	0	0	0	0	0	0	0	0	0	11	3	0	0	0	14
16:15 - 16:30	0	0	0	1	0	1	0	2	0	0	46	18	0	6	0	70	0	0	0	0	0	0	0	0	0	0	13	4	0	0	0	17
16:30 - 16:45	0	0	0	0	0	1	0	1	0	1	63	24	0	6	0	94	0	0	0	0	0	0	0	0	0	0	13	3	0	0	0	16
16:45 - 17:00	0	0	0	0	0	1	0	1	0	0	81	10	0	2	0	93	0	0	0	0	0	0	0	0	0	0	12	2	0	1	0	15
Hourly Total	0	0	2	2	0	3	0	5	0	1	243	65	0	16	0	325	0	0	0	0	0	0	0	0	0	0	49	12	0	1	0	62
17:00 - 17:15	0	0	2	0	0	0	0	2	0	0	76	16	1	3	0	96	0	0	0	0	0	0	0	0	0	0	14	3	0	0	0	17
17:15 - 17:30	0	0	0	0	1	0	1	2	0	0	93	8	0	1	0	102	0	0	0	0	0	0	0	0	0	0	10	1	0	0	0	11
17:30 - 17:45	0	0	2	0	0	0	0	2	0	2	74	9	0	2	0	87	0	0	0	0	0	0	0	0	0	0	11	1	0	0	0	12
17:45 - 18:00	0	0	1	2	0	0	0	3	0	0	62	9	2	2	1	76	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	7
Hourly Total	0	0	5	2	0	1	0	8	0	2	308	42	3	8	1	361	0	0	0	0	0	0	0	0	0	0	41	6	0	0	0	47
18:00 - 18:15	0	0	1	0	0	0	0	1	0	0	39	4	1	6	0	50	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7
18:15 - 18:30	0	0	1	0	0	0	0	1	0	0	34	3	0	1	0	38	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	7
18:30 - 18:45	0	0	0	0	0	1	0	1	0	0	27	4	1	3	1	36	0	0	0	0	0	0	0	0	0	0	8	2	0	0	0	10
18:45 - 19:00	0	0	1	0	0	1	0	2	0	0	24	3	0	4	0	31	0	0	0	0	0	0	0	0	0	0	6	2	0	0	0	8
Hourly Total	0	0	3	0	0	2	0	5	0	0	124	14	2	14	1	155	0	0	0	0	0	0	0	0	0	0	27	5	0	0	0	32
TOTAL	0	0	8	4	0	6	0	18	0	3	672	121	5	38	2	841	0	0	0	0	0	0	0	0	0	0	117	23	0	1	0	141

Junction: 2 (YELLOW)
Approach: Heolcae'r-Bont

TIME	To A48 (N)								To M4 (N)								To A48 (E)								To M4 (S)								
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	
07:00 - 07:15	0	0	2	0	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:15 - 07:30	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
07:30 - 07:45	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:45 - 08:00	0	0	1	2	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	
Hourly Total	0	0	3	2	4	4	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	
08:00 - 08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	0	2	
08:15 - 08:30	0	0	1	5	0	1	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	
08:30 - 08:45	0	0	5	2	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:45 - 09:00	0	0	1	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	
Hourly Total	0	0	7	11	1	1	1	21	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	3	0	1	0	6	
09:00 - 09:15	0	0	3	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	
09:15 - 09:30	0	0	6	2	0	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	
09:30 - 09:45	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	1	0	
09:45 - 10:00	0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	0	0	16	5	0	0	0	21	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	2	0	2	
TOTAL	0	0	26	18	5	5	1	55	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	2	3	1	7	0	13	
16:00 - 16:15	0	0	5	1	1	0	0	7	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	4	0	0	0	0	4	
16:15 - 16:30	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3	0	0	0	0	3	
16:30 - 16:45	0	0	4	2	0	1	0	7	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	3	0	1	0	0	4	
16:45 - 17:00	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	
Hourly Total	0	0	15	4	1	1	0	21	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	10	0	1	1	0	12	
17:00 - 17:15	0	0	14	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	4	0	0	1	0	5	
17:15 - 17:30	0	0	5	1	0	1	0	7	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	6	0	0	0	0	6	
17:30 - 17:45	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	3	
17:45 - 18:00	0	0	5	1	0	2	0	8	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	2	0	0	2	0	4	
Hourly Total	0	0	26	2	0	3	0	31	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	0	14	0	0	4	4	0	18
18:00 - 18:15	0	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	1	0	2	
18:15 - 18:30	0	0	4	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	2	
18:30 - 18:45	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	
18:45 - 19:00	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4	0	0	2	0	0	0	0	2	
Hourly Total	0	0	21	1	0	1	0	23	0	0	0	0	0	0	0	0	0	0	1	4	2	0	0	7	0	0	5	0	0	2	0	7	
TOTAL	0	0	62	7	1	5	0	75	0	0	0	0	0	0	0	0	0	0	1	16	2	0	0	19	0	0	29	0	1	7	0	37	

Junction: 2 (YELLOW)
Approach: A48 North

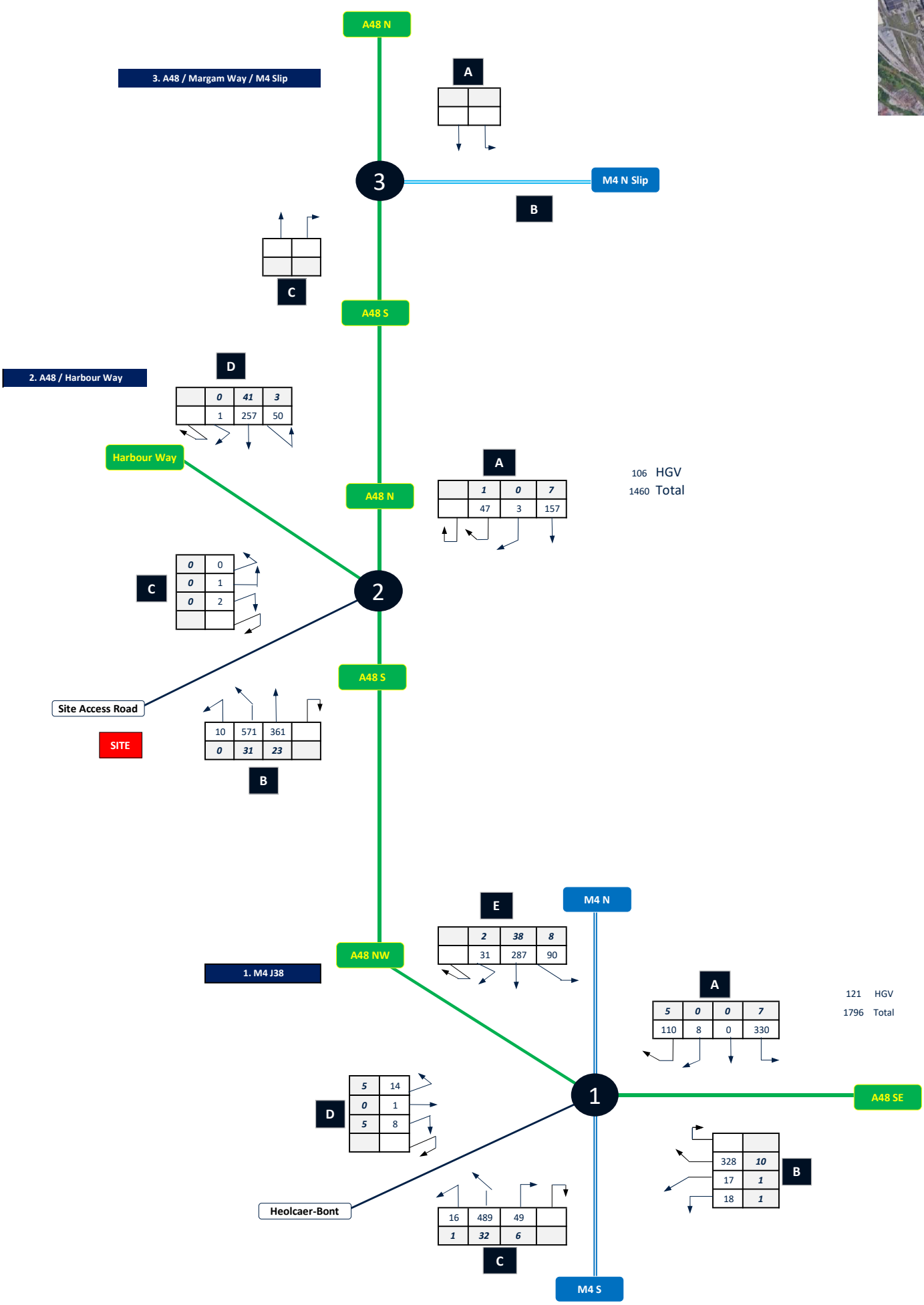
TIME	To M4 (N)								To A48 (E)								To M4 (S)								To Heolcae'r-Bont							
	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL
07:00 - 07:15	0	0	0	0	0	0	0	0	0	1	8	5	0	0	0	14	0	0	29	13	0	6	0	48	0	0	0	0	0	0	0	0
07:15 - 07:30	0	0	0	0	0	0	0	0	0	0	11	5	1	0	0	17	0	2	41	16	0	3	0	62	0	0	0	0	1	0	0	1
07:30 - 07:45	0	0	0	0	0	0	0	0	0	0	17	1	0	0	0	18	0	0	62	13	2	9	0	86	0	0	7	1	0	0	0	8
07:45 - 08:00	0	0	0	0	0	0	0	0	1	0	21	4	0	1	1	28	0	0	35	25	2	6	0	68	0	0	4	3	0	1	0	8
Hourly Total	0	0	0	0	0	0	0	0	1	1	57	15	1	1	1	77	0	2	167	67	4	24	0	264	0	0	11	4	1	1	0	17
08:00 - 08:15	0	0	0	0	0	0	0	0	0	1	12	2	0	2	2	19	0	0	48	14	2	10	0	74	0	0	4	2	0	0	0	6
08:15 - 08:30	0	0	0	0	0	0	0	0	0	2	19	2	1	0	1	25	0	0	40	12	0	7	0	59	0	0	6	2	0	1	0	9
08:30 - 08:45	0	0	0	0	0	0	0	0	0	0	37	5	3	0	0	45	0	0	38	10	0	6	0	54	0	0	2	1	0	0	0	3
08:45 - 09:00	0	0	0	0	0	0	0	0	0	0	19	4	0	0	0	23	0	0	26	10	0	5	0	41	0	0	1	1	0	0	0	2
Hourly Total	0	0	0	0	0	0	0	0	0	3	67	13	4	2	3	112	0	0	152	46	2	28	0	228	0	0	13	6	0	1	0	20
09:00 - 09:15	0	0	0	0	0	0	0	0	0	0	26	3	0	0	0	29	0	0	28	12	3	4	1	48	0	0	2	0	0	0	0	2
09:15 - 09:30	0	0	0	0	0	0	0	0	0	1	24	9	0	0	0	34	0	0	24	19	2	8	0	53	0	0	2	0	0	0	0	2
09:30 - 09:45	0	0	0	0	0	0	0	0	0	0	19	2	2	0	1	24	0	0	23	8	4	6	0	41	0	0	0	1	0	0	0	1
09:45 - 10:00	0	0	0	0	0	0	0	0	0	0	13	4	1	0	1	19	0	0	22	11	1	5	1	40	0	0	2	0	0	1	0	3
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TOTAL	0	0	0	0	0	0	0	0	1	5	226	46	8	3	6	295	0	2	416	163	16	75	2	674	0	0	30	11	1	3	0	45
16:00 - 16:15	0	0	0	0	0	0	0	0	0	0	45	8	0	0	1	54	0	0	94	19	2	4	0	119	0	0	2	0	0	0	0	2
16:15 - 16:30	0	0	0	0	0	0	0	0	1	0	40	7	0	0	1	49	0	0	92	11	1	5	0	109	0	0	2	0	0	0	0	2
16:30 - 16:45	0	0	0	0	0	0	0	0	1	2	46	4	1	0	0	54	0	0	82	17	2	0	0	101	0	0	2	1	0	0	0	3
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Hourly Total	0	0	0	0	0	0	0	0	2	4	175	27	1	0	3	212	0	0	353	63	5	10	0	431	0	0	8	1	0	0	0	9
17:00 - 17:15	0	0	0	0	0	0	0	0	0	0	59	6	1	0	0	66	0	0	92	12	1	2	0	107	0	0	4	1	0	0	0	5
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18:15 - 18:30	0	0	0	0	0	0	0	0	0	1	31	4	0	0	0	36	0	0	53	2	0	1	0	56	0	0	4	0	0	0	0	4
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	27	2	0	0	1	30	0	0	54	2	0	0	0	56	0	0	4	1	0	0	0	5
18:45 - 19:00	0	0	0	0	0	0	0	0	0	2	26	4	0	0	0	32	0	0	23	3	0	3	0	29	0	0	1	0	0	0	0	1
Hourly Total	0	0	0	0	0	0	0	0	1	5	133	12	1	0	2	154	0	0	191	15	0	8	0	214	0	0	9	1	0	1	0	11
TOTAL	0	0	0	0	0	0	0	0	9	9	491	54	3	1	8	575	0	0	863	114	7	25	0	1009	0	1	28	4	0	3	0	36

Time	Arm A		Arm B		Arm C	Arm D	
	A48 Margam Road North Lane 1	A48 Margam Road North Lane 2	A48 Margam Road South Lane 1	A48 Margam Road South Lane 2	Margam Energy Plant	A4241 Harbour Way Lane 1	A4241 Harbour Way Lane 2
07:05	0	0	0	0	0	0	0
07:10	0	0	0	0	0	0	0
07:15	0	1	0	0	0	0	1
07:20	0	0	1	0	0	0	0
07:25	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	2
07:35	0	0	0	2	0	1	3
07:40	1	1	2	0	0	0	2
07:45	0	1	1	3	0	1	1
07:50	0	0	2	0	0	0	2
07:55	2	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0
08:05	0	1	0	0	0	0	2
08:10	0	1	3	0	0	0	2
08:15	0	0	0	0	0	0	0
08:20	0	0	0	0	0	0	1
08:25	0	1	3	1	0	0	0
08:30	0	0	0	0	0	0	0
08:35	0	2	0	0	0	0	0
08:40	0	0	0	0	0	0	0
08:45	1	0	0	0	0	0	2
08:50	0	0	0	0	0	0	0
08:55	0	0	0	0	0	0	0
09:00	0	1	1	0	0	0	1
09:05	0	0	0	0	0	0	0
09:10	1	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0
09:20	0	0	0	0	0	0	0
09:25	1	0	2	0	0	0	0
09:30	0	0	1	0	0	0	0
09:35	1	1	0	0	0	0	2
09:40	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	1
09:50	0	0	0	0	0	0	2
09:55	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0

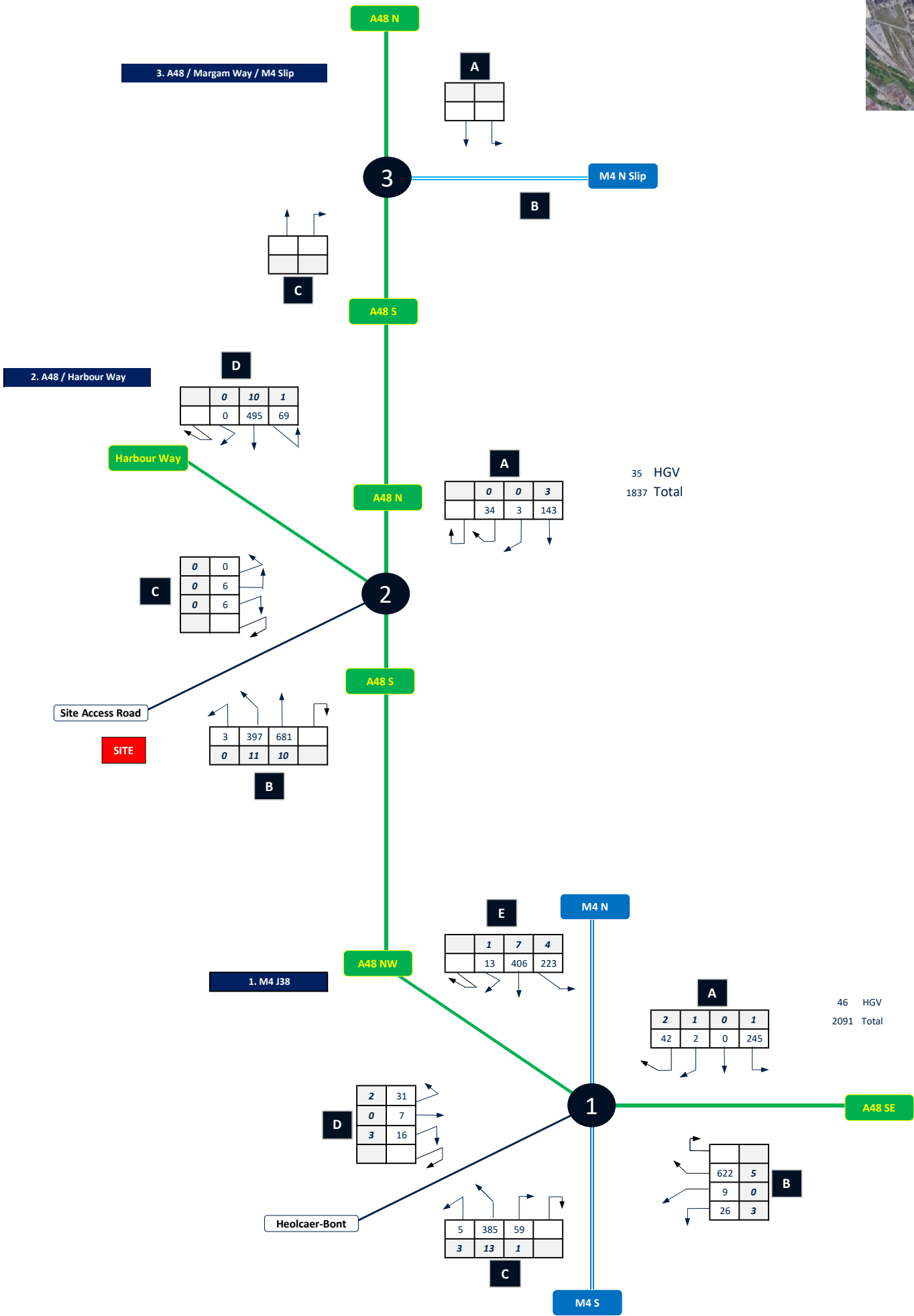
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16:20	2	0	0	0	0	0	4
16:25	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	2
16:35	0	0	0	0	0	1	1
16:40	0	0	0	2	0	1	6
16:45	2	0	0	0	0	1	6
16:50	0	0	0	0	0	0	3
16:55	1	2	0	0	0	1	2
17:00	0	0	0	0	0	0	1
17:05	0	0	0	0	0	2	5
17:10	0	1	0	0	1	2	7
17:15	0	1	0	0	0	0	6
17:20	0	0	1	0	0	1	1
17:25	0	0	0	0	0	1	3
17:30	0	0	0	0	0	0	4
17:35	0	0	0	0	0	0	0
17:40	0	0	0	0	0	0	3
17:45	1	0	0	0	1	1	5
17:50	1	0	0	0	0	3	2
17:55	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0
18:05	1	0	0	0	0	0	1
18:10	1	0	1	0	0	0	0
18:15	0	2	2	0	0	1	2
18:20	0	0	0	0	0	0	0
18:25	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	1
18:35	0	0	0	0	0	0	0
18:40	0	0	0	0	0	0	0
18:45	1	0	0	0	0	0	2
18:50	0	0	0	0	0	0	1
18:55	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0

Appendix C Traffic Flow Diagrams

KEY	
12	Total Vehicles
12	HGVs



KEY	
12	Total Vehicles
12	HGVs

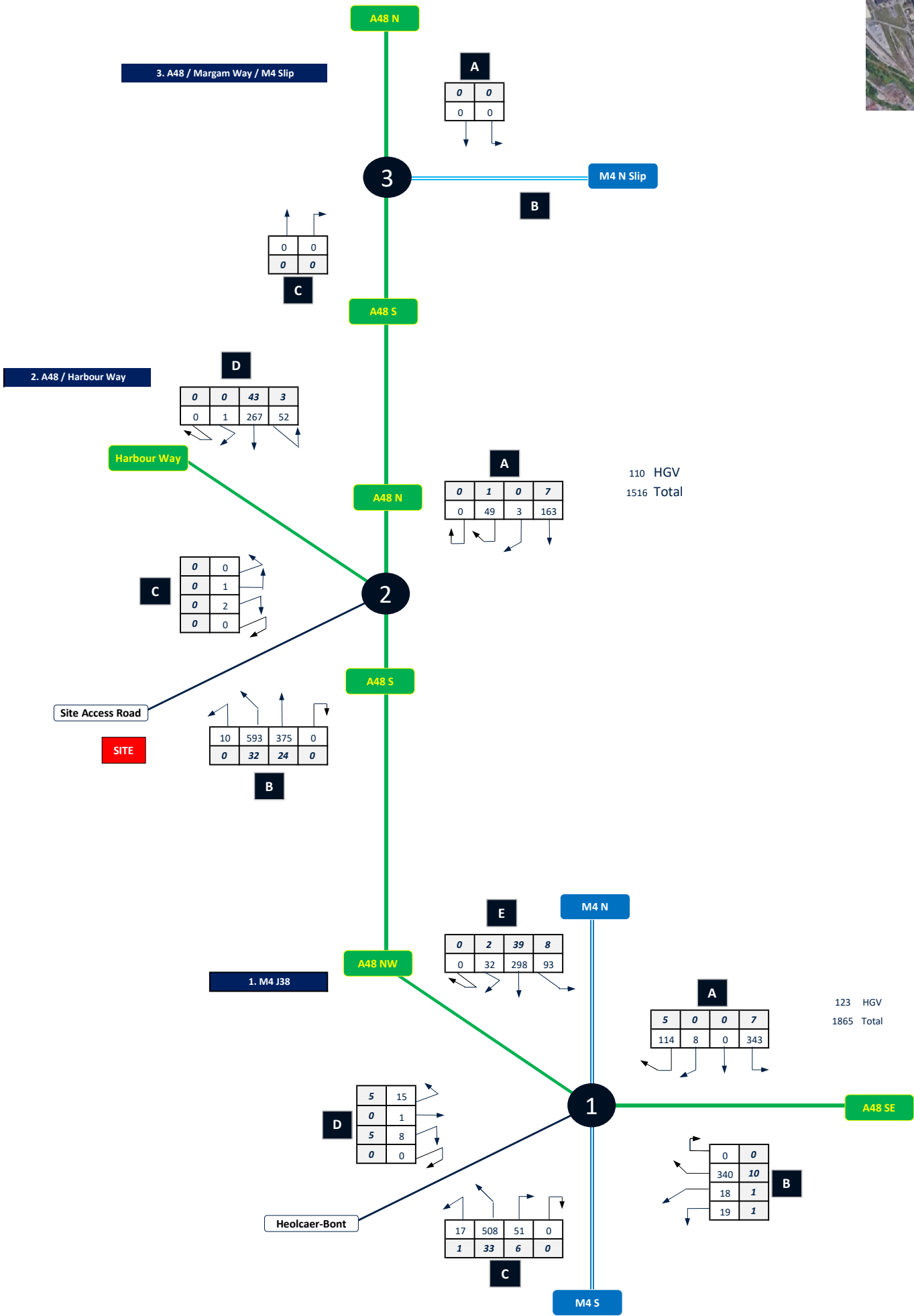


KEY

12	Total Vehicles
12	HGVs

2021-2026 Growth

1.0380863

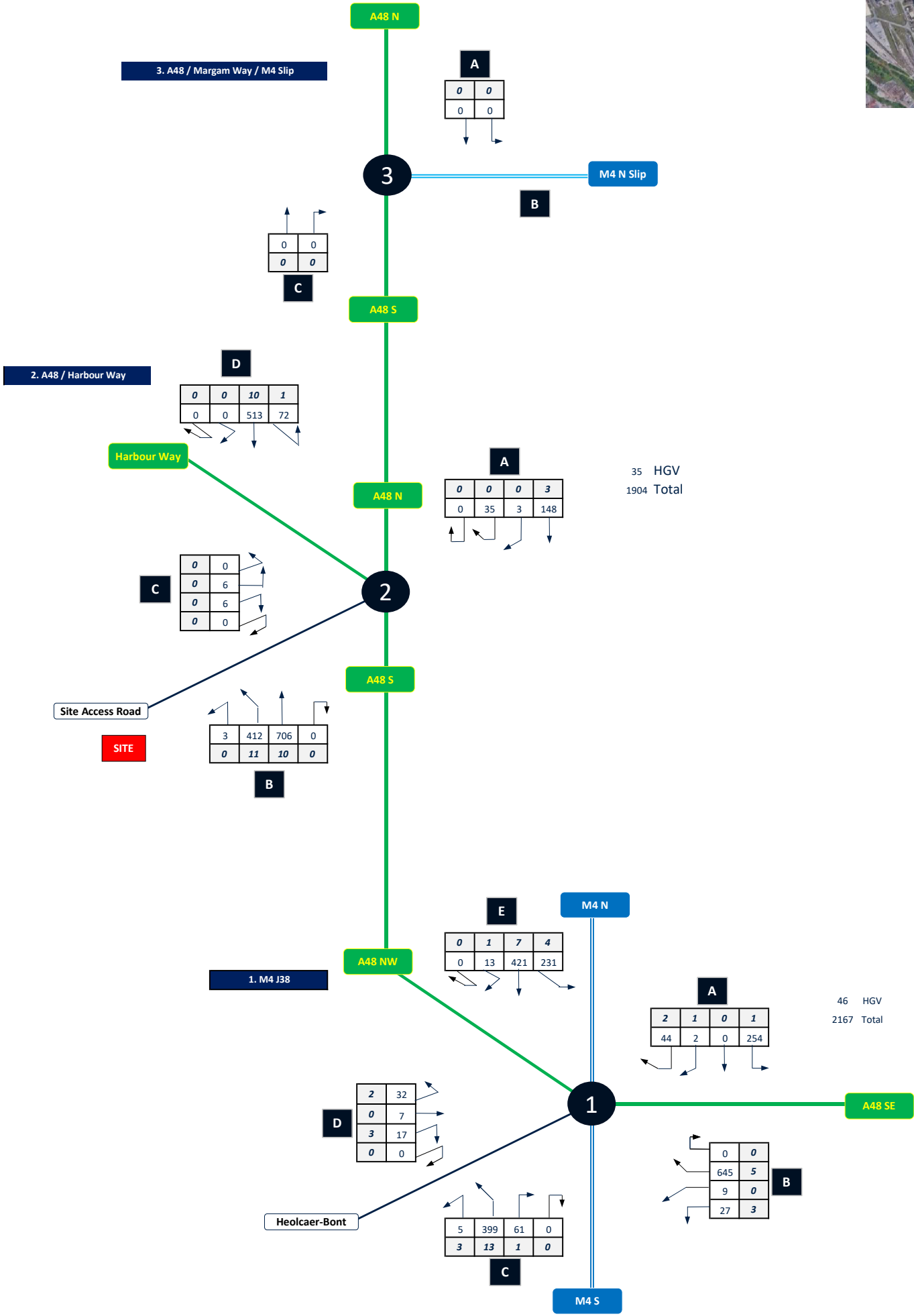


KEY

12	Total Vehicles
12	HGVs

2021-2026 Growth

1.03717574

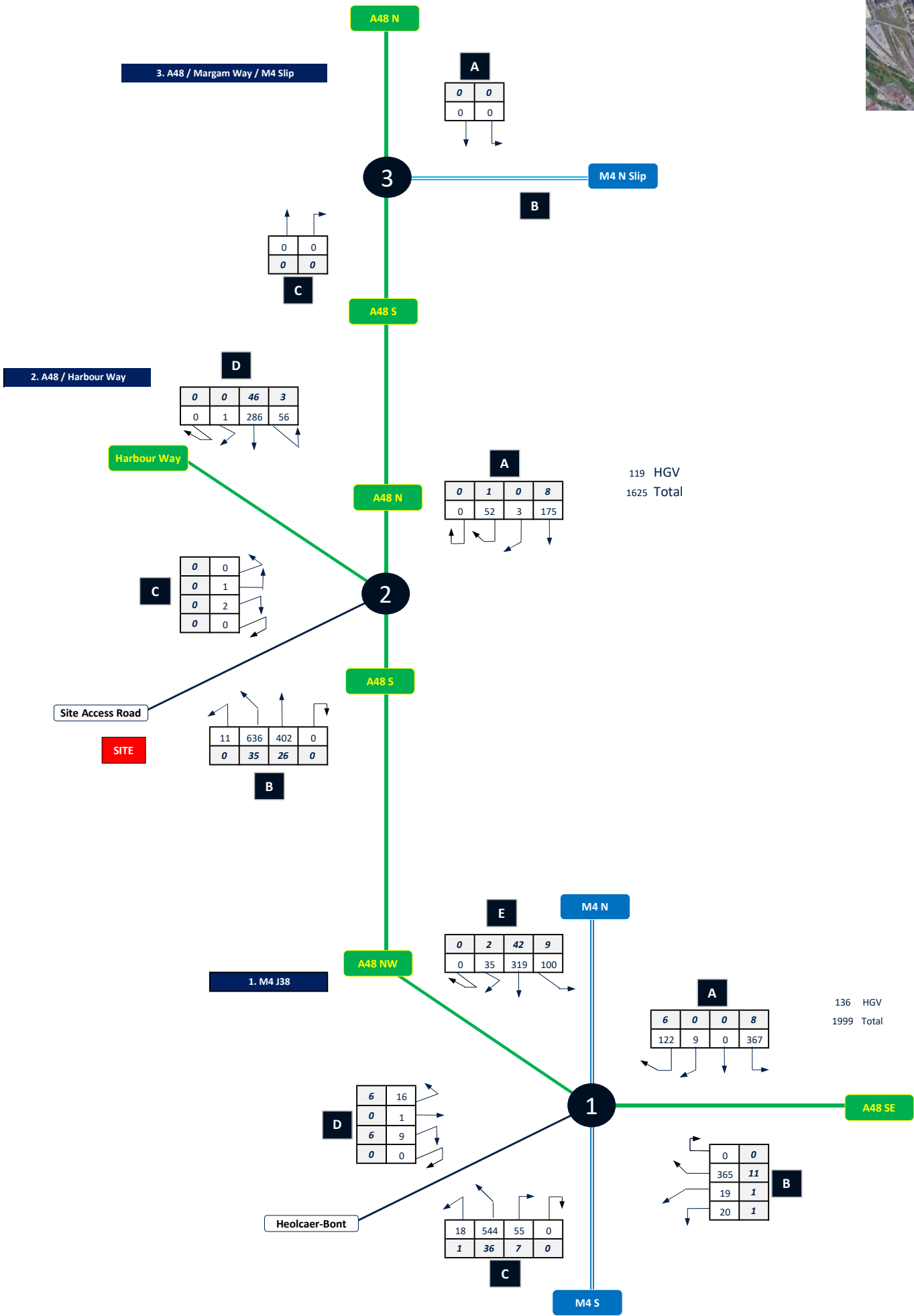


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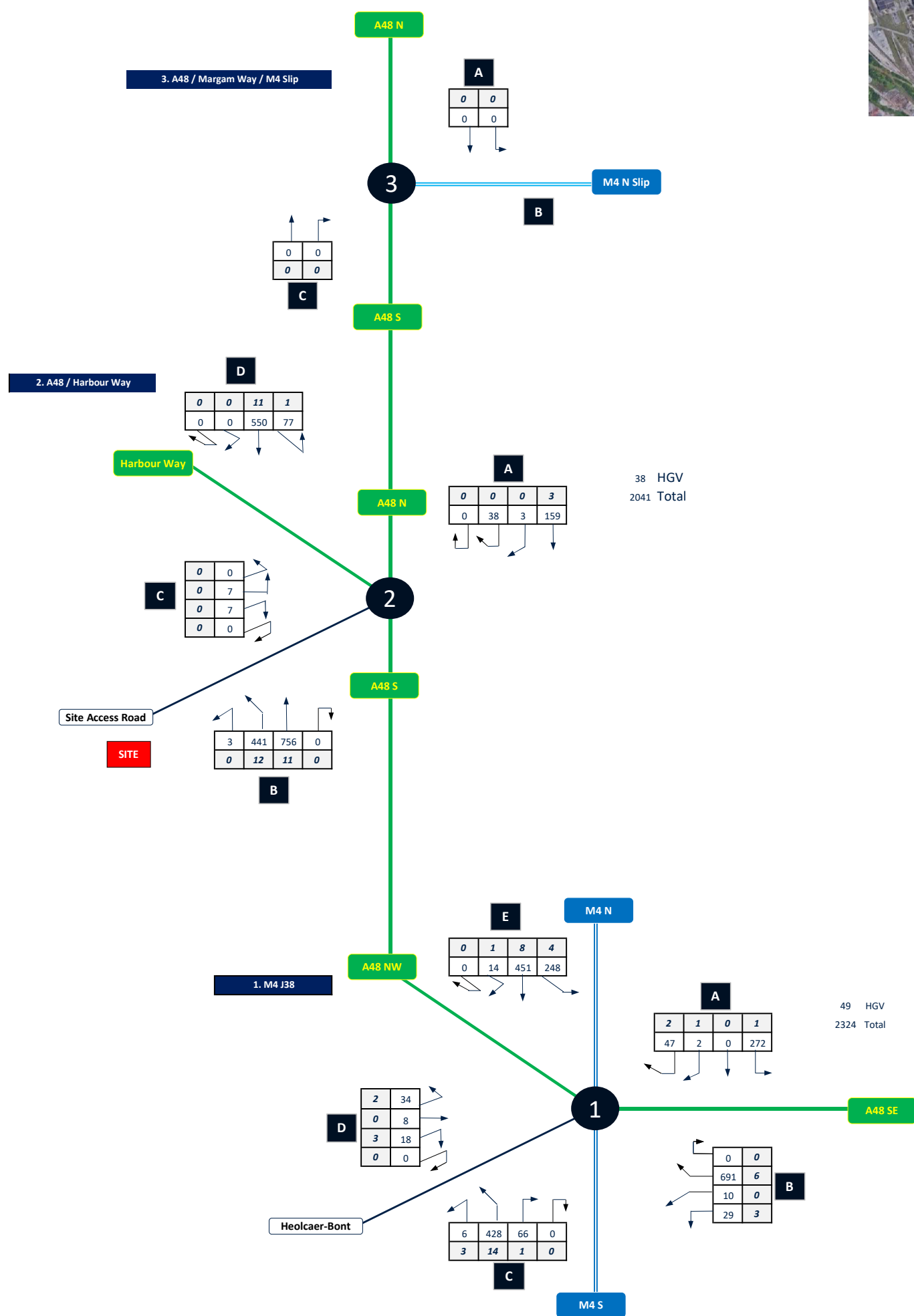
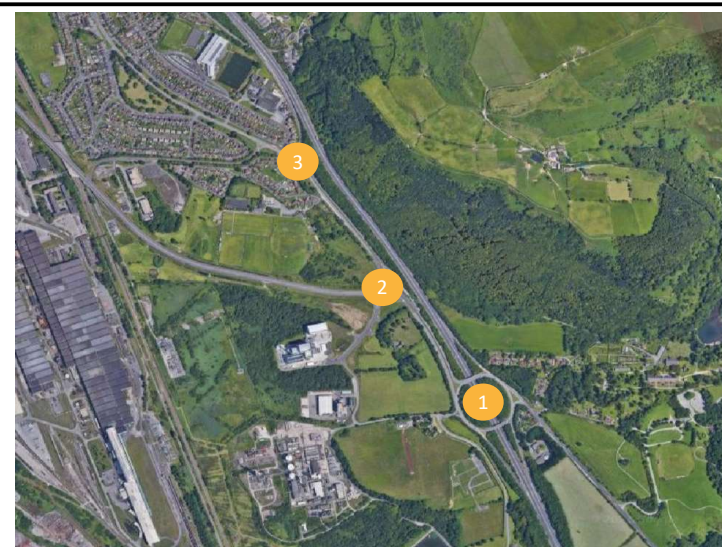
12	Total Vehicles
12	HGVs

2021-2036 Growth

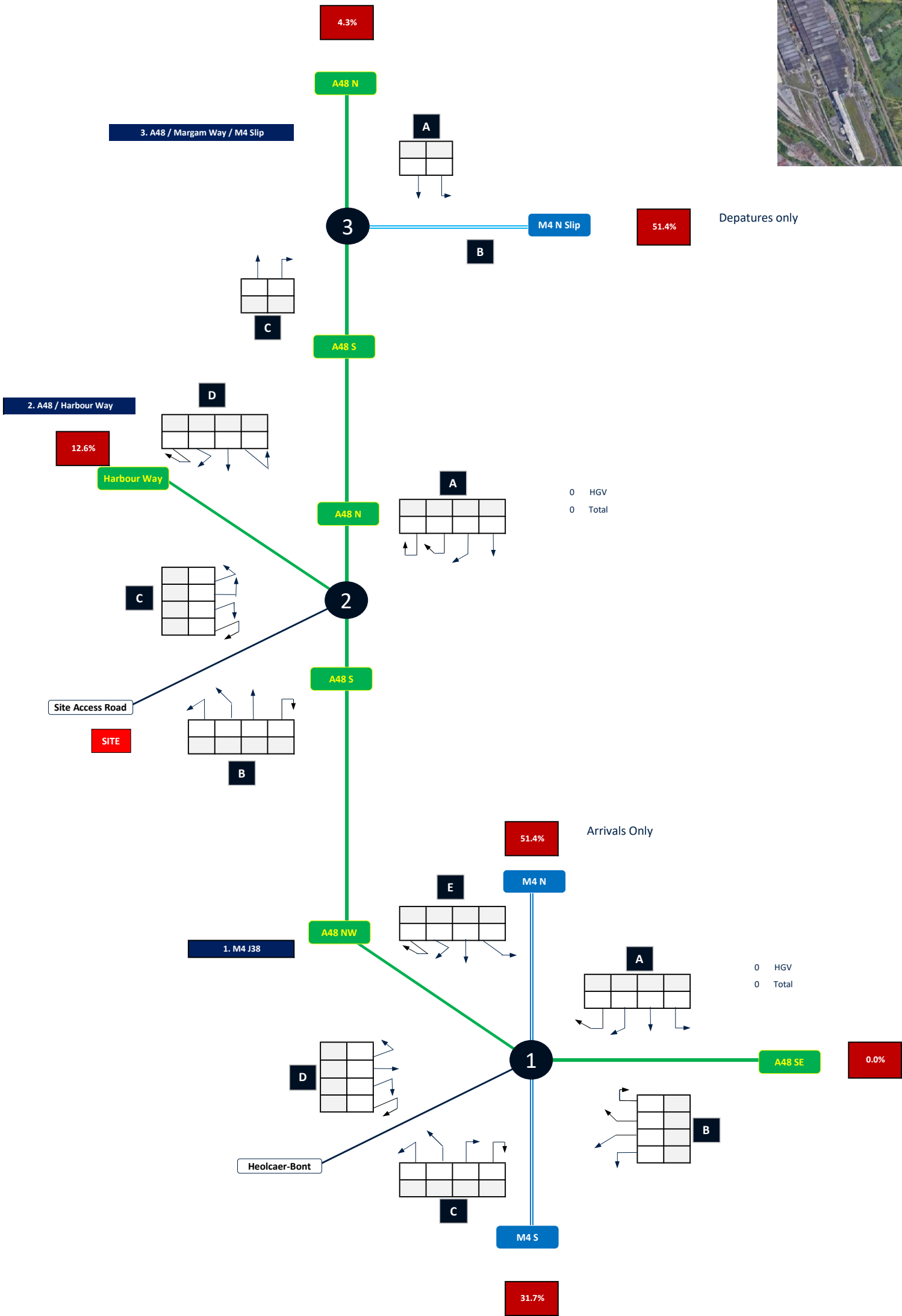
1.11312268



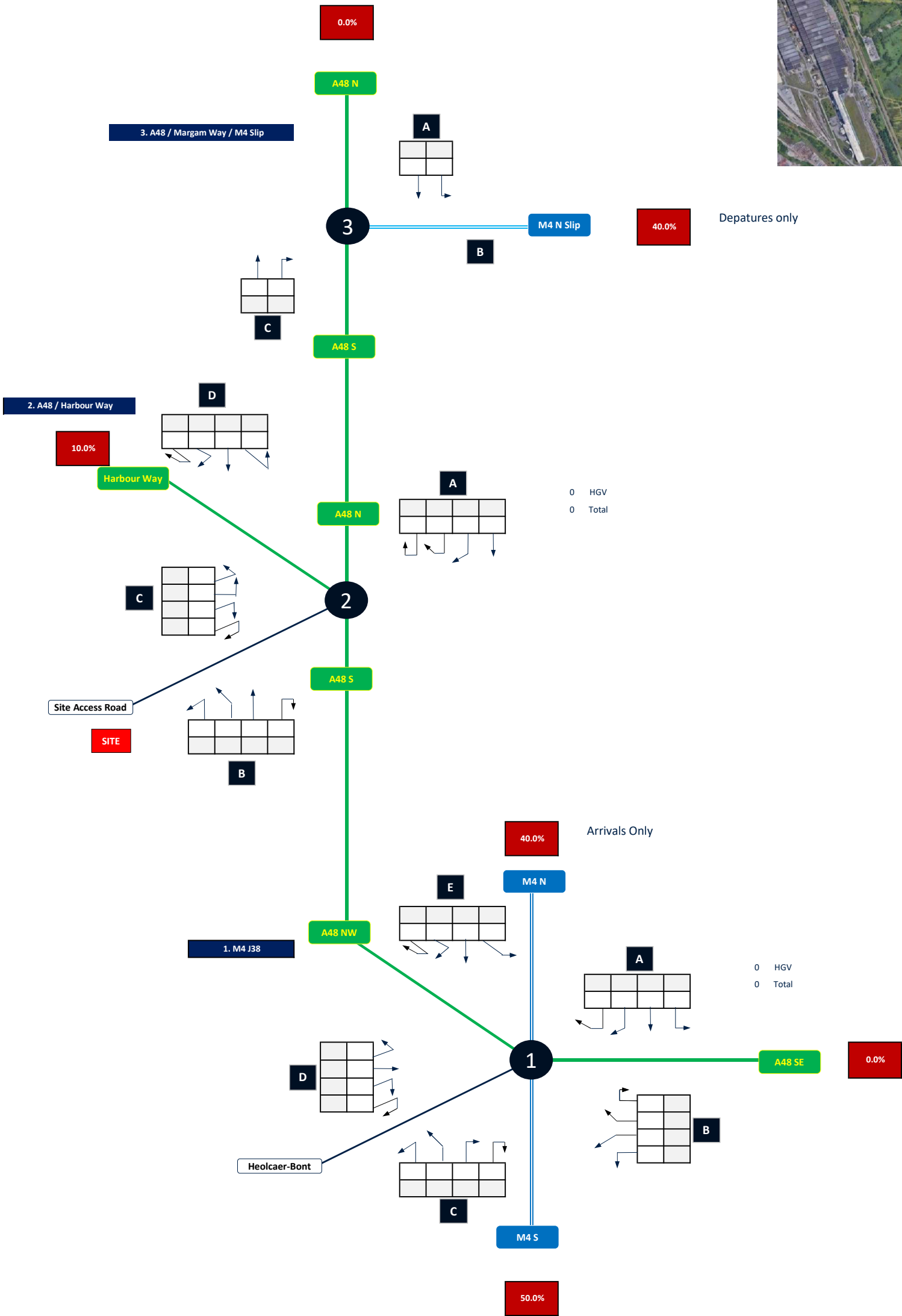
2021-2036 Growth	1.11058047
------------------	------------

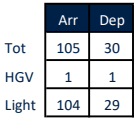


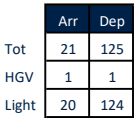
KEY	
12	Total Vehicles
12	HGVs



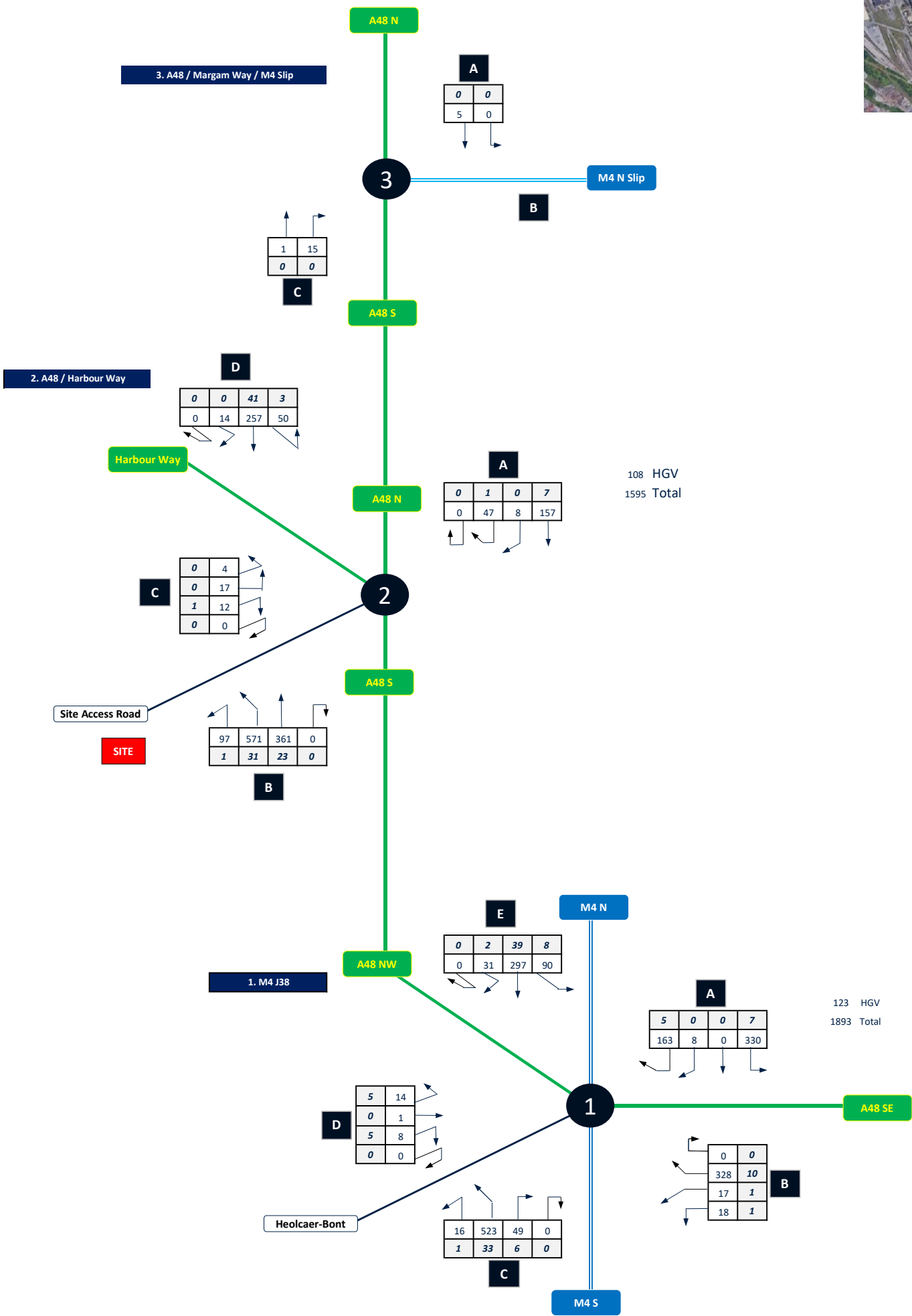
KEY	
12	Total Vehicles
12	HGVs







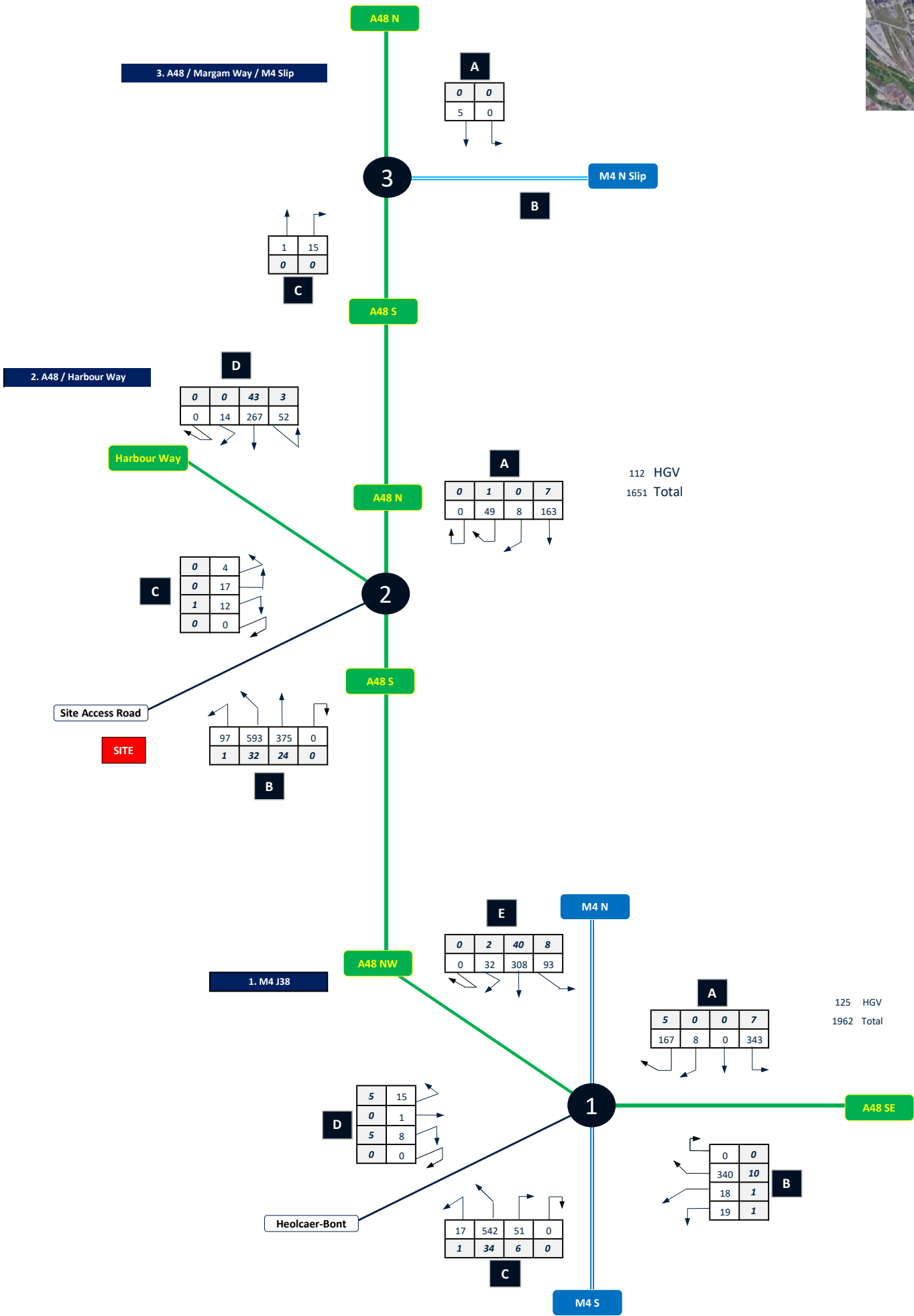
KEY	
12	Total Vehicles
12	HGVs





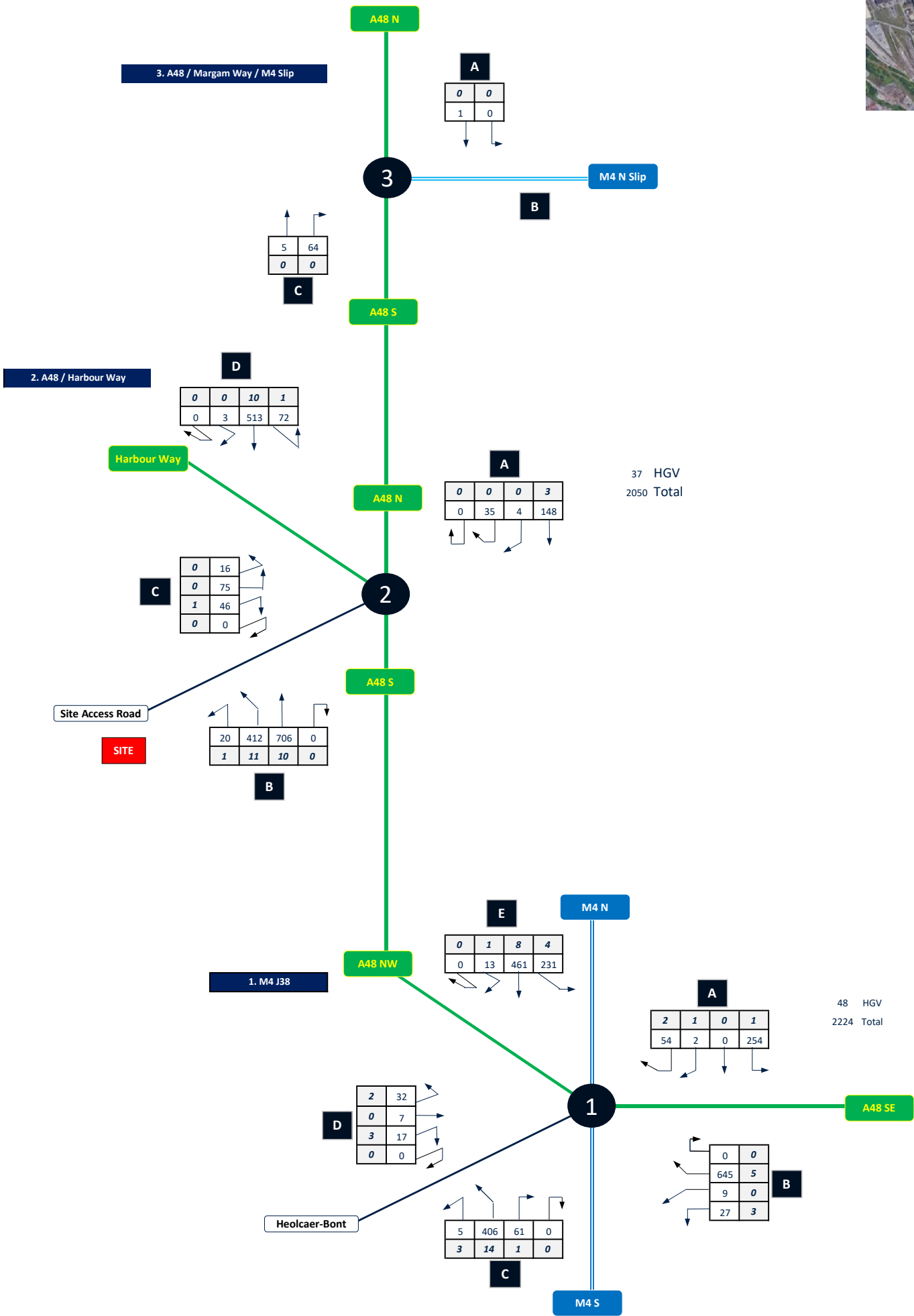
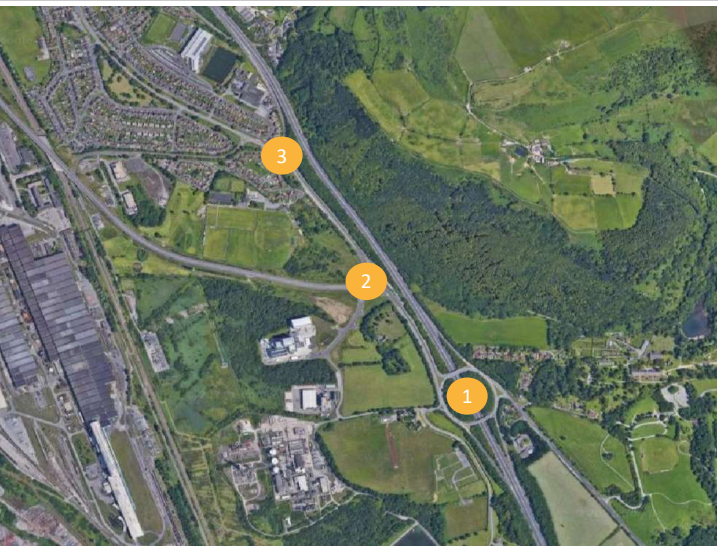
C12

KEY	
12	Total Vehicles
12	HGVs

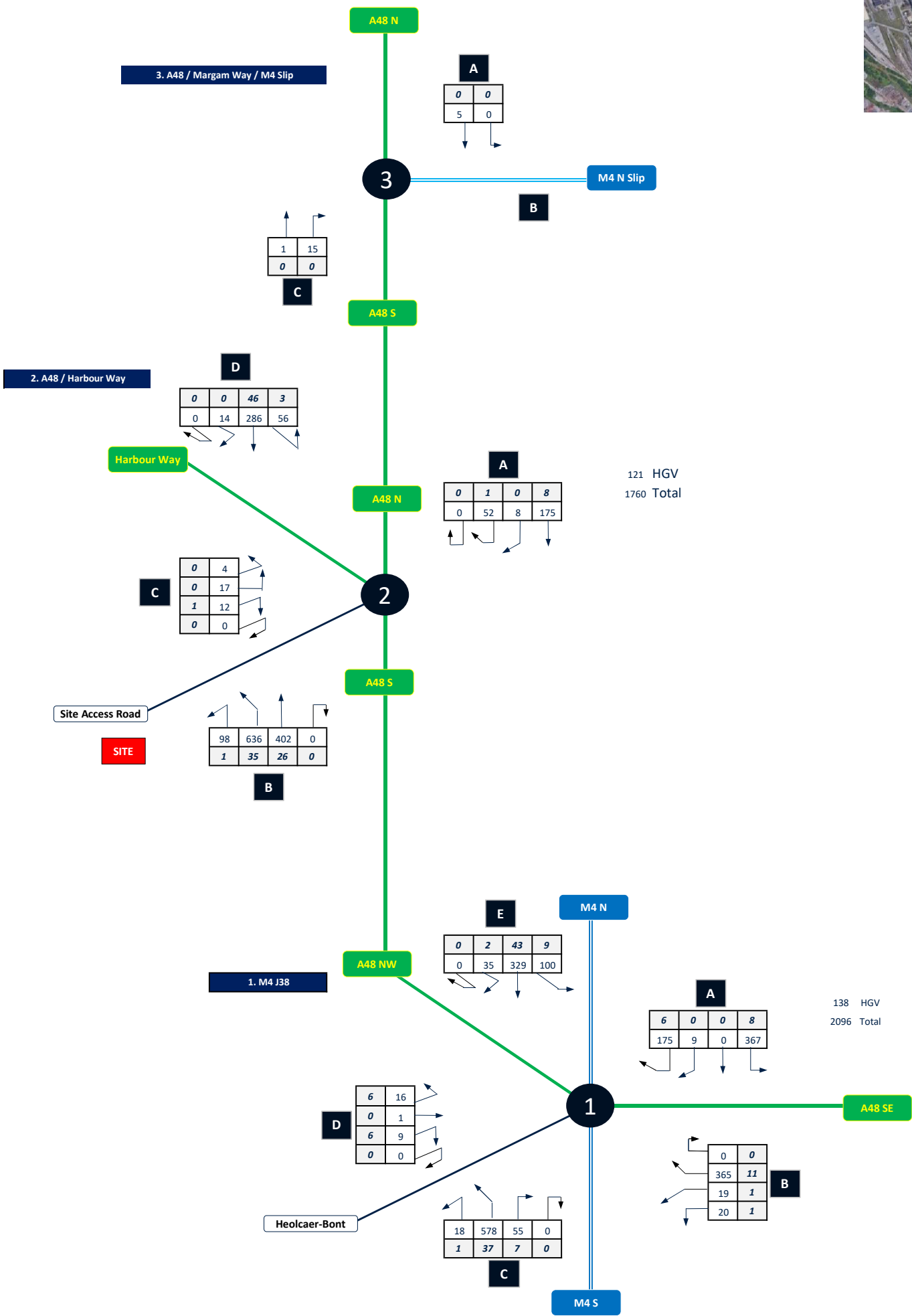


KEY

12	Total Vehicles
12	HGVs

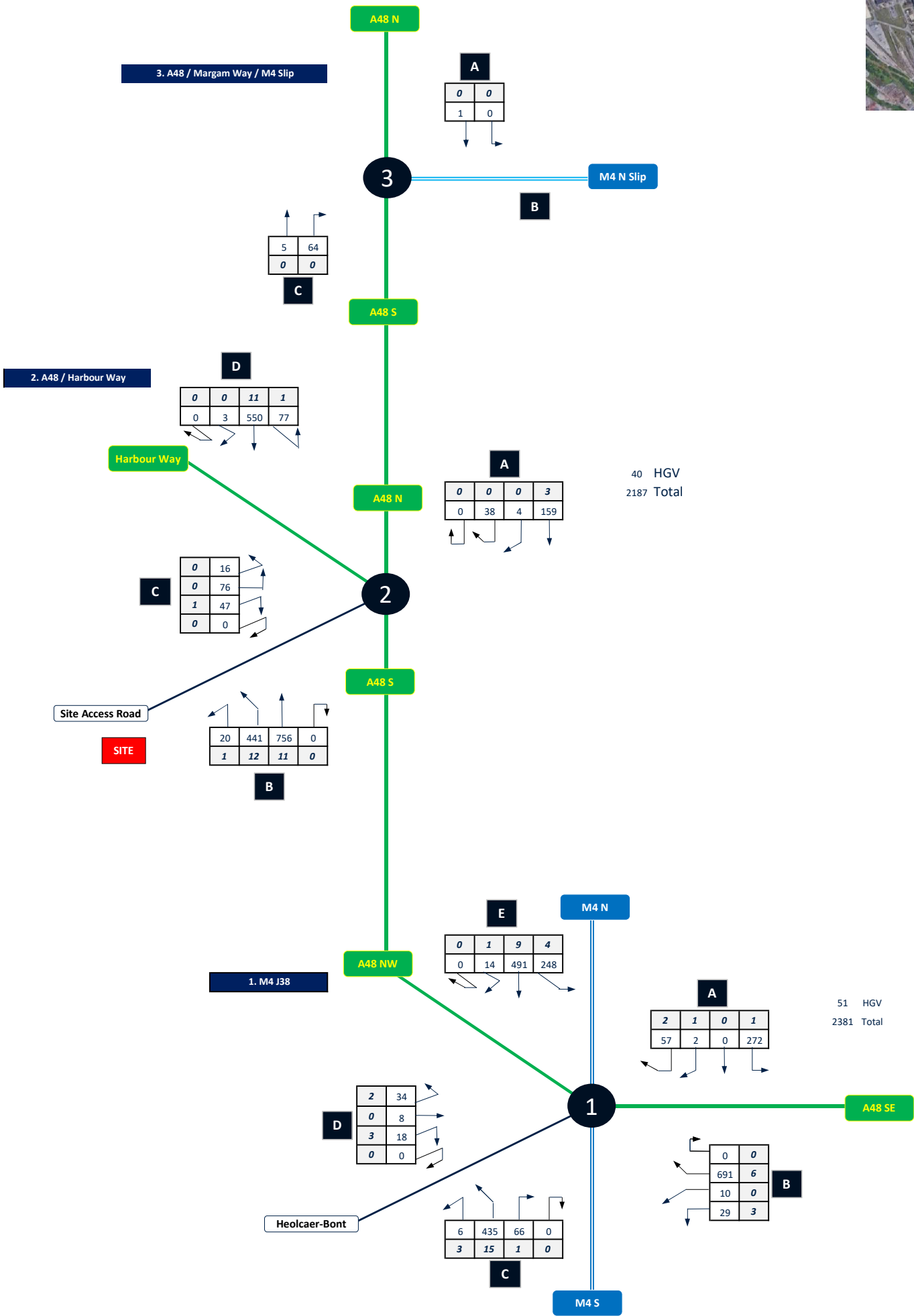
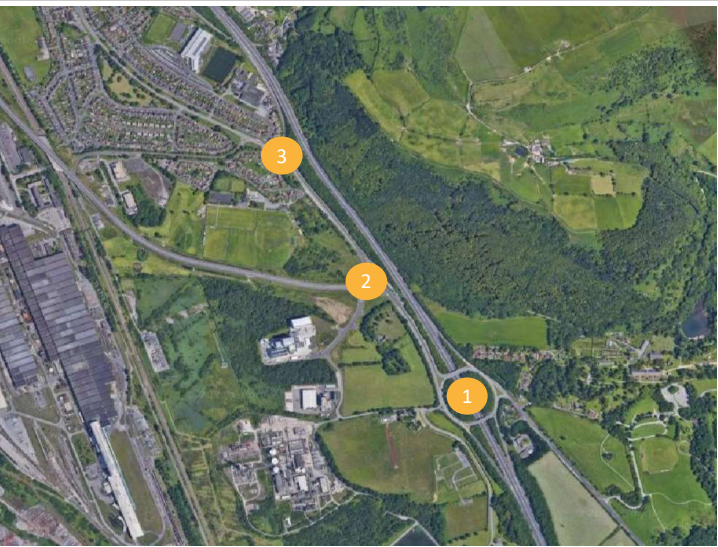


KEY	
12	Total Vehicles
12	HGVs

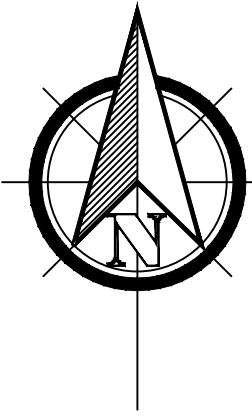


KEY

12	Total Vehicles
12	HGVs



Appendix D Site Masterplan



Margam Green Energy
Power Station

Balancing Pond

Western Bio Energy
Power Station

WB

Chy
Tank

Tank

El Sub Stas

HOV4 ONLY ENTRANCE.
SIGNAGE TO BE INSTALLED
TO PROMPT LORRIES
TURNING LEFT

2.8m HIGH PALISADE FENCE
AROUND PERIMETER OF
SECURITY BARRIER.

ELECTRIC CHARGING PORTS
FOR 2 SPACES.

OFFICE BLOCK
FFL +9.000m

ATTENDANCE POD

ELECTRIC CHARGING PORTS
FOR 6 SPACES.

CYCLE SHELTER
28 SPACES.

SECURITY GATE ACCESS TO
PRODUCTION UNIT

PUMPING
STATION
FFL +9.500m

SERVICES AREA
FFL +10.000m

ARGON TANK

5 SHIPS TO BE SITUATED IN
THE RECYCLING AREA.

2.8m HIGH PALISADE FENCE
AROUND PERIMETER OF
SUBSTATION.

SUB STATION
FFL +10.500m

LAB
FFL +11.000m

PRODUCTION UNIT
FFL +11.000m

AMENITY BLOCK
FFL +11.600m

CYCLE STANDS
24 SPACES.

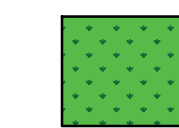
DETENTION BASIN

4m WIDE DOUBLE ACCESS GATE
FOR CONTRACTOR USE ONLY.

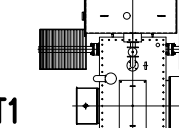
EXISTING GAS PIPE

KEY

- SITE BOUNDARY LINE
- NEW FENCING LINE.
- CATEGORY A TREE (HIGH)
(HIGHLY DESIRABLE FOR RETENTION)
- CATEGORY B TREE (MODERATE)
(DESIRABLE FOR RETENTION)
- CATEGORY C TREE (LOW)
(OPTIONAL FOR RETENTION)
- CATEGORY U TREE (POOR)
(UNSUITABLE FOR RETENTION)



PROPOSED SUDS FEATURES.



TRANSFORMERS



SERVICE FILTER.

ASD No: 20.62
Drawing No: 002
Scale: 1:500 @ A3

Rev: D

No.	REVISION	by	date	No.	REVISION	by	date	No.	REVISION	by	date	No.	REVISION	by	date
A	MAIN CAR PARKING LAYOUT UPDATED TO REFLECT COMMENTS MADE BY ARCHITECTURAL REPORT. ATTENDANCE POD MOVED TO WEST OF OFFICE BLOCK TO AVOID FLOOD ZONE. SITE BOUNDARY LINE UPDATED TO INCORPORATE UPDATED ACCESS JUNCTION.	K.J.	07.10.21												
B	MAJOR AMENDMENTS MADE TO OVERALL SITE PLAN. TRANSFORMERS AND SERVICE FILTERS ADDED TO THE DRAWING. TREE CONSTRAINTS PLAN ADDED TOO.	J.M.	26.10.21												
C	MAJOR AMENDMENTS MADE TO PLANT, ROOF PLANS ADDED TO DRAWING.	J.M.	26.10.21												
D	MASTERPLAN UPDATED TO REFLECT NEW POSITION OF HOV ACCESS ROAD	K.J.	25.01.22												

NOTES

1. Do not scale from this drawing
2. All dimensions to be checked on site
3. All built drawings are prepared, in part, based upon information furnished by others. While this information is believed to be reliable, James & Nicholas LLP assumes no responsibility for the accuracy of its built drawings or for any errors or omissions that may have been incorporated into them as a result of incorrect information provided to us by others. Those relying on an As built drawing are advised to obtain independent verification of its accuracy.

STAGE

PLANNING

REFER ALSO TO THE FOLLOWING:
Drawings:

Bending Schedules:

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Job title

DEVELOPMENT SITE, PORT TALBOT, SANDVIK OSPREY LTD.

Drawing title

OVERALL SITE MASTERPLAN

Job No: 20.62

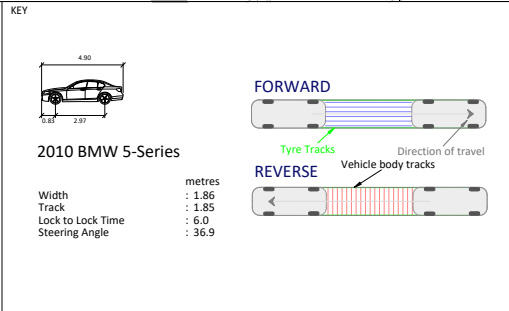
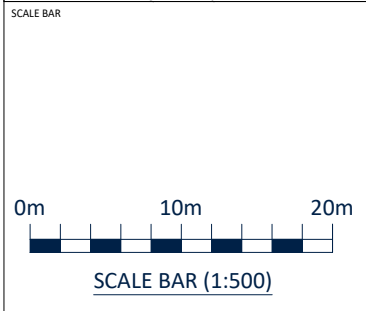
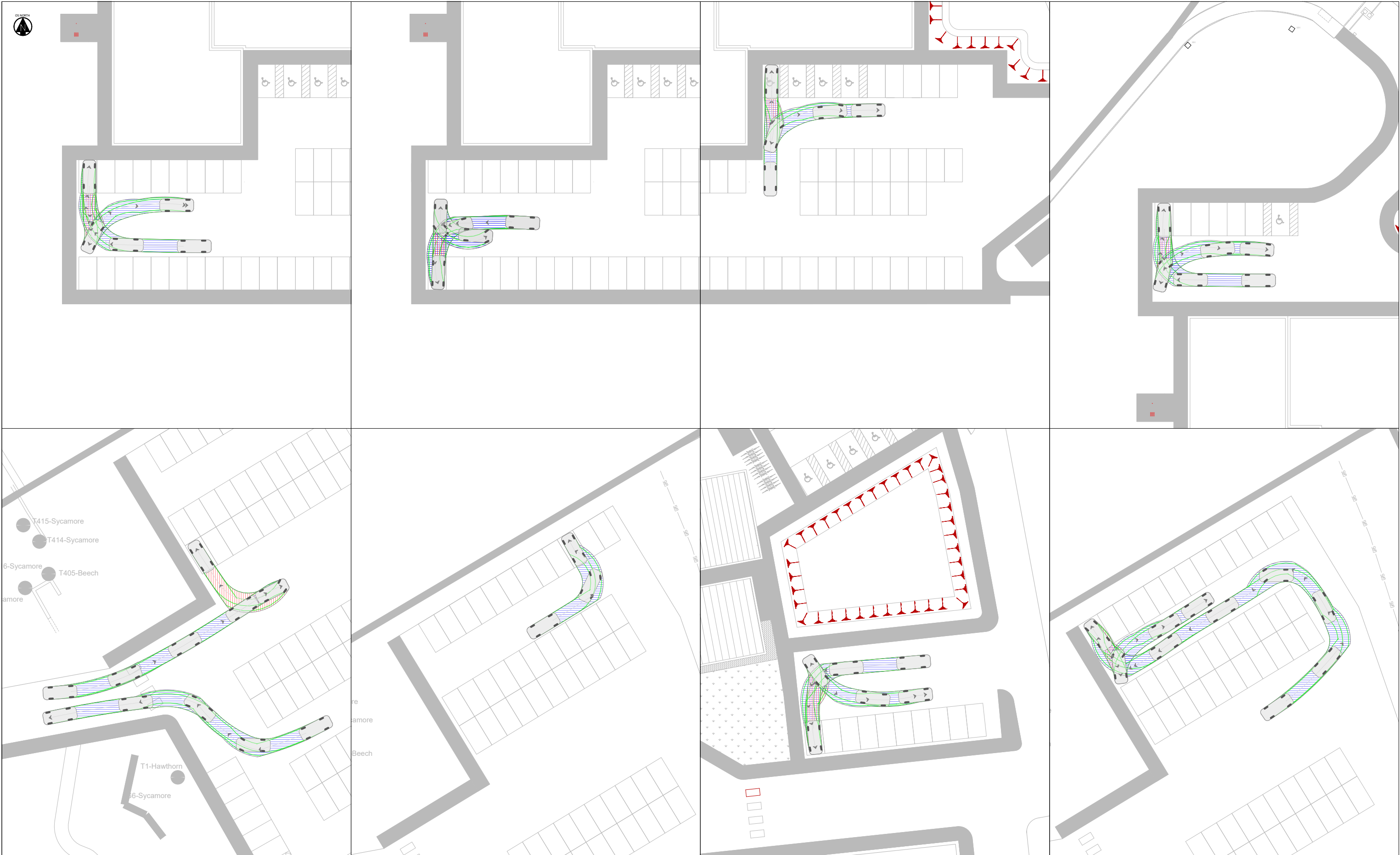
Drawing No: 002

Rev: D

Scale: 1:500 @ A3

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Appendix E Swept Path Analysis



NOTES

1. Drawing suitable for planning purposes only. This drawing is not suitable for construction
2. Drawing is based on 2062 C02 Overall Site Masterplan
3. Drawing is based on OS mapping data. Ordnance Survey, (c) Crown Copyright 2021. All rights reserved. Licence number 100022432
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REVISIONS (CONTINUED)

Rev	Date	Description	By	App
P02	27/10/21	Second Issue.	AR	DC
P01	25/08/21	First Issue.	AR	DC

REVISIONS

Rev	Date	Description	By	App
P02	27/10/21	Second Issue.	AR	DC
P01	25/08/21	First Issue.	AR	DC

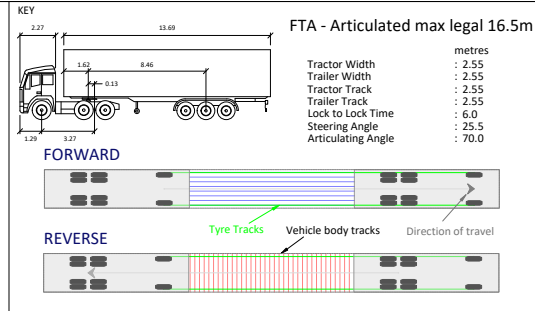
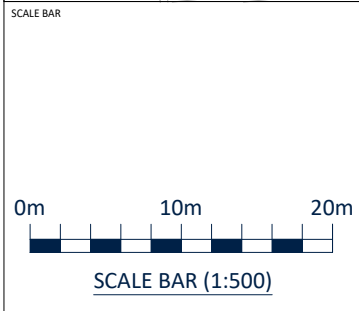
Apex
TRANSPORT PLANNING

23-24 PARK PLACE
CARDIFF
CF10 9BA
t: 02920 619 361
e: info@apextp.co.uk

CLIENT
SANDVIK OSPREY LTD

PROJECT
INDUSTRIAL UNIT AT M4 J38 MARGAM

TITLE LARGE CAR SWEPT PATH ANALYSIS	
PROJECT NO. C21-052	SCALE @ A3 1:500
STATUS DESCRIPTION INFORMATION	STATUS S2
DRAWING NO. C21052-ATP-DR-TP-003	



- NOTES
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 2. Drawing is based on 2062 C02 Overall Site Masterplan
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 4. Please do not scale from this drawing

REVISIONS (CONTINUED)

Rev	Date	Description	By	App
P02	27/10/21	Second Issue.	AR	DC
P01	25/08/21	First Issue.	AR	DC

REVISIONS

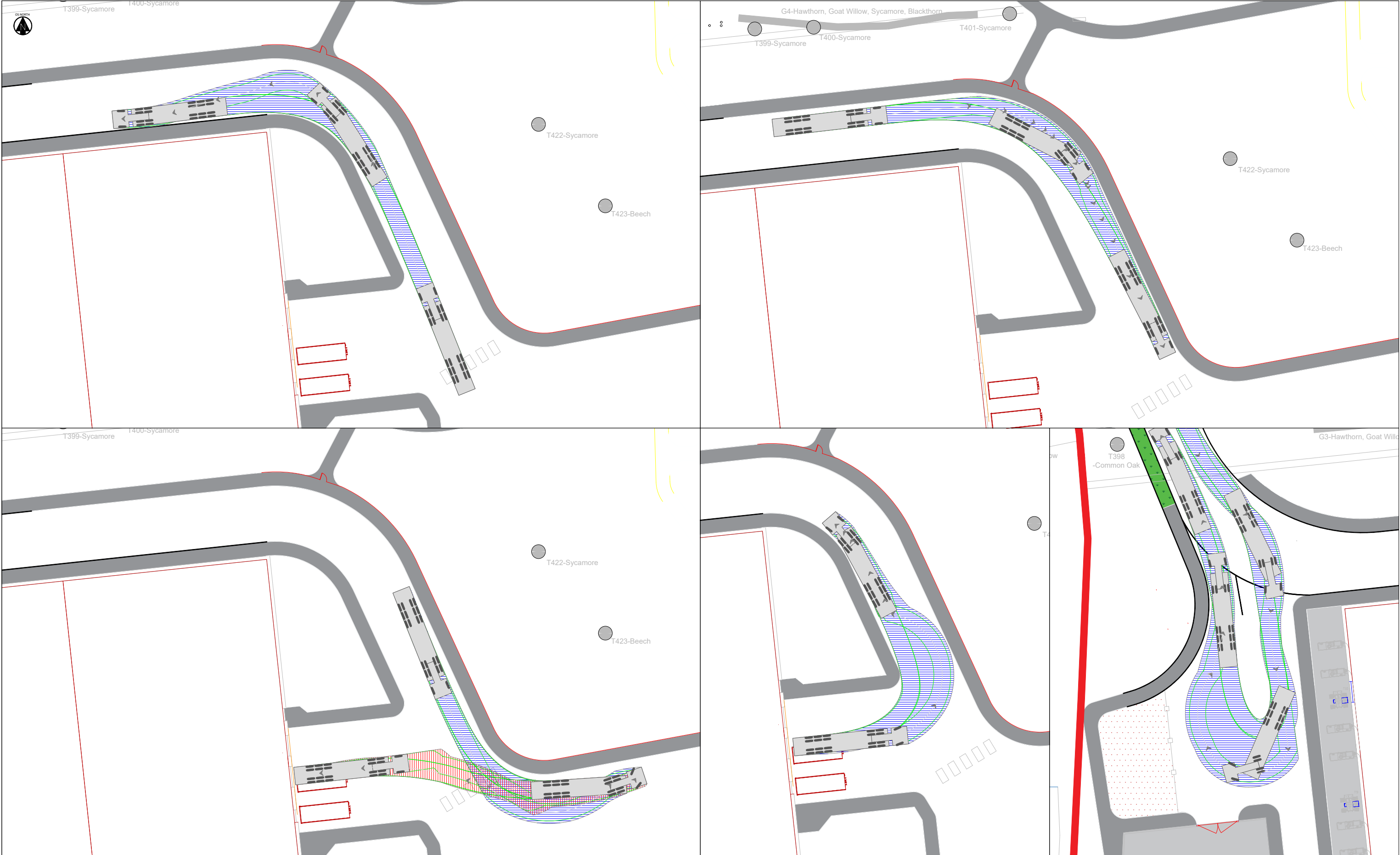
Rev	Date	Description	By	App
P02	27/10/21	Second Issue.	AR	DC
P01	25/08/21	First Issue.	AR	DC

23-24 PARK PLACE
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e: info@apexpt.co.uk

CLIENT
SANDVIK OSPREY LTD

PROJECT
INDUSTRIAL UNIT AT M4 J38 MARGAM

TITLE ARTICULATED SWEEP PATH ANALYSIS	
PROJECT NO. C21-052	SCALE @ A3 1:500
STATUS DESCRIPTION INFORMATION	STATUS S2
DRAWING NO. C21052-ATP-DR-TP-002	



SCALE BAR

SCALE BAR (1:500)

KEY

FTA - Articulated max legal 16.5m

Tractor Width	: 2.55	metres
Trailer Width	: 2.55	
Tractor Track	: 2.55	
Trailer Track	: 2.55	
Lock to Lock Time	: 6.0	
Steering Angle	: 25.5	
Articulating Angle	: 70.0	

FORWARD

REVERSE

NOTES

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- Drawing is based on 2062 C02 Overall Site Masterplan
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- Please do not scale from this drawing

REVISIONS (CONTINUED)

Rev	Date	Description	By	App
P03	28/01/22	Third Issue for revised masterplan	DC	DC
P02	27/10/21	Second Issue for revised masterplan	AR	DC
P01	25/08/21	First Issue.	AR	DC

REVISIONS

Rev	Date	Description	By	App
P03	28/01/22	Third Issue for revised masterplan	DC	DC
P02	27/10/21	Second Issue for revised masterplan	AR	DC
P01	25/08/21	First Issue.	AR	DC

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PROJECT
INDUSTRIAL UNIT AT M4 J38 MARGAM

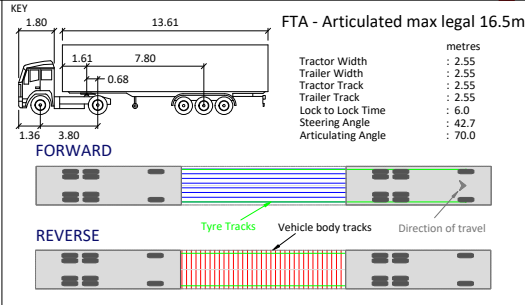
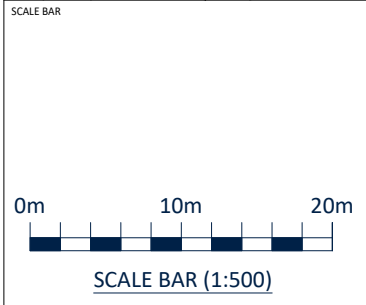
TITLE
ARTICULATED SWEEP PATH ANALYSIS

PROJECT NO. C21-052	SCALE @ A3 1:500
STATUS DESCRIPTION INFORMATION	STATUS S2
DRAWING NO. C21052-ATP-DR-TP-001	

Appendix F Operational Site Access Arrangements



Road Signage:
No Left Turn for HGVs
Position and type to
be agreed through
detailed design



- NOTES
1. Drawing suitable for planning purposes only. This drawing is not suitable for construction
 2. Drawing is based on 2062 C02 Overall Site Masterplan
 3. The content of this drawing will require further work such as a Road Safety Audit and detailed design
 4. Drawing is based on OS mapping data. Ordnance Survey, (c) Crown Copyright 2021. All rights reserved. Licence number 100022432
 5. All land ownership details and rights of way to be confirmed
 6. Assumes all landscaping can be altered and no trees are subject to TPO
 7. Please do not scale from this drawing

REVISIONS (CONTINUED)

Rev	Date	Description	By	App
P03	28/01/22	Third Issue. Access moved to northern boundary.	GP	DC
P02	27/10/21	Second Issue.	GP	DC
P01	27/09/21	First Issue.	GP	DC

REVISIONS

Rev	Date	Description	By	App
P03	28/01/22	Third Issue. Access moved to northern boundary.	GP	DC
P02	27/10/21	Second Issue.	GP	DC
P01	27/09/21	First Issue.	GP	DC

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CARDIFF
CF11 9PQ
t: 02920 619 361
e: info@apextp.co.uk

CLIENT
SANDVIK OSPREY LTD

PROJECT
INDUSTRIAL UNIT AT M4 J38 MARGAM

TITLE PROPOSED NORTHERN SITE ACCESS AND SWEEP PATH ANALYSIS	
PROJECT NO. C21-052	SCALE @ A3 1:500
STATUS DESCRIPTION INFORMATION	
DRAWING NO. C21052-ATP-DR-TP-004	
STATUS S2	

Appendix G TRICS Outputs

Calculation Reference: AUDIT-502501-210524-0516

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : C - INDUSTRIAL UNIT
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	WS WEST SUSSEX	1 days
03	SOUTH WEST	
	CW CORNWALL	2 days
	DV DEVON	1 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days
	NR NORTHAMPTONSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	WY WEST YORKSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	1 days
09	NORTH	
	TV TEES VALLEY	1 days
10	WALES	
	CF CARDIFF	1 days
	MT MERTHYR TYDFIL	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: Gross floor area
 Actual Range: 10200 to 23500 (units: sqm)
 Range Selected by User: 10000 to 30000 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 06/10/16

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	3 days
Wednesday	1 days
Thursday	5 days
Friday	1 days

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

Selected survey types:

Manual count	11 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:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	6
Free Standing (PPS6 Out of Town)	2

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:

Industrial Zone	7
Out of Town	2
No Sub Category	2

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.

Secondary Filtering selection:

Use Class:

Not Known	11 days
-----------	---------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:

All Surveys Included

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	4 days
5,001 to 10,000	3 days
15,001 to 20,000	1 days
25,001 to 50,000	2 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	1 days
50,001 to 75,000	3 days
75,001 to 100,000	1 days
125,001 to 250,000	4 days
250,001 to 500,000	1 days
500,001 or More	1 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	4 days
1.1 to 1.5	6 days
1.6 to 2.0	1 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:

Not Known	1 days
Yes	1 days
No	9 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	11 days
-----------------	---------

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

LIST OF SITES relevant to selection parameters

1	CF-02-C-02	BAKERY	CARDIFF
	MAES-Y-COED ROAD		
	CARDIFF		
	Suburban Area (PPS6 Out of Centre)		
	Industrial Zone		
	Total Gross floor area:	14125 sqm	
	Survey date: THURSDAY	06/10/16	Survey Type: MANUAL
2	CH-02-C-01	BAKERY	CHESHIRE
	GADBROOK PARK		
	NORTHWICH		
	HIGH SHURLACH		
	Edge of Town		
	Industrial Zone		
	Total Gross floor area:	15000 sqm	
	Survey date: THURSDAY	21/06/07	Survey Type: MANUAL
3	CW-02-C-01	FOOD DISTRIBUTION	CORNWALL
	WILSON WAY		
	CAMBORNE		
	POOL		
	Suburban Area (PPS6 Out of Centre)		
	Industrial Zone		
	Total Gross floor area:	10200 sqm	
	Survey date: FRIDAY	08/06/07	Survey Type: MANUAL
4	CW-02-C-02	LIGHTING COMPANY	CORNWALL
	NORMANDY WAY		
	BODMIN		
	Edge of Town		
	Industrial Zone		
	Total Gross floor area:	17675 sqm	
	Survey date: WEDNESDAY	06/06/07	Survey Type: MANUAL
5	DS-02-C-01	BAKERY	DERBYSHIRE
	STUBLEY LANE		
	NEAR SHEFFIELD		
	DRONFIELD		
	Edge of Town		
	No Sub Category		
	Total Gross floor area:	23500 sqm	
	Survey date: THURSDAY	22/06/06	Survey Type: MANUAL
6	DV-02-C-01	TUBE MANUFACTURE	DEVON
	PLYMBRIDGE ROAD		
	PLYMOUTH		
	ESTOVER		
	Edge of Town		
	Industrial Zone		
	Total Gross floor area:	20000 sqm	
	Survey date: TUESDAY	17/07/12	Survey Type: MANUAL
7	MT-02-C-01	CONFECTIONERY	MERTHYR TYDFIL
	HIGH STREET		
	MERTHYR TYDFIL		
	DOWLAIS		
	Edge of Town		
	No Sub Category		
	Total Gross floor area:	15450 sqm	
	Survey date: TUESDAY	09/10/07	Survey Type: MANUAL
8	NR-02-C-01	PAPER COMPANY	NORTHAMPTONSHIRE
	RHOSILI ROAD		
	NORTHAMPTON		
	BRACKMILLS		
	Edge of Town		
	Industrial Zone		
	Total Gross floor area:	11500 sqm	
	Survey date: THURSDAY	27/11/08	Survey Type: MANUAL
9	TV-02-C-01	ELECTRONICS CO.	TEES VALLEY
	SAMSUNG AVENUE		
	NEAR BILLINGHAM		
	WOLVISTON		
	Free Standing (PPS6 Out of Town)		
	Out of Town		
	Total Gross floor area:	21841 sqm	
	Survey date: TUESDAY	02/10/01	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

10	WS-02-C-02	AVIATION COMPANY	WEST SUSSEX
	MAYDWELL AVENUE		
	NEAR HORSHAM		
	SLINFOLD		
	Free Standing (PPS6 Out of Town)		
	Out of Town		
	Total Gross floor area:	11375 sqm	
	Survey date: THURSDAY	23/01/14	Survey Type: MANUAL
11	WY-02-C-02	FLUID SYSTEMS	WEST YORKSHIRE
	BROWN LANE WEST		
	LEEDS		
	HOLBECK		
	Suburban Area (PPS6 Out of Centre)		
	Industrial Zone		
	Total Gross floor area:	13350 sqm	
	Survey date: MONDAY	19/10/15	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.

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

TOTAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	12363	0.315	2	12363	0.020	2	12363	0.335
07:00 - 08:00	11	15820	0.370	11	15820	0.107	11	15820	0.477
08:00 - 09:00	11	15820	0.345	11	15820	0.068	11	15820	0.413
09:00 - 10:00	11	15820	0.170	11	15820	0.096	11	15820	0.266
10:00 - 11:00	11	15820	0.103	11	15820	0.093	11	15820	0.196
11:00 - 12:00	11	15820	0.090	11	15820	0.089	11	15820	0.179
12:00 - 13:00	11	15820	0.121	11	15820	0.155	11	15820	0.276
13:00 - 14:00	11	15820	0.238	11	15820	0.132	11	15820	0.370
14:00 - 15:00	11	15820	0.160	11	15820	0.275	11	15820	0.435
15:00 - 16:00	11	15820	0.110	11	15820	0.209	11	15820	0.319
16:00 - 17:00	11	15820	0.080	11	15820	0.328	11	15820	0.408
17:00 - 18:00	11	15820	0.073	11	15820	0.438	11	15820	0.511
18:00 - 19:00	11	15820	0.060	11	15820	0.157	11	15820	0.217
19:00 - 20:00	1	11375	0.044	1	11375	0.132	1	11375	0.176
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.279			2.299			4.578

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:	10200 - 23500 (units: sqm)
Survey date range:	01/01/00 - 06/10/16
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

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 shown. 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 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

OGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	12363	0.000	2	12363	0.000	2	12363	0.000
07:00 - 08:00	11	15820	0.021	11	15820	0.019	11	15820	0.040
08:00 - 09:00	11	15820	0.026	11	15820	0.024	11	15820	0.050
09:00 - 10:00	11	15820	0.046	11	15820	0.022	11	15820	0.068
10:00 - 11:00	11	15820	0.039	11	15820	0.027	11	15820	0.066
11:00 - 12:00	11	15820	0.032	11	15820	0.024	11	15820	0.056
12:00 - 13:00	11	15820	0.036	11	15820	0.021	11	15820	0.057
13:00 - 14:00	11	15820	0.028	11	15820	0.024	11	15820	0.052
14:00 - 15:00	11	15820	0.030	11	15820	0.025	11	15820	0.055
15:00 - 16:00	11	15820	0.023	11	15820	0.018	11	15820	0.041
16:00 - 17:00	11	15820	0.018	11	15820	0.023	11	15820	0.041
17:00 - 18:00	11	15820	0.007	11	15820	0.010	11	15820	0.017
18:00 - 19:00	11	15820	0.007	11	15820	0.012	11	15820	0.019
19:00 - 20:00	1	11375	0.000	1	11375	0.000	1	11375	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.313			0.249			0.562

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 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

PSVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	12363	0.000	2	12363	0.000	2	12363	0.000
07:00 - 08:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
08:00 - 09:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
09:00 - 10:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
10:00 - 11:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
11:00 - 12:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
12:00 - 13:00	11	15820	0.001	11	15820	0.000	11	15820	0.001
13:00 - 14:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
14:00 - 15:00	11	15820	0.001	11	15820	0.000	11	15820	0.001
15:00 - 16:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
16:00 - 17:00	11	15820	0.001	11	15820	0.000	11	15820	0.001
17:00 - 18:00	11	15820	0.000	11	15820	0.001	11	15820	0.001
18:00 - 19:00	11	15820	0.000	11	15820	0.000	11	15820	0.000
19:00 - 20:00	1	11375	0.000	1	11375	0.000	1	11375	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.003			0.001			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 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

CYCLISTS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	12363	0.008	2	12363	0.000	2	12363	0.008
07:00 - 08:00	11	15820	0.006	11	15820	0.003	11	15820	0.009
08:00 - 09:00	11	15820	0.007	11	15820	0.001	11	15820	0.008
09:00 - 10:00	11	15820	0.001	11	15820	0.001	11	15820	0.002
10:00 - 11:00	11	15820	0.000	11	15820	0.001	11	15820	0.001
11:00 - 12:00	11	15820	0.001	11	15820	0.001	11	15820	0.002
12:00 - 13:00	11	15820	0.000	11	15820	0.001	11	15820	0.001
13:00 - 14:00	11	15820	0.009	11	15820	0.004	11	15820	0.013
14:00 - 15:00	11	15820	0.006	11	15820	0.015	11	15820	0.021
15:00 - 16:00	11	15820	0.001	11	15820	0.003	11	15820	0.004
16:00 - 17:00	11	15820	0.001	11	15820	0.009	11	15820	0.010
17:00 - 18:00	11	15820	0.003	11	15820	0.006	11	15820	0.009
18:00 - 19:00	11	15820	0.002	11	15820	0.004	11	15820	0.006
19:00 - 20:00	1	11375	0.000	1	11375	0.000	1	11375	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.045			0.049			0.094

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 H Traffic Distribution Calculations

%																
From	To	No	M4 SB	M4 Nb	M4 N/b on-slip	M4 J38 - A48	A48 between the site access road and Margam Road	A48 between the site access road and J38	Margam Road	Harbour Way	M4 S	A48 between site access road and M4 J38	A48 between the site access road and Margam Road	M4 Nb on-slip	Margam Road	Harbour Way
Neath Port Talbot 018	Neath Port Talbot 019	346		100%	50%	50%	50%	50%			0	173	173	173	0	0
Neath Port Talbot 019	Neath Port Talbot 019	333	20%		0%	0%	80%	20%	80%		66.6	66.6	266.4	0	266.4	0
Neath Port Talbot 017	Neath Port Talbot 019	316			0%	0%	0%	0%		100%	0	0	0	0	0	316
Neath Port Talbot 016	Neath Port Talbot 019	314			0%	0%	0%	0%		100%	0	0	0	0	0	314
Neath Port Talbot 015	Neath Port Talbot 019	300		100%	50%	50%	50%	50%			0	150	150	150	0	0
Neath Port Talbot 014	Neath Port Talbot 019	292		50%	25%	25%	25%	25%		50%	0	73	73	73	0	146
Bridgend 008	Neath Port Talbot 019	149	100%		0%	0%	0%	100%			149	149	0	0	0	0
Neath Port Talbot 013	Neath Port Talbot 019	138		100%	50%	50%	50%	50%			0	69	69	69	0	0
Neath Port Talbot 010	Neath Port Talbot 019	130		100%	50%	50%	50%	50%			0	65	65	65	0	0
Bridgend 010	Neath Port Talbot 019	126	100%		0%	0%	0%	100%			126	126	0	0	0	0
Bridgend 018	Neath Port Talbot 019	126	100%		0%	0%	0%	100%			126	126	0	0	0	0
Neath Port Talbot 004	Neath Port Talbot 019	117		100%	50%	50%	50%	50%			0	58.5	58.5	58.5	0	0
Neath Port Talbot 006	Neath Port Talbot 019	106		100%	50%	50%	50%	50%			0	53	53	53	0	0
Neath Port Talbot 009	Neath Port Talbot 019	103		100%	50%	50%	50%	50%			0	51.5	51.5	51.5	0	0
Bridgend 002	Neath Port Talbot 019	92	100%		0%	0%	0%	100%			92	92	0	0	0	0
Neath Port Talbot 007	Neath Port Talbot 019	87		100%	50%	50%	50%	50%			0	43.5	43.5	43.5	0	0
Neath Port Talbot 005	Neath Port Talbot 019	83		100%	50%	50%	50%	50%			0	41.5	41.5	41.5	0	0
Neath Port Talbot 012	Neath Port Talbot 019	80		100%	50%	50%	50%	50%			0	40	40	40	0	0
Bridgend 019	Neath Port Talbot 019	77	100%		0%	0%	0%	100%			77	77	0	0	0	0
Neath Port Talbot 008	Neath Port Talbot 019	73		100%	50%	50%	50%	50%			0	36.5	36.5	36.5	0	0
Neath Port Talbot 011	Neath Port Talbot 019	70		100%	50%	50%	50%	50%			0	35	35	35	0	0
Bridgend 005	Neath Port Talbot 019	70	100%		0%	0%	0%	100%			70	70	0	0	0	0
Bridgend 001	Neath Port Talbot 019	65	100%		0%	0%	0%	100%			65	65	0	0	0	0
Bridgend 017	Neath Port Talbot 019	63	100%		0%	0%	0%	100%			63	63	0	0	0	0
Neath Port Talbot 020	Neath Port Talbot 019	63		100%	50%	50%	50%	50%			0	31.5	31.5	31.5	0	0
Swansea 021	Neath Port Talbot 019	58		100%	50%	50%	50%	50%			0	29	29	29	0	0
Neath Port Talbot 003	Neath Port Talbot 019	57		100%	50%	50%	50%	50%			0	28.5	28.5	28.5	0	0
Swansea 004	Neath Port Talbot 019	54		100%	50%	50%	50%	50%			0	27	27	27	0	0
Powys 021	Neath Port Talbot 019	54	100%		0%	0%	0%	100%			54	54	0	0	0	0
Swansea 009	Neath Port Talbot 019	53		100%	50%	50%	50%	50%			0	26.5	26.5	26.5	0	0
Swansea 002	Neath Port Talbot 019	52		100%	50%	50%	50%	50%			0	26	26	26	0	0
Swansea 014	Neath Port Talbot 019	51		100%	50%	50%	50%	50%			0	25.5	25.5	25.5	0	0
Swansea 010	Neath Port Talbot 019	50		100%	50%	50%	50%	50%			0	25	25	25	0	0
Swansea 003	Neath Port Talbot 019	49		100%	50%	50%	50%	50%			0	24.5	24.5	24.5	0	0
Swansea 006	Neath Port Talbot 019	49		100%	50%	50%	50%	50%			0	24.5	24.5	24.5	0	0
Bridgend 006	Neath Port Talbot 019	45	100%		0%	0%	0%	100%			45	45	0	0	0	0
Neath Port Talbot 002	Neath Port Talbot 019	43		100%	50%	50%	50%	50%			0	21.5	21.5	21.5	0	0
Bridgend 009	Neath Port Talbot 019	41	100%		0%	0%	0%	100%			41	41	0	0	0	0
Swansea 005	Neath Port Talbot 019	40		100%	50%	50%	50%	50%			0	20	20	20	0	0
Swansea 029	Neath Port Talbot 019	38		100%	50%	50%	50%	50%			0	19	19	19	0	0
Swansea 001	Neath Port Talbot 019	35		100%	50%	50%	50%	50%			0	17.5	17.5	17.5	0	0
Swansea 008	Neath Port Talbot 019	35		100%	50%	50%	50%	50%			0	17.5	17.5	17.5	0	0
Swansea 015	Neath Port Talbot 019	35		100%	50%	50%	50%	50%			0	17.5	17.5	17.5	0	0
Swansea 012	Neath Port Talbot 019	34		100%	50%	50%	50%	50%			0	17	17	17	0	0
Swansea 007	Neath Port Talbot 019	33		100%	50%	50%	50%	50%			0	16.5	16.5	16.5	0	0
Bridgend 014	Neath Port Talbot 019	33	100%		0%	0%	0%	100%			33	33	0	0	0	0
Bridgend 015	Neath Port Talbot 019	33	100%		0%	0%	0%	100%			33	33	0	0	0	0
Cardiff 048	Neath Port Talbot 019	33	100%		0%	0%	0%	100%			33	33	0	0	0	0
Swansea 025	Neath Port Talbot 019	32		100%	50%	50%	50%	50%			0	16	16	16	0	0

Bridgend 012	Neath Port Talbot 019	32	100%		0%	0%	0%	100%			32	32	0	0	0	0
Bridgend 003	Neath Port Talbot 019	31	100%		0%	0%	0%	100%			31	31	0	0	0	0
Swansea 031	Neath Port Talbot 019	29		100%	50%	50%	50%	50%			0	14.5	14.5	14.5	0	0
Swansea 024	Neath Port Talbot 019	28		100%	50%	50%	50%	50%			0	14	14	14	0	0
Bridgend 007	Neath Port Talbot 019	28	100%		0%	0%	0%	100%			28	28	0	0	0	0
Carmarthenshire 019	Neath Port Talbot 019	27		100%	50%	50%	50%	50%			0	13.5	13.5	13.5	0	0
Swansea 017	Neath Port Talbot 019	27		100%	50%	50%	50%	50%			0	13.5	13.5	13.5	0	0
Rhondda Cynon Taf 029	Neath Port Talbot 019	27	100%		0%	0%	0%	100%			27	27	0	0	0	0
Bridgend 004	Neath Port Talbot 019	26	100%		0%	0%	0%	100%			26	26	0	0	0	0
Swansea 011	Neath Port Talbot 019	25		100%	50%	50%	50%	50%			0	12.5	12.5	12.5	0	0
Swansea 022	Neath Port Talbot 019	25		100%	50%	50%	50%	50%			0	12.5	12.5	12.5	0	0
Rhondda Cynon Taf 031	Neath Port Talbot 019	25	100%		0%	0%	0%	100%			25	25	0	0	0	0
Blaenau Gwent 001	Neath Port Talbot 019	25	100%		0%	0%	0%	100%			25	25	0	0	0	0
Bridgend 013	Neath Port Talbot 019	24	100%		0%	0%	0%	100%			24	24	0	0	0	0
Blaenau Gwent 007	Neath Port Talbot 019	24	100%		0%	0%	0%	100%			24	24	0	0	0	0
Swansea 016	Neath Port Talbot 019	22		100%	50%	50%	50%	50%			0	11	11	11	0	0
Swansea 027	Neath Port Talbot 019	22		100%	50%	50%	50%	50%			0	11	11	11	0	0
Blaenau Gwent 004	Neath Port Talbot 019	22	100%		0%	0%	0%	100%			22	22	0	0	0	0
Bridgend 016	Neath Port Talbot 019	21	100%		0%	0%	0%	100%			21	21	0	0	0	0
Swansea 020	Neath Port Talbot 019	20		100%	50%	50%	50%	50%			0	10	10	10	0	0
Carmarthenshire 017	Neath Port Talbot 019	19		100%	50%	50%	50%	50%			0	9.5	9.5	9.5	0	0
Bridgend 011	Neath Port Talbot 019	19	100%		0%	0%	0%	100%			19	19	0	0	0	0
Carmarthenshire 011	Neath Port Talbot 019	18		100%	50%	50%	50%	50%			0	9	9	9	0	0
Swansea 013	Neath Port Talbot 019	18		100%	50%	50%	50%	50%			0	9	9	9	0	0
Newport 009	Neath Port Talbot 019	17	100%		0%	0%	0%	100%			17	17	0	0	0	0
Carmarthenshire 016	Neath Port Talbot 019	16		100%	50%	50%	50%	50%			0	8	8	8	0	0
Carmarthenshire 025	Neath Port Talbot 019	15		100%	50%	50%	50%	50%			0	7.5	7.5	7.5	0	0
Swansea 018	Neath Port Talbot 019	15		100%	50%	50%	50%	50%			0	7.5	7.5	7.5	0	0
Swansea 028	Neath Port Talbot 019	15		100%	50%	50%	50%	50%			0	7.5	7.5	7.5	0	0
Newport 015	Neath Port Talbot 019	15	100%		0%	0%	0%	100%			15	15	0	0	0	0
Swansea 019	Neath Port Talbot 019	14		100%	50%	50%	50%	50%			0	7	7	7	0	0
Swansea 023	Neath Port Talbot 019	14		100%	50%	50%	50%	50%			0	7	7	7	0	0
Rhondda Cynon Taf 001	Neath Port Talbot 019	14	100%		0%	0%	0%	100%			14	14	0	0	0	0
Rhondda Cynon Taf 010	Neath Port Talbot 019	14	100%		0%	0%	0%	100%			14	14	0	0	0	0
Cardiff 049	Neath Port Talbot 019	14	100%		0%	0%	0%	100%			14	14	0	0	0	0
Carmarthenshire 010	Neath Port Talbot 019	13		100%	50%	50%	50%	50%			0	6.5	6.5	6.5	0	0
Swansea 026	Neath Port Talbot 019	13		100%	50%	50%	50%	50%			0	6.5	6.5	6.5	0	0
Swansea 030	Neath Port Talbot 019	13		100%	50%	50%	50%	50%			0	6.5	6.5	6.5	0	0
Rhondda Cynon Taf 027	Neath Port Talbot 019	13	100%		0%	0%	0%	100%			13	13	0	0	0	0
Monmouthshire 010	Neath Port Talbot 019	13	100%		0%	0%	0%	100%			13	13	0	0	0	0
Carmarthenshire 021	Neath Port Talbot 019	12		100%	50%	50%	50%	50%			0	6	6	6	0	0
Carmarthenshire 023	Neath Port Talbot 019	12		100%	50%	50%	50%	50%			0	6	6	6	0	0
The Vale of Glamorgan 002	Neath Port Talbot 019	12	100%		0%	0%	0%	100%			12	12	0	0	0	0
Carmarthenshire 024	Neath Port Talbot 019	11		100%	50%	50%	50%	50%			0	5.5	5.5	5.5	0	0
Caerphilly 016	Neath Port Talbot 019	11	100%		0%	0%	0%	100%			11	11	0	0	0	0
Blaenau Gwent 002	Neath Port Talbot 019	11	100%		0%	0%	0%	100%			11	11	0	0	0	0
Blaenau Gwent 003	Neath Port Talbot 019	11	100%		0%	0%	0%	100%			11	11	0	0	0	0
Cardiff 006	Neath Port Talbot 019	11	100%		0%	0%	0%	100%			11	11	0	0	0	0
Cardiff 011	Neath Port Talbot 019	11	100%		0%	0%	0%	100%			11	11	0	0	0	0
Carmarthenshire 012	Neath Port Talbot 019	10		100%	50%	50%	50%	50%			0	5	5	5	0	0
Carmarthenshire 026	Neath Port Talbot 019	10		100%	50%	50%	50%	50%			0	5	5	5	0	0
The Vale of Glamorgan 001	Neath Port Talbot 019	10	100%		0%	0%	0%	100%			10	10	0	0	0	0
The Vale of Glamorgan 011	Neath Port Talbot 019	10	100%		0%	0%	0%	100%			10	10	0	0	0	0
Rhondda Cynon Taf 003	Neath Port Talbot 019	10	100%		0%	0%	0%	100%			10	10	0	0	0	0
Rhondda Cynon Taf 023	Neath Port Talbot 019	10	100%		0%	0%	0%	100%			10	10	0	0	0	0

Caerphilly 006	Neath Port Talbot 019	10	100%		0%	0%	0%	100%		10	10	0	0	0	0
Newport 004	Neath Port Talbot 019	10	100%		0%	0%	0%	100%		10	10	0	0	0	0
Newport 006	Neath Port Talbot 019	10	100%		0%	0%	0%	100%		10	10	0	0	0	0
Cardiff 014	Neath Port Talbot 019	10	100%		0%	0%	0%	100%		10	10	0	0	0	0
Carmarthenshire 013	Neath Port Talbot 019	9		100%	50%	50%	50%	50%		0	4.5	4.5	4.5	0	0
Carmarthenshire 015	Neath Port Talbot 019	9		100%	50%	50%	50%	50%		0	4.5	4.5	4.5	0	0
Rhondda Cynon Taf 007	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Rhondda Cynon Taf 018	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Torfaen 008	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Monmouthshire 009	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Monmouthshire 011	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Cardiff 009	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Cardiff 025	Neath Port Talbot 019	9	100%		0%	0%	0%	100%		9	9	0	0	0	0
Carmarthenshire 004	Neath Port Talbot 019	8		100%	50%	50%	50%	50%		0	4	4	4	0	0
Carmarthenshire 006	Neath Port Talbot 019	8		100%	50%	50%	50%	50%		0	4	4	4	0	0
Carmarthenshire 018	Neath Port Talbot 019	8		100%	50%	50%	50%	50%		0	4	4	4	0	0
The Vale of Glamorgan 012	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
The Vale of Glamorgan 014	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Rhondda Cynon Taf 009	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Merthyr Tydfil 003	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Caerphilly 011	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Caerphilly 019	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Caerphilly 024	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Blaenau Gwent 005	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Newport 002	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Newport 005	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Newport 017	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
Cardiff 020	Neath Port Talbot 019	8	100%		0%	0%	0%	100%		8	8	0	0	0	0
North Somerset 020	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
The Vale of Glamorgan 009	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Rhondda Cynon Taf 016	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Rhondda Cynon Taf 028	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Rhondda Cynon Taf 030	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Caerphilly 009	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Caerphilly 012	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Caerphilly 023	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Blaenau Gwent 006	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Blaenau Gwent 008	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Torfaen 012	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Newport 008	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Cardiff 003	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Cardiff 012	Neath Port Talbot 019	7	100%		0%	0%	0%	100%		7	7	0	0	0	0
Carmarthenshire 008	Neath Port Talbot 019	6		100%	50%	50%	50%	50%		0	3	3	3	0	0
Carmarthenshire 020	Neath Port Talbot 019	6		100%	50%	50%	50%	50%		0	3	3	3	0	0
Rhondda Cynon Taf 014	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Rhondda Cynon Taf 021	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Rhondda Cynon Taf 024	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Merthyr Tydfil 005	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Caerphilly 014	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Torfaen 006	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Newport 001	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Newport 011	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Newport 012	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Newport 016	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Powys 020	Neath Port Talbot 019	6	100%		0%	0%	0%	100%		6	6	0	0	0	0
Total										1947.6	3526.1	1844.9	1578.5	266.4	776

Appendix I Junctions 9 Outputs – M4 J38

Junctions 9	
ARCADY 9 - Roundabout Module	
Version: 9.5.1.7462 © Copyright TRL Limited, 2019	
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk	
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Filename: Margam M4 Rbt - v.3 (17.12.21).j9

Path: C:\Users\beth1\EvokeTransport\Evoke Transport\Evoke Projects - Documents\R-21-0122 M4 J38 Margam\30 Technical\31 Modelling

Report generation date: 17/12/2021 15:27:19

»M1 Junction 38 - 2021 Base, AM
 »M1 Junction 38 - 2021 Base, PM
 »M1 Junction 38 - 2026 Base, AM
 »M1 Junction 38 - 2026 Base, PM
 »M1 Junction 38 - 2036 Base, AM
 »M1 Junction 38 - 2036 Base, PM
 »M1 Junction 38 - 2021 Base + Dev, AM
 »M1 Junction 38 - 2021 Base + Dev, PM
 »M1 Junction 38 - 2026 Base + Dev, AM
 »M1 Junction 38 - 2026 Base + Dev, PM
 »M1 Junction 38 - 2036 Base + Dev, AM
 »M1 Junction 38 - 2036 Base + Dev, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	M1 Junction 38 - 2021 Base											
Arm A LL	D1	0.5	4.59	0.32	A	90 % [Arm A LL]	D2	0.4	4.92	0.27	A	74 % [Arm A LL]
Arm A RL		0.1	3.62	0.12	A			0.1	4.05	0.05	A	
Arm B		0.2	1.95	0.18	A			0.5	2.30	0.32	A	
Arm C		0.5	2.86	0.33	A			0.4	2.91	0.29	A	
Arm D		0.0	3.59	0.02	A			0.0	2.97	0.05	A	
Arm E		0.2	1.60	0.17	A			0.3	1.61	0.24	A	
	M1 Junction 38 - 2026 Base											
Arm A LL	D3	0.5	4.76	0.33	A	83 % [Arm A LL]	D4	0.4	5.13	0.29	A	68 % [Arm A LL]
Arm A RL		0.1	3.68	0.12	A			0.1	4.14	0.06	A	
Arm B		0.2	1.99	0.19	A			0.5	2.37	0.33	A	
Arm C		0.5	2.96	0.34	A			0.4	3.01	0.30	A	
Arm D		0.0	3.63	0.03	A			0.1	3.05	0.05	A	
Arm E		0.2	1.61	0.17	A			0.3	1.63	0.25	A	
	M1 Junction 38 - 2036 Base											
Arm A LL	D5	0.6	5.17	0.37	A	70 % [Arm A LL]	D6	0.5	5.68	0.32	A	56 % [Arm A LL]
Arm A RL		0.2	3.87	0.13	A			0.1	4.34	0.06	A	
Arm B		0.3	2.07	0.20	A			0.6	2.52	0.36	A	
Arm C		0.6	3.19	0.38	A			0.5	3.27	0.33	A	
Arm D		0.0	3.95	0.03	A			0.1	3.24	0.06	A	
Arm E		0.2	1.64	0.19	A			0.4	1.68	0.27	A	
	M1 Junction 38 - 2021 Base + Dev											
Arm A LL	D7	0.5	4.65	0.32	A	87 % [Arm A LL]	D8	0.4	5.18	0.28	A	67 % [Arm A LL]
Arm A RL		0.2	3.83	0.17	A			0.1	4.19	0.06	A	
Arm B		0.2	2.03	0.18	A			0.5	2.38	0.32	A	
Arm C		0.6	3.07	0.36	A			0.4	2.96	0.29	A	
Arm D		0.0	3.79	0.03	A			0.0	3.01	0.05	A	
Arm E		0.2	1.61	0.17	A			0.3	1.65	0.26	A	
	M1 Junction 38 - 2026 Base + Dev											
Arm A LL	D9	0.5	4.82	0.34	A	81 % [Arm A LL]	D10	0.4	5.41	0.30	A	62 % [Arm A LL]
Arm A RL		0.2	3.90	0.17	A			0.1	4.29	0.07	A	
Arm B		0.2	2.06	0.19	A			0.5	2.45	0.34	A	
Arm C		0.6	3.19	0.37	A			0.4	3.07	0.31	A	
Arm D		0.0	3.84	0.03	A			0.1	3.09	0.05	A	
Arm E		0.2	1.62	0.18	A			0.4	1.67	0.26	A	
	M1 Junction 38 - 2036 Base + Dev											
Arm A LL	D11	0.6	5.24	0.37	A	69 % [Arm A LL]	D12	0.5	5.98	0.33	A	51 % [Arm A LL]
Arm A RL		0.2	4.10	0.19	A			0.1	4.52	0.08	A	
Arm B		0.3	2.15	0.21	A			0.6	2.62	0.37	A	
Arm C		0.7	3.46	0.41	A			0.5	3.33	0.34	A	
Arm D		0.0	4.20	0.03	A			0.1	3.28	0.06	A	
Arm E		0.2	1.65	0.19	A			0.4	1.72	0.28	A	

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

File summary

File Description

Title	
Location	M1 Junction 38
Site number	
Date	09/09/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DESKTOP-IQT85C8\beth1
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	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	2021 Base	AM	ONE HOUR	07:15	08:45	15	✓
D2	2021 Base	PM	ONE HOUR	16:15	17:45	15	✓
D3	2026 Base	AM	ONE HOUR	07:15	08:45	15	✓
D4	2026 Base	PM	ONE HOUR	16:15	17:45	15	✓
D5	2036 Base	AM	ONE HOUR	07:15	08:45	15	✓
D6	2036 Base	PM	ONE HOUR	16:15	17:45	15	✓
D7	2021 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓
D8	2021 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓
D9	2026 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓
D10	2026 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓
D11	2036 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓
D12	2036 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	M1 Junction 38	✓	100.000	100.000

M1 Junction 38 - 2021 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.75	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	90	Arm A LL

Arms

Arms

Arm	Name	Description
A LL	M4 North	
A RL	M4 North	
B	A48 SE	
C	M4 South	
D	Heolcaer-Bont	
E	A48 NW	

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
A LL	3.15	3.15	0.0	107.1	118.2	16.0	
A RL	3.15	3.15	0.0	107.1	118.2	16.0	
B	3.50	8.15	29.7	43.3	215.1	21.0	
C	6.30	6.30	0.0	84.8	161.1	13.0	
D	3.60	6.92	14.0	47.0	254.8	17.0	
E	7.30	7.30	0.0	44.3	143.4	18.0	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A LL	0.716	1584
A RL	0.716	1584
B	0.995	2857
C	1.001	2564
D	0.806	2390
E	1.165	3101

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	2021 Base	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	330	100.000
A RL		ONE HOUR	✓	118	100.000
B		ONE HOUR	✓	363	100.000
C		ONE HOUR	✓	554	100.000
D		ONE HOUR	✓	23	100.000
E		ONE HOUR	✓	408	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	330	0	0	0	0
	A RL	0	0	0	0	8	110
	B	0	0	0	18	17	328
	C	0	0	49	0	16	489
	D	0	0	1	8	0	14
	E	0	0	90	287	31	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	2	0	0	0	0
	A RL	0	0	0	0	0	5
	B	0	0	0	6	6	3
	C	0	0	12	0	6	7
	D	0	0	0	63	0	36
	E	0	0	9	13	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.32	4.59	0.5	A	303	454
A RL	0.12	3.62	0.1	A	108	162
B	0.18	1.95	0.2	A	333	500
C	0.33	2.86	0.5	A	508	763
D	0.02	3.59	0.0	A	21	32
E	0.17	1.60	0.2	A	374	562

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	248	62	350	1276	0.195	247	0	0.0	0.2	3.495	A
A RL	89	22	350	1249	0.071	89	247	0.0	0.1	3.102	A
B	273	68	334	2409	0.113	273	105	0.0	0.1	1.685	A
C	417	104	371	2036	0.205	416	235	0.0	0.3	2.221	A
D	17	4	733	1231	0.014	17	54	0.0	0.0	2.964	A
E	307	77	44	2721	0.113	307	707	0.0	0.1	1.490	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	297	74	419	1222	0.243	296	0	0.2	0.3	3.887	A
A RL	106	27	419	1196	0.089	106	296	0.1	0.1	3.302	A
B	326	82	399	2338	0.140	326	126	0.1	0.2	1.788	A
C	498	125	444	1965	0.253	498	281	0.3	0.3	2.453	A
D	21	5	877	1146	0.018	21	65	0.0	0.0	3.198	A
E	367	92	52	2710	0.135	367	845	0.1	0.2	1.535	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	363	91	513	1148	0.317	363	0	0.3	0.5	4.582	A
A RL	130	32	513	1123	0.116	130	363	0.1	0.1	3.623	A
B	400	100	489	2242	0.178	399	154	0.2	0.2	1.953	A
C	610	152	544	1869	0.326	609	344	0.3	0.5	2.857	A
D	25	6	1074	1029	0.025	25	79	0.0	0.0	3.584	A
E	449	112	64	2696	0.167	449	1035	0.2	0.2	1.601	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	363	91	513	1148	0.317	363	0	0.5	0.5	4.589	A
A RL	130	32	513	1123	0.116	130	363	0.1	0.1	3.623	A
B	400	100	489	2242	0.178	400	154	0.2	0.2	1.953	A
C	610	152	544	1868	0.326	610	345	0.5	0.5	2.860	A
D	25	6	1075	1029	0.025	25	79	0.0	0.0	3.586	A
E	449	112	64	2696	0.167	449	1036	0.2	0.2	1.601	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	297	74	419	1222	0.243	297	0	0.5	0.3	3.896	A
A RL	106	27	419	1196	0.089	106	297	0.1	0.1	3.303	A
B	326	82	399	2338	0.140	327	126	0.2	0.2	1.789	A
C	498	125	444	1965	0.253	499	282	0.5	0.3	2.457	A
D	21	5	878	1145	0.018	21	65	0.0	0.0	3.203	A
E	367	92	52	2710	0.135	367	847	0.2	0.2	1.535	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	248	62	351	1276	0.195	249	0	0.3	0.2	3.505	A
A RL	89	22	351	1248	0.071	89	249	0.1	0.1	3.104	A
B	273	68	334	2408	0.114	273	105	0.2	0.1	1.688	A
C	417	104	372	2035	0.205	417	236	0.3	0.3	2.225	A
D	17	4	735	1230	0.014	17	54	0.0	0.0	2.968	A
E	307	77	44	2721	0.113	307	709	0.2	0.1	1.493	A

M1 Junction 38 - 2021 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.58	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	74	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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	2021 Base	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	245	100.000
A RL		ONE HOUR	✓	44	100.000
B		ONE HOUR	✓	657	100.000
C		ONE HOUR	✓	449	100.000
D		ONE HOUR	✓	54	100.000
E		ONE HOUR	✓	642	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	245	0	0	0	0
	A RL	0	0	0	0	2	42
	B	0	0	0	26	9	622
	C	0	0	59	0	5	385
	D	0	0	7	16	0	31
	E	0	0	223	406	13	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	0	0	0	0	0
	A RL	0	0	0	0	50	5
	B	0	0	0	12	0	1
	C	0	0	2	0	60	3
	D	0	0	0	19	0	6
	E	0	0	2	2	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.27	4.92	0.4	A	225	337
A RL	0.05	4.05	0.1	A	40	61
B	0.32	2.30	0.5	A	603	904
C	0.29	2.91	0.4	A	412	618
D	0.05	2.97	0.0	A	50	74
E	0.24	1.61	0.3	A	589	884

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	184	46	544	1186	0.155	184	0	0.0	0.2	3.589	A
A RL	33	8	544	1111	0.030	33	184	0.0	0.0	3.340	A
B	495	124	360	2459	0.201	494	217	0.0	0.3	1.831	A
C	338	85	517	1966	0.172	337	337	0.0	0.2	2.209	A
D	41	10	832	1561	0.026	41	22	0.0	0.0	2.366	A
E	483	121	62	2971	0.163	483	811	0.0	0.2	1.446	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	220	55	651	1108	0.199	220	0	0.2	0.2	4.051	A
A RL	40	10	651	1038	0.038	40	220	0.0	0.0	3.605	A
B	591	148	430	2388	0.247	590	260	0.3	0.3	2.003	A
C	404	101	618	1867	0.216	403	403	0.2	0.3	2.460	A
D	49	12	995	1439	0.034	49	26	0.0	0.0	2.589	A
E	577	144	74	2956	0.195	577	970	0.2	0.2	1.512	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	270	67	797	1001	0.269	269	0	0.2	0.4	4.913	A
A RL	48	12	797	938	0.052	48	269	0.0	0.1	4.048	A
B	723	181	527	2290	0.316	723	318	0.3	0.5	2.297	A
C	494	124	757	1731	0.286	494	493	0.3	0.4	2.908	A
D	59	15	1219	1271	0.047	59	32	0.0	0.0	2.971	A
E	707	177	90	2936	0.241	707	1188	0.2	0.3	1.613	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	270	67	797	1001	0.269	270	0	0.4	0.4	4.921	A
A RL	48	12	797	937	0.052	48	270	0.1	0.1	4.049	A
B	723	181	527	2290	0.316	723	318	0.5	0.5	2.298	A
C	494	124	757	1730	0.286	494	493	0.4	0.4	2.911	A
D	59	15	1220	1270	0.047	59	32	0.0	0.0	2.973	A
E	707	177	90	2936	0.241	707	1189	0.3	0.3	1.614	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	220	55	651	1108	0.199	221	0	0.4	0.2	4.059	A
A RL	40	10	651	1037	0.038	40	221	0.1	0.0	3.607	A
B	591	148	431	2387	0.247	591	260	0.5	0.3	2.004	A
C	404	101	619	1866	0.216	404	403	0.4	0.3	2.463	A
D	49	12	997	1437	0.034	49	26	0.0	0.0	2.593	A
E	577	144	74	2956	0.195	577	972	0.3	0.2	1.513	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	184	46	545	1185	0.156	185	0	0.2	0.2	3.597	A
A RL	33	8	545	1110	0.030	33	185	0.0	0.0	3.345	A
B	495	124	361	2458	0.201	495	218	0.3	0.3	1.836	A
C	338	85	518	1964	0.172	338	337	0.3	0.2	2.215	A
D	41	10	835	1560	0.026	41	22	0.0	0.0	2.371	A
E	483	121	62	2970	0.163	484	814	0.2	0.2	1.449	A

M1 Junction 38 - 2026 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.82	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	83	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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	2026 Base	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	343	100.000
A RL		ONE HOUR	✓	122	100.000
B		ONE HOUR	✓	377	100.000
C		ONE HOUR	✓	576	100.000
D		ONE HOUR	✓	24	100.000
E		ONE HOUR	✓	423	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	343	0	0	0	0
	A RL	0	0	0	0	8	114
	B	0	0	0	19	18	340
	C	0	0	51	0	17	508
	D	0	0	1	8	0	15
	E	0	0	93	298	32	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	2	0	0	0	0
	A RL	0	0	0	0	0	4
	B	0	0	0	5	6	3
	C	0	0	12	0	6	6
	D	0	0	0	63	0	33
	E	0	0	9	13	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.33	4.76	0.5	A	315	472
A RL	0.12	3.68	0.1	A	112	168
B	0.19	1.99	0.2	A	346	519
C	0.34	2.96	0.5	A	529	793
D	0.03	3.63	0.0	A	22	33
E	0.17	1.61	0.2	A	388	582

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	258	65	363	1266	0.204	257	0	0.0	0.3	3.564	A
A RL	92	23	363	1241	0.074	92	257	0.0	0.1	3.130	A
B	284	71	346	2399	0.118	283	109	0.0	0.1	1.701	A
C	434	108	385	2025	0.214	433	244	0.0	0.3	2.259	A
D	18	5	761	1231	0.015	18	56	0.0	0.0	2.967	A
E	318	80	45	2724	0.117	318	734	0.0	0.1	1.495	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	308	77	434	1210	0.255	308	0	0.3	0.3	3.989	A
A RL	110	27	434	1186	0.092	110	308	0.1	0.1	3.342	A
B	339	85	413	2327	0.146	339	130	0.1	0.2	1.810	A
C	518	129	460	1952	0.265	517	292	0.3	0.4	2.509	A
D	22	5	910	1141	0.019	22	67	0.0	0.0	3.214	A
E	380	95	54	2713	0.140	380	878	0.1	0.2	1.542	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	378	94	532	1134	0.333	377	0	0.3	0.5	4.754	A
A RL	134	34	532	1111	0.121	134	377	0.1	0.1	3.684	A
B	415	104	506	2227	0.186	415	160	0.2	0.2	1.986	A
C	634	159	563	1852	0.342	634	358	0.4	0.5	2.953	A
D	26	7	1114	1019	0.026	26	83	0.0	0.0	3.626	A
E	466	116	66	2698	0.173	466	1075	0.2	0.2	1.611	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	378	94	532	1133	0.333	378	0	0.5	0.5	4.763	A
A RL	134	34	532	1111	0.121	134	378	0.1	0.1	3.685	A
B	415	104	506	2227	0.186	415	160	0.2	0.2	1.986	A
C	634	159	564	1851	0.343	634	358	0.5	0.5	2.956	A
D	26	7	1115	1018	0.026	26	83	0.0	0.0	3.628	A
E	466	116	66	2698	0.173	466	1076	0.2	0.2	1.612	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	308	77	434	1210	0.255	309	0	0.5	0.3	3.997	A
A RL	110	27	434	1186	0.092	110	309	0.1	0.1	3.346	A
B	339	85	414	2326	0.146	339	130	0.2	0.2	1.814	A
C	518	129	461	1951	0.265	518	292	0.5	0.4	2.512	A
D	22	5	912	1140	0.019	22	67	0.0	0.0	3.219	A
E	380	95	54	2713	0.140	380	879	0.2	0.2	1.542	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	258	65	364	1266	0.204	259	0	0.3	0.3	3.574	A
A RL	92	23	364	1241	0.074	92	259	0.1	0.1	3.135	A
B	284	71	347	2398	0.118	284	109	0.2	0.1	1.704	A
C	434	108	386	2024	0.214	434	245	0.4	0.3	2.266	A
D	18	5	763	1229	0.015	18	56	0.0	0.0	2.971	A
E	318	80	45	2724	0.117	319	736	0.2	0.1	1.496	A

M1 Junction 38 - 2026 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.66	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	68	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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	2026 Base	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	254	100.000
A RL		ONE HOUR	✓	46	100.000
B		ONE HOUR	✓	681	100.000
C		ONE HOUR	✓	465	100.000
D		ONE HOUR	✓	56	100.000
E		ONE HOUR	✓	665	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	254	0	0	0	0
	A RL	0	0	0	0	2	44
	B	0	0	0	27	9	645
	C	0	0	61	0	5	399
	D	0	0	7	17	0	32
	E	0	0	231	421	13	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	0	0	0	0	0
	A RL	0	0	0	0	50	5
	B	0	0	0	11	0	1
	C	0	0	2	0	60	3
	D	0	0	0	18	0	6
	E	0	0	2	2	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.29	5.13	0.4	A	233	350
A RL	0.06	4.14	0.1	A	42	63
B	0.33	2.37	0.5	A	625	937
C	0.30	3.01	0.4	A	427	640
D	0.05	3.05	0.1	A	51	77
E	0.25	1.63	0.3	A	610	915

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	191	48	564	1172	0.163	190	0	0.0	0.2	3.661	A
A RL	35	9	564	1101	0.031	35	190	0.0	0.0	3.376	A
B	513	128	373	2447	0.210	512	225	0.0	0.3	1.860	A
C	350	88	536	1950	0.180	349	349	0.0	0.2	2.248	A
D	42	11	863	1543	0.027	42	22	0.0	0.0	2.397	A
E	501	125	64	2970	0.169	500	841	0.0	0.2	1.457	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	228	57	674	1092	0.209	228	0	0.2	0.3	4.167	A
A RL	41	10	674	1025	0.040	41	228	0.0	0.0	3.659	A
B	612	153	447	2373	0.258	612	269	0.3	0.3	2.044	A
C	418	105	641	1847	0.226	418	418	0.2	0.3	2.518	A
D	50	13	1032	1416	0.036	50	26	0.0	0.0	2.636	A
E	598	149	76	2955	0.202	598	1006	0.2	0.3	1.526	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	280	70	825	981	0.285	279	0	0.3	0.4	5.126	A
A RL	51	13	825	921	0.055	51	279	0.0	0.1	4.136	A
B	750	187	547	2271	0.330	749	329	0.3	0.5	2.365	A
C	512	128	784	1707	0.300	511	512	0.3	0.4	3.010	A
D	62	15	1264	1241	0.050	62	32	0.0	0.1	3.051	A
E	732	183	93	2934	0.250	732	1232	0.3	0.3	1.633	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	280	70	826	981	0.285	280	0	0.4	0.4	5.134	A
A RL	51	13	826	921	0.055	51	280	0.1	0.1	4.137	A
B	750	187	547	2271	0.330	750	329	0.5	0.5	2.366	A
C	512	128	785	1706	0.300	512	512	0.4	0.4	3.014	A
D	62	15	1265	1240	0.050	62	32	0.1	0.1	3.053	A
E	732	183	94	2934	0.250	732	1233	0.3	0.3	1.633	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	228	57	675	1091	0.209	229	0	0.4	0.3	4.176	A
A RL	41	10	675	1024	0.040	41	229	0.1	0.0	3.661	A
B	612	153	447	2372	0.258	613	269	0.5	0.3	2.046	A
C	418	105	642	1846	0.226	419	418	0.4	0.3	2.523	A
D	50	13	1034	1414	0.036	50	26	0.1	0.0	2.638	A
E	598	149	77	2955	0.202	598	1008	0.3	0.3	1.527	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	191	48	565	1171	0.163	192	0	0.3	0.2	3.673	A
A RL	35	9	565	1100	0.031	35	192	0.0	0.0	3.379	A
B	513	128	374	2446	0.210	513	225	0.3	0.3	1.864	A
C	350	88	537	1948	0.180	350	350	0.3	0.2	2.252	A
D	42	11	866	1541	0.027	42	22	0.0	0.0	2.402	A
E	501	125	64	2970	0.169	501	844	0.3	0.2	1.457	A

M1 Junction 38 - 2036 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	3.01	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	70	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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	2036 Base	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	367	100.000
A RL		ONE HOUR	✓	131	100.000
B		ONE HOUR	✓	404	100.000
C		ONE HOUR	✓	617	100.000
D		ONE HOUR	✓	26	100.000
E		ONE HOUR	✓	454	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	367	0	0	0	0
	A RL	0	0	0	0	9	122
	B	0	0	0	20	19	365
	C	0	0	55	0	18	544
	D	0	0	1	9	0	16
	E	0	0	100	319	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	2	0	0	0	0
	A RL	0	0	0	0	0	5
	B	0	0	0	5	5	3
	C	0	0	13	0	6	7
	D	0	0	0	67	0	38
	E	0	0	9	13	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.37	5.17	0.6	A	337	505
A RL	0.13	3.87	0.2	A	120	180
B	0.20	2.07	0.3	A	371	556
C	0.38	3.19	0.6	A	566	849
D	0.03	3.95	0.0	A	24	36
E	0.19	1.64	0.2	A	417	625

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	276	69	390	1243	0.222	275	0	0.0	0.3	3.717	A
A RL	99	25	390	1214	0.081	98	275	0.0	0.1	3.225	A
B	304	76	371	2370	0.128	304	117	0.0	0.1	1.741	A
C	465	116	413	1993	0.233	463	262	0.0	0.3	2.349	A
D	20	5	816	1160	0.017	20	61	0.0	0.0	3.155	A
E	342	85	49	2718	0.126	341	786	0.0	0.1	1.514	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	330	82	466	1183	0.279	330	0	0.3	0.4	4.218	A
A RL	118	29	466	1155	0.102	118	330	0.1	0.1	3.468	A
B	363	91	444	2292	0.158	363	140	0.1	0.2	1.865	A
C	555	139	494	1915	0.290	554	313	0.3	0.4	2.645	A
D	23	6	976	1067	0.022	23	73	0.0	0.0	3.448	A
E	408	102	58	2706	0.151	408	941	0.1	0.2	1.565	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	404	101	571	1100	0.367	403	0	0.4	0.6	5.162	A
A RL	144	36	571	1075	0.134	144	403	0.1	0.2	3.868	A
B	445	111	544	2185	0.204	445	172	0.2	0.3	2.068	A
C	679	170	605	1808	0.376	679	383	0.4	0.6	3.187	A
D	29	7	1195	940	0.030	29	89	0.0	0.0	3.951	A
E	500	125	71	2690	0.186	500	1152	0.2	0.2	1.643	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	404	101	571	1100	0.367	404	0	0.6	0.6	5.174	A
A RL	144	36	571	1074	0.134	144	404	0.2	0.2	3.869	A
B	445	111	544	2184	0.204	445	172	0.3	0.3	2.069	A
C	679	170	606	1807	0.376	679	383	0.6	0.6	3.191	A
D	29	7	1196	939	0.030	29	89	0.0	0.0	3.954	A
E	500	125	72	2690	0.186	500	1153	0.2	0.2	1.643	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	330	82	467	1182	0.279	331	0	0.6	0.4	4.232	A
A RL	118	29	467	1155	0.102	118	331	0.2	0.1	3.473	A
B	363	91	444	2291	0.159	363	140	0.3	0.2	1.866	A
C	555	139	495	1914	0.290	555	313	0.6	0.4	2.652	A
D	23	6	977	1066	0.022	23	73	0.0	0.0	3.454	A
E	408	102	59	2706	0.151	408	942	0.2	0.2	1.568	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	276	69	391	1242	0.222	277	0	0.4	0.3	3.732	A
A RL	99	25	391	1214	0.081	99	277	0.1	0.1	3.231	A
B	304	76	372	2369	0.128	304	118	0.2	0.1	1.743	A
C	465	116	414	1992	0.233	465	262	0.4	0.3	2.359	A
D	20	5	818	1159	0.017	20	61	0.0	0.0	3.162	A
E	342	85	49	2718	0.126	342	789	0.2	0.1	1.514	A

M1 Junction 38 - 2036 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.85	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	56	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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	2036 Base	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	272	100.000
A RL		ONE HOUR	✓	49	100.000
B		ONE HOUR	✓	730	100.000
C		ONE HOUR	✓	500	100.000
D		ONE HOUR	✓	60	100.000
E		ONE HOUR	✓	713	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	272	0	0	0	0
	A RL	0	0	0	0	2	47
	B	0	0	0	29	10	691
	C	0	0	66	0	6	428
	D	0	0	8	18	0	34
	E	0	0	248	451	14	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	0	0	0	0	0
	A RL	0	0	0	0	50	4
	B	0	0	0	10	0	1
	C	0	0	2	0	50	3
	D	0	0	0	17	0	6
	E	0	0	2	2	7	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.32	5.68	0.5	A	250	374
A RL	0.06	4.34	0.1	A	45	67
B	0.36	2.52	0.6	A	670	1005
C	0.33	3.27	0.5	A	459	688
D	0.06	3.24	0.1	A	55	83
E	0.27	1.68	0.4	A	654	981

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	205	51	605	1138	0.180	204	0	0.0	0.2	3.851	A
A RL	37	9	605	1076	0.034	37	204	0.0	0.0	3.462	A
B	550	137	400	2419	0.227	548	242	0.0	0.3	1.924	A
C	376	94	574	1913	0.197	375	374	0.0	0.2	2.340	A
D	45	11	925	1504	0.030	45	24	0.0	0.0	2.466	A
E	537	134	69	2963	0.181	536	901	0.0	0.2	1.482	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	245	61	723	1052	0.232	244	0	0.2	0.3	4.455	A
A RL	44	11	723	995	0.044	44	244	0.0	0.0	3.785	A
B	656	164	478	2340	0.281	656	289	0.3	0.4	2.138	A
C	449	112	686	1803	0.249	449	448	0.2	0.3	2.658	A
D	54	13	1107	1367	0.039	54	29	0.0	0.0	2.741	A
E	641	160	83	2947	0.217	641	1078	0.2	0.3	1.560	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	299	75	886	933	0.321	299	0	0.3	0.5	5.666	A
A RL	54	13	886	883	0.061	54	299	0.0	0.1	4.342	A
B	804	201	585	2231	0.360	803	354	0.4	0.6	2.519	A
C	551	138	840	1652	0.333	550	548	0.3	0.5	3.263	A
D	66	17	1355	1179	0.056	66	35	0.0	0.1	3.235	A
E	785	196	101	2925	0.268	785	1320	0.3	0.4	1.681	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	299	75	886	933	0.321	299	0	0.5	0.5	5.680	A
A RL	54	13	886	883	0.061	54	299	0.1	0.1	4.344	A
B	804	201	586	2231	0.360	804	355	0.6	0.6	2.522	A
C	551	138	841	1652	0.333	551	548	0.5	0.5	3.268	A
D	66	17	1356	1177	0.056	66	35	0.1	0.1	3.238	A
E	785	196	101	2925	0.268	785	1321	0.4	0.4	1.681	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	245	61	724	1051	0.233	245	0	0.5	0.3	4.471	A
A RL	44	11	724	994	0.044	44	245	0.1	0.0	3.791	A
B	656	164	479	2339	0.281	657	290	0.6	0.4	2.140	A
C	449	112	688	1802	0.249	450	448	0.5	0.3	2.665	A
D	54	13	1109	1365	0.040	54	29	0.1	0.0	2.745	A
E	641	160	83	2947	0.218	641	1080	0.4	0.3	1.563	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	205	51	606	1137	0.180	205	0	0.3	0.2	3.864	A
A RL	37	9	606	1075	0.034	37	205	0.0	0.0	3.466	A
B	550	137	401	2418	0.227	550	243	0.4	0.3	1.927	A
C	376	94	576	1912	0.197	377	375	0.3	0.2	2.345	A
D	45	11	928	1502	0.030	45	24	0.0	0.0	2.470	A
E	537	134	69	2963	0.181	537	904	0.3	0.2	1.483	A

M1 Junction 38 - 2021 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.88	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	87	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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
D7	2021 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	330	100.000
A RL		ONE HOUR	✓	171	100.000
B		ONE HOUR	✓	363	100.000
C		ONE HOUR	✓	588	100.000
D		ONE HOUR	✓	23	100.000
E		ONE HOUR	✓	418	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	330	0	0	0	0
	A RL	0	0	0	0	8	163
	B	0	0	0	18	17	328
	C	0	0	49	0	16	523
	D	0	0	1	8	0	14
	E	0	0	90	297	31	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	2	0	0	0	0
	A RL	0	0	0	0	0	3
	B	0	0	0	6	6	3
	C	0	0	12	0	6	6
	D	0	0	0	63	0	36
	E	0	0	9	13	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.32	4.65	0.5	A	303	454
A RL	0.17	3.83	0.2	A	157	235
B	0.18	2.03	0.2	A	333	500
C	0.36	3.07	0.6	A	540	809
D	0.03	3.79	0.0	A	21	32
E	0.17	1.61	0.2	A	384	575

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	248	62	358	1269	0.196	247	0	0.0	0.2	3.520	A
A RL	129	32	358	1259	0.102	128	247	0.0	0.1	3.181	A
B	273	68	381	2362	0.116	273	105	0.0	0.1	1.722	A
C	443	111	411	2003	0.221	442	243	0.0	0.3	2.304	A
D	17	4	798	1194	0.015	17	54	0.0	0.0	3.058	A
E	315	79	44	2722	0.116	314	772	0.0	0.1	1.494	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	297	74	428	1214	0.244	296	0	0.2	0.3	3.923	A
A RL	154	38	428	1204	0.128	154	296	0.1	0.1	3.425	A
B	326	82	456	2283	0.143	326	126	0.1	0.2	1.838	A
C	529	132	491	1925	0.275	528	290	0.3	0.4	2.577	A
D	21	5	955	1102	0.019	21	65	0.0	0.0	3.329	A
E	376	94	52	2711	0.139	376	924	0.1	0.2	1.540	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	363	91	524	1138	0.319	363	0	0.3	0.5	4.641	A
A RL	188	47	524	1129	0.167	188	363	0.1	0.2	3.825	A
B	400	100	558	2175	0.184	399	154	0.2	0.2	2.027	A
C	647	162	602	1818	0.356	647	355	0.4	0.6	3.071	A
D	25	6	1169	975	0.026	25	79	0.0	0.0	3.789	A
E	460	115	64	2697	0.171	460	1131	0.2	0.2	1.608	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	363	91	524	1138	0.319	363	0	0.5	0.5	4.647	A
A RL	188	47	524	1129	0.167	188	363	0.2	0.2	3.826	A
B	400	100	558	2174	0.184	400	154	0.2	0.2	2.028	A
C	647	162	602	1818	0.356	647	356	0.6	0.6	3.075	A
D	25	6	1170	974	0.026	25	79	0.0	0.0	3.792	A
E	460	115	64	2697	0.171	460	1132	0.2	0.2	1.608	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	297	74	428	1214	0.244	297	0	0.5	0.3	3.932	A
A RL	154	38	428	1204	0.128	154	297	0.2	0.1	3.427	A
B	326	82	456	2283	0.143	327	126	0.2	0.2	1.842	A
C	529	132	492	1924	0.275	529	291	0.6	0.4	2.581	A
D	21	5	957	1101	0.019	21	65	0.0	0.0	3.332	A
E	376	94	52	2711	0.139	376	925	0.2	0.2	1.543	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	248	62	359	1269	0.196	249	0	0.3	0.2	3.530	A
A RL	129	32	359	1259	0.102	129	249	0.1	0.1	3.186	A
B	273	68	382	2361	0.116	273	105	0.2	0.1	1.726	A
C	443	111	412	2002	0.221	443	243	0.4	0.3	2.311	A
D	17	4	801	1193	0.015	17	54	0.0	0.0	3.062	A
E	315	79	44	2722	0.116	315	775	0.2	0.1	1.495	A

M1 Junction 38 - 2021 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.65	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	67	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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
D8	2021 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	245	100.000
A RL		ONE HOUR	✓	54	100.000
B		ONE HOUR	✓	657	100.000
C		ONE HOUR	✓	456	100.000
D		ONE HOUR	✓	54	100.000
E		ONE HOUR	✓	682	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	245	0	0	0	0
	A RL	0	0	0	0	2	52
	B	0	0	0	26	9	622
	C	0	0	59	0	5	392
	D	0	0	7	16	0	31
	E	0	0	223	446	13	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	0	0	0	0	0
	A RL	0	0	0	0	50	4
	B	0	0	0	12	0	1
	C	0	0	2	0	60	4
	D	0	0	0	19	0	6
	E	0	0	2	2	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.28	5.18	0.4	A	225	337
A RL	0.06	4.19	0.1	A	50	74
B	0.32	2.38	0.5	A	603	904
C	0.29	2.96	0.4	A	418	628
D	0.05	3.01	0.0	A	50	74
E	0.26	1.65	0.3	A	626	939

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	184	46	574	1160	0.159	184	0	0.0	0.2	3.688	A
A RL	41	10	574	1103	0.037	41	184	0.0	0.0	3.387	A
B	495	124	398	2421	0.204	494	217	0.0	0.3	1.867	A
C	343	86	524	1955	0.176	342	367	0.0	0.2	2.231	A
D	41	10	845	1551	0.026	41	22	0.0	0.0	2.382	A
E	513	128	62	2970	0.173	513	824	0.0	0.2	1.465	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	220	55	687	1078	0.204	220	0	0.2	0.3	4.196	A
A RL	49	12	687	1025	0.047	48	220	0.0	0.0	3.685	A
B	591	148	475	2343	0.252	590	260	0.3	0.3	2.054	A
C	410	102	627	1855	0.221	410	439	0.2	0.3	2.490	A
D	49	12	1011	1427	0.034	49	26	0.0	0.0	2.611	A
E	613	153	74	2955	0.207	613	986	0.2	0.3	1.536	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	270	67	841	965	0.279	269	0	0.3	0.4	5.169	A
A RL	59	15	841	918	0.065	59	269	0.0	0.1	4.191	A
B	723	181	582	2235	0.324	723	318	0.3	0.5	2.381	A
C	502	126	768	1718	0.292	502	537	0.3	0.4	2.958	A
D	59	15	1238	1256	0.047	59	32	0.0	0.0	3.007	A
E	751	188	90	2935	0.256	751	1207	0.3	0.3	1.647	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	270	67	841	965	0.280	270	0	0.4	0.4	5.177	A
A RL	59	15	841	918	0.065	59	270	0.1	0.1	4.193	A
B	723	181	582	2234	0.324	723	318	0.5	0.5	2.382	A
C	502	126	769	1717	0.292	502	537	0.4	0.4	2.962	A
D	59	15	1239	1255	0.047	59	32	0.0	0.0	3.009	A
E	751	188	90	2935	0.256	751	1208	0.3	0.3	1.647	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	220	55	687	1077	0.204	221	0	0.4	0.3	4.205	A
A RL	49	12	687	1025	0.047	49	221	0.1	0.0	3.690	A
B	591	148	476	2342	0.252	591	260	0.5	0.3	2.058	A
C	410	102	628	1854	0.221	410	439	0.4	0.3	2.495	A
D	49	12	1012	1425	0.034	49	26	0.0	0.0	2.616	A
E	613	153	74	2955	0.207	613	987	0.3	0.3	1.539	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	184	46	575	1159	0.159	185	0	0.3	0.2	3.699	A
A RL	41	10	575	1102	0.037	41	185	0.0	0.0	3.393	A
B	495	124	398	2420	0.204	495	218	0.3	0.3	1.872	A
C	343	86	526	1954	0.176	344	368	0.3	0.2	2.235	A
D	41	10	848	1549	0.026	41	22	0.0	0.0	2.385	A
E	513	128	62	2969	0.173	514	826	0.3	0.2	1.467	A

M1 Junction 38 - 2026 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.96	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	81	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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
D9	2026 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	343	100.000
A RL		ONE HOUR	✓	175	100.000
B		ONE HOUR	✓	377	100.000
C		ONE HOUR	✓	610	100.000
D		ONE HOUR	✓	24	100.000
E		ONE HOUR	✓	433	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	343	0	0	0	0
	A RL	0	0	0	0	8	167
	B	0	0	0	19	18	340
	C	0	0	51	0	17	542
	D	0	0	1	8	0	15
	E	0	0	93	308	32	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	2	0	0	0	0
	A RL	0	0	0	0	0	3
	B	0	0	0	5	6	3
	C	0	0	12	0	6	6
	D	0	0	0	63	0	33
	E	0	0	9	13	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.34	4.82	0.5	A	315	472
A RL	0.17	3.90	0.2	A	161	241
B	0.19	2.06	0.2	A	346	519
C	0.37	3.19	0.6	A	560	840
D	0.03	3.84	0.0	A	22	33
E	0.18	1.62	0.2	A	397	596

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	258	65	370	1261	0.205	257	0	0.0	0.3	3.584	A
A RL	132	33	370	1251	0.105	131	257	0.0	0.1	3.214	A
B	284	71	393	2353	0.121	283	109	0.0	0.1	1.739	A
C	459	115	424	1992	0.231	458	252	0.0	0.3	2.347	A
D	18	5	826	1193	0.015	18	56	0.0	0.0	3.062	A
E	326	81	45	2725	0.120	325	799	0.0	0.1	1.500	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	308	77	443	1203	0.256	308	0	0.3	0.3	4.020	A
A RL	157	39	443	1194	0.132	157	308	0.1	0.2	3.472	A
B	339	85	470	2271	0.149	339	130	0.1	0.2	1.862	A
C	548	137	508	1911	0.287	548	301	0.3	0.4	2.640	A
D	22	5	988	1096	0.020	22	67	0.0	0.0	3.348	A
E	389	97	54	2714	0.143	389	956	0.1	0.2	1.548	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	378	94	543	1125	0.336	377	0	0.3	0.5	4.808	A
A RL	193	48	543	1116	0.173	192	377	0.2	0.2	3.896	A
B	415	104	575	2159	0.192	415	160	0.2	0.2	2.063	A
C	672	168	622	1801	0.373	671	369	0.4	0.6	3.184	A
D	26	7	1210	964	0.027	26	83	0.0	0.0	3.840	A
E	477	119	66	2699	0.177	477	1170	0.2	0.2	1.619	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	378	94	543	1125	0.336	378	0	0.5	0.5	4.817	A
A RL	193	48	543	1116	0.173	193	378	0.2	0.2	3.899	A
B	415	104	576	2159	0.192	415	160	0.2	0.2	2.064	A
C	672	168	622	1801	0.373	672	369	0.6	0.6	3.187	A
D	26	7	1211	963	0.027	26	83	0.0	0.0	3.843	A
E	477	119	66	2699	0.177	477	1171	0.2	0.2	1.619	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	308	77	443	1203	0.256	309	0	0.5	0.3	4.030	A
A RL	157	39	443	1194	0.132	158	309	0.2	0.2	3.474	A
B	339	85	471	2270	0.149	339	130	0.2	0.2	1.866	A
C	548	137	508	1911	0.287	549	301	0.6	0.4	2.645	A
D	22	5	990	1095	0.020	22	67	0.0	0.0	3.352	A
E	389	97	54	2714	0.143	389	958	0.2	0.2	1.548	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	258	65	371	1260	0.205	259	0	0.3	0.3	3.598	A
A RL	132	33	371	1250	0.105	132	259	0.2	0.1	3.219	A
B	284	71	394	2352	0.121	284	109	0.2	0.1	1.740	A
C	459	115	426	1991	0.231	460	252	0.4	0.3	2.351	A
D	18	5	829	1192	0.015	18	56	0.0	0.0	3.067	A
E	326	81	45	2725	0.120	326	802	0.2	0.1	1.500	A

M1 Junction 38 - 2026 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.73	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	62	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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
D10	2026 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	254	100.000
A RL		ONE HOUR	✓	56	100.000
B		ONE HOUR	✓	681	100.000
C		ONE HOUR	✓	472	100.000
D		ONE HOUR	✓	56	100.000
E		ONE HOUR	✓	705	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	254	0	0	0	0
	A RL	0	0	0	0	2	54
	B	0	0	0	27	9	645
	C	0	0	61	0	5	406
	D	0	0	7	17	0	32
	E	0	0	231	461	13	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	0	0	0	0	0
	A RL	0	0	0	0	50	4
	B	0	0	0	11	0	1
	C	0	0	2	0	60	3
	D	0	0	0	18	0	6
	E	0	0	2	2	8	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.30	5.41	0.4	A	233	350
A RL	0.07	4.29	0.1	A	51	77
B	0.34	2.45	0.5	A	625	937
C	0.31	3.07	0.4	A	433	650
D	0.05	3.09	0.1	A	51	77
E	0.26	1.67	0.4	A	647	970

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	191	48	594	1146	0.167	190	0	0.0	0.2	3.764	A
A RL	42	11	594	1092	0.039	42	190	0.0	0.0	3.428	A
B	513	128	411	2409	0.213	512	225	0.0	0.3	1.897	A
C	355	89	543	1940	0.183	354	380	0.0	0.2	2.269	A
D	42	11	876	1533	0.028	42	22	0.0	0.0	2.413	A
E	531	133	64	2969	0.179	530	854	0.0	0.2	1.475	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	228	57	710	1061	0.215	228	0	0.2	0.3	4.320	A
A RL	50	13	710	1011	0.050	50	228	0.0	0.1	3.745	A
B	612	153	492	2328	0.263	612	269	0.3	0.4	2.098	A
C	424	106	650	1836	0.231	424	454	0.2	0.3	2.549	A
D	50	13	1048	1404	0.036	50	26	0.0	0.0	2.659	A
E	634	158	76	2954	0.215	634	1021	0.2	0.3	1.550	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	280	70	869	945	0.296	279	0	0.3	0.4	5.401	A
A RL	62	15	869	900	0.068	62	279	0.1	0.1	4.291	A
B	750	187	602	2216	0.338	749	329	0.4	0.5	2.452	A
C	520	130	795	1694	0.307	519	556	0.3	0.4	3.063	A
D	62	15	1283	1227	0.050	62	32	0.0	0.1	3.089	A
E	776	194	93	2933	0.265	776	1251	0.3	0.4	1.668	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	280	70	870	945	0.296	280	0	0.4	0.4	5.412	A
A RL	62	15	870	900	0.068	62	280	0.1	0.1	4.292	A
B	750	187	602	2216	0.338	750	329	0.5	0.5	2.455	A
C	520	130	796	1693	0.307	520	556	0.4	0.4	3.067	A
D	62	15	1284	1226	0.050	62	32	0.1	0.1	3.092	A
E	776	194	94	2933	0.265	776	1252	0.4	0.4	1.668	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	228	57	711	1061	0.215	229	0	0.4	0.3	4.331	A
A RL	50	13	711	1011	0.050	50	229	0.1	0.1	3.748	A
B	612	153	492	2327	0.263	613	269	0.5	0.4	2.100	A
C	424	106	651	1835	0.231	425	454	0.4	0.3	2.555	A
D	50	13	1049	1402	0.036	50	26	0.1	0.0	2.662	A
E	634	158	77	2954	0.215	634	1023	0.4	0.3	1.551	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	191	48	595	1145	0.167	192	0	0.3	0.2	3.776	A
A RL	42	11	595	1091	0.039	42	192	0.1	0.0	3.432	A
B	513	128	412	2408	0.213	513	225	0.4	0.3	1.899	A
C	355	89	545	1938	0.183	356	380	0.3	0.2	2.276	A
D	42	11	879	1531	0.028	42	22	0.0	0.0	2.417	A
E	531	133	64	2969	0.179	531	857	0.3	0.2	1.476	A

M1 Junction 38 - 2036 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	3.16	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	69	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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
D11	2036 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	367	100.000
A RL		ONE HOUR	✓	184	100.000
B		ONE HOUR	✓	404	100.000
C		ONE HOUR	✓	651	100.000
D		ONE HOUR	✓	26	100.000
E		ONE HOUR	✓	464	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	367	0	0	0	0
	A RL	0	0	0	0	9	175
	B	0	0	0	20	19	365
	C	0	0	55	0	18	578
	D	0	0	1	9	0	16
	E	0	0	100	329	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	2	0	0	0	0
	A RL	0	0	0	0	0	3
	B	0	0	0	5	5	3
	C	0	0	13	0	6	6
	D	0	0	0	67	0	38
	E	0	0	9	13	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.37	5.24	0.6	A	337	505
A RL	0.19	4.10	0.2	A	169	253
B	0.21	2.15	0.3	A	371	556
C	0.41	3.46	0.7	A	597	896
D	0.03	4.20	0.0	A	24	36
E	0.19	1.65	0.2	A	426	639

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	276	69	398	1237	0.223	275	0	0.0	0.3	3.737	A
A RL	139	35	398	1224	0.113	138	275	0.0	0.1	3.312	A
B	304	76	418	2324	0.131	304	117	0.0	0.2	1.781	A
C	490	123	453	1960	0.250	489	269	0.0	0.3	2.444	A
D	20	5	881	1124	0.017	20	61	0.0	0.0	3.259	A
E	349	87	49	2719	0.128	349	851	0.0	0.1	1.518	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	330	82	475	1176	0.281	330	0	0.3	0.4	4.253	A
A RL	165	41	475	1163	0.142	165	330	0.1	0.2	3.606	A
B	363	91	500	2236	0.162	363	140	0.2	0.2	1.921	A
C	585	146	542	1874	0.312	585	322	0.3	0.5	2.792	A
D	23	6	1054	1024	0.023	23	73	0.0	0.0	3.598	A
E	417	104	58	2707	0.154	417	1019	0.1	0.2	1.571	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	404	101	582	1091	0.370	403	0	0.4	0.6	5.226	A
A RL	203	51	582	1080	0.188	202	403	0.2	0.2	4.100	A
B	445	111	613	2117	0.210	445	172	0.2	0.3	2.152	A
C	717	179	663	1757	0.408	716	394	0.5	0.7	3.455	A
D	29	7	1290	886	0.032	29	89	0.0	0.0	4.196	A
E	511	128	71	2691	0.190	511	1247	0.2	0.2	1.650	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	404	101	582	1091	0.370	404	0	0.6	0.6	5.238	A
A RL	203	51	582	1080	0.188	203	404	0.2	0.2	4.103	A
B	445	111	613	2116	0.210	445	172	0.3	0.3	2.153	A
C	717	179	664	1756	0.408	717	394	0.7	0.7	3.462	A
D	29	7	1291	886	0.032	29	89	0.0	0.0	4.200	A
E	511	128	72	2691	0.190	511	1249	0.2	0.2	1.650	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	330	82	476	1175	0.281	331	0	0.6	0.4	4.266	A
A RL	165	41	476	1163	0.142	166	331	0.2	0.2	3.612	A
B	363	91	501	2236	0.162	363	140	0.3	0.2	1.923	A
C	585	146	543	1874	0.312	586	322	0.7	0.5	2.797	A
D	23	6	1056	1022	0.023	23	73	0.0	0.0	3.606	A
E	417	104	59	2707	0.154	417	1021	0.2	0.2	1.574	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	276	69	398	1236	0.223	277	0	0.4	0.3	3.755	A
A RL	139	35	398	1223	0.113	139	277	0.2	0.1	3.321	A
B	304	76	420	2322	0.131	304	118	0.2	0.2	1.786	A
C	490	123	454	1959	0.250	491	270	0.5	0.3	2.452	A
D	20	5	884	1122	0.017	20	61	0.0	0.0	3.264	A
E	349	87	49	2719	0.128	349	854	0.2	0.1	1.518	A

M1 Junction 38 - 2036 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	Margam Interchange M4	Large Roundabout		A LL, A RL, B, C, D, E	2.93	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	51	Arm A LL

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
A LL	578	85.86
A RL	578	85.86
B	544	0.00
C	564	123.70
D	1133	0.00
E	76	53.10

Slope / Intercept / Capacity

[same as above]

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
D12	2036 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A LL		ONE HOUR	✓	272	100.000
A RL		ONE HOUR	✓	59	100.000
B		ONE HOUR	✓	730	100.000
C		ONE HOUR	✓	507	100.000
D		ONE HOUR	✓	60	100.000
E		ONE HOUR	✓	753	100.000

Origin-Destination Data

Demand (Veh/hr)

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	272	0	0	0	0
	A RL	0	0	0	0	2	57
	B	0	0	0	29	10	691
	C	0	0	66	0	6	435
	D	0	0	8	18	0	34
	E	0	0	248	491	14	0

Vehicle Mix

Heavy Vehicle Percentages

	To						
		A LL	A RL	B	C	D	E
From	A LL	0	0	0	0	0	0
	A RL	0	0	0	0	50	4
	B	0	0	0	10	0	1
	C	0	0	2	0	50	3
	D	0	0	0	17	0	6
	E	0	0	2	2	7	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A LL	0.33	5.98	0.5	A	250	374
A RL	0.08	4.52	0.1	A	54	81
B	0.37	2.62	0.6	A	670	1005
C	0.34	3.33	0.5	A	465	698
D	0.06	3.28	0.1	A	55	83
E	0.28	1.72	0.4	A	691	1036

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	205	51	635	1116	0.183	204	0	0.0	0.2	3.944	A
A RL	44	11	635	1066	0.042	44	204	0.0	0.0	3.523	A
B	550	137	437	2381	0.231	548	242	0.0	0.3	1.963	A
C	382	95	581	1903	0.201	381	404	0.0	0.3	2.363	A
D	45	11	938	1494	0.030	45	24	0.0	0.0	2.483	A
E	567	142	69	2962	0.191	566	914	0.0	0.2	1.502	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	245	61	759	1026	0.238	244	0	0.2	0.3	4.605	A
A RL	53	13	759	979	0.054	53	244	0.0	0.1	3.885	A
B	656	164	523	2295	0.286	656	289	0.3	0.4	2.197	A
C	456	114	695	1792	0.254	455	483	0.3	0.3	2.693	A
D	54	13	1122	1355	0.040	54	29	0.0	0.0	2.766	A
E	677	169	83	2946	0.230	677	1093	0.2	0.3	1.585	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	299	75	930	901	0.332	299	0	0.3	0.5	5.966	A
A RL	65	16	930	861	0.075	65	299	0.1	0.1	4.522	A
B	804	201	640	2176	0.369	803	354	0.4	0.6	2.620	A
C	558	140	851	1639	0.340	558	592	0.3	0.5	3.326	A
D	66	17	1374	1164	0.057	66	35	0.0	0.1	3.278	A
E	829	207	101	2924	0.284	829	1339	0.3	0.4	1.717	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	299	75	930	901	0.332	299	0	0.5	0.5	5.984	A
A RL	65	16	930	861	0.075	65	299	0.1	0.1	4.524	A
B	804	201	641	2176	0.369	804	355	0.6	0.6	2.623	A
C	558	140	852	1639	0.341	558	592	0.5	0.5	3.331	A
D	66	17	1375	1163	0.057	66	35	0.1	0.1	3.281	A
E	829	207	101	2924	0.284	829	1340	0.4	0.4	1.717	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	245	61	760	1025	0.239	245	0	0.5	0.3	4.621	A
A RL	53	13	760	979	0.054	53	245	0.1	0.1	3.890	A
B	656	164	524	2294	0.286	657	290	0.6	0.4	2.201	A
C	456	114	697	1791	0.255	456	484	0.5	0.3	2.698	A
D	54	13	1124	1353	0.040	54	29	0.1	0.0	2.770	A
E	677	169	83	2946	0.230	677	1095	0.4	0.3	1.588	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A LL	205	51	636	1115	0.184	205	0	0.3	0.2	3.957	A
A RL	44	11	636	1065	0.042	44	205	0.1	0.0	3.527	A
B	550	137	438	2380	0.231	550	243	0.4	0.3	1.968	A
C	382	95	583	1902	0.201	382	405	0.3	0.3	2.369	A
D	45	11	941	1492	0.030	45	24	0.0	0.0	2.489	A
E	567	142	69	2962	0.191	567	917	0.3	0.2	1.502	A

Appendix J Junctions 9 Outputs – A48 / Harbour Way / Site Access Road

Junctions 9	
ARCADY 9 - Roundabout Module	
Version: 9.5.1.7462 © Copyright TRL Limited, 2019	
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Filename: A48 - A4241 Roundabout (17.12.21).j9

Path: C:\Users\beth1\EvokeTransport\Evoke Transport\Evoke Projects - Documents\R-21-0122 M4 J38 Margam\30 Technical\31 Modelling

Report generation date: 17/12/2021 15:38:28

-
- »A48/Harbour Way Junction - 2021 Base, AM
 - »A48/Harbour Way Junction - 2021 Base, PM
 - »A48/Harbour Way Junction - 2026 Base, AM
 - »A48/Harbour Way Junction - 2026 Base, PM
 - »A48/Harbour Way Junction - 2036 Base, AM
 - »A48/Harbour Way Junction - 2036 Base, PM
 - »A48/Harbour Way Junction - 2021 Base + Dev, AM
 - »A48/Harbour Way Junction - 2021 Base + Dev, PM
 - »A48/Harbour Way Junction - 2026 Base + Dev, AM
 - »A48/Harbour Way Junction - 2026 Base + Dev, PM
 - »A48/Harbour Way Junction - 2036 Base + Dev, AM
 - »A48/Harbour Way Junction - 2036 Base + Dev, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	A48/Harbour Way Junction - 2021 Base											
Arm A	D1	0.1	2.02	0.11	A	91 % [Arm B]	D2	0.1	2.08	0.10	A	75 % [Arm B]
Arm B		1.0	3.44	0.50	A			1.2	3.68	0.55	A	
Arm C		0.0	0.00	0.00	A			0.0	2.81	0.01	A	
Arm D		0.2	2.57	0.19	A			0.5	3.19	0.36	A	
	A48/Harbour Way Junction - 2026 Base											
Arm A	D3	0.1	2.04	0.12	A	84 % [Arm B]	D4	0.1	2.10	0.11	A	69 % [Arm B]
Arm B		1.1	3.58	0.52	A			1.3	3.85	0.57	A	
Arm C		0.0	0.00	0.00	A			0.0	2.86	0.01	A	
Arm D		0.3	2.61	0.20	A			0.6	3.30	0.37	A	
	A48/Harbour Way Junction - 2036 Base											
Arm A	D5	0.1	2.07	0.13	A	72 % [Arm B]	D6	0.1	2.14	0.12	A	58 % [Arm B]
Arm B		1.2	3.90	0.56	A			1.6	4.25	0.61	A	
Arm C		0.0	0.00	0.00	A			0.0	2.98	0.01	A	
Arm D		0.3	2.69	0.22	A			0.7	3.56	0.41	A	
	A48/Harbour Way Junction - 2021 Base + Dev											
Arm A	D7	0.1	2.04	0.12	A	75 % [Arm B]	D8	0.1	2.11	0.10	A	72 % [Arm B]
Arm B		1.2	3.80	0.54	A			1.3	3.76	0.56	A	
Arm C		0.0	2.83	0.03	A			0.1	3.18	0.12	A	
Arm D		0.3	2.61	0.20	A			0.6	3.41	0.37	A	
	A48/Harbour Way Junction - 2026 Base + Dev											
Arm A	D9	0.1	2.06	0.12	A	69 % [Arm B]	D10	0.1	2.13	0.11	A	66 % [Arm B]
Arm B		1.3	3.97	0.56	A			1.4	3.94	0.58	A	
Arm C		0.0	2.88	0.03	A			0.1	3.24	0.12	A	
Arm D		0.3	2.66	0.21	A			0.6	3.53	0.39	A	
	A48/Harbour Way Junction - 2036 Base + Dev											
Arm A	D11	0.2	2.10	0.13	A	58 % [Arm B]	D12	0.1	2.18	0.12	A	55 % [Arm B]
Arm B		1.5	4.36	0.60	A			1.6	4.37	0.62	A	
Arm C		0.0	2.98	0.03	A			0.1	3.39	0.13	A	
Arm D		0.3	2.74	0.23	A			0.7	3.83	0.42	A	

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

File summary

File Description

Title	
Location	A48/Harbour Way Junction
Site number	
Date	09/09/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DESKTOP-IQT85C8\beth1
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	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	2021 Base	AM	ONE HOUR	07:15	08:45	15	✓
D2	2021 Base	PM	ONE HOUR	16:15	17:45	15	✓
D3	2026 Base	AM	ONE HOUR	07:15	08:45	15	✓
D4	2026 Base	PM	ONE HOUR	16:15	17:45	15	✓
D5	2036 Base	AM	ONE HOUR	07:15	08:45	15	✓
D6	2036 Base	PM	ONE HOUR	16:15	17:45	15	✓
D7	2021 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓
D8	2021 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓
D9	2026 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓
D10	2026 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓
D11	2036 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓
D12	2036 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	A48/Harbour Way Junction	✓	100.000	100.000

A48/Harbour Way Junction - 2021 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.05	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	91	Arm B

Arms

Arms

Arm	Name	Description
A	A48 North	
B	A48 S	
C	Site Access Road	
D	Harbour Way	

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
A	7.30	7.30	0.0	37.0	100.0	30.0	
B	7.30	7.30	0.0	21.0	113.4	28.0	
C	3.80	7.40	24.3	25.0	87.1	31.0	
D	7.30	7.30	0.0	39.0	72.0	34.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.533	2262
B	0.523	2232
C	0.490	1903
D	0.582	2234

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	2021 Base	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	207	100.000
B		ONE HOUR	✓	942	100.000
C		ONE HOUR	✓	3	100.000
D		ONE HOUR	✓	308	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	157	3	47
	B	361	0	10	571
	C	1	2	0	0
	D	50	257	1	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	4	0	2
	B	6	0	0	5
	C	0	0	0	0
	D	6	16	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.11	2.02	0.1	A	190	285
B	0.50	3.44	1.0	A	864	1297
C	0.00	0.00	0.0	A	0	0
D	0.19	2.57	0.2	A	283	424

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	156	39	194	2062	0.076	156	309	0.0	0.1	1.887	A
B	709	177	38	2092	0.339	707	311	0.0	0.5	2.596	A
C	0	0	735	1523	0.000	0	11	0.0	0.0	0.000	A
D	232	58	271	1808	0.128	231	464	0.0	0.1	2.283	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	186	47	232	2040	0.091	186	369	0.1	0.1	1.942	A
B	847	212	46	2088	0.406	846	372	0.5	0.7	2.896	A
C	0	0	879	1448	0.000	0	13	0.0	0.0	0.000	A
D	277	69	324	1779	0.156	277	555	0.1	0.2	2.396	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	228	57	284	2009	0.113	228	452	0.1	0.1	2.021	A
B	1037	259	56	2083	0.498	1036	456	0.7	1.0	3.433	A
C	0	0	1077	1346	0.000	0	15	0.0	0.0	0.000	A
D	339	85	397	1740	0.195	339	680	0.2	0.2	2.570	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	228	57	284	2009	0.113	228	453	0.1	0.1	2.021	A
B	1037	259	56	2083	0.498	1037	456	1.0	1.0	3.441	A
C	0	0	1078	1345	0.000	0	15	0.0	0.0	0.000	A
D	339	85	397	1739	0.195	339	680	0.2	0.2	2.570	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	186	47	232	2039	0.091	186	370	0.1	0.1	1.942	A
B	847	212	46	2088	0.406	848	372	1.0	0.7	2.907	A
C	0	0	881	1447	0.000	0	13	0.0	0.0	0.000	A
D	277	69	325	1779	0.156	277	556	0.2	0.2	2.397	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	156	39	194	2062	0.076	156	310	0.1	0.1	1.890	A
B	709	177	38	2092	0.339	710	312	0.7	0.5	2.607	A
C	0	0	738	1522	0.000	0	11	0.0	0.0	0.000	A
D	232	58	272	1807	0.128	232	466	0.2	0.1	2.285	A

A48/Harbour Way Junction - 2021 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.37	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	75	Arm B

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	2021 Base	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	180	100.000
B		ONE HOUR	✓	1081	100.000
C		ONE HOUR	✓	12	100.000
D		ONE HOUR	✓	564	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	143	3	34
	B	681	0	3	397
	C	6	6	0	0
	D	69	495	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	2	0	0
	B	1	0	0	3
	C	0	0	0	0
	D	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.10	2.08	0.1	A	165	248
B	0.55	3.68	1.2	A	992	1488
C	0.01	2.81	0.0	A	11	17
D	0.36	3.19	0.5	A	518	776

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	136	34	376	2023	0.067	135	568	0.0	0.1	1.905	A
B	814	203	28	2176	0.374	811	484	0.0	0.6	2.634	A
C	9	2	835	1487	0.006	9	5	0.0	0.0	2.436	A
D	425	106	520	1890	0.225	423	324	0.0	0.3	2.451	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	162	40	450	1984	0.082	162	679	0.1	0.1	1.975	A
B	972	243	33	2173	0.447	971	579	0.6	0.8	2.994	A
C	11	3	999	1405	0.008	11	5	0.0	0.0	2.582	A
D	507	127	622	1831	0.277	507	387	0.3	0.4	2.719	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	198	50	551	1930	0.103	198	831	0.1	0.1	2.078	A
B	1190	298	41	2169	0.549	1189	708	0.8	1.2	3.665	A
C	13	3	1223	1293	0.010	13	7	0.0	0.0	2.812	A
D	621	155	762	1750	0.355	620	474	0.4	0.5	3.185	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	198	50	552	1930	0.103	198	832	0.1	0.1	2.078	A
B	1190	298	41	2169	0.549	1190	709	1.2	1.2	3.677	A
C	13	3	1224	1292	0.010	13	7	0.0	0.0	2.814	A
D	621	155	763	1749	0.355	621	475	0.5	0.5	3.190	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	162	40	451	1983	0.082	162	681	0.1	0.1	1.977	A
B	972	243	33	2173	0.447	973	580	1.2	0.8	3.007	A
C	11	3	1001	1403	0.008	11	5	0.0	0.0	2.584	A
D	507	127	624	1830	0.277	508	388	0.5	0.4	2.723	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	136	34	378	2023	0.067	136	570	0.1	0.1	1.909	A
B	814	203	28	2176	0.374	815	485	0.8	0.6	2.646	A
C	9	2	838	1485	0.006	9	5	0.0	0.0	2.440	A
D	425	106	522	1889	0.225	425	325	0.4	0.3	2.461	A

A48/Harbour Way Junction - 2026 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.15	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	84	Arm B

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	2026 Base	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	215	100.000
B		ONE HOUR	✓	978	100.000
C		ONE HOUR	✓	3	100.000
D		ONE HOUR	✓	320	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	163	3	49
	B	375	0	10	593
	C	1	2	0	0
	D	52	267	1	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	4	0	2
	B	6	0	0	5
	C	0	0	0	0
	D	6	16	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.12	2.04	0.1	A	197	296
B	0.52	3.58	1.1	A	897	1346
C	0.00	0.00	0.0	A	0	0
D	0.20	2.61	0.3	A	294	440

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	162	40	201	2060	0.079	162	321	0.0	0.1	1.895	A
B	736	184	40	2091	0.352	734	323	0.0	0.5	2.647	A
C	0	0	763	1508	0.000	0	11	0.0	0.0	0.000	A
D	241	60	281	1801	0.134	240	482	0.0	0.2	2.305	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	193	48	241	2037	0.095	193	384	0.1	0.1	1.952	A
B	879	220	48	2088	0.421	878	386	0.5	0.7	2.976	A
C	0	0	914	1431	0.000	0	13	0.0	0.0	0.000	A
D	288	72	337	1771	0.162	288	577	0.2	0.2	2.426	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	237	59	295	2005	0.118	237	470	0.1	0.1	2.036	A
B	1077	269	58	2082	0.517	1075	473	0.7	1.1	3.571	A
C	0	0	1118	1325	0.000	0	15	0.0	0.0	0.000	A
D	352	88	412	1730	0.204	352	706	0.2	0.3	2.612	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	237	59	295	2005	0.118	237	470	0.1	0.1	2.036	A
B	1077	269	58	2082	0.517	1077	473	1.1	1.1	3.580	A
C	0	0	1120	1324	0.000	0	15	0.0	0.0	0.000	A
D	352	88	413	1730	0.204	352	707	0.3	0.3	2.613	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	193	48	241	2037	0.095	193	384	0.1	0.1	1.952	A
B	879	220	48	2087	0.421	881	387	1.1	0.7	2.987	A
C	0	0	916	1429	0.000	0	13	0.0	0.0	0.000	A
D	288	72	338	1770	0.163	288	578	0.3	0.2	2.428	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	162	40	202	2060	0.079	162	322	0.1	0.1	1.895	A
B	736	184	40	2091	0.352	737	324	0.7	0.5	2.661	A
C	0	0	766	1507	0.000	0	11	0.0	0.0	0.000	A
D	241	60	283	1800	0.134	241	484	0.2	0.2	2.310	A

A48/Harbour Way Junction - 2026 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.50	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	69	Arm B

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	2026 Base	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	186	100.000
B		ONE HOUR	✓	1121	100.000
C		ONE HOUR	✓	12	100.000
D		ONE HOUR	✓	585	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	148	3	35
	B	706	0	3	412
	C	6	6	0	0
	D	72	513	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	2	0	0
	B	1	0	0	3
	C	0	0	0	0
	D	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.11	2.10	0.1	A	171	256
B	0.57	3.85	1.3	A	1029	1543
C	0.01	2.86	0.0	A	11	17
D	0.37	3.30	0.6	A	537	805

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	140	35	390	2017	0.069	140	588	0.0	0.1	1.916	A
B	844	211	29	2177	0.388	841	501	0.0	0.6	2.692	A
C	9	2	865	1471	0.006	9	5	0.0	0.0	2.461	A
D	440	110	539	1880	0.234	439	336	0.0	0.3	2.495	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	167	42	466	1976	0.085	167	704	0.1	0.1	1.989	A
B	1008	252	34	2174	0.464	1007	599	0.6	0.9	3.081	A
C	11	3	1036	1387	0.008	11	5	0.0	0.0	2.616	A
D	526	131	645	1819	0.289	526	401	0.3	0.4	2.783	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	205	51	571	1921	0.107	205	862	0.1	0.1	2.097	A
B	1234	309	42	2170	0.569	1232	734	0.9	1.3	3.833	A
C	13	3	1268	1271	0.010	13	7	0.0	0.0	2.861	A
D	644	161	789	1735	0.371	643	491	0.4	0.6	3.295	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	205	51	571	1920	0.107	205	863	0.1	0.1	2.098	A
B	1234	309	42	2170	0.569	1234	734	1.3	1.3	3.847	A
C	13	3	1269	1270	0.010	13	7	0.0	0.0	2.864	A
D	644	161	791	1735	0.371	644	492	0.6	0.6	3.300	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	167	42	467	1976	0.085	167	706	0.1	0.1	1.990	A
B	1008	252	34	2174	0.464	1010	600	1.3	0.9	3.096	A
C	11	3	1038	1385	0.008	11	5	0.0	0.0	2.620	A
D	526	131	647	1818	0.289	527	403	0.6	0.4	2.788	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	140	35	391	2017	0.069	140	591	0.1	0.1	1.920	A
B	844	211	29	2177	0.388	845	503	0.9	0.6	2.706	A
C	9	2	869	1470	0.006	9	5	0.0	0.0	2.464	A
D	440	110	541	1879	0.234	441	337	0.4	0.3	2.505	A

A48/Harbour Way Junction - 2036 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.37	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	72	Arm B

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	2036 Base	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	230	100.000
B		ONE HOUR	✓	1049	100.000
C		ONE HOUR	✓	3	100.000
D		ONE HOUR	✓	343	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	175	3	52
	B	402	0	11	636
	C	1	2	0	0
	D	56	286	1	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	5	0	2
	B	6	0	0	6
	C	0	0	0	0
	D	5	16	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.13	2.07	0.1	A	211	317
B	0.56	3.90	1.2	A	963	1444
C	0.00	0.00	0.0	A	0	0
D	0.22	2.69	0.3	A	315	472

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	173	43	216	2048	0.085	173	344	0.0	0.1	1.918	A
B	790	197	42	2089	0.378	787	346	0.0	0.6	2.762	A
C	0	0	818	1480	0.000	0	11	0.0	0.0	0.000	A
D	258	65	302	1791	0.144	258	516	0.0	0.2	2.346	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	207	52	258	2023	0.102	207	411	0.1	0.1	1.981	A
B	943	236	50	2084	0.452	942	414	0.6	0.8	3.150	A
C	0	0	979	1396	0.000	0	13	0.0	0.0	0.000	A
D	308	77	361	1759	0.175	308	618	0.2	0.2	2.481	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	253	63	316	1989	0.127	253	504	0.1	0.1	2.074	A
B	1155	289	62	2079	0.556	1153	507	0.8	1.2	3.883	A
C	0	0	1198	1283	0.000	0	16	0.0	0.0	0.000	A
D	378	94	442	1715	0.220	377	756	0.2	0.3	2.691	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	253	63	316	1988	0.127	253	504	0.1	0.1	2.074	A
B	1155	289	62	2079	0.556	1155	508	1.2	1.2	3.896	A
C	0	0	1200	1282	0.000	0	17	0.0	0.0	0.000	A
D	378	94	443	1715	0.220	378	757	0.3	0.3	2.692	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	207	52	258	2023	0.102	207	412	0.1	0.1	1.982	A
B	943	236	50	2084	0.452	945	415	1.2	0.8	3.165	A
C	0	0	982	1395	0.000	0	14	0.0	0.0	0.000	A
D	308	77	362	1758	0.175	309	620	0.3	0.2	2.483	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	173	43	216	2048	0.085	173	345	0.1	0.1	1.921	A
B	790	197	42	2089	0.378	791	347	0.8	0.6	2.775	A
C	0	0	822	1478	0.000	0	11	0.0	0.0	0.000	A
D	258	65	303	1790	0.144	258	519	0.2	0.2	2.351	A

A48/Harbour Way Junction - 2036 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.83	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	58	Arm B

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	2036 Base	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	200	100.000
B		ONE HOUR	✓	1200	100.000
C		ONE HOUR	✓	14	100.000
D		ONE HOUR	✓	627	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	159	3	38
	B	756	0	3	441
	C	7	7	0	0
	D	77	550	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	2	0	0
	B	1	0	0	3
	C	0	0	0	0
	D	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.12	2.14	0.1	A	184	275
B	0.61	4.25	1.6	A	1101	1652
C	0.01	2.98	0.0	A	13	19
D	0.41	3.56	0.7	A	575	863

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	151	38	418	2004	0.075	150	630	0.0	0.1	1.941	A
B	903	226	31	2175	0.415	901	538	0.0	0.7	2.820	A
C	11	3	927	1441	0.007	11	5	0.0	0.0	2.516	A
D	472	118	578	1858	0.254	471	360	0.0	0.3	2.592	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	180	45	500	1960	0.092	180	754	0.1	0.1	2.021	A
B	1079	270	37	2172	0.497	1078	643	0.7	1.0	3.288	A
C	13	3	1109	1350	0.009	13	5	0.0	0.0	2.691	A
D	564	141	692	1792	0.315	563	430	0.3	0.5	2.929	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	220	55	612	1900	0.116	220	923	0.1	0.1	2.142	A
B	1321	330	45	2167	0.610	1319	787	1.0	1.5	4.233	A
C	15	4	1357	1226	0.013	15	7	0.0	0.0	2.973	A
D	690	173	846	1702	0.406	689	527	0.5	0.7	3.550	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	220	55	613	1900	0.116	220	925	0.1	0.1	2.142	A
B	1321	330	45	2167	0.610	1321	788	1.5	1.6	4.254	A
C	15	4	1360	1225	0.013	15	7	0.0	0.0	2.976	A
D	690	173	848	1702	0.406	690	527	0.7	0.7	3.559	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	180	45	502	1960	0.092	180	757	0.1	0.1	2.022	A
B	1079	270	37	2171	0.497	1081	645	1.6	1.0	3.307	A
C	13	3	1112	1348	0.009	13	5	0.0	0.0	2.695	A
D	564	141	694	1791	0.315	565	431	0.7	0.5	2.939	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	151	38	420	2004	0.075	151	633	0.1	0.1	1.944	A
B	903	226	31	2175	0.415	905	540	1.0	0.7	2.838	A
C	11	3	931	1439	0.007	11	5	0.0	0.0	2.522	A
D	472	118	580	1857	0.254	473	361	0.5	0.3	2.603	A

A48/Harbour Way Junction - 2021 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.30	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	75	Arm B

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
D7	2021 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	212	100.000
B		ONE HOUR	✓	1029	100.000
C		ONE HOUR	✓	33	100.000
D		ONE HOUR	✓	321	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	157	8	47
	B	361	0	97	571
	C	17	12	0	4
	D	50	257	14	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	4	0	2
	B	6	0	1	5
	C	0	8	0	0
	D	6	16	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.12	2.04	0.1	A	195	292
B	0.54	3.80	1.2	A	944	1416
C	0.03	2.83	0.0	A	30	45
D	0.20	2.61	0.3	A	295	442

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	160	40	213	2054	0.078	159	321	0.0	0.1	1.899	A
B	775	194	52	2093	0.370	772	320	0.0	0.6	2.721	A
C	25	6	735	1478	0.017	25	89	0.0	0.0	2.476	A
D	242	60	293	1806	0.134	241	467	0.0	0.2	2.299	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	191	48	254	2029	0.094	191	384	0.1	0.1	1.957	A
B	925	231	62	2088	0.443	924	383	0.6	0.8	3.092	A
C	30	7	879	1406	0.021	30	107	0.0	0.0	2.615	A
D	289	72	350	1774	0.163	288	559	0.2	0.2	2.422	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	233	58	311	1996	0.117	233	471	0.1	0.1	2.042	A
B	1133	283	76	2081	0.544	1131	469	0.8	1.2	3.784	A
C	36	9	1076	1307	0.028	36	131	0.0	0.0	2.833	A
D	353	88	429	1732	0.204	353	684	0.2	0.3	2.611	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	233	58	312	1996	0.117	233	471	0.1	0.1	2.042	A
B	1133	283	76	2081	0.544	1133	469	1.2	1.2	3.796	A
C	36	9	1078	1306	0.028	36	131	0.0	0.0	2.835	A
D	353	88	429	1731	0.204	353	685	0.3	0.3	2.612	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	191	48	255	2029	0.094	191	385	0.1	0.1	1.958	A
B	925	231	62	2088	0.443	927	383	1.2	0.8	3.105	A
C	30	7	882	1405	0.021	30	107	0.0	0.0	2.620	A
D	289	72	351	1774	0.163	289	560	0.3	0.2	2.424	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	160	40	213	2054	0.078	160	323	0.1	0.1	1.899	A
B	775	194	52	2093	0.370	776	321	0.8	0.6	2.735	A
C	25	6	738	1477	0.017	25	90	0.0	0.0	2.481	A
D	242	60	294	1805	0.134	242	469	0.2	0.2	2.303	A

A48/Harbour Way Junction - 2021 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.47	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	72	Arm B

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
D8	2021 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	181	100.000
B		ONE HOUR	✓	1098	100.000
C		ONE HOUR	✓	137	100.000
D		ONE HOUR	✓	567	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	143	4	34
	B	681	0	20	397
	C	75	46	0	16
	D	69	495	3	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	2	0	0
	B	1	0	5	3
	C	0	2	0	0
	D	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.10	2.11	0.1	A	166	249
B	0.56	3.76	1.3	A	1008	1511
C	0.12	3.18	0.1	A	126	189
D	0.37	3.41	0.6	A	520	780

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	136	34	408	2006	0.068	136	619	0.0	0.1	1.924	A
B	827	207	31	2173	0.380	824	514	0.0	0.6	2.665	A
C	103	26	835	1476	0.070	103	20	0.0	0.1	2.622	A
D	427	107	602	1843	0.232	426	336	0.0	0.3	2.537	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	163	41	489	1963	0.083	163	741	0.1	0.1	1.999	A
B	987	247	37	2170	0.455	986	614	0.6	0.8	3.041	A
C	123	31	999	1394	0.088	123	24	0.1	0.1	2.831	A
D	510	127	720	1774	0.287	509	402	0.3	0.4	2.846	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	199	50	598	1905	0.105	199	907	0.1	0.1	2.110	A
B	1209	302	45	2165	0.558	1207	752	0.8	1.3	3.750	A
C	151	38	1223	1284	0.118	151	30	0.1	0.1	3.177	A
D	624	156	882	1681	0.371	624	492	0.4	0.6	3.403	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	199	50	599	1904	0.105	199	908	0.1	0.1	2.111	A
B	1209	302	45	2165	0.558	1209	753	1.3	1.3	3.762	A
C	151	38	1224	1283	0.118	151	30	0.1	0.1	3.179	A
D	624	156	883	1680	0.372	624	492	0.6	0.6	3.408	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	163	41	490	1963	0.083	163	743	0.1	0.1	1.999	A
B	987	247	37	2170	0.455	989	616	1.3	0.8	3.054	A
C	123	31	1001	1393	0.088	123	24	0.1	0.1	2.834	A
D	510	127	722	1773	0.287	510	402	0.6	0.4	2.853	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	136	34	410	2005	0.068	136	622	0.1	0.1	1.927	A
B	827	207	31	2173	0.380	828	515	0.8	0.6	2.677	A
C	103	26	838	1474	0.070	103	20	0.1	0.1	2.625	A
D	427	107	604	1841	0.232	427	337	0.4	0.3	2.547	A

A48/Harbour Way Junction - 2026 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.42	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	69	Arm B

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
D9	2026 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	220	100.000
B		ONE HOUR	✓	1065	100.000
C		ONE HOUR	✓	33	100.000
D		ONE HOUR	✓	333	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	163	8	49
	B	375	0	97	593
	C	17	12	0	4
	D	52	267	14	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	4	0	2
	B	6	0	1	5
	C	0	8	0	0
	D	6	16	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.12	2.06	0.1	A	202	303
B	0.56	3.97	1.3	A	977	1466
C	0.03	2.88	0.0	A	30	45
D	0.21	2.66	0.3	A	306	458

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	166	41	220	2052	0.081	165	333	0.0	0.1	1.907	A
B	802	200	53	2092	0.383	799	332	0.0	0.6	2.780	A
C	25	6	763	1464	0.017	25	89	0.0	0.0	2.501	A
D	251	63	303	1798	0.139	250	485	0.0	0.2	2.324	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	198	49	263	2027	0.098	198	399	0.1	0.1	1.968	A
B	957	239	64	2087	0.459	957	397	0.6	0.8	3.181	A
C	30	7	913	1389	0.021	30	107	0.0	0.0	2.648	A
D	299	75	363	1766	0.170	299	580	0.2	0.2	2.454	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	242	61	322	1992	0.122	242	488	0.1	0.1	2.057	A
B	1173	293	78	2080	0.564	1171	486	0.8	1.3	3.954	A
C	36	9	1118	1286	0.028	36	131	0.0	0.0	2.880	A
D	367	92	444	1722	0.213	366	710	0.2	0.3	2.656	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	242	61	323	1991	0.122	242	489	0.1	0.1	2.057	A
B	1173	293	78	2080	0.564	1173	487	1.3	1.3	3.968	A
C	36	9	1120	1285	0.028	36	131	0.0	0.0	2.882	A
D	367	92	445	1721	0.213	367	711	0.3	0.3	2.657	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	198	49	264	2026	0.098	198	400	0.1	0.1	1.970	A
B	957	239	64	2087	0.459	959	398	1.3	0.9	3.196	A
C	30	7	916	1387	0.021	30	107	0.0	0.0	2.651	A
D	299	75	364	1765	0.170	300	582	0.3	0.2	2.456	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	166	41	221	2052	0.081	166	335	0.1	0.1	1.910	A
B	802	200	53	2092	0.383	803	333	0.9	0.6	2.795	A
C	25	6	766	1462	0.017	25	90	0.0	0.0	2.505	A
D	251	63	304	1797	0.139	251	487	0.2	0.2	2.327	A

A48/Harbour Way Junction - 2026 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.61	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	66	Arm B

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
D10	2026 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	187	100.000
B		ONE HOUR	✓	1138	100.000
C		ONE HOUR	✓	137	100.000
D		ONE HOUR	✓	588	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	148	4	35
	B	706	0	20	412
	C	75	46	0	16
	D	72	513	3	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	2	0	0
	B	1	0	5	3
	C	0	2	0	0
	D	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.11	2.13	0.1	A	172	257
B	0.58	3.94	1.4	A	1044	1566
C	0.12	3.24	0.1	A	126	189
D	0.39	3.53	0.6	A	540	809

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	141	35	422	2000	0.070	140	640	0.0	0.1	1.935	A
B	857	214	32	2174	0.394	854	531	0.0	0.6	2.724	A
C	103	26	865	1461	0.071	103	20	0.0	0.1	2.651	A
D	443	111	621	1833	0.241	441	348	0.0	0.3	2.583	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	168	42	505	1956	0.086	168	766	0.1	0.1	2.013	A
B	1023	256	38	2171	0.471	1022	635	0.6	0.9	3.131	A
C	123	31	1036	1377	0.089	123	24	0.1	0.1	2.871	A
D	529	132	743	1763	0.300	528	416	0.3	0.4	2.916	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	206	51	618	1895	0.109	206	938	0.1	0.1	2.130	A
B	1253	313	46	2166	0.578	1251	778	0.9	1.4	3.925	A
C	151	38	1268	1262	0.120	151	30	0.1	0.1	3.240	A
D	647	162	909	1666	0.389	647	509	0.4	0.6	3.526	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	206	51	619	1895	0.109	206	939	0.1	0.1	2.131	A
B	1253	313	46	2166	0.578	1253	778	1.4	1.4	3.941	A
C	151	38	1269	1261	0.120	151	30	0.1	0.1	3.242	A
D	647	162	911	1666	0.389	647	510	0.6	0.6	3.534	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	168	42	506	1955	0.086	168	768	0.1	0.1	2.015	A
B	1023	256	38	2171	0.471	1025	636	1.4	0.9	3.148	A
C	123	31	1038	1375	0.090	123	24	0.1	0.1	2.877	A
D	529	132	745	1762	0.300	529	417	0.6	0.4	2.922	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	141	35	424	1999	0.070	141	643	0.1	0.1	1.938	A
B	857	214	32	2174	0.394	858	533	0.9	0.7	2.738	A
C	103	26	869	1459	0.071	103	20	0.1	0.1	2.654	A
D	443	111	623	1832	0.242	443	349	0.4	0.3	2.592	A

A48/Harbour Way Junction - 2036 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.69	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	58	Arm B

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
D11	2036 Base + Dev	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	235	100.000
B		ONE HOUR	✓	1136	100.000
C		ONE HOUR	✓	33	100.000
D		ONE HOUR	✓	356	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	175	8	52
	B	402	0	98	636
	C	17	12	0	4
	D	56	286	14	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	5	0	2
	B	6	0	1	6
	C	0	8	0	0
	D	5	16	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.13	2.10	0.2	A	216	323
B	0.60	4.36	1.5	A	1042	1564
C	0.03	2.98	0.0	A	30	45
D	0.23	2.74	0.3	A	327	490

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	177	44	234	2040	0.087	177	356	0.0	0.1	1.932	A
B	855	214	56	2089	0.409	852	355	0.0	0.7	2.906	A
C	25	6	818	1436	0.017	25	90	0.0	0.0	2.550	A
D	268	67	323	1788	0.150	267	519	0.0	0.2	2.366	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	211	53	280	2013	0.105	211	427	0.1	0.1	1.998	A
B	1021	255	66	2083	0.490	1020	425	0.7	1.0	3.382	A
C	30	7	979	1355	0.022	30	108	0.0	0.0	2.715	A
D	320	80	387	1753	0.183	320	621	0.2	0.2	2.511	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	259	65	343	1975	0.131	259	522	0.1	0.2	2.096	A
B	1251	313	81	2076	0.602	1249	520	1.0	1.5	4.340	A
C	36	9	1198	1245	0.029	36	132	0.0	0.0	2.977	A
D	392	98	474	1706	0.230	392	761	0.2	0.3	2.739	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	259	65	344	1975	0.131	259	523	0.2	0.2	2.096	A
B	1251	313	81	2076	0.603	1251	521	1.5	1.5	4.362	A
C	36	9	1200	1244	0.029	36	132	0.0	0.0	2.980	A
D	392	98	475	1706	0.230	392	762	0.3	0.3	2.739	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	211	53	281	2012	0.105	211	428	0.2	0.1	2.000	A
B	1021	255	67	2083	0.490	1023	426	1.5	1.0	3.402	A
C	30	7	982	1354	0.022	30	108	0.0	0.0	2.720	A
D	320	80	388	1753	0.183	320	623	0.3	0.2	2.513	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	177	44	235	2039	0.087	177	358	0.1	0.1	1.934	A
B	855	214	56	2089	0.409	856	356	1.0	0.7	2.922	A
C	25	6	822	1434	0.017	25	90	0.0	0.0	2.555	A
D	268	67	325	1787	0.150	268	522	0.2	0.2	2.370	A

A48/Harbour Way Junction - 2036 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	A48 / A4241	Standard Roundabout		A, B, C, D	3.95	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	55	Arm B

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
D12	2036 Base + Dev	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	201	100.000
B		ONE HOUR	✓	1217	100.000
C		ONE HOUR	✓	139	100.000
D		ONE HOUR	✓	630	100.000

Origin-Destination Data

Demand (Veh/hr)

	To				
	A	B	C	D	
From	A	0	159	4	38
	B	756	0	20	441
	C	76	47	0	16
	D	77	550	3	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
	A	B	C	D	
From	A	0	2	0	0
	B	1	0	5	3
	C	0	2	0	0
	D	1	2	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
A	0.12	2.18	0.1	A	184	277
B	0.62	4.37	1.6	A	1117	1675
C	0.13	3.39	0.1	A	128	191
D	0.42	3.83	0.7	A	578	867

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	151	38	450	1987	0.076	151	682	0.0	0.1	1.960	A
B	916	229	34	2172	0.422	913	568	0.0	0.7	2.855	A
C	105	26	927	1430	0.073	104	20	0.0	0.1	2.714	A
D	474	119	660	1811	0.262	473	372	0.0	0.4	2.688	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	181	45	539	1940	0.093	181	816	0.1	0.1	2.046	A
B	1094	274	40	2169	0.505	1093	679	0.7	1.0	3.344	A
C	125	31	1109	1340	0.093	125	24	0.1	0.1	2.962	A
D	566	142	789	1736	0.326	566	445	0.4	0.5	3.075	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	221	55	660	1875	0.118	221	999	0.1	0.1	2.176	A
B	1340	335	50	2164	0.619	1338	831	1.0	1.6	4.345	A
C	153	38	1357	1217	0.126	153	30	0.1	0.1	3.382	A
D	694	173	966	1633	0.425	693	544	0.5	0.7	3.823	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	221	55	661	1875	0.118	221	1001	0.1	0.1	2.177	A
B	1340	335	50	2164	0.619	1340	832	1.6	1.6	4.369	A
C	153	38	1360	1216	0.126	153	30	0.1	0.1	3.386	A
D	694	173	968	1632	0.425	694	545	0.7	0.7	3.833	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	181	45	540	1939	0.093	181	819	0.1	0.1	2.048	A
B	1094	274	40	2168	0.505	1096	681	1.6	1.0	3.367	A
C	125	31	1113	1338	0.093	125	24	0.1	0.1	2.967	A
D	566	142	792	1734	0.327	567	446	0.7	0.5	3.089	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Throughput (exit side) (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	151	38	452	1986	0.076	151	685	0.1	0.1	1.961	A
B	916	229	34	2172	0.422	917	570	1.0	0.7	2.874	A
C	105	26	931	1428	0.073	105	20	0.1	0.1	2.721	A
D	474	119	663	1809	0.262	475	373	0.5	0.4	2.698	A