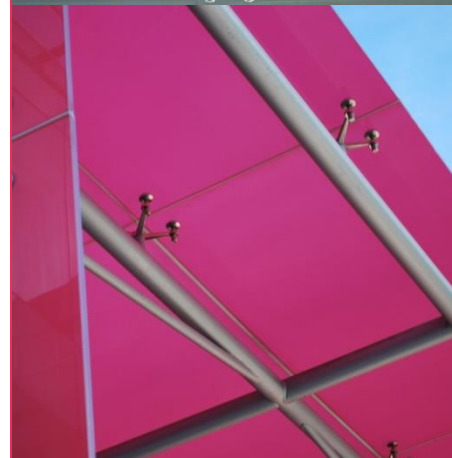


# Ysgol Plas Brondyffryn, Denbigh

## Transport Assessment

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Client Name: Denbighshire County Council



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<b>YPB-CUR-00-XX-DR-D-05004 &amp; 05005</b>	<b>Large Car</b>
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## 1.0 Introduction

### 1.1 Background

1.1.1 Curtins has been appointed by Wates on behalf of Denbighshire County Council (DCC) to provide traffic and transportation advice in relation to the proposed development of a new 3-19 Special Education Needs (SEN) School in Denbigh. The school would replace existing facilities that are currently split across three separate locations in the town.

1.1.2 Pupils and staff from each site rarely come together and these sites operate individually. The school is currently unable to meet the growing demand for places and each site has its own problems regarding condition and suitability of accommodation. The current split is as follows:

- Primary department for pupils aged 3 to 11.
- Secondary department for pupils aged 11 to 19.
- Specialist provision for pupils aged 11 to 19 with more complex needs.

1.1.3 The aim of this project is to bring all learners, including a nursery provision, into one site in a new purpose-built facility. This proposal will see a new building erected on the playing fields at Denbigh High. The development description is to be read as follows:

*“Erection of a new Ysgol Plas Brondyffryn Special Educational Needs (SEN) School for ages 3-19, including formation of Multi Use Games Areas (2no.), external plant / services area, new 118 space car parking area (including 14 electric charging bays), minibus parking (4no.), cycle parking (60no.), designated drop off area, new vehicular access off Ystrad Road, community café, landscaping works and all other associated works.”*

1.1.4 The SEN nature of the proposed development means the school would operate differently to the way most primary or secondary schools do. The principle differences being that pupils are often transported to/from the school via learner transport services, and there are higher proportions of teachers/staff per pupil so that more specialist education can be provided.

### 1.2 Purpose of the Report

1.2.1 This Transport Assessment (TA) has been prepared to inform Highways Officers at DCC on all traffic and transportation matters associated with the development proposals.

1.2.2 In conjunction with this TA, an Interim Travel Plan (ITP) document has also been produced (Curtins Document Reference **YPB-CUR-00-XX-RP-TP-002**). The ITP is intended to encourage site users to choose alternative transport modes over single occupancy car use and where possible reduce the need to travel at all.

1.2.3 The development would also be assessed under Building Research Establishment Environmental Assessment Method (BREEAM) 2018 standards, and would seek to demonstrate compliance by obtaining a number of credits. The assessment categories pertaining to traffic and transport, the relevant sections where they are provided, together with credits they obtain, are summarised in **Table 1.1** below:

BREEAM Category	Description	Signposts	No. of Credits
Tra 01	<p><b><u>Transport Assessment and Travel Plan:</u></b></p> <p>1. No later than Concept Design stage, undertake a site-specific transport assessment (or develop a travel statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form.</p> <p>2. The site-specific travel assessment (or statement) shall cover as a minimum:</p> <ul style="list-style-type: none"> <li>• If relevant, travel patterns and attitudes of existing building or site users towards cycling, walking and public transport, to identify relevant constraints and opportunities;</li> <li>• Predicted travel patterns and transport impact of future building or site users;</li> <li>• Current local environment for pedestrians and cyclists, accounting for any age-related requirements of occupants and visitors;</li> <li>• Reporting of the number and type of existing accessible amenities within 500m of the site;</li> <li>• Disabled access accounting for varying levels and types of disability, including visual impairment;</li> <li>• Calculation of the existing public transport Accessibility Index (AI); and</li> <li>• Current facilities for cyclists.</li> </ul> <p>3. Following a transport assessment (in accordance with the requirements set out in criteria 2), develop a site-specific travel plan that provides a long-term management strategy which encourages more sustainable travel. The travel plan includes measures to increase or improve more sustainable modes of transport and movement of people and goods during the building's operation.</p> <p>4. If the occupier is known, involve them in the development of the travel plan.</p> <p>5. Demonstrate that the travel plan will be implemented and supported by the building's management in operation.</p>	<p>This document</p> <p>N/A (see Section 2.2)</p> <p>Section 5 of TA</p> <p>Section 2 of TA</p> <p>Section 4 of TA</p> <p>Section 2.4 and 3 of TA</p> <p>Section 4 of TA</p> <p>Section 4 of TA</p> <p>Interim Travel Plan (ITP) provided in doc YPB-CUR-00-XX-RP-TP-002</p> <p>Yes</p> <p>Section 8 of ITP</p>	2
Tra 02	<p><b><u>Sustainable Transport Measures:</u></b></p> <p>1. Prerequisite: Achieve criteria 3–5 in the Tra 01 Transport Assessment and Travel Plan credit.</p> <p>2. Identify the sustainable transport measures as per Table 7.4 in BREEAM guidance.</p> <ul style="list-style-type: none"> <li>• The existing AI calculated in Tra 01 <math>\geq</math> 8;</li> </ul>	<p>This document</p> <p>Section 4 of TA</p>	<p>Points:</p> <p>0</p>

BREEAM Category	Description	Signposts	No. of Credits
	<ul style="list-style-type: none"> <li>Demonstrate an increase over the existing Accessibility Index through negotiation with local bus, train or tram companies to increase the frequency of the local service provision for the development; OR</li> <li>Demonstrate an increase over the existing Accessibility Index. This could be through provision of a diverted bus route, a new or enhanced bus stop, or other similar solutions; OR</li> <li>Provide a dedicated service, such as a bus route or service.</li> </ul>	School will provide learner transport for their pupils	1
	<ul style="list-style-type: none"> <li>Provide a public transport information system in a publicly accessible area, to allow building users access to up-to-date information on the available public transport and transport infrastructure. This may include signposting to public transport, cycling, walking infrastructure or local amenities;</li> </ul>	Not achieved	0
	<ul style="list-style-type: none"> <li>Provide electric recharging stations of a minimum of 3kW for at least 10% of the total car parking capacity for the development;</li> </ul>	To be achieved (14 spaces)	1
	<ul style="list-style-type: none"> <li>Set up a car sharing group or facility to facilitate and encourage building users to car share; AND</li> <li>Raise awareness of the sharing scheme with marketing and communication materials; AND</li> <li>Provide priority spaces for car sharers for at least 5% of the total car parking capacity for the development; AND</li> <li>Locate priority parking spaces nearest the development entrance used by the sharing scheme participants.</li> </ul>	Section 5 of the ITP promotes car sharing. Position of priority spaces (5%) to be reviewed.	1
	<ul style="list-style-type: none"> <li>During preparation of the brief, the design team consults with the local authority (LA) on the state of the local cycling network and public accessible pedestrian routes, to focus on whichever the LA deems most relevant to the project, and how to improve it; AND</li> <li>Agree and implement one proposition chosen with the local authority. The proposition supported by the development is additional to existing local plans and has a significant impact on the local cycling network or on pedestrian routes open to the public.</li> </ul>	Design Team has consulted with LA during scoping discussions to identify accessible pedestrian/cycle routes. Development to connect onto Active Travel Route	1
	<ul style="list-style-type: none"> <li>Install compliant cycle storage spaces to meet the minimum levels set out in Table 7.5;</li> </ul>	To be achieved and located close to main entrances	1
	<ul style="list-style-type: none"> <li>The above has been achieved; provide at least two compliant cyclists' facilities for the building users (showers, changing facilities, lockers, drying spaces);</li> </ul>	To be achieved (shower and changing room proposed on site)	1
	<p><b>Existing amenities:</b></p> <ul style="list-style-type: none"> <li>At least three existing accessible amenities are present;</li> </ul>	Section 4 of TA	1
	<p><b>Enhanced amenities:</b></p> <ul style="list-style-type: none"> <li>Ensure a minimum of one new accessible amenity, in accordance with Table 7.6 on page 191, for the relevant Building Group, is provided; OR</li> </ul>	Access to a recreation or leisure facility for fitness or sports	1

BREEAM Category	Description	Signposts	No. of Credits
	<ul style="list-style-type: none"> <li>Ensure a more than one new accessible amenity, in accordance with Table 7.6 on page 191, for the relevant Building Group, is provided.</li> </ul>		
	<ul style="list-style-type: none"> <li>Implement one site-specific improvement measure, not covered by the options already listed in this issue, in line with the recommendations of the travel plan. Submit this for review by BRE.</li> </ul> <p>3. Award credits according to the existing Accessible Index (AI) of the project, and the total number of points achieved for the options implemented, see Table 7.3 of BREEAM guidance.</p>	<p>Section 6 of ITP, pending BRE review (see para 1.2.6)</p> <p>Site AI: 0.83 Points achieved under criteria 2: 9</p>	<b>8</b>
<b>Total Transport Credits Obtained</b>			<b>10</b>

Table 1.1 – BREEAM Credits Targeted

1.2.4 Other relevant considerations in a BREEAM-compliant report include the following, with the compliance of the proposed development to these considerations outlined next to the criteria:

- **Lighting, landscaping and shelter to create pleasant pedestrian and public transport waiting areas** – Pleasant pedestrian environments will be delivered within the site as part of proposed development and waiting areas for learner transport will also be delivered.
- **Restrictions or charging for car parking** – Spaces will be allocated for staff and visitors at the site and managed accordingly.
- **Pedestrian and cyclist friendly (for all types of user regardless of the level of mobility or visual impairment) with the provision of cycle lanes, safe crossing points, direct routes, appropriate tactile surfaces, good lighting and signposting to other amenities, public transport nodes and adjoining off-site pedestrian and cycle routes** – Direct routes, appropriate surfaces, lighting and signposting will be delivered within the site as part of proposed development and these will tie into existing off-site pedestrian/cycle routes (which are also to be enhanced).
- **Provision of suitable taxi drop-off or waiting areas** – Waiting areas for learner transport will be delivered within the site, alongside a suitable drop-off and pick-up area segregated from the main car parks.
- **Ensure rural buildings have appropriate access to transport to serve the local community adequately (where procured to do so, e.g. community centre)** – Not applicable as the proposed development is located within the town centre.



1.2.5 A key part of the Travel Plan will be monitoring, whereby travel surveys will be distributed at the development, in order to understand travel habits. Recipients will be encouraged to participate, and the surveys would extract key information such as place of residence, usual mode of travel and reason for modal choice, attractiveness of and barriers to active and sustainable modes of travel, and any incentives that could encourage more sustainable travel. The findings will provide information on reasons for travel patterns and attitudes of site users to identify relevant constraints and opportunities.

1.2.6 The TP will include Welcome Packs as an initiative to encourage sustainable travel, which would be a site-specific improvement measure in line with the aims, objectives and recommendations of the Travel Plan. This measure is submitted for review by BRE.

### 1.3 Scope of the Report

1.3.1 Curtins attended an on-site pre-application meeting with representatives from DCC Highways on 7<sup>th</sup> February 2022 to discuss the proposed development. At the meeting Curtins provided a high-level overview of the site, as well as information regarding the proposed access, car parking and drop-off provisions, pedestrian and cycle connectivity and the potential scope for capacity assessments. DCC provided a useful commentary on the site and further information regarding the surrounding highway network.

1.3.2 On this basis of the above discussions, this TA contains the following information:

- A description of the highway network in the vicinity of the site;
- A review of the accident record in the vicinity of the site;
- A summary of the development proposals, including access, servicing and parking arrangements;
- A summary of local and national transport planning policy;
- A review of accessibility of the site by sustainable modes of travel;
- Details of the calculated trip generation for the proposed development at the site;
- Details of the distribution of the development traffic;
- An assessment of the potential impact of the development traffic on local junctions; and,
- Details of any proposed measures to mitigate the impact of development traffic.

### 1.4 Structure of the Report

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

1.4.2 **Section 2** also reviews the local area in terms of highways safety by way of obtaining records of accidents adjacent to the site over the most recent five-year period available.

- 1.4.3 The development proposals summarised in **Section 3**, including the proposed parking provision and access arrangements.
- 1.4.4 The accessibility of the site by sustainable modes of travel is assessed in **Section 4**.
- 1.4.5 **Section 5** outlines the traffic forecasting methodology used to establish the likely traffic generation associated with the development proposals, with **Section 5** also providing details of the capacity assessments undertaken at junctions on the local highway network as part of a sensitivity test.
- 1.4.6 Relevant local and national transport policy is summarised in **Section 6**. A Transport Implementation Strategy (TIS) is provided in accordance with TAN 18 in **Section 7**, and the report is summarised and concluded in **Section 8**.

## 2.0 Site Location and Highway Layout

### 2.1 Site Location

2.1.1 The proposed development site is located off Ystrad Road in Denbigh, to the south-east of the town centre. The application site is bounded by Denbigh Leisure Centre to the north, Ystrad Road to the east, residential properties fronting onto Clwyd Road to the west and agricultural land to the south. **Figure 2.1** shows the proposed site location alongside the existing school sites.



Figure 2.1 – Site Location (Google Earth)

### 2.2 Existing Use

2.2.1 The application site currently comprises playing fields utilised by Denbigh High. The site is flanked by an existing 'Active Travel Route' that runs between Denbigh Town FC in the west to Ystrad Road in the east.

2.2.2 Currently there is no direct vehicular access into the site itself. Vehicular access to the leisure centre car park and drop-off areas to the north of the site are currently provided via a series of priority junction arrangements from Ystrad Road.

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## 2.3 Surrounding Highway Network

### *Ystrad Road*

- 2.3.1 The proposed development would be accessed via Ystrad Road which is a single carriageway road that runs along a general north-south alignment along the eastern border of the site. The road currently serves Denbigh Leisure Centre, a small number of residential properties and some agricultural uses.
- 2.3.2 Ystrad Road commences to the north of the site at a priority junction with the A543 Ruthin Road, from here the road continues for approximately 2km to the south. Past the development site Ystrad Road is typically 6m wide with footway provided on the eastern side of the carriageway. Ystrad Road is subject to a 30mph speed limit and is lit by streetlighting.

### *A543 (Ruthin Road)*

- 2.3.3 From the priority junction with Ystrad Road the A543 Ruthin Road travels east towards the A525 and west towards Denbigh town centre. For this section of the A543 the road operates as a single carriageway with a running lane in each direction and a typical width of 7m.
- 2.3.4 The road is subject to a 30mph speed limit with street lighting and footways provided along both sides of the carriageway (with the northern footway typically separated by grass verge). The road benefits from good pedestrian infrastructure generally and includes wide footways, dropped kerbs, tactile paving, signalised crossings points and pedestrian guardrails. The closest signalised pedestrian crossing point is located 40m west of the priority junction with Ystrad Road.
- 2.3.5 The closest pair of bus stops to the proposed development are also located along the A543, approximately 325m north-west of the site. Both bus stops benefit from raised kerbs and the westbound stop includes a shelter, seating and timetable information. Services available from these bus stops are discussed in greater detail within **Section 4** of this TA.

## 2.4 Access for Mobility and Visually Impaired Users

- 2.4.1 The site benefits from its location in close proximity to Denbigh town centre location and there are a number of existing features which ensure safe, convenient and aided access for those site users who are disabled and/or visually impaired.
- 2.4.2 There is a good standard of footway surrounding the site as described in **Section 2.3** above. Dropped kerbs and tactile paving are present at most of the key crossing points in the vicinity of the site, including at the adjacent signalised pedestrian crossing points along the A543 Ruthin Road.

2.4.3 Additionally, the adjacent bus stops have suitable infrastructure for those who are disabled or visually impaired such as raised kerbs. The proposed disabled parking bays on site are located close to the pedestrian entrances to minimise travel distance. The site access junction will be pedestrian and cycle priority (at grade) to further assist visually impaired and disabled users.

## 2.5 Highway Safety

2.5.1 Personal Injury Accident (PIA) data for the highway network adjacent to the site has been obtained from Crashmap for the most recent five years, the period being 2017 to 2021 (inclusive). Crashmap is a professional service which only publishes official data that is provided by the Department for Transport (DfT). This in turn is based on records submitted to them by police forces and therefore there is no longer a requirement to obtain records direct from the Police.

2.5.2 The Study Area considered for the Highway Safety Review is provided in **Appendix A**. A breakdown of the information is contained in **Table 2.1**.

Junction/Link	Slight	Serious	Fatal	Totals
<b>A543 Ruthin Road/Ystrad Road</b>	1	0	0	<b>1</b>
<b>A543 Ruthin Road</b>	0	1	0	<b>1</b>
<b>A543 Ruthin Road/Vale Street</b>	1	0	0	<b>1</b>
<b>A525</b>	0	0	2	<b>2</b>
<b>A543 Ruthin Road/A525 Roundabout</b>	0	1	0	<b>1</b>
<b>Totals</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>6</b>

**Table 2.1** – Personal Injury Accident Data Summary

2.5.3 There has been a total of 6 accidents in the latest five-year period available, comprising 2 slight accidents, 2 serious accidents and 2 fatal accidents. No accidents occurred along Ystrad Road or in the vicinity of the site access junction. There is nothing to suggest an existing safety issue from the breakdown in accidents to locations, with accidents generally dispersed across the study area, with no clearly identifiable clusters.

2.5.4 Two fatal accidents were recorded at separate locations on the A525 to the northeast of the site. The first fatal incident occurred on Friday 4<sup>th</sup> August 2017 when a motorcycle was proceeding normally along the carriageway, left the carriageway, and collided with a road sign resulting in fatal injuries to the rider. The second fatal incident occurred on Saturday April 21<sup>st</sup> 2018 when a car proceeding normally along the carriageway, left the carriageway, and collided with a tree resulting in fatal injuries to the driver.

2.5.5 The full Crashmap records for the fatal accidents have been included in **Appendix A**. As shown on the records the first fatal accident occurred in daylight with dry road conditions and no high winds. The incident did not occur within 20m of a junction or within 50m of a pedestrian crossing facility.

- 2.5.6 The second fatal accident occurred during darkness with dry road conditions and no streetlighting present. Again the accident did not occur within 20m of a junction or within 50m of a pedestrian crossing facility.
- 2.5.7 Following a review of the records, there is nothing to suggest that highway layout or condition were contributory factors. The conclusion is that the fatalities were likely unfortunate accidents. It is not considered that there is an existing safety issue that is likely to be exacerbated by the proposed development.

## 3.0 Development Proposals

### 3.1 Introduction

3.1.1 This TA has been prepared in order to support the proposed development of a new 3-19 Special Education Needs School in Denbigh. The school would replace three existing facilities that are currently split across three separate locations in the town.

3.1.2 The aim of this project is to bring all learners, including a nursery provision, into one site in a new purpose-built facility. This proposal will see a new building erected on the playing fields at Denbigh High. The following pupil numbers are anticipated at full capacity:

- Nursery – 10
- EYS – 16
- KS2 – 55
- KS3 – 61
- KS4 – 32
- P16 – 36
- Higher Needs Provision – 20
- **Total - 230**

3.1.3 It is proposed that the new school will include general teaching rooms, as well as garden areas, active play zones, art/library gardens and sensory spaces. The development is supported by an adjacent car parking provision that includes a suitable drop-off and pick up area. This is discussed in greater detail within the parking section of this chapter. Reference should be made to **Appendix B** which details the proposed site layout plans.

### 3.2 Proposed Access

#### *Vehicular Access*

3.2.1 Vehicular access for the proposed development is to be provided from Ystrad Road via a new priority junction arrangement. Following discussions with DCC this access junction has been designed to prioritise pedestrian/cycle movements along the adjacent Active Travel route with a continuation of the route across the access junction (at-grade). The internal access road itself measures approximately 10m, with a central reservation and gates proposed on the ingress and egress movements. Reference should be made to **Curtins Drawing YPB-CUR-00-XX-DR-D-75001** for the proposed site access arrangement.

3.2.2 As shown on the site layout drawing in **Appendix B**, there is a separate drop-off area to the immediate east of the proposed school building. During the pick-up and drop-off times the internal gates will be opened to allowing vehicles to access the areas of hardstanding. Outside of these times this area can be utilised by the school for recreational and teaching activities. This facility, and the parking described in the following Section, reduces the likelihood of over spill parking on Ystrad Road itself.

3.2.3 A detailed swept path assessment has been undertaken on the proposed access arrangement to ensure that it can be suitably accessed by servicing, delivery and emergency vehicles should this be necessary. Reference should be made to the following drawings:

- YPB-CUR-00-XX-DR-D-05001 11.2mRefuse.
- YPB-CUR-00-XX-DR-D-05003 FireTender.
- YPB-CUR-00-XX-DR-D-05004 & 05005 Large Car.
- YPB-CUR-00-XX-DR-D-05008 7.5T Box Van.

3.2.4 A visibility splay drawing has for the proposed site access, this is also shown on **Drawing YPB-CUR-00-XX-DR-D-75001** to the rear of this report. This demonstrates safe and suitable visibility is achievable from the proposed access location along both Ystrad Road, and the Active Travel route, in accordance with TAN 18 guidance. A robust cycle speed of 20mph has been assumed for the Active Travel route, as agreed on site with DCC Highways Officers.

### ***Pedestrian and Cycle Access***

3.2.5 A separate 3m wide pedestrian and cycle access is proposed on Ystrad Road approximately 50m south of the vehicular access point. The provides a direct connection between the site and the traffic free Active Travel route, which in turn ties into the existing infrastructure surrounding the development site (described in detail within **Section 2** and **4** of this report).

## **3.3 Active Travel Route Enhancements**

3.3.1 As part of the development proposals, there is the potential to enhance the existing Active Travel Route links with Denbigh Leisure Centre and Ystrad Road. On this basis, Curtins has developed two potential options for the Active Travel Route interface with the Leisure Centre and Ystrad Road.

3.3.2 It is envisaged the following two options would be discussed as part of the pre-application process, and a way forward agreed in advance of the planning submission.

### ***Enhanced Active Travel Crossing Over The Leisure Centre Car Park***

3.3.3 **Drawing YPB-CUR-00-XX-DR-D-75002** at the rear of this report shows the extension of the Active Travel Route to a point north of the Denbigh Leisure Centre access points, when cyclists are returned back onto carriageway before the junction with Ruthin Road.



3.3.4 This option gives the benefit of a continuous link from the site and the existing shared pedestrian/cycle provision over the four access points associated with the Leisure Centre and bus layover, resulting in an extension of c.55m.

3.3.5 However, it would require the use of Leisure Centre car park land, and may result in the loss of parking spaces (number is to be confirmed following a more detailed design on topographic base, although the outline design indicates this could be 6-7 spaces).

***Alternative Active Travel Solution***

3.3.6 **Drawing YPB-CUR-00-XX-DR-D-75003** at the rear of this report shows how cyclists could be returned to carriageway along Ystrad Road at the end of the current Active Travel Route terminus.

3.3.7 This option does not have the benefit of a continuous link from the site and the existing shared pedestrian/cycle provision over the four access points associated with the Leisure Centre and bus layover.

3.3.8 However, it would not impact on the Leisure Centre car park land, and would not result in any loss of parking spaces.

**3.4 Parking Provision**

3.4.1 The proposed car park is to include 118 car parking bays (including 14 electric charging bays) and 4 minibus bays.

3.4.2 The school has an excellent understanding of their requirements for car parking at their existing sites. The site layout in **Appendix B** shows sufficient parking to ensure that developer end user requirements are met, with the purpose of guaranteeing that no overspill parking occurs onto the internal site access road, or wider network. This is considered of particular importance given the SEN use and the presence of the adjacent residential uses.

3.4.3 In addition to the above, the school is committed to the principles of sustainable development and will seek to influence the travel choices of site users via the ITP. The ITP document will seek to encourage sustainable development and travel patterns to reduce single occupancy vehicular use on site. As demonstrated on the site layout in **Appendix B**, 60 cycle parking spaces will be provided across the proposed development at safe, secure and convenient locations.

## 4.0 Accessibility by Sustainable Modes of Travel

### 4.1 Introduction

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

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

- Pedestrian Accessibility;
- Accessibility by Cycle; and,
- Accessibility by Public Transport.

### 4.2 Pedestrian Accessibility

4.2.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities.

4.2.2 Due to the surrounding town centre uses in Denbigh, the site benefits from good pedestrian infrastructure generally. This includes footways and formal crossing facilities such as dropped kerbs, tactile paving, signalised crossings, zebra crossings and pedestrian refuge islands.

4.2.3 Reference should be made to **Drawing YPB-CUR-00-XX-DR-TP-06001-P01** to the rear of this report which details 500m, 1000m and 2,000m walking catchments from the site.

4.2.4 Within a catchment of 500m there are several complimentary land uses such as Denbigh Leisure Centre, Denbigh High School, Denbigh Tennis Club and Denbigh Cricket Club. In addition to these education and leisure facilities some of the residential properties within the eastern extents of Denbigh town centre are accessible with a 500m walk of the site.

4.2.5 Guidance from the Building Research Establishment Environmental Assessment Method (BREEAM) UK New Construction 2018 consultation states that Transport Assessments and Travel Plans should include reporting on the number and type of amenities within 500m of the site (based on current Tra 02 criteria) to obtain credits. The number and type of existing accessible amenities within 500m of the site can be summarised in **Table 4.1** below:

No.	Amenity	BREEAM Criteria / Type	Proximity to Site (m)
1	Denbigh Leisure Centre	Community Facility	180m
2	Denbigh High School	Childcare Facility or School	350m
3	Post Box (A543 Ruthin Road)	Publicly Available Postal Facility	350m
4	Denbigh Tennis Club	Community Facility	425m
5	Plas Pigtot Club	Community Facility	500m

**Table 4.1** – Number and Type of Existing Accessible Amenities within 500m of the Site

- 4.2.6 At a further 1000m catchment there are additional residential areas in this catchment to the north, west and east of the site, providing further amenities such as Lidl and Aldi Foodstores, McColl's Newsagent, GP Practice, Pharmacy and several takeaways/restaurants.
- 4.2.7 Denbigh town centre is accessible within the final 2km catchment, providing a number of amenities such as: Co-Op, Library, Boots, several banks, a dentist, Specsavers and many other typical high street shops. In addition to these local amenities, the 2km catchment covers many of the residential areas in and around Denbigh.
- 4.2.8 It is therefore considered that the site is located in an accessible location for pedestrians, with good proximity to local amenities. The site is located adjacent to several complimentary educational, leisure and residential uses and therefore it is anticipated there will be good opportunities for pedestrian trips to and from the site.

### 4.3 Accessibility by Cycle

- 4.3.1 In order to assist in assessing the accessibility of the site by cycle, 5.5km and 8km cycle catchments have been considered for the site. The entirety of Denbigh is accessible within the shorter 5.5km cycle catchment. The wider 8km catchment equates to a journey time of around 40 minutes, cycling at a speed of 12kph. This catchment extends as far as Llannerch Hall in the north, Llangwyfan to the east, Saron in the south and Groes to the west.
- 4.3.2 Reference should be made to **Drawing YPB-CUR-00-XX-DR-TP-06002-P01** to the rear of this report which details 5.5km and 8km cycle catchments from the site.

4.3.3 As discussed above the site is located immediately adjacent to an existing 'Active Travel' route, this is shown in **Figures 4.1 – 4.2** below:

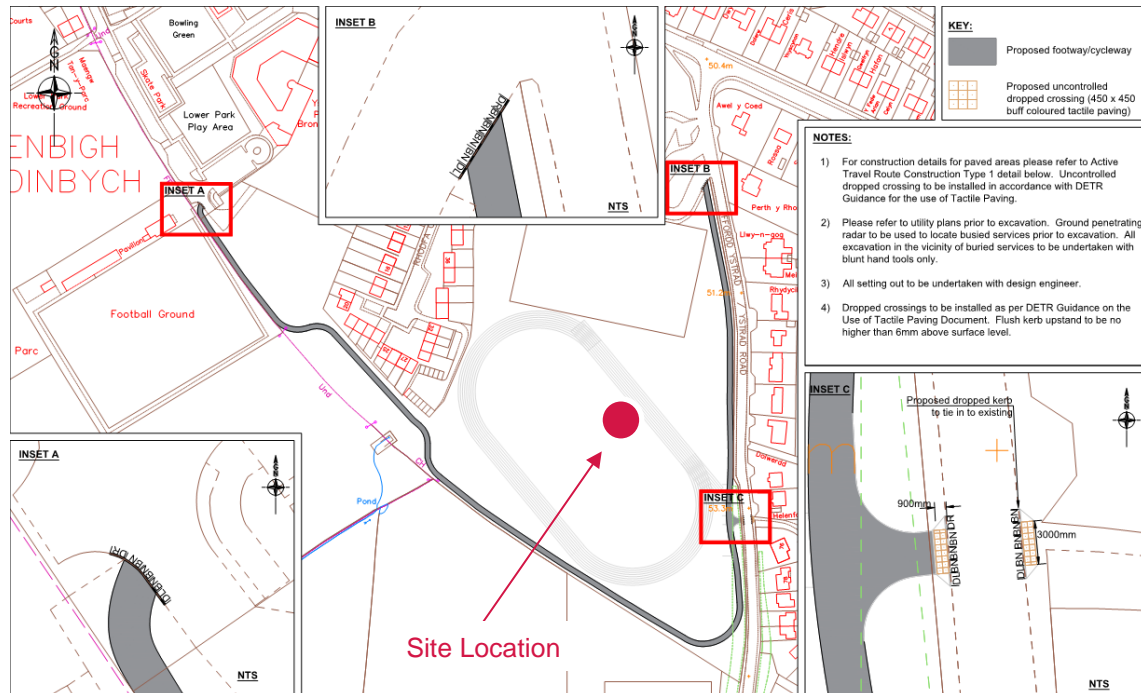


Figure 4.1 – Existing Active Travel Route



Figure 4.2 – Existing Active Travel Route (Site Photographs)

4.3.4 As demonstrated in **Figures 4.1** and **4.2**, the site is very well placed to benefit from the existing Active Travel route, which provides a useful traffic free connection towards Park Street.

4.3.5 In summary, it is considered that cycling represents a realistic mode of travel for some future site users.

#### 4.4 Accessibility by Public Transport

4.4.1 The nearest bus stops to the site are located as pair approximately 325m away on the A543 Ruthin Road. Both bus stops benefit from raised kerbs and the westbound stop benefits from a shelter, seating and timetable information. **Table 4.2** details the service that calls at these stops, and its associated frequencies:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
<b>14D</b>	Mold - Denbigh	AM Service Only	No Service	No Service
<b>71</b>	Corwen - Denbigh	AM Service Only	No Service	No Service
<b>76</b>	Lenten Pool - Llangwyfan Sanitorium	Evening Service Only	Evening Service Only	Evening Service Only
<b>76H</b>	Rhyl - Llangwyfan	No Service	No Service	3 Services
<b>X51</b>	Denbigh to Wrexham	60 mins	60 mins	No Service

**Table 4.1** – Summary of Bus Service Frequencies from the A543 Ruthin Road

4.4.2 It is considered that given the frequency of the X51 bus service on the A543 Ruthin Road, supported by several morning and evening services, the site is accessible by bus.

4.4.3 In addition to the public transport services the school provides learner transport for their pupils. These vehicles will utilise the proposed drop-off area described in with **Section 3** of this report.

#### 4.5 BREEAM Public Transport Accessibility Index (AI)

4.5.1 Guidance from the BREEAM UK New Construction 2018 consultation also states that Transport Assessments and Travel Plans should include reporting on the public transport accessibility (i.e. Tra 01 – proximity to train, bus etc. stops and frequency of services) to obtain credits. This includes calculation of the Accessibility Index (AI) of the site.

4.5.2 Based on Tra 01 standards, a compliant transport node is defined as any bus service with a stop within 650m and any railway station within 1,000m of the assessed building’s main entrance, measured via a safe pedestrian route (not ‘as the crow flies’). The bus stop (‘node’) located within this distance and their

respective service frequencies per hour are as follows in **Table 4.3**. For the purposes of this assessment, multiple services (i.e. services that operate from more than one node within proximity of the site, or the same bus/rail serving two separate stops/stations) have been considered only once at the node in closest proximity to the site.

Service and Frequencies per Hour		Node and Distance to Node (m)
		A543 Ruthin Road (325m)
Bus	X51	1
Accessibility Index (AI)		<b><u>0.83</u></b>

**Table 4.3** – BREEAM Public Transport Accessibility Index (AI) Calculator

4.5.3 It can be observed that the site has an AI of 0.83.

## 4.6 Summary

4.6.1 In summary, the site is located such as to benefit from existing walking, cycling and public transport opportunities. The site is located in close proximity to a variety of key services and facilities as well as a number of pre-existing residential areas. The site is therefore considered to be accessible from sustainable modes of travel in line with national and local transport planning policy outlined in **Section 6** of this TA.

## 5.0 Highway Impact (Sensitivity Test)

### 5.1 Introduction

5.1.1 The proposed development is for a SEN school in Denbigh. The school would replace three existing facilities that are currently split across separate locations in the town and therefore it is considered that these vehicular trips are already on the local highway network and any potential highway impacts will be negligible. Notwithstanding the above, in order to provide consideration of the proposed development highway impact, a robust sensitivity test has been undertaken; the details of which are set out in this section.

### 5.2 Baseline Data Acquisition

5.2.1 Manual classified turning count traffic surveys were undertaken in March 2022 at the junctions/locations requested by DCC at the on-site meeting in February 2022, namely the A543 Ruthin Road/Ystrad Road priority junction and A543 Ruthin Road/Vale Street traffic signals. Additionally, an Automatic Traffic Counter (ATC) was installed in the vicinity of the proposed access on Ystrad Road, which collected 7 complete days of data.

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

5.2.3 The traffic flows surveyed in 2022 scenarios have been projected to 2027 by applying factors extracted from the DfT's TEMPRO 7.2 program, using the definitive NTEM v7.2 database and the current NTM AF09 dataset in line with TAG Unit M4: Forecasting and Uncertainty. Denbighshire (011 and 012) has been selected as the defined area. Reference should be made to **Table 5.1** which shows the growth factors applied to the base flows.

Scenarios	Time Period	
	AM Peak	PM Peak
2022 - 2027	1.038	1.037

**Table 5.1** – TEMPRO Growth Factors in Denbighshire.

5.2.4 Reference should be made to **Figures 3** and **4** in **Appendix C** which show the 2027 'No Development' scenarios for the weekday AM and PM peak periods.

### 5.3 Trip Generation

5.3.1 SEN schools are bespoke uses, and whilst they may be similar in nature to other educational facilities, they often have their own specific requirements. There is a general lack of available traffic survey data for SEN schools on the industry standard TRICS database.

5.3.2 As a worst-case, it has been assumed that all vehicles associated with the 122 parking bays (118 car parking bays and 4 minibus bays) would arrive in the AM peak and depart in the PM peak. In reality it is likely that these movements will be spread across the wider AM and PM periods, and likely to be outside of the network peak hours (in particular the PM).

5.3.3 It should also be re-iterated given the proximity of the existing school facilities in Denbigh (see **Figure 2.1** above) it is considered that the majority of the vehicular movements are already on the local highway network, and a proportion of these movements will have been counted in the traffic surveys.

## 5.4 Traffic Distribution

5.4.1 In order to robustly assess the junctions identified by DCC Curtins has assumed that 100% of development trips will travel through the Ystrad Road/Ruthin Road priority junction and 75% will in turn utilise the A543 Ruthin Road/Vale Street traffic signals. The remaining 25% will travel east along the A543 Ruthin Road towards the A525.

5.4.2 A summary of the distribution and assignment pattern for the AM and PM peaks is shown at **Figure 5 Appendix C** to the rear of this report. These turning proportions have been applied to the trip generation values and the resultant AM and PM flows are subsequently illustrated in **Figures 6 and 7**. These values have been added to the 2027 base traffic flows presented at **Figures 3 and 4**, to produce 2027 with development traffic flows – shown at **Figures 8 and 9**.

## 5.5 Interpretation of Model Outputs

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

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

5.5.3 The modelling outputs from the capacity assessments undertaken in this TA can be found in **Appendix D**.

## 5.6 Ystrad Road/A543 Ruthin Road Priority Junction (JUNCTIONS)

5.6.1 Analysis of the junction has been undertaken using JUNCTIONS, and the results are summarised in **Tables 5.2 and 5.3**:



Arm		2022 Base	
		RFC	MMQ
AM Peak			
B-C	Ystrad Road - Left	0.12	0
B-A	Ystrad Road - Right	0.29	0
C-AB	A543 Ruthin Road - Right	0.08	0
PM Peak			
B-C	Ystrad Road - Left	0.05	0
B-A	Ystrad Road - Right	0.11	0
C-AB	A543 Ruthin Road - Right	0.06	0

**Table 5.2** – Ystrad Road/A543 Ruthin Road Capacity Assessment Results

Arm		2027 Base		2027 Base + Dev	
		RFC	MMQ	RFC	MMQ
AM Peak					
B-C	Ystrad Road - Left	0.13	0	0.13	0
B-A	Ystrad Road - Right	0.31	1	0.34	1
C-AB	A543 Ruthin Road - Right	0.08	0	0.31	1
PM Peak					
B-C	Ystrad Road - Left	0.05	0	0.21	0
B-A	Ystrad Road - Right	0.11	0	0.21	0
C-AB	A543 Ruthin Road - Right	0.07	0	0.07	0

**Table 5.3** – Ystrad Road/A543 Ruthin Road Capacity Assessment Results

## 5.7 A543 Ruthin Road/Vale Street Signals (LinSig)

5.7.1 Analysis of the junction has been undertaken using LinSig, and the results are summarised in **Tables 5.4** and **5.5**. Curtins understands that the A543 Ruthin Road/Vale Street signals operate under MOVA. MOVA is a real-time method of signal control technology which improves operation by constantly assessing and modifying signals times of the approach arms in order to maximise capacity. Within the LINSIG programme, it is not currently possible to accurately model the benefits of MOVA, as such the results presented within this TA are a worse-case.

Arm		2022 Base	
		DoS	MMQ
AM Peak			
1/1+1/2	A543 Ruthin Road Right Left	63.4%	6
2/1	A543 Rhyl Road Left Ahead	62.0%	9
3/1+3/2	A543 Vale Street Right Ahead	61.7%	6
PM Peak			
1/1+1/2	A543 Ruthin Road Right Left	56.7%	4
2/1	A543 Rhyl Road Left Ahead	60.8%	8
3/1+3/2	A543 Vale Street Right Ahead	59.6%	6

**Table 5.4 – A543 Ruthin Road/Vale Street Capacity Assessment Results**

Arm		2027 Base		2027 Base + Dev	
		DoS	MMQ	DoS	MMQ
AM Peak					
1/1+1/2	A543 Ruthin Road Right Left	65.7%	7	73.9%	7
2/1	A543 Rhyl Road Left Ahead	64.4%	9	72.2%	11
3/1+3/2	A543 Vale Street Right Ahead	64.0%	6	72.1%	7
PM Peak					
1/1+1/2	A543 Ruthin Road Right Left	58.4%	4	66.5%	5
2/1	A543 Rhyl Road Left Ahead	63.0%	9	65.3%	9
3/1+3/2	A543 Vale Street Right Ahead	61.8%	6	67.8%	6

**Table 5.5 – A543 Ruthin Road/Vale Street Capacity Assessment Results**

## 5.8 Summary

- 5.8.1 Given the nature of the proposed development (consolidation of three existing facilities in Denbigh), the anticipated highway impact will be negligible, and is far from being able to be categorised as severe. To provide further comfort a robust sensitivity test has been undertaken on the key junctions local to the development site. The assessment has demonstrated that development is acceptable in highways capacity terms, with no material worsening of existing conditions.

## 6.0 Transport Planning Policy

### 6.1 Introduction

6.1.1 When developing scheme proposals, it is important to understand the national and local transport related planning policies. This section aims to outline the key policies throughout relevant national and local policy and guidance documents.

### 6.2 National Planning Policy and Guidance

#### *Planning Policy Wales (Edition 10, 2018)*

6.2.1 Updated and reissued as Edition 11 in February 2021, Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

6.2.2 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales. Section 4.1 of PPW relates to transport. The section focuses on:

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

6.2.3 The document recognises that the planning system has a key role to play in reducing the need to travel and supporting sustainable transport. The planning system should do this 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;*
- *Are designed in a way which integrates them with existing land uses and neighbourhoods; and*
- *Make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.”*

6.2.4 In line with the above, PPW sets a transport hierarchy which has been reproduced as **Figure 6.1**. This transport hierarchy has formed the basis of the proposed development from a design and access perspective; including influencing the site access and parking provision:

Figure 9: The Sustainable Transport Hierarchy for Planning

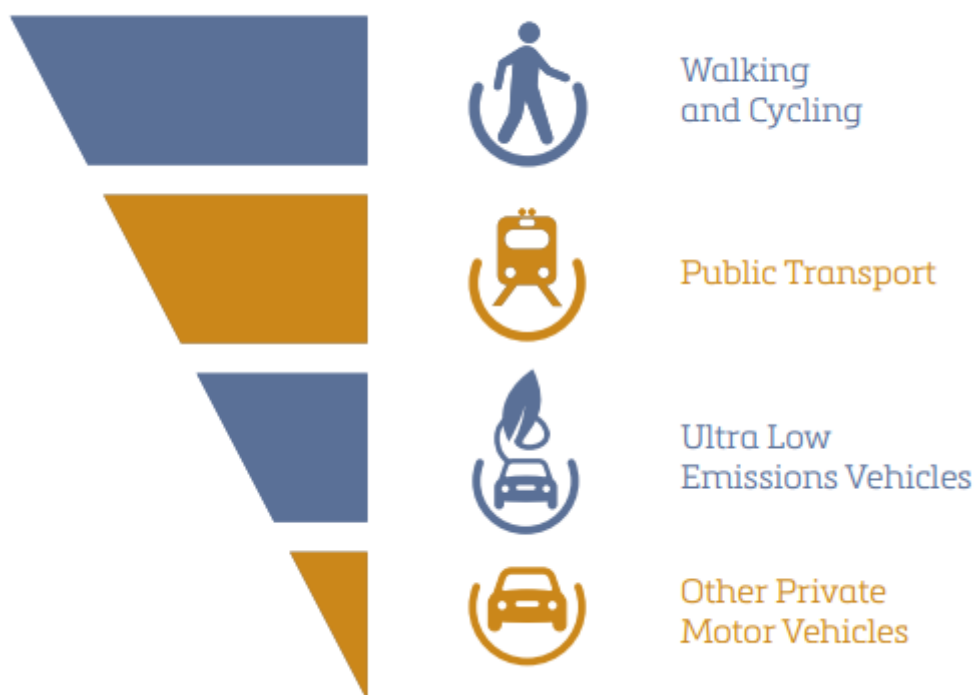


Figure 6.1 – The Sustainable Transport Hierarchy for Planning (reproduced from PPW)

**TAN 18: Transport (2007)**

6.2.5 The transport-related Technical Advice Note ‘TAN 18: Transport’ referenced in PPW was produced in March 2007. The document notes that:

*“An efficient and sustainable transport system is a requirement for a modern, prosperous and inclusive society. However, transport, in particular road traffic, can also have negative impacts on human health and the environment. Road traffic growth is a cause of increased local air pollution, green house gas emissions contributing to global warming and climate change and, in some areas, congestion, which can affect economic competitiveness.”*

6.2.6 The document sets various pieces of policy and guidance to influence design and is a material consideration when determining planning applications. TAN 18 is supplemented by a number of Annex’s, comprising:

- Annex A – Accessibility;
- Annex B – Visibility Standards;
- Annex C – Definitions of Highway Routes;
- Annex D – Transport Assessment;
- Annex E – Planning Application Procedures; and

- Annex F – Conditions Requiring Works in the Highway

6.2.7 Of particular relevance to the proposed development are annex letters A, B and D.

Annex A

6.2.8 Annex A of TAN 18 notes that accessibility planning has the potential to contribute to a number of Assembly Government priorities including addressing climate change and social exclusion, ensuring sustainable development and contributing to the health and wellbeing of the population of Wales.

6.2.9 The document notes that different accessibility measuring techniques may be appropriate depending upon local circumstances and the nature of the plan proposal or planning application. This Transport Assessment has used data obtained from site visits in conjunction with GIS based tools to assess the site's accessibility.

Annex B

6.2.10 The Stopping Sight Distance (SSD) values presented in Table B of Annex B have been used to assess the proposed access junction from Ystrad Road, based on a design speed of 30mph.

Annex D

6.2.11 Various thresholds for Transport Assessments are provided within Annex D of TAN 18.

6.2.12 Annex D of TAN 18 also notes that the output of any Transport Assessment should be a Transport Implementation Strategy (TIS). On this basis, a TIS has been included as **Section 7** within this document. The TIS should satisfy the following aims:

- Understand the transport impacts of the development;
- Clearly communicate the impacts to assist the decision making process;
- Demonstrate the development is sited in a location that will produce a desired and predicted output (for example in terms of target modal split);
- Mitigate negative transport impacts through the design process and secured through planning conditions or obligations;
- Maximise the accessibility of the development by non-car modes; and
- Contribute to relevant development plan and RTP objectives relating to accessibility of services and modal share.

***An Active Travel Action Plan for Wales (2021)***

6.2.13 An Active Travel Action Plan for Wales guidance document was produced in 2013, and updated July 2021, following the Active Travel (Wales) Act of 2013.

6.2.14 The Welsh Government aims to increase levels of walking and cycling in Wales and realise the many benefits that travelling actively brings. The Active Travel Act focuses on walking and cycling as a mode of transport, and the Active Travel Action Plan was finalised after consultation. The document focuses on the following topics as ways to encourage and facilitate active travel:

- **Leadership** – from a national and local level;
- **Legislation, Standards and Tools** – including at the planning and design stages;
- **Infrastructure** – referencing Welsh Government funding and developer contributions;
- **Promotion & Behaviour Change** – through communication of information, consultation and engagement;
- **Skills & Training** – with access to professionals and decision makers; and
- **Monitoring & Evaluation** – underpinning and refining the process.

### 6.3 Local Planning Policy and Guidance

#### *Denbighshire Local Development Plan 2006 – 2021 (2013)*

6.3.1 The Denbighshire Local Development Plan (LDP) determines where new development will take place and was adopted in June 2013. Under the theme 'Achieving Sustainable Accessibility', there are three transport-related policies:

- Policy ASA 1 – New transport infrastructure
- Policy ASA 2 – Provision of sustainable transport facilities
- Policy ASA 3 – Parking standards

6.3.2 Policies ASA 2 and ASA 3 are particularly relevant to this application. As such, ASA 2 reads:

*“Development proposals expected to result in a need to bring forward improvements to public transport, walking or cycling infrastructure will be required to incorporate or contribute to the cost of their provision. Subject to individual assessments, schemes may be required to provide or contribute to:*

- *Capacity improvements or connection to the cycle network;*
- *Provision of walking and cycling links with public transport facilities; and*
- *Improvement of public transport services.”*

6.3.3 The matter of capacity is considered throughout the Highway Impact section (**Section 5**) of this report. The proposed development is very well connected to the surrounding pedestrian and cycling network, as well as a number of bus services, as demonstrated in **Section 4** of this report.

6.3.4 Policy ASA 3 reads:

*“Development proposals, including changes of use, will be expected to provide appropriate parking spaces for cars and bicycles. If the use of a property or premises requires parking infrastructure for mobility impaired people, these facilities will be taken into account when determining the amount of parking space required. Consideration will be given to the following circumstances (where they apply) in determining parking provision:*

- *The site is located within a high-densely populated area;*
- *Access to and availability of public transport is secured;*
- *Parking is available within reasonable distance of the site;*
- *Alternative forms of transport are available in the area.”*

## **6.4 Conclusions**

6.4.1 In summary, the development proposals are considered to be consistent with local and national transport planning policies and guidance. The site is located within an area which has a range of existing local facilities and sustainable travel choices, and is an existing established school.

## 7.0 Transport Implementation Strategy

### 7.1 Introduction

7.1.1 In line with the guidance contained in TAN 18, this section is intended to draw together the elements of a Transport Implementation Strategy for the proposed development.

### 7.2 Policy Requirements and Objectives

7.2.1 **Section 6** of this Transport Assessment includes an examination of national and local transport policy relevant to the development. The main national and local policy objectives that have been identified following this examination can be summarised as follows:

- Reduce the need to travel, especially by private car;
- Improve accessibility by walking, cycling and public transport;
- Promote walking and cycling and sustainable modes of travel;
- Ensure that transport is accessible to all;
- Support the provision of high quality public transport; and
- Support necessary infrastructure improvements.

### 7.3 Measures

7.3.1 In order to successfully deliver the development whilst meeting the above objective the following measures are proposed:

#### ***Infrastructure Improvements***

- Vehicular access arrangements from Ystrad Road via a new priority junction arrangement. Following discussions with DCC this access junction has been designed to prioritise pedestrian/cycle movements along the adjacent Active Travel route with a continuation of the route across the access junction (at-grade).
- A total of 60 cycle parking spaces across three areas for convenience.

#### ***Travel Planning and Demand Management***

7.3.2 An Interim Travel Plan (document reference: **079942-CUR-00-XX-RP-TP-002-V01**) has been prepared to accompany the outline application. The key initiatives are summarised below:

- Welcome packs would be issued to all future employees and parents of the site, which would provide details of:
  - Local walking and cycling routes;



- Local bus timetable/route information;
- Information on the health and environmental benefits of walking and cycling; and
- Information on the benefits of car sharing.
- Notice boards to be provided in communal areas to provide additional information regarding walking, cycling, public transport and car sharing opportunities.
- Appointment of a Travel Plan Coordinator (TPC).
- Promotion of key infrastructure improvements including cycle and EV parking.
- Management of any on-site parking and drop-off activity.

## 7.4 Targets and Monitoring

7.4.1 The effectiveness of the above measures will be monitored within the Travel Plan process.

7.4.2 It is important that an accurate baseline for modal split is ascertained so that realistic targets for modal shift can be set. However, such information is not available until the site has been surveyed and so this TIS does not set a specific target.

7.4.3 Within three months of the being occupied, travel surveys would be distributed to all employees and parents. From this baseline scenario, targets will be set for achieving a shift towards sustainable modes of travel. The TPC would then undertake annual surveys to monitor modal shift, reporting these findings to the Local Authority.

## 7.5 Summary of Impacts

7.5.1 It has been demonstrated throughout this Transport Assessment that the proposed development would result in a negligible impact from a vehicular perspective. As demonstrated throughout this TIS, this would be underpinned by the following three main principles:

- Provision of improved pedestrian and cycle infrastructure;
- Cycle and EV parking spaces; and,
- Adoption of a robust Travel Plan (document reference: **079942-CUR-00-XX-RP-TP-002-V01**) with monitoring and review.

## 8.0 Summary and Conclusions

### 8.1 Summary

- 8.1.1 Curtins has been appointed by Wates on behalf of Denbighshire County Council (DCC) to provide traffic and transportation advice in relation to the proposed development of a new 3-19 Special Education Needs (SEN) School in Denbigh. The school would replace existing facilities that are currently split across three separate locations in the town.
- 8.1.2 Vehicular access for the proposed development is to be provided from Ystrad Road via a new priority junction arrangement. Following discussions with DCC this access junction has been designed to prioritise pedestrian/cycle movements along the adjacent Active Travel route with a continuation of the route across the access junction (at-grade).
- 8.1.3 The school has an excellent understanding of their requirements for car parking at their existing sites. The site layout includes sufficient parking to ensure that developer end user requirements are met, with the purpose of guaranteeing that no overspill parking occurs onto the internal site access road, or wider network. This is considered of particular importance given the nature of the adjacent residential uses.
- 8.1.4 A review of accidents on the local highway network does not indicate any correlations that would suggest that highway condition, layout or design were significant contributory factors in the accidents.
- 8.1.5 The walking, cycling and public transport opportunities at the site constitute alternative modes of travel to the car which are considered to be realistic modes of travel for a range of different journey types. The site is therefore considered to be accessible from sustainable modes of travel in line with national and local transport planning policy.
- 8.1.6 The highway impacts of the traffic predicted to be generated by the proposed development have been properly assessed at a key junction on the road network. Those impacts have been demonstrated to be immaterial and are far from being able to be categorised as severe. Therefore, no highway capacity mitigation measures are proposed in order to make the development proposals acceptable in planning terms.
- 8.1.7 A review of relevant local and national transport planning guidance has been undertaken. It is considered that the proposed development conforms with such policy.

### 8.2 Conclusions

- 8.2.1 From a traffic and transportation perspective there are no reasons why the development proposals should not be granted planning approval.

## Plans



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Project: YSGOL PLAS BRONDYFRRYN

Status: PRELIMINARY

Drg Title: ACCESSIBILITY  
 INDICATIVE WALKING CATCHMENT

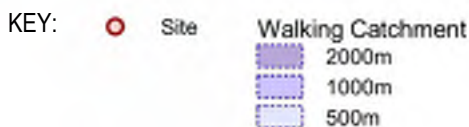
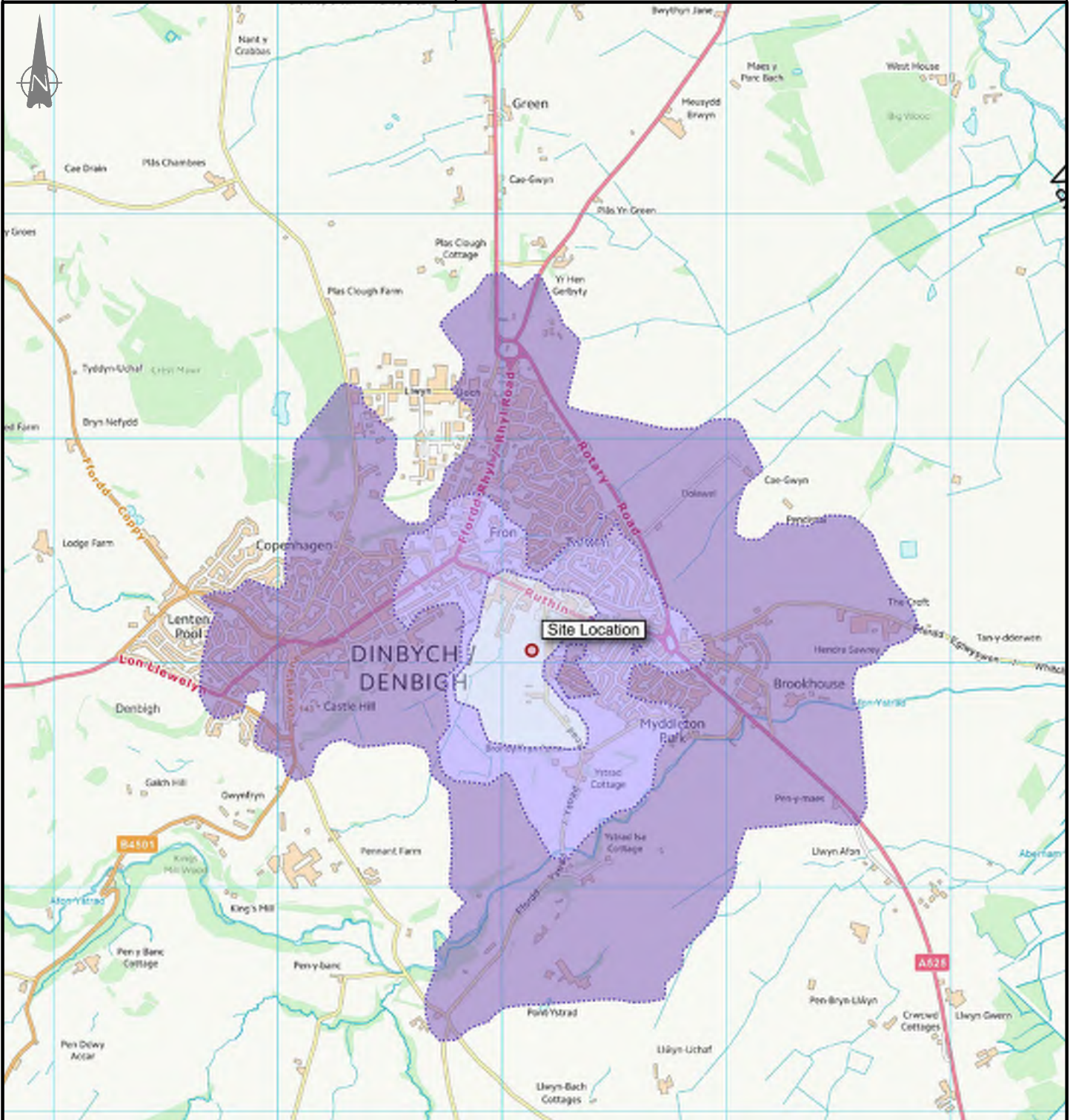
Drawn By: HD Checked By: DJ

Designed By: HD Date: 18/05/22

Scale: NTS

Project No: Originator: Volume: Level: Type: Role: Category / Number: Rev:

079942- CUR - 00 - XX - DR -TP - 06001 - P01



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\\ifs03\projects\TP\079942.100 - Ysgol Plas Brondyfrryn\4 - Production\4A - Models - Drawings\TP\CAD\061



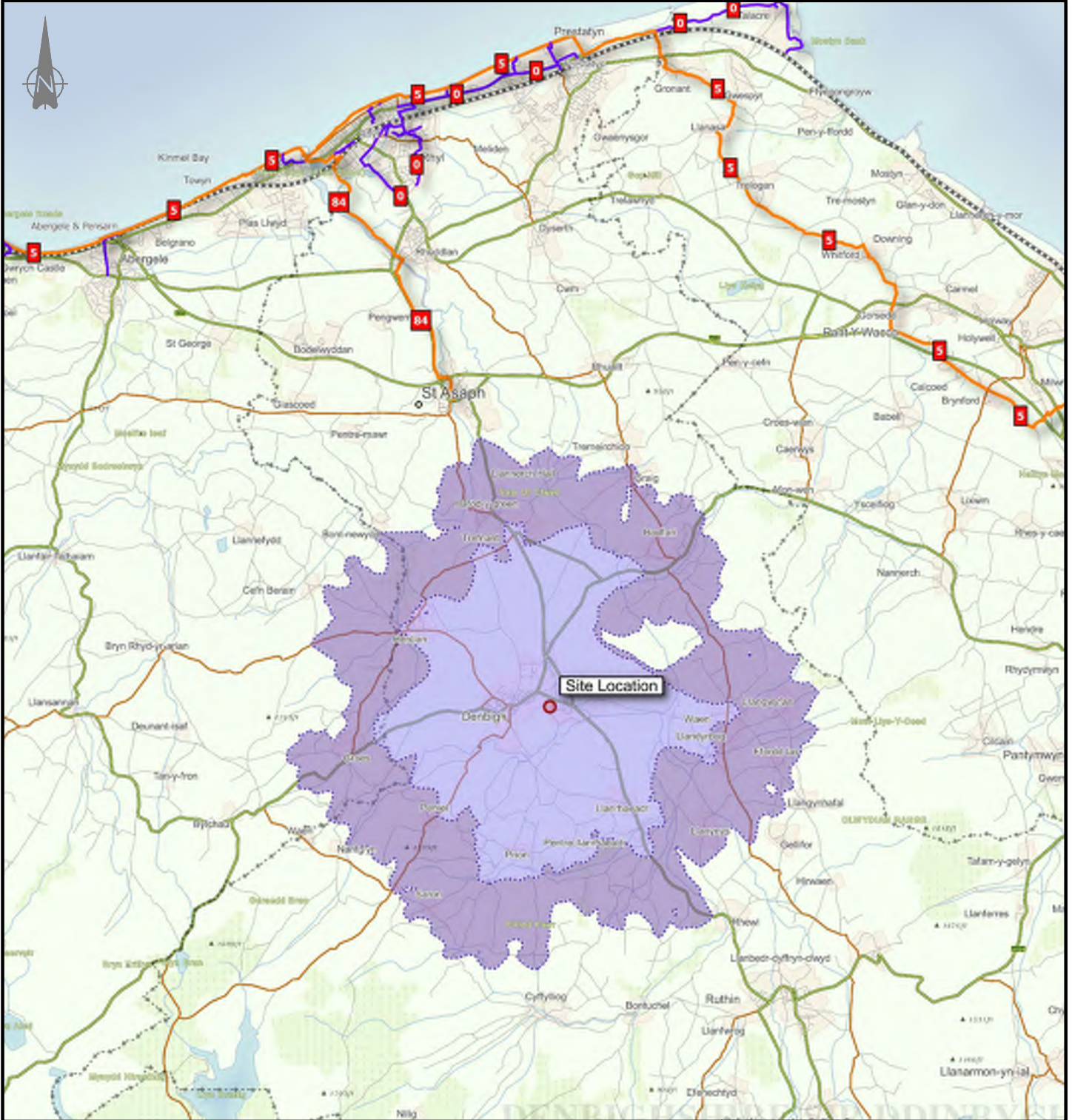
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 Telephone 0151 726 2000  
 Email [Liverpool@curtins.com](mailto:Liverpool@curtins.com)  
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Project: YSGOL PLAS BRONDYFRRYN  
 Drg Title: ACCESSIBILITY  
 INDICATIVE CYCLE CATCHMENT

Status: PRELIMINARY  
 Drawn By: HD Checked By: DJ  
 Designed By: HD Date: 18/05/22  
 Scale: NTS

Project No: 079942- CUR - 00 - XX - DR -TP - 06002 - P01  
 Originator: Volume: Level: Type: Role: Category / Number: Rev:



KEY: Site Cycle Catchment  
 8000m National Cycle Network (Public)  
 5500m Not on Cycle Network  
 National Cycle Network   
 Regional Cycle Network

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Project: YSGOL PLAS BRONDYFRRYN

Status: PRELIMINARY

Drg Title: ACCESSIBILITY  
 INDICATIVE PUBLIC  
 TRANSPORT CATCHMENT

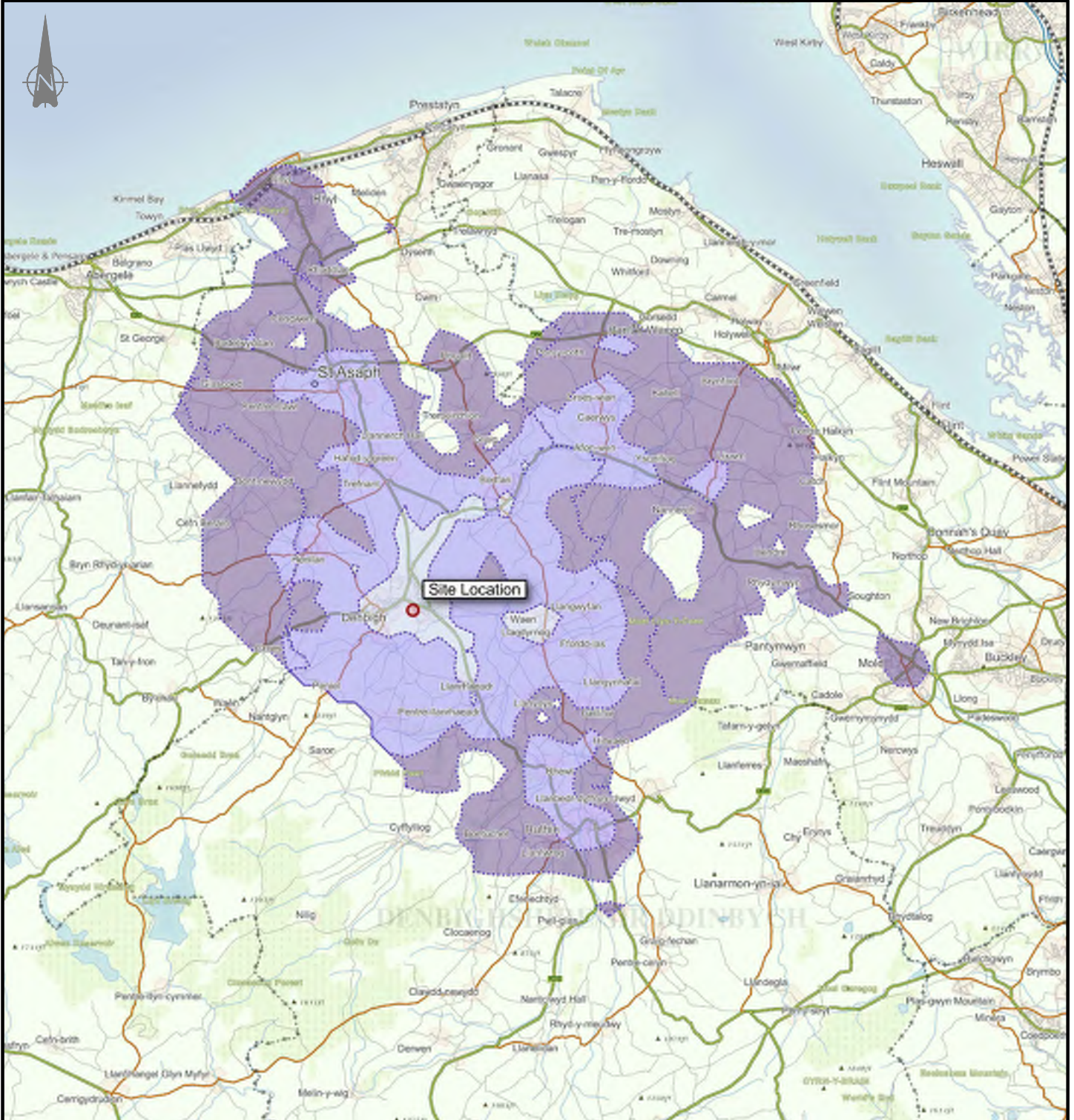
Drawn By: HD Checked By: DJ

Designed By: HD Date: 18/05/22

Scale: NTS

Project No: Originator: Volume: Level: Type: Role: Category / Number: Rev:

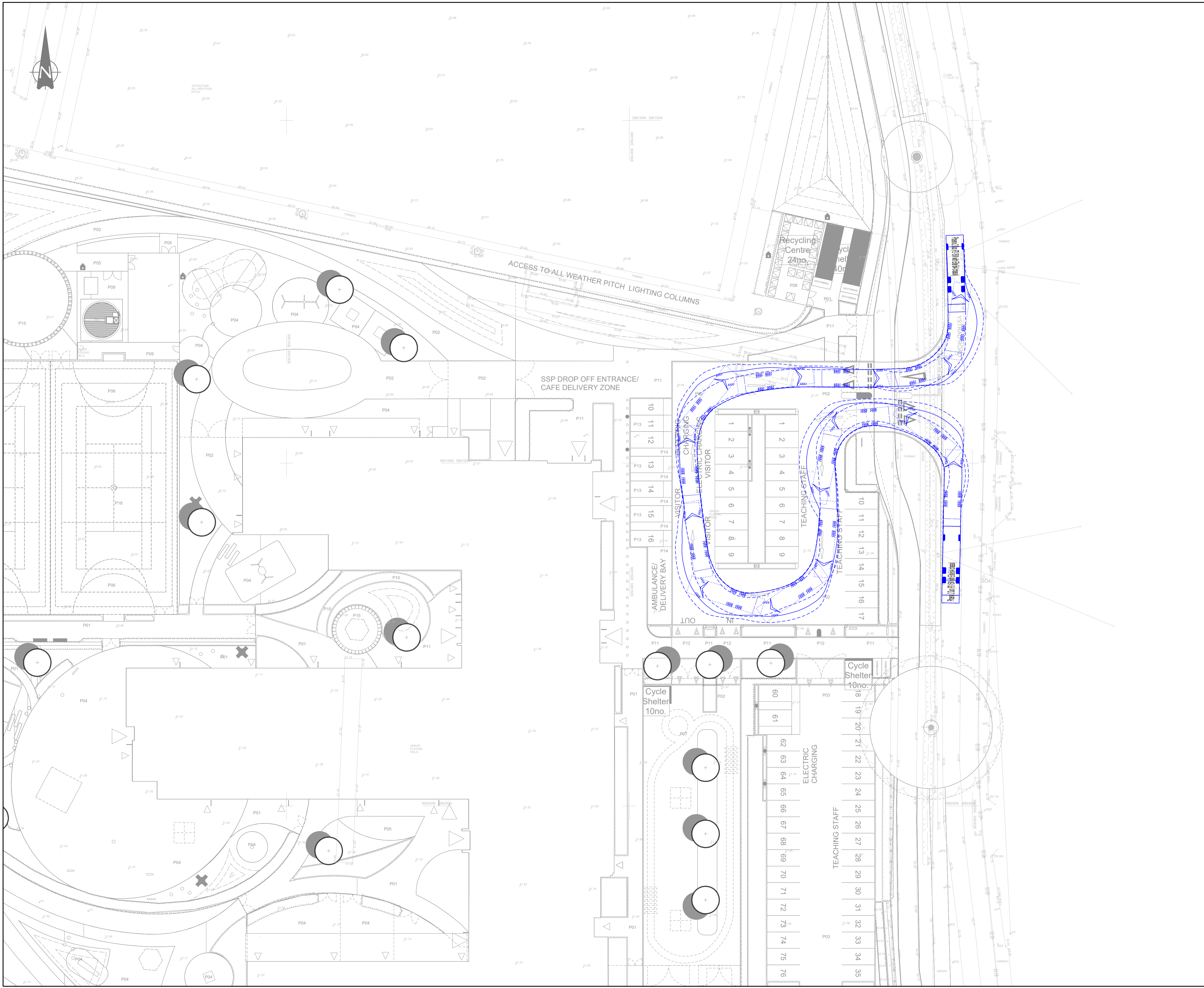
079942- CUR - 00 - XX - DR -TP - 06003 - P01



KEY: Site Public Transport Catchment  
 60 minutes  
 40 minutes  
 20 minutes

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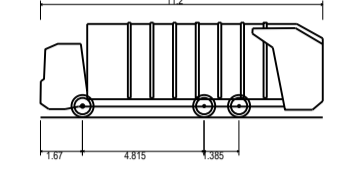
## Drawings



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**VEHICLE PROFILE:**



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)  
 Overall Length: 11.200m  
 Overall Width: 2.550m  
 Overall Body Height: 3.725m  
 Min Body Ground Clearance: 13.24m  
 Track Width: 2.500m  
 Lock to lock time: 4.05s  
 Kerb to Kerb Turning Radius: 9.500m

P06	UPDATED LAYOUT	31/08/22	HD	DJ
P05	UPDATED LAYOUT	24/08/22	HD	DJ
P04	UPDATED LAYOUT	23/05/22	HD	DJ
P03	UPDATED LAYOUT	23/02/22	JM	DJ
P02	UPDATED LAYOUT	27/01/22	HD	DJ
Rev:	Description:	Date:	By:	Chkd:



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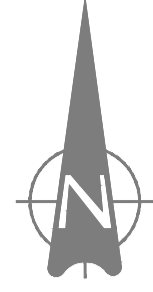
Project: **YSGOL PLAS BRONDYFRYRN**

Draw Title: **SWEPT PATH ANALYSIS  
 11.2M REFUSE**

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
079942	A1	21/01/22	HD	HD	JA
Project Code:	Originator:	Volume:	Level:	Type:	Role:
YBP - CUR - 00 - XX - DR - D -					
05001 -	P06				

W:\03\projects-1\079942-100-Ysgol Plas Brondyfrryn\04-Production\A-Mode Drawings\TP-CDD05

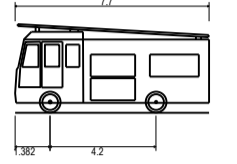




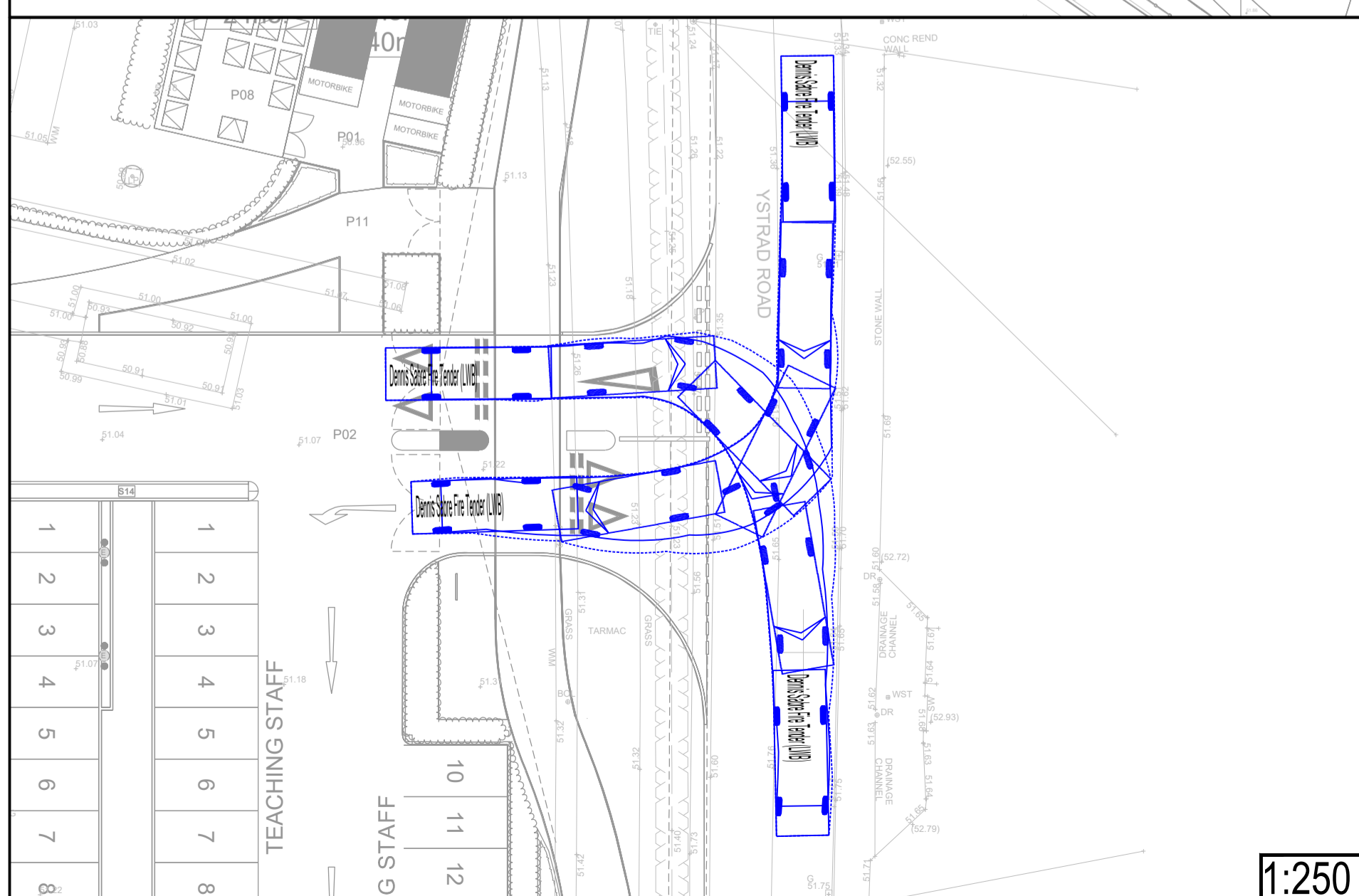
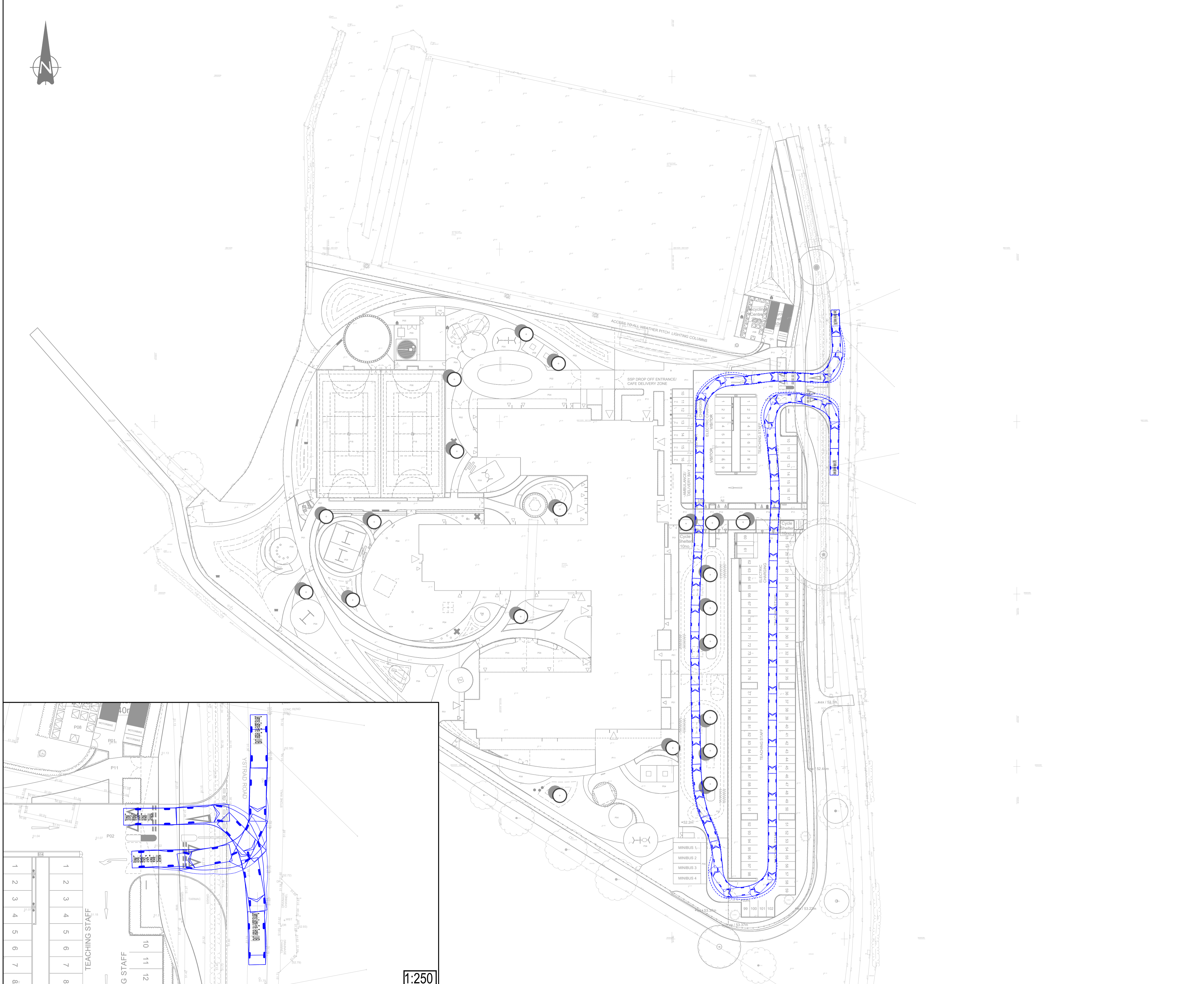
**GENERAL NOTES:**

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**VEHICLE PROFILE:**



Dennis Sabre Fire Tender (LWB)	7.700m
Overall Length	2.430m
Overall Width	1.932m
Min Body Height	2.290m
Min Body Ground Clearance	0.500m
Track Width	2.290m
Lock to Lock Time	5.000m
Kerb to Kerb Turning Radius	7.400m



1:250

P06	UPDATED LAYOUT	31/08/22	HD	DJ
P05	UPDATED LAYOUT	24/08/22	HD	DJ
P04	UPDATED LAYOUT	23/05/22	HD	DJ
P03	UPDATED LAYOUT	23/02/22	JM	DJ
P02	UPDATED LAYOUT	27/01/22	HD	DJ
Rev:	Description:	Date:	By:	Chkd:



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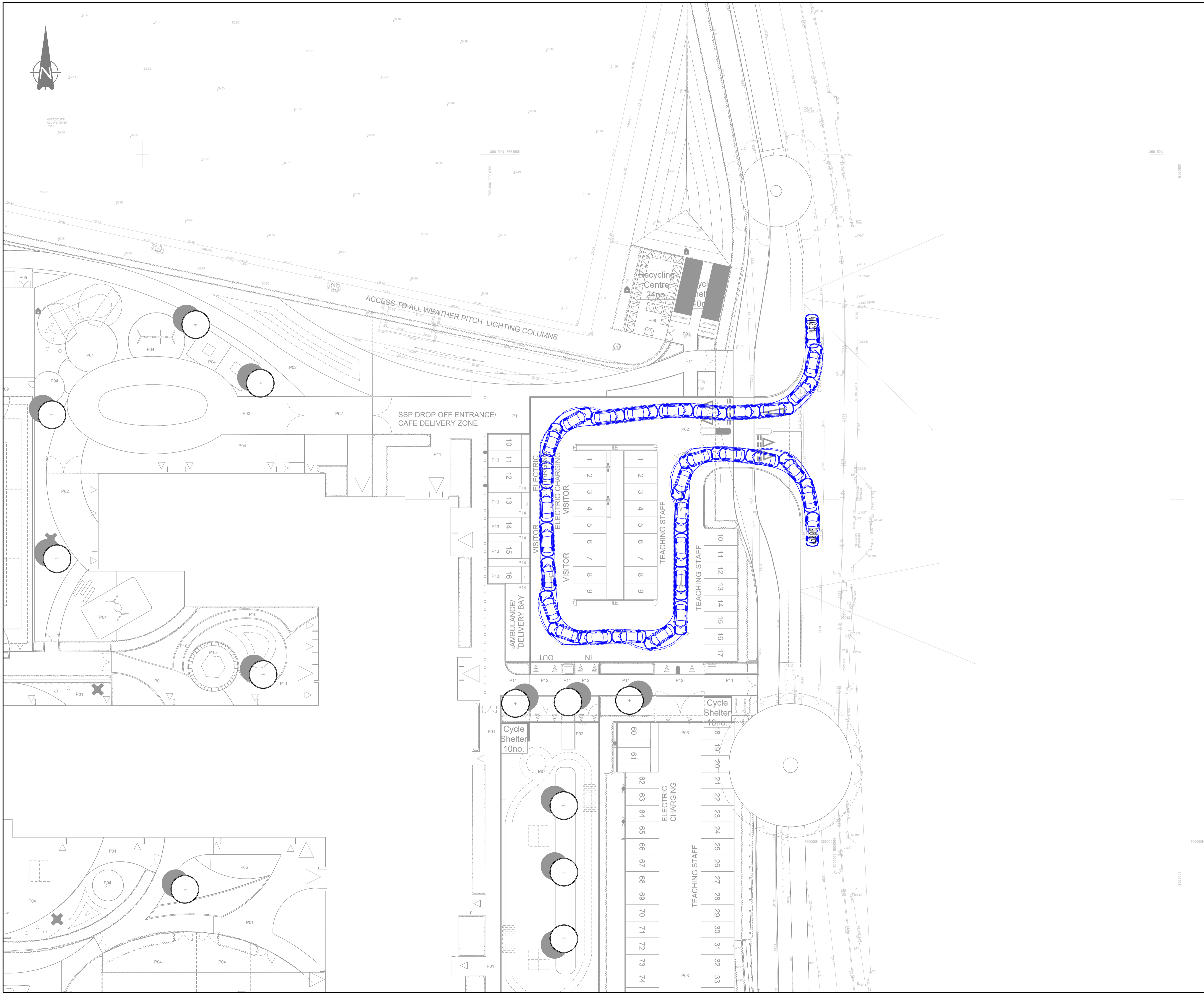
Project: **YSGOL PLAS BRONDYFRYRN**

Dirg Title: **SWEPT PATH ANALYSIS  
 FIRE TENDER**

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
079942	A1	21/01/22	HD	HD	JA
Scale: 1:500					

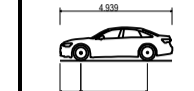
Project Code:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
YPB - CUR - 00 - XX - DR - D - 05003 - P06							

\\msb3\projects\17\079942\_100 - Ysgol Plas Brondyfrryn\04-Production\A-Moode Drawings\TP-CDD05



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Audi A8 (2018)	4899mm
Overall Length	2142mm
Overall Body Height	1471mm
Min Body Ground Clearance	142mm
Min Track Width	1575mm
Lock to Lock Time	4.05s
Lock to Lock Turning Radius	8.60m

P02	UPDATED LAYOUT	01/09/22	HD	DJ
Rev:	Description:	Date:	By:	Chkd:



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Project: **YSGOL PLAS BRONDYFRYRN**

Dwg Title: **SWEPT PATH ANALYSIS  
LARGE CAR**

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
079942	A1	21/01/22	HD	HD	JA
Scale: 1:250					

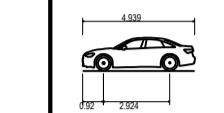
Project Code:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
YPB - CUR - 00 - XX - DR - D -						05004 - P02	

\\msb3\projects\17079942\_00 - Ysgol Plas Brondyfrryn\04-Production\A-Moode Drawings\TP\0005

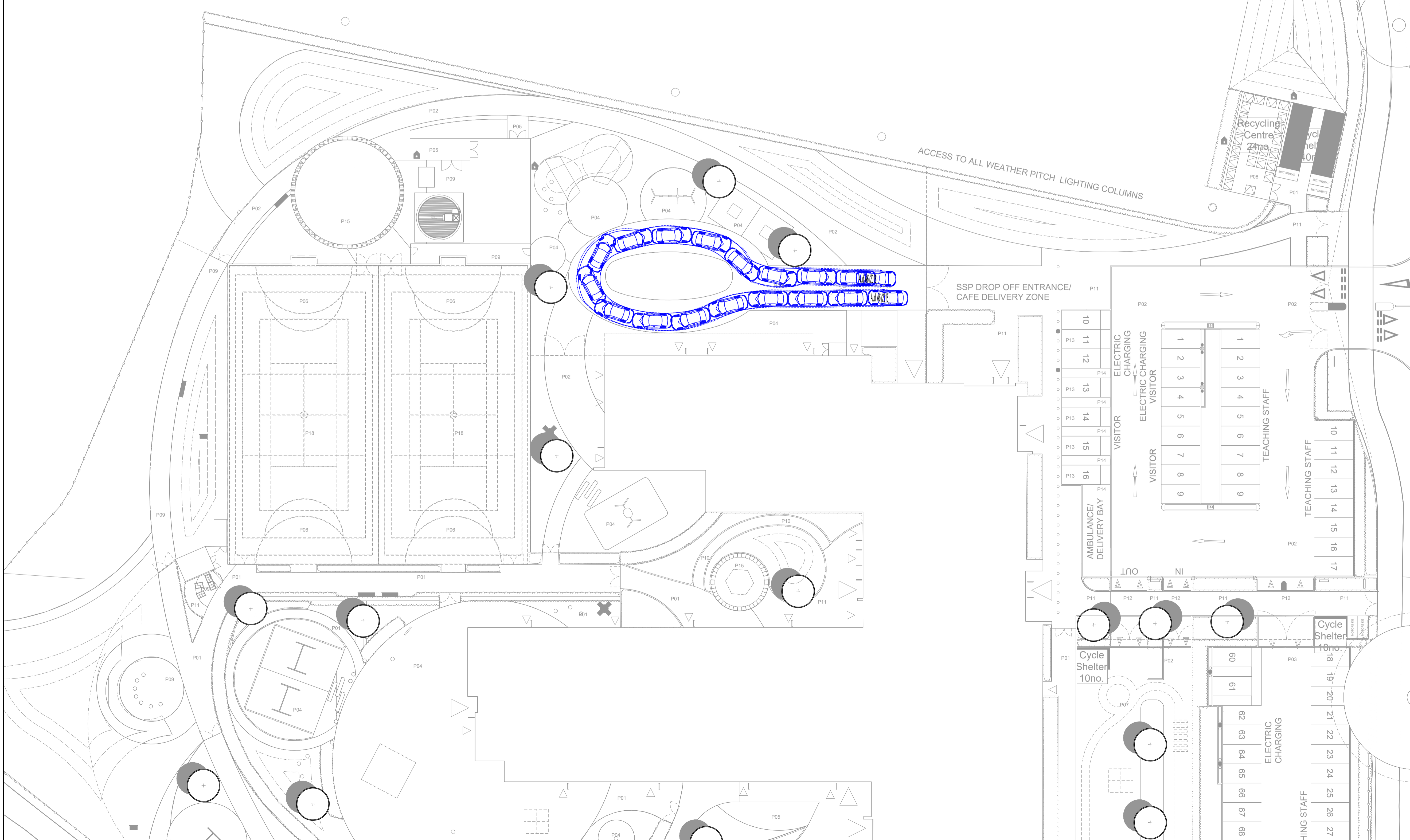


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Overall Length	4.99m
Overall Width	2.14m
Overall Body Height	1.43m
Max Body Clear Height	0.42m
Max Track Width	1.67m
Lock to Lock Rise	4.50m
Lock to Lock Turning Radius	5.90m



P03	UPDATED LAYOUT	01/09/22	HD	DJ
P02	UPDATED LAYOUT	24/08/22	HD	DJ

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Project: **YSGOL PLAS BRONDYFRYRN**

Dwg Title: **SWEPT PATH ANALYSIS  
LARGE CAR-DROP OFFS**

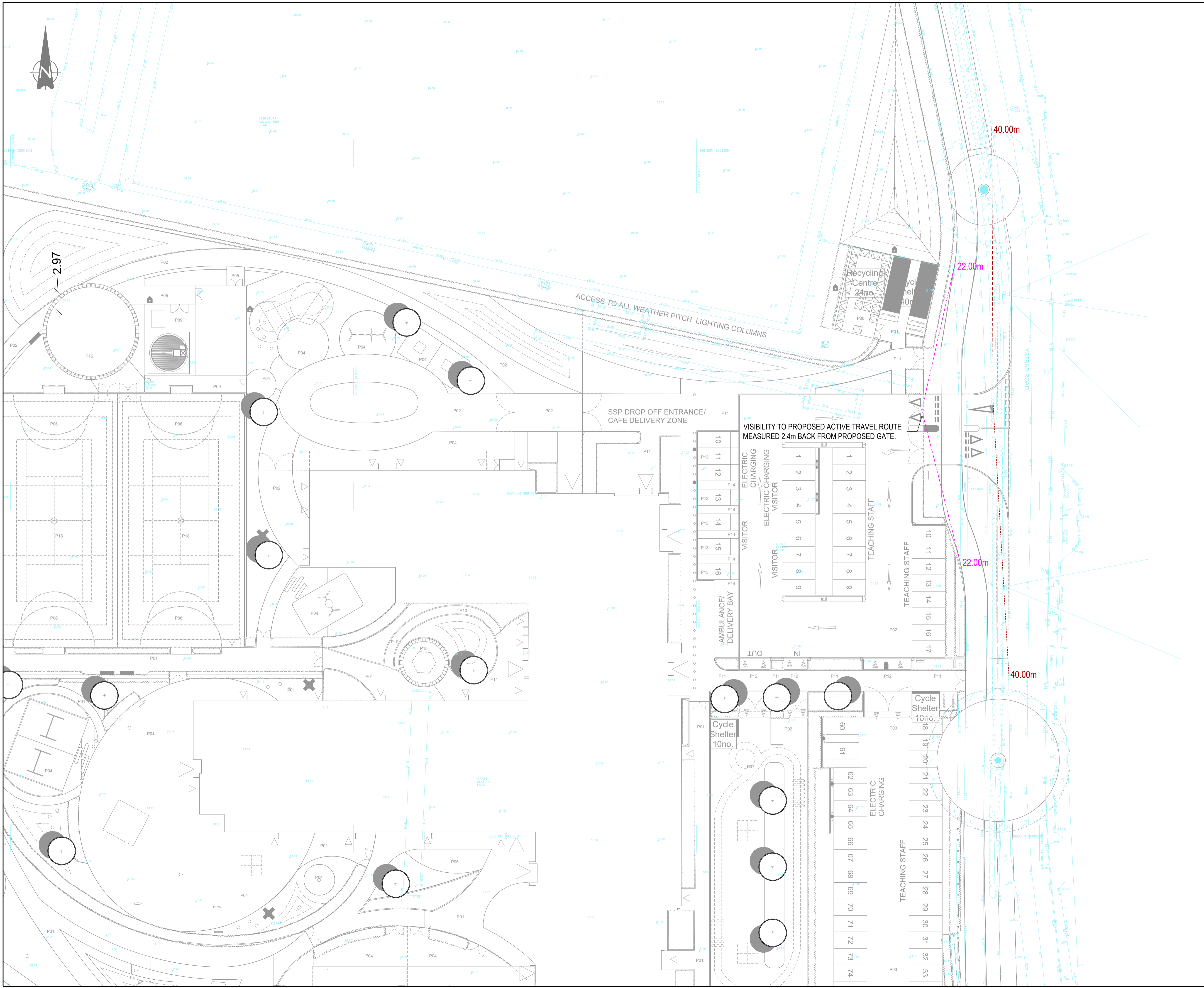
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079942	A1	31/01/21	HD	HD	JA

Scale: 1:250

Project Code:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
YPB - CUR - 00 - XX - DR - D -						05005 - P02	

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KEY:  
 -2.40 x 40.00m. 30mph VISIBILITY SPLAYS BASED ON TAN18 GUIDANCE  
 -2.40 x 22.00m. 20mph VISIBILITY SPLAYS TO PROPOSED ACTIVE TRAVEL ROUTE BASED ON TAN18 GUIDANCE

P03	UPDATED LAYOUT & VISIBILITY SPLAYS	02/09/22	HD	DJ
P02	UPDATED LAYOUT	24/05/22	HD	DJ
Rev:	Description:	Date:	By:	Chkd:



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Status: **PRELIMINARY**

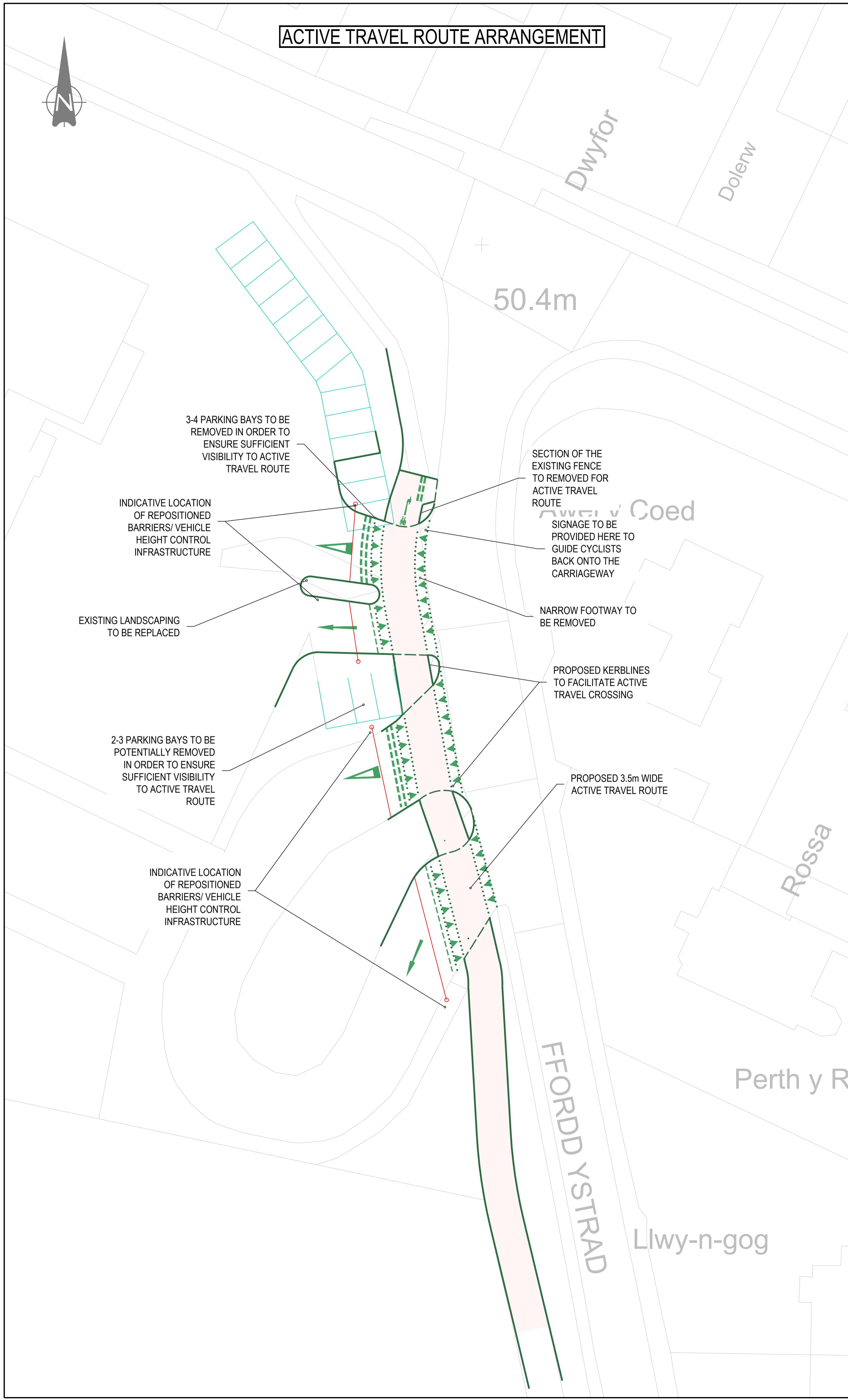
Project: **YSGOL PLAS BRONDYFRYRN**

Dwg Title: **ACCESS ARRANGEMENT VISIBILITY SPLAYS**

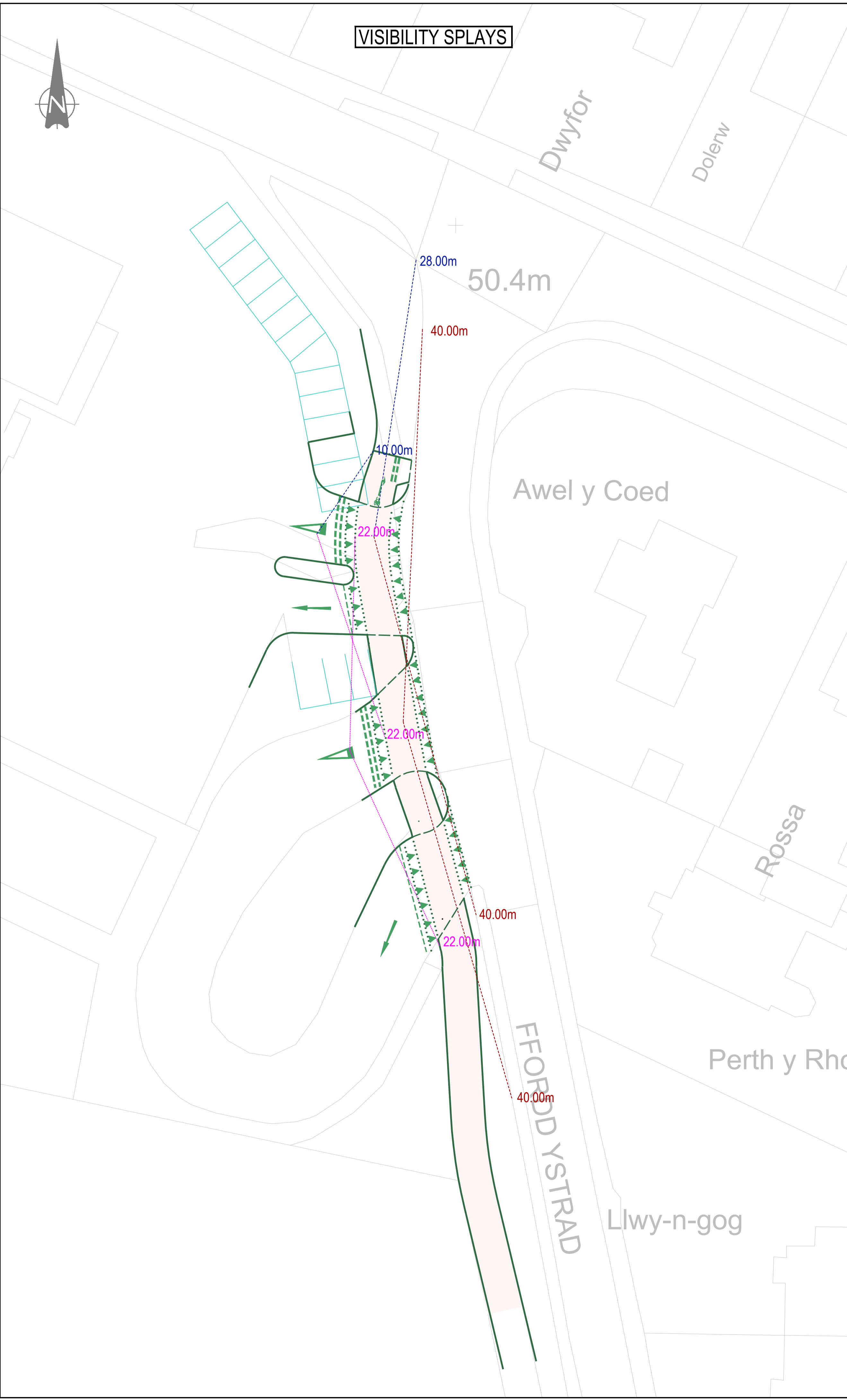
Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
079942	A1	23/02/22	JM	JM	JA
Project Code:	Originator:	Volume:	Level:	Type:	Role:
YPB - CUR - 00 - XX - DR - D - 75001 - P03					

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**ACTIVE TRAVEL ROUTE ARRANGEMENT**



**VISIBILITY SPLAYS**



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  3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
  4. FOR GENERAL NOTES REFER TO DRAWING.
  5. THE CONTENT OF THIS DRAWING IS FOR INDICATIVE INFORMATION ONLY AND NOT SUITABLE FOR CONSTRUCTION PURPOSES.
  6. THIS DRAWING HAS BEEN BASED ON AN OS DRAWING WITH LIMITED DETAIL AROUND THE EXISTING LEISURE CENTRE AND HIGH SCHOOL BUS ACCESS POINTS. EXISTING KERB LINES HAVE BEEN ALTERED AND PROVIDED INDICATIVELY TO ASSIST THE DESIGN. DEVELOPMENT A TOPOGRAPHIC SURVEY WILL BE REQUIRED AT FUTURE DESIGN STAGES TO PROVIDE GREATER ACCURACY WITH PARTICULAR REFERENCE TO THE NUMBER OF PARKING SPACES AFFECTED.

**KEY:**

- PROPOSED RAISED KERB
- PROPOSED FLUSH KERB / BACK OF FOOTWAY
- PROPOSED ROAD MARKINGS
- EXISTING FEATURES AMENDED USING SATELLITE IMAGE OVERLAY
- 20mph VISIBILITY SPLAYS TO PROPOSED ACTIVE TRAVEL ROUTE BASED ON TAN18 GUIDANCE
- 40mph VISIBILITY SPLAYS TO PROPOSED ACTIVE TRAVEL ROUTE BASED ON TAN18 GUIDANCE
- PROPOSED RAMP
- PROPOSED ACTIVE TRAVEL ROUTE

Rev:	Description:	Date:	By:	Chkd:

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**PRELIMINARY**

**YSGOL PLAS BRONDYFRYRN**

**ACCESS ARRANGEMENT  
LEISURE CENTRE**

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
079942	A1	16/03/22	HD	HD	JA

Scale: 1:250

Project Code:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
YPB - CUR - 00 - XX - DR - D -						75002 - P01	

**ALTERNATIVE ACTIVE TRAVEL ROUTE ARRANGEMENT**



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4. FOR GENERAL NOTES REFER TO DRAWING.
5. THE CONTENT OF THIS DRAWING IS FOR INDICATIVE INFORMATION ONLY AND NOT SUITABLE FOR CONSTRUCTION PURPOSES.
6. THIS DRAWING HAS BEEN BASED ON AN OS DRAWING WITH LIMITED DETAIL AROUND THE EXISTING LEISURE CENTRE AND HIGH SCHOOL BUS ACCESS POINTS. EXISTING KERB LINES HAVE BEEN ALTERED AND PROVIDED INDICATIVELY TO ASSIST THE DESIGN DEVELOPMENT. A TOPOGRAPHIC SURVEY WILL BE REQUIRED AT FUTURE DESIGN STAGES TO PROVIDE GREATER ACCURACY WITH PARTICULAR REFERENCE TO THE NUMBER OF PARKING SPACES AFFECTED.

KEY:

	PROPOSED RAISED KERB
	PROPOSED FLUSH KERB / BACK OF FOOTWAY
	PROPOSED ROAD MARKINGS

Rev:	Description:	Date:	By:	Chkd:
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Project: **YSGOL PLAS BRONDYFRRYN**

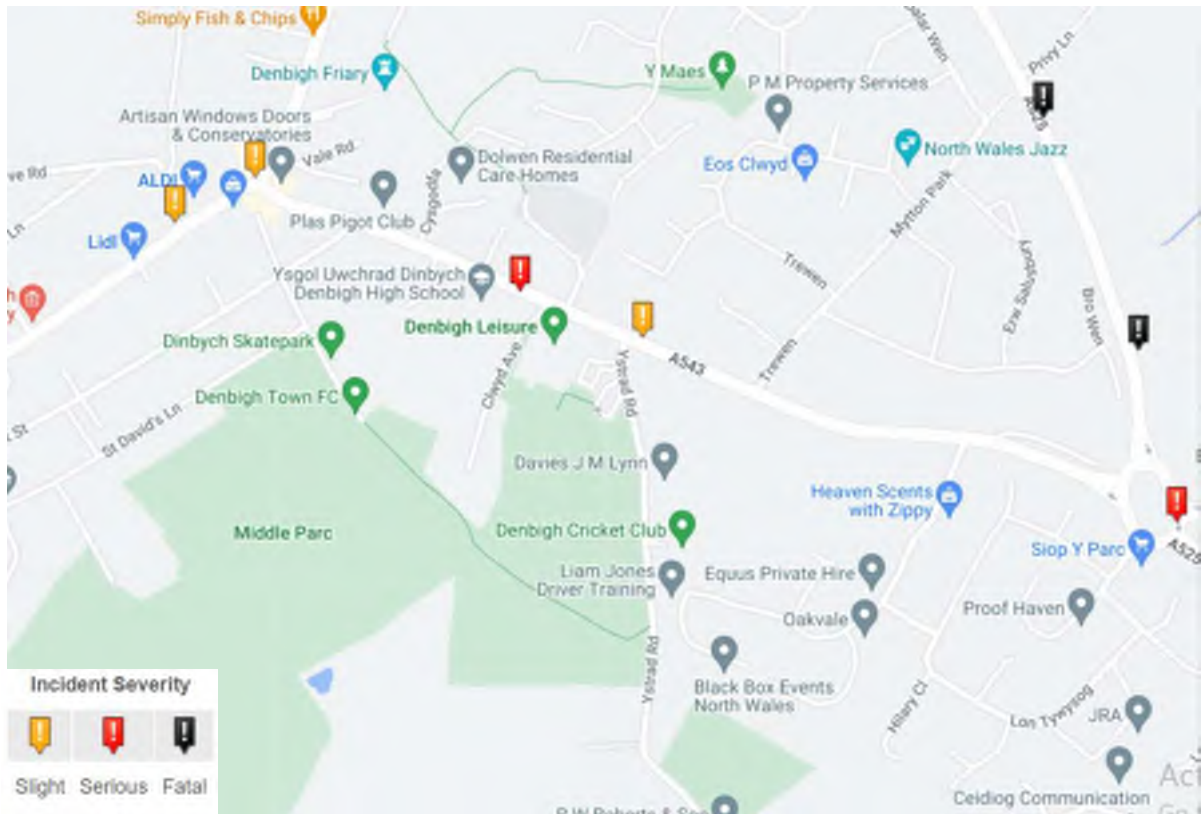
Dwg Title: **ACCESS ARRANGEMENT  
 LEISURE CENTRE-  
 ALTERNATIVE ROUTE**

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
079942	A1	07/09/22	HD	HD	DJ
Scale: 1:250					

Project Code:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
YPB - CUR - 00 - XX - DR - D -						75003 - P01	

\\fs03\pedads-1\p\079942-100-Ysgol Plas Brondyfrryn\04-Production\A-Moode-Drawing\TP-CAD\75

## Appendix A – Accident Data



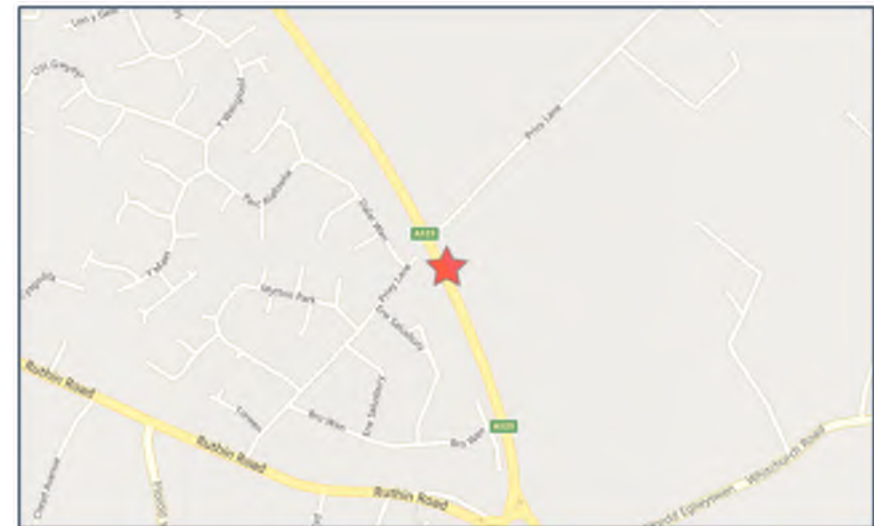




Validated Data

**Crash Date:** Saturday, April 21, 2018      **Time of Crash:** 10:45:00 PM      **Crash Reference:** 201860W051275

<b>Highest Injury Severity:</b>	Fatal	<b>Road Number:</b>	A525	<b>Number of Casualties:</b>	2
<b>Highway Authority:</b>	Denbighshire			<b>Number of Vehicles:</b>	1
<b>Local Authority:</b>	Denbighshire County			<b>OS Grid Reference:</b>	306642 366511
<b>Weather Description:</b>	Unknown				
<b>Road Surface Description:</b>	Dry				
<b>Speed Limit:</b>	60				
<b>Light Conditions:</b>	Darkness: no street lighting				
<b>Carriageway Hazards:</b>	None				
<b>Junction Detail:</b>	Not at or within 20 metres of junction				
<b>Junction Pedestrian Crossing:</b>	No physical crossing facility within 50 metres				
<b>Road Type:</b>	Single carriageway				
<b>Junction Control:</b>	Not Applicable				



For more information about the data please visit: [www.crashmap.co.uk/home/Faq](http://www.crashmap.co.uk/home/Faq)  
To subscribe to unlimited reports using CrashMap Pro visit [www.crashmap.co.uk/Home/Premium\\_Services](http://www.crashmap.co.uk/Home/Premium_Services)



**Validated Data**

**Vehicles involved**

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	-1	Male	26 - 35	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Unknown	None	Tree

**Casualties**

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Fatal	Driver or rider	Male	26 - 35	Unknown or other	Unknown or other
1	2	Fatal	Vehicle or pillion passenger	Male	26 - 35	Unknown or other	Unknown or other

For more information about the data please visit: [www.crashmap.co.uk/home/Faq](http://www.crashmap.co.uk/home/Faq)

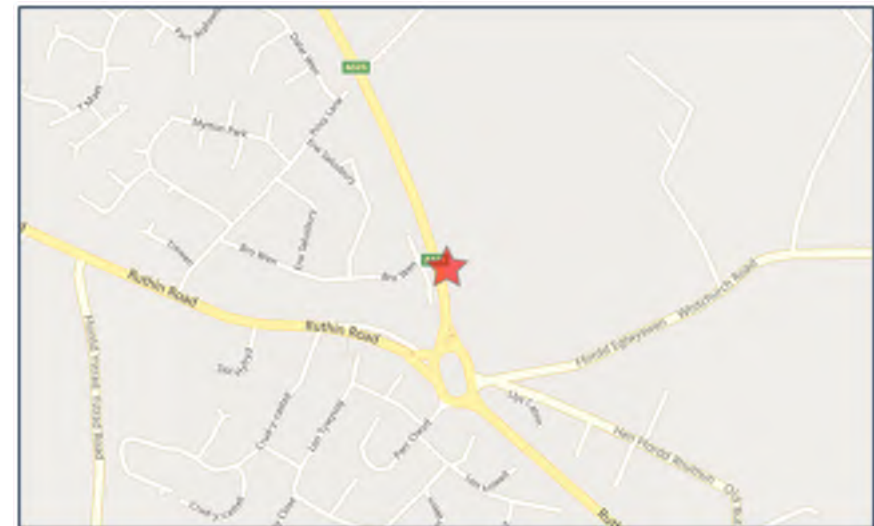
To subscribe to unlimited reports using CrashMap Pro visit [www.crashmap.co.uk/Home/Premium\\_Services](http://www.crashmap.co.uk/Home/Premium_Services)



**Validated Data**

**Crash Date:** Friday, August 04, 2017      **Time of Crash:** 7:15:00 AM      **Crash Reference:** 201760V117409

<b>Highest Injury Severity:</b>	Fatal	<b>Road Number:</b>	A252	<b>Number of Casualties:</b>	1
<b>Highway Authority:</b>	Denbighshire			<b>Number of Vehicles:</b>	1
<b>Local Authority:</b>	Denbighshire County			<b>OS Grid Reference:</b>	306742 366256
<b>Weather Description:</b>	Fine without high winds				
<b>Road Surface Description:</b>	Dry				
<b>Speed Limit:</b>	60				
<b>Light Conditions:</b>	Daylight: regardless of presence of streetlights				
<b>Carriageway Hazards:</b>	None				
<b>Junction Detail:</b>	Not at or within 20 metres of junction				
<b>Junction Pedestrian Crossing:</b>	No physical crossing facility within 50 metres				
<b>Road Type:</b>	Single carriageway				
<b>Junction Control:</b>	Not Applicable				



For more information about the data please visit: [www.crashmap.co.uk/home/Faq](http://www.crashmap.co.uk/home/Faq)  
To subscribe to unlimited reports using CrashMap Pro visit [www.crashmap.co.uk/Home/Premium\\_Services](http://www.crashmap.co.uk/Home/Premium_Services)



**Validated Data**

**Vehicles involved**

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Manoeuvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Motorcycle over 500cc	-1	Male	56 - 65	Vehicle proceeding normally along the carriageway, not on a bend	Front	Unknown	None	Road sign/Traffic signal

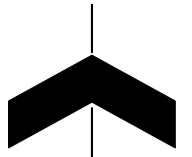
**Casualties**

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Fatal	Driver or rider	Male	56 - 65	Unknown or other	Unknown or other

For more information about the data please visit: [www.crashmap.co.uk/home/Faq](http://www.crashmap.co.uk/home/Faq)

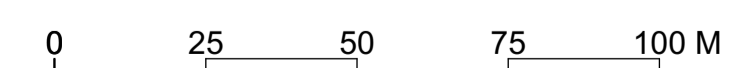
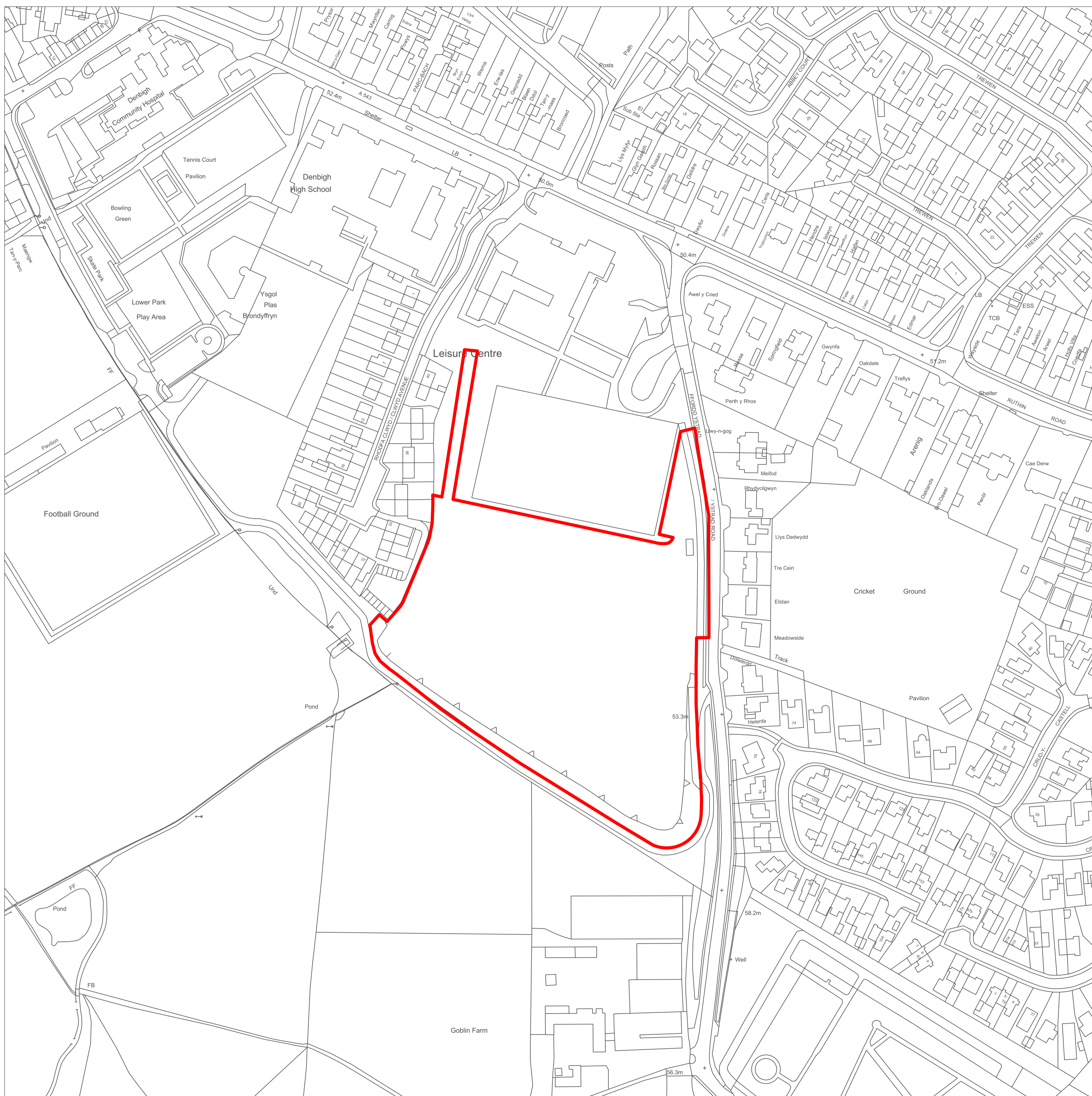
To subscribe to unlimited reports using CrashMap Pro visit [www.crashmap.co.uk/Home/Premium\\_Services](http://www.crashmap.co.uk/Home/Premium_Services)

## Appendix B – Proposed Site Layout



**NOTE**

1. Do not scale from this drawing.
2. All dimensions are in meters unless otherwise noted.
3. Information shown outside extent of works is for illustrative purposes only.
4. To be read in conjunction with all other Landscape Architect's drawings.
5. Drawings YPB-ALA-00-XX-DR-L-00000 Series.
6. Details YPB-ALA-00-XX-DR-L-10000 Series.
7. NBS - YPB-ALA-00-XX-SP-L-00002
8. MMP - YPB-ALA-00-XX-RP-L-00001
9. To be read in conjunction with all other discipline's drawings and specifications.
10. Specification and details of build ups to paving, kerbs, edges and structures to be advised by Project Civil Engineer.
11. All subsides to retaining features, walls to Project Engineers details.
12. Formations levels are to be inspected and approved by the Project Engineer.
13. Highway works by others, cross over and carpark, please refer to Civils package.
14. Drainage design, manhole cover positions & final levels to be coordinated with Drainage Engineers.
15. Lighting design, to be coordinated with M&E details, columns are shown for coordination only.
16. Landscape contractor is responsible for all area take offs. Any areas or quantities shown are for information only. Plant numbers should account for slopes/gradients.
17. Plant substitutions require approval from Landscape Architect / Client due to safeguarding and health and safety issues in relation to SEND client requirements.
18. Any work to existing trees to be carried out by a suitability qualified Tree Surgeon; All work to be carried out in accordance with AMS. Tree Consultant to advise on all issues regarding works in relation to trees.
19. The following elements are intended to be specialist design packages, subcontractor / specialist to submit drawings for approval prior to procurement and manufacture: a. street furniture b. canopies c. cycle stores d. metalwork package fencing, e. gates etc. Access control to be coordinated by M&E Consultant tbc by School. Sports furniture and finishes.
20. The following elements are intended to be specialist design packages, subcontractor / specialist designer to submit drawings for approval prior to procurement and manufacture: a. all street furniture b. external classroom canopies c. cycle store d. metalwork package including all fencing, handrails, gates etc. Access control / Gate sitting to be coordinated with WCU / M&E Consultant tbc by School & OCC. sports furniture / finishes / Jmemarkings. All specialists to submit drawings for approval prior to procurement and manufacture and ensure these are designed in accordance with all relevant BS Standards and Guidance.
21. The contractor is to check all setting out information, levels and dimensions before construction. Any discrepancies are to be brought to the attention of Ares Landscape Architects before commencing on site.
22. Refer to designer risk assessment for details in relation to safeguarding / security issues due to SEND client requirements.
23. Site clearing works as per Ecological and Arboricultural reports.
24. Topsoil / Subsoil stripping to be carried out in accordance with Arboricultural Input for site strip, storage, remediation and repositioning on site. To be carried out in accordance with the Wates Soft Work Manual.
25. Provide small gaps of at least 15cm x 15cm at designated points under all boundary fences to allow movement of small mammals/hedgehogs. These are indicatively shown on the sustainability and biodiversity plans YPB-ALA-00-XX-DR-L-00029 in 11No. locations.
26. Incoming services, meter, substations to MEP Information. Please refer to their package for detailed layouts.
27. Drainage design by Drainage Engineer, please refer to Curtins information.



**KEY**



**RESIDUAL PROJECT RISKS**

ID	RISK	MITIGATION	DATE MITIGATED

**REVISIONS**

DATE	REV	DESCRIPTION OF REVISION	DRAWN BY	APPROVED BY
30/08/2022	P07	Issued for Planning	KP	
30/08/2022	P06	Response to clarification tracker 160822	KP	
04/07/2022	P05	1. Red Line Amended to Suit Client Comments	KP	KS

**STATUS**

**S2 - FOR PLANNING**

**ares**  
LANDSCAPE ARCHITECTS

Ares Landscape Architects LTD  
Gatecrasher,  
51 Eyre Lane  
Sheffield  
S1 4RB  
t: 0114 276 2000  
e: hello@aresdesign.co.uk  
w: ares.eu.com

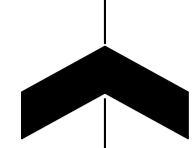
CLIENT:  
**Wates Construction Ltd**

PROJECT TITLE:  
**Ysgol Plas Brondyffryn SEN**

DRAWING TITLE:  
**Site Location Plan**

DRAWING SCALE: 1:1250	DRAWN BY: KP	DRAWN DATE: 20/01/2022
PAPER SIZE: A1	APPROVED BY: KS	ALA PROJECT CODE: ALAT25

DRAWING NUMBER: <b>YPB-ALA-00-XX-DR-L-00001</b>	STATUS: <b>S2</b>	REVISION: <b>P07</b>
--	----------------------	-------------------------



**NOTE**

1. Do not scale from this drawing.
2. All dimensions are in meters unless otherwise noted.
3. Information shown outside extent of works is for illustrative purposes only.
4. To be read in conjunction with all other Landscape Architects drawings. Drawings YPB-ALA-XX-XX-DR-L-0000 Series, Details YPB-ALA-XX-XX-DR-L-10000 Series, NBS - YPB-ALA-XX-XX-SP-L-00002 MMP - YPB-ALA-XX-XX-RP-L-00001
5. To be read in conjunction with all other disciplines drawings and specifications.
6. Specification and details of built ups to paving, kerbs, edges and structures to be advised by Project Civil Engineer.
7. All subspaces to retaining features, walls to Project Engineers details.
8. Formations levels are to be inspected and approved by the Project Engineer.
9. Highway works by others, cross over and carpark please refer to Civils package.
10. Drainage design, manhole cover positions & final levels to be coordinated with Drainage Engineers
11. Lighting design, to be coordinated with M&E details, columns are shown for coordination only.
12. Landscape contractor is responsible for all area take offs. Any areas or quantities shown are for information only. Plant numbers should account for slopes/gradients.
13. Plant substitutions require approval from Landscape Architect / Client due to safeguarding and health and safety issues in relation to SEND client requirements.
14. Any work to existing trees to be carried out by a suitably qualified Tree Surgeon. All work to be carried out in accordance with AMS. Tree Consultant to advise on all issues regarding works in relation to trees.
15. The following elements are intended to be specialist design packages, subcontractor / specialist to submit drawings for approval prior to procurement and manufacture: a. street furniture b. canopies c. cycle stores d. metalwork package fencing, e. gates etc. Access control to be coordinated by M&E Consultant tbc by School. Sports furniture and finishes.
16. The following elements are intended to be specialist design packages, subcontractor / specialist designer to submit drawings for approval prior to procurement and manufacture: a. all street furniture b. external classroom canopies c. cycle store d. metalwork package including all fencing, handrails, gates etc. Access control / Gate seating to be coordinated with VCL / M&E Consultant tbc by School & DCC, sports furniture / finishes / line markings. All specialists to submit drawings for approval prior to procurement and manufacture and ensure these are designed in accordance with all relevant BS Standards and Guidance.
17. The contractor is to check all setting out information, levels and dimensions before construction. Any discrepancies are to be brought to the attention of Ares Landscape Architects before commencing on site.
18. Refer to designer risk assessment for details in relation to safeguarding / security issues due to SEND client requirements.
19. Site clearing works as per Ecological and Arboricultural reports.
20. Topsoil / Subsoil stripping to be carried out in accordance with Arboricultural Input for site strip, storage, remediation and repositioning on site. To be carried out in accordance with the Wales Soft Work Manual.
21. Provide small gaps of at least 15cm x 15cm at designated points under all boundary fences to allow movement of small mammals/hedgehogs. These are indicated on the sustainability and biodiversity plans YPB-ALA-00-XX-DR-L-00029 in 11No. locations.
22. Incoming services, meter, substations to MEP Information. Please refer to their package for detailed layouts.
23. Drainage design by Drainage Engineer, please refer to Curtins information.



- Furniture**  
Refer to General Arrangement Ref: YPB-ALA-00-XX-DR-L-00004 and Detail Ref: YPB-ALA-00-XX-DR-L-10000
- Cycle Shelter
  - Trike/Scooter Storage
  - External Shed
  - Wooden Shelter
  - Shade sail
  - Play Equipment
  - Wayfinding signage
  - Raised Planter
  - Picnic bench
  - Bench Seating
  - Electric Car Charging Point
  - Bollards
  - Door Protection Barrier
  - Parking Entrance Build Out Concrete Block Paving
  - Parking Islands Concrete Block Paving
  - Habitat Houses Refer to Sustainability and Biodiversity drawings YPB-ALA-00-XX-DR-L-00029
- Fencing and Structures**  
Refer to Boundary Treatment Ref: YPB-ALA-00-XX-DR-L-00005
- Fencing
  - Gates

- KEY**
- Site**
- Planning Application Boundary
  - Proposed Building
  - Proposed Canopy/ Building Overhang
  - Proposed Main Entrance
  - Proposed Classroom Entrance
  - Proposed Plant Room Entrance
  - Existing Tree
  - Existing Hedge
  - Existing Vegetation Removed to Facilitate Development
  - Existing Floodlighting Columns for Neighbouring Leisure Centre All Weather Pitch (AWP)
  - Existing Retaining Wall
- Planting**  
Refer to Planting Strategy Ref: YPB-ALA-00-XX-DR-L-00015
- Proposed Tree
  - Anemity Lawn
  - Anemity Planting
  - Sensory Planting
  - Hedge Planting
  - Meadow Planting
  - Swale Meadow Planting
  - Woodland Planting
  - Green Screen 'Fedge'
- Paving**  
Refer to General Arrangement Ref: YPB-ALA-00-XX-DR-L-00004
- Pedestrian Macadam
  - Vehicular Macadam
  - Permeable Macadam
  - Wetpou safety surface
  - Reinforced Grass
  - MUGA Permeable Surface
  - Play Markings
  - Concrete Pad
  - Self binding gravel
  - Cobbled sensory path
  - Concrete Block Paving

ID	RISK	MITIGATION	DATE MITIGATED
<b>RESIDUAL PROJECT RISKS</b>			

DATE	REV	DESCRIPTION OF REVISION	DRAWN BY	APPROVED BY
30/08/2022	P10	Issued for Planning	KP	KS
18/08/2022	P11	Response to clarification tracker 150822 - 1. Emergency access out of site added. 2. Entrance gate reversed direction. 3. Bollard added for EV charging. 4. Ambulance bay made larger. 5. Drop off zone signage changed to 'in' and 'out'. 6. One way system in car park with white living arrows. 7. Bed line amended to suit client comments	KP	KS

**REVISIONS**

**STATUS**  
**S2 - FOR PLANNING**

**ares**  
LANDSCAPE ARCHITECTS

Ares Landscape Architects LTD  
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CLIENT:  
**Wates Construction Ltd**

PROJECT TITLE:  
**Ysgol Plas Brondyffryn SEN**

DRAWING TITLE:  
**Landscape Illustrative Masterplan**

DRAWING SCALE: 1:500  
PAPER SIZE: A1

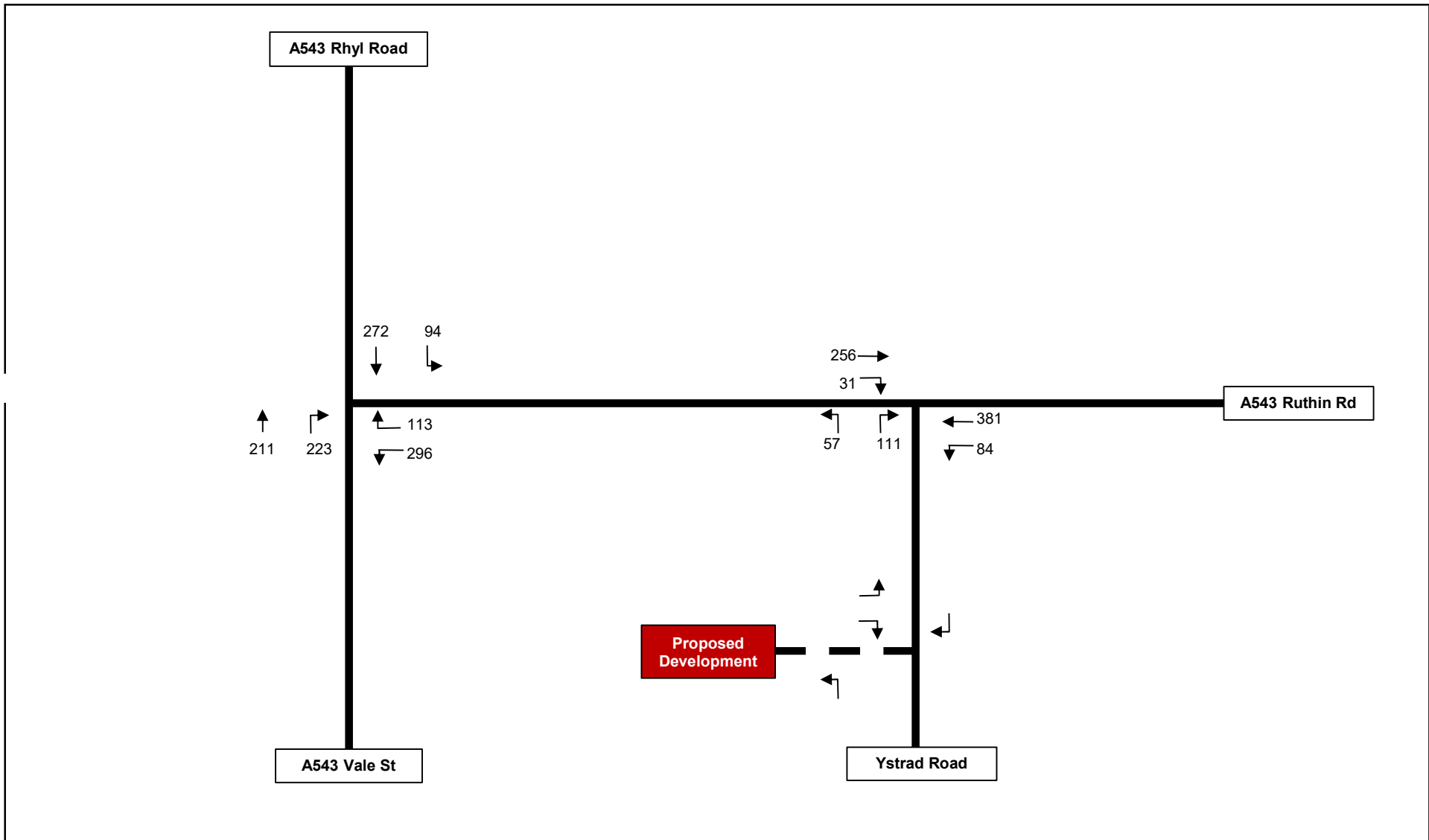
DRAWN BY: KP  
APPROVED BY: KS


DRAWN DATE: 24/01/2022  
ALA PROJECT CODE: ALAT25

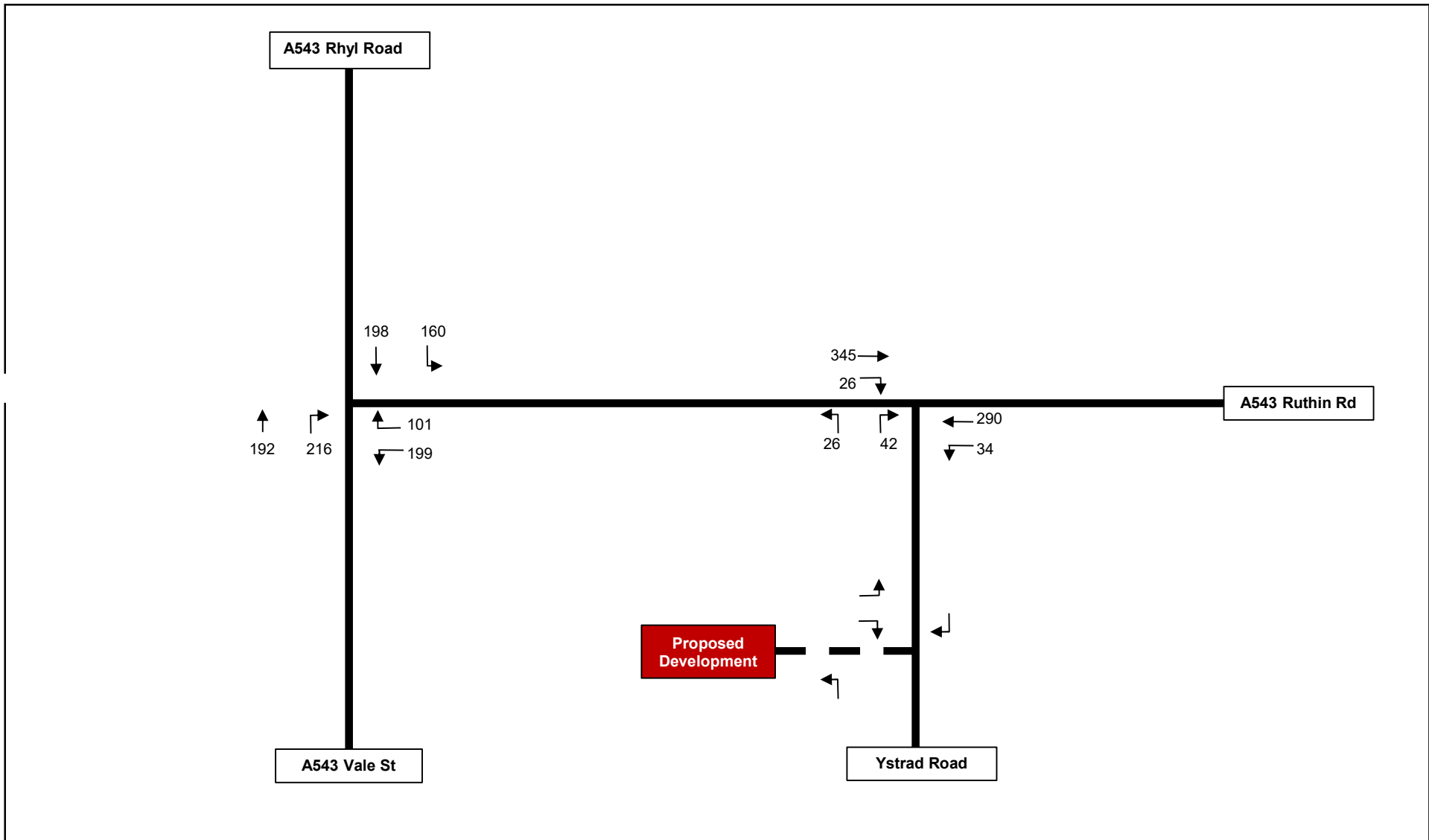
DRAWING NUMBER: **YPB-ALA-00-XX-DR-L-00003**  
STATUS: **S2**  
REVISION: **P10**


## Appendix C – Network Diagrams

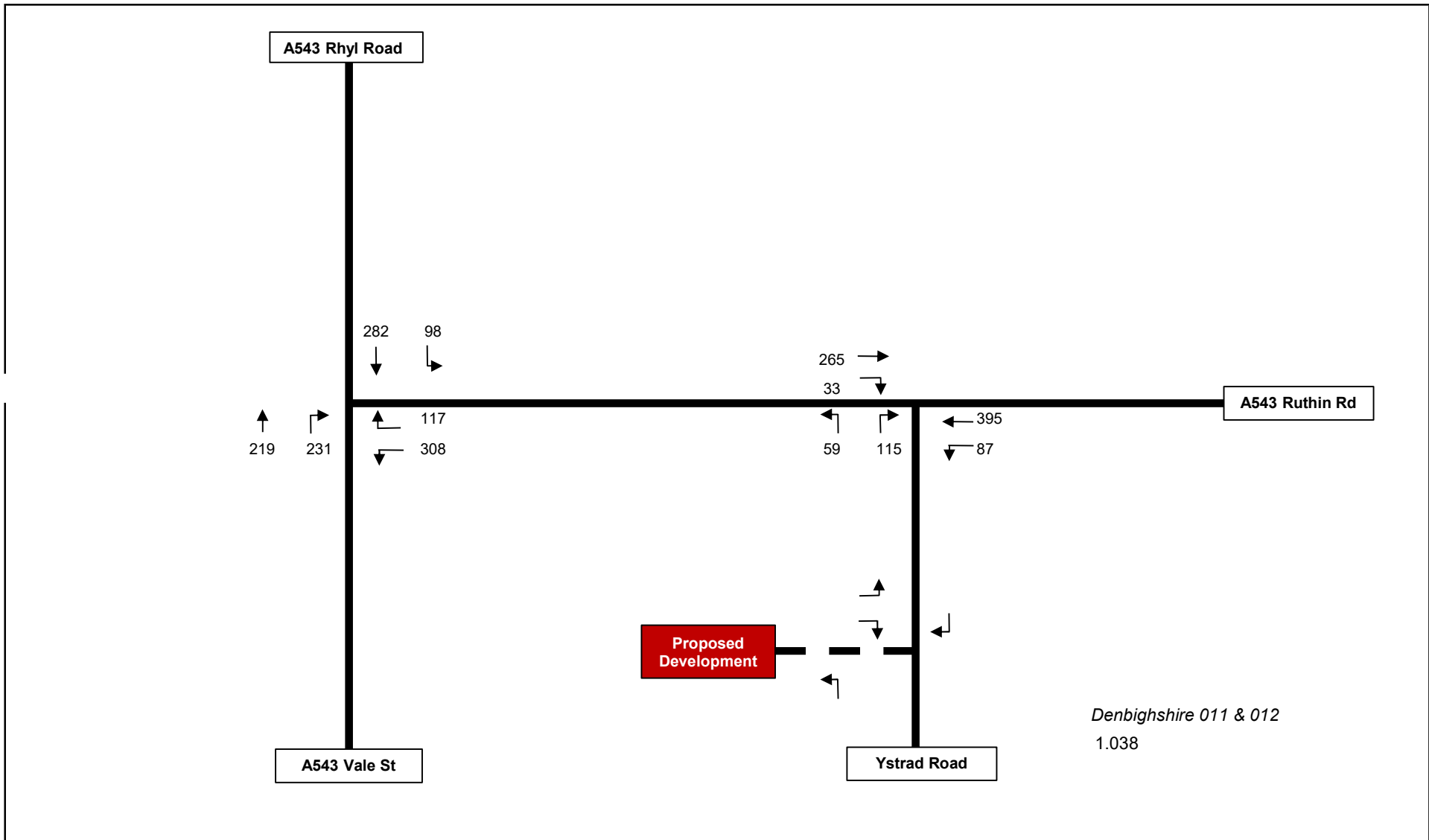





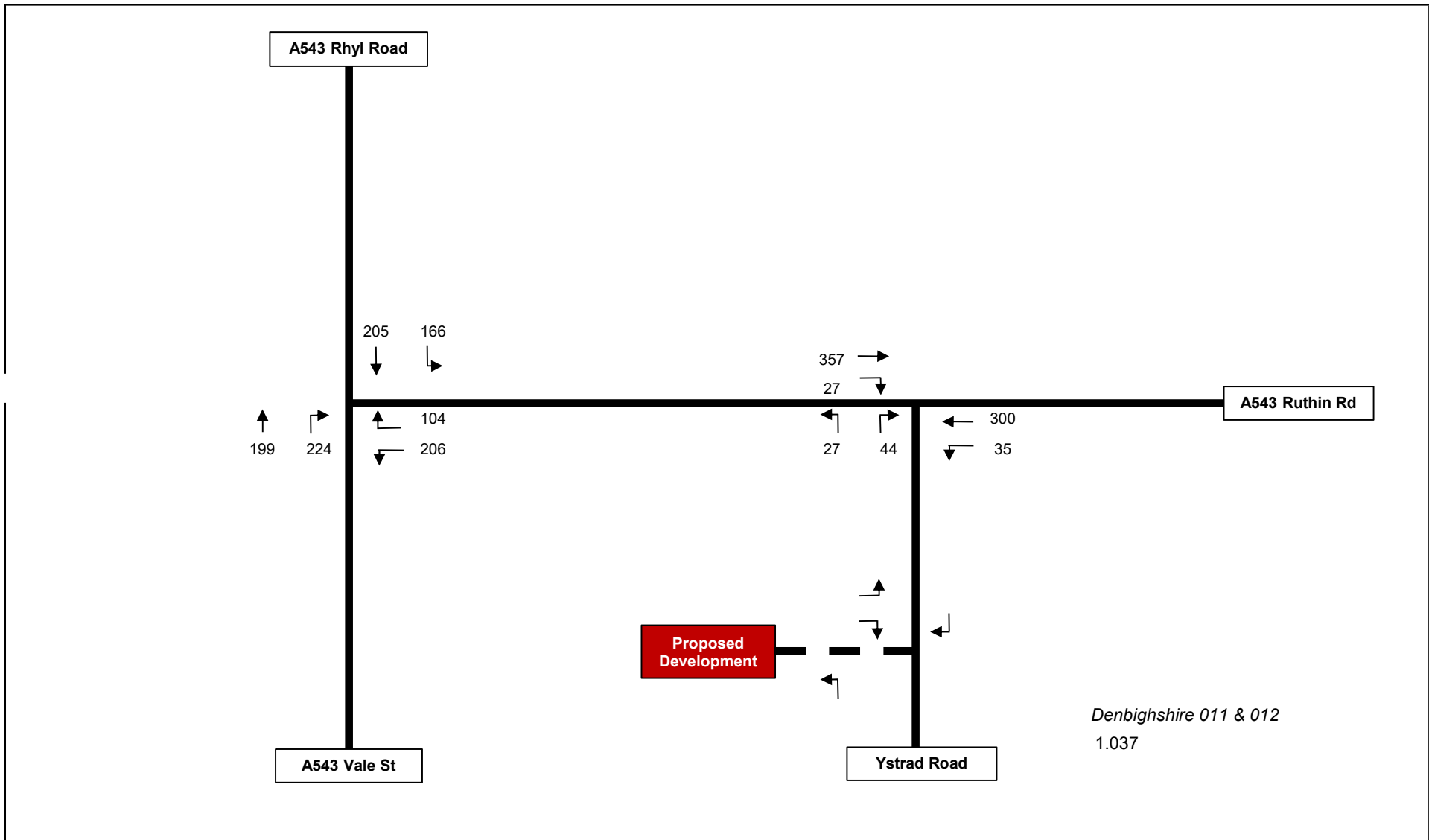
	<b>2022 Weekday AM Survey Flows (PCU Flows)</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 1</b>	




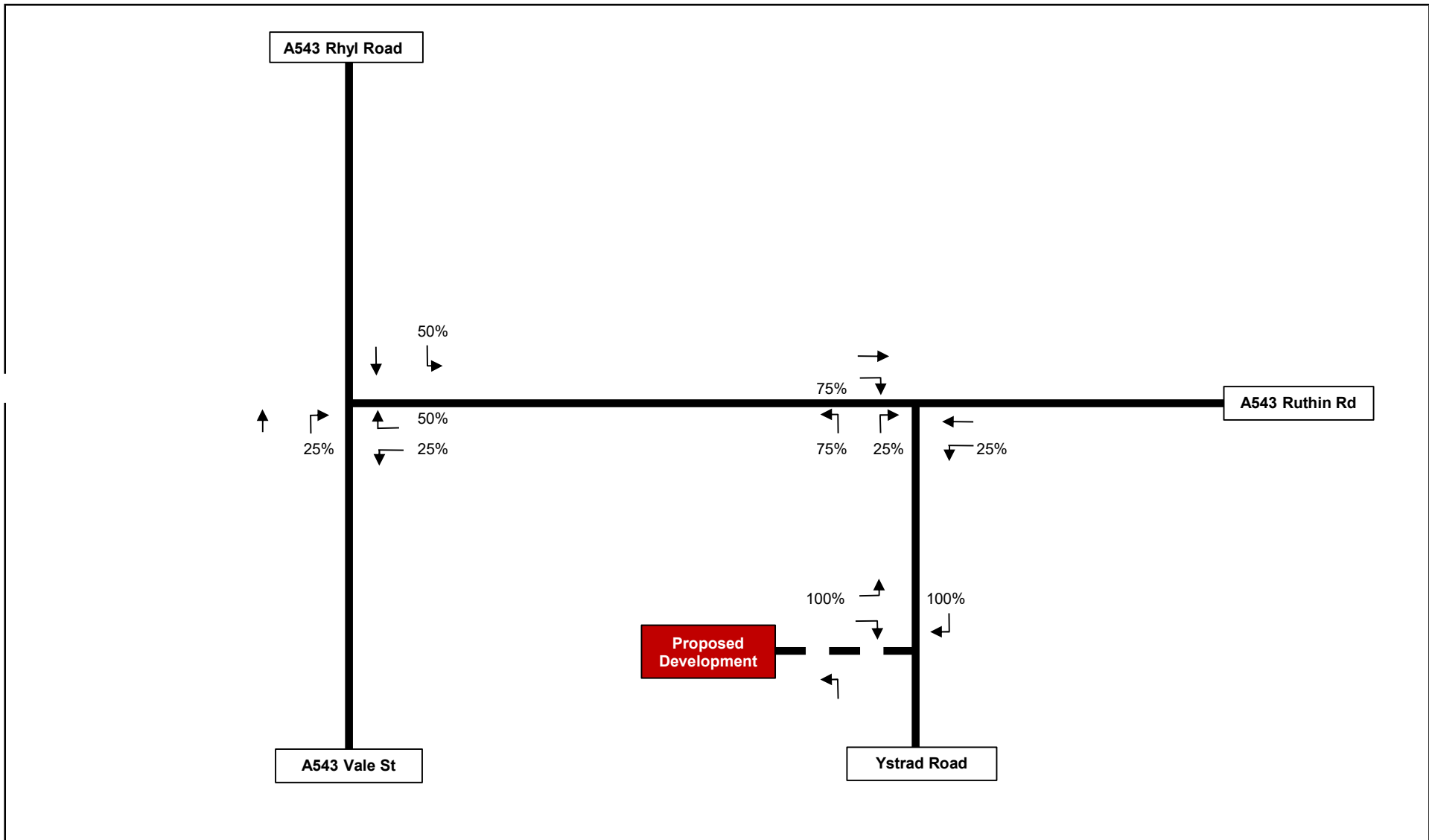
	<b>2022 Weekday PM Survey Flows (PCU Flows)</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 2</b>	




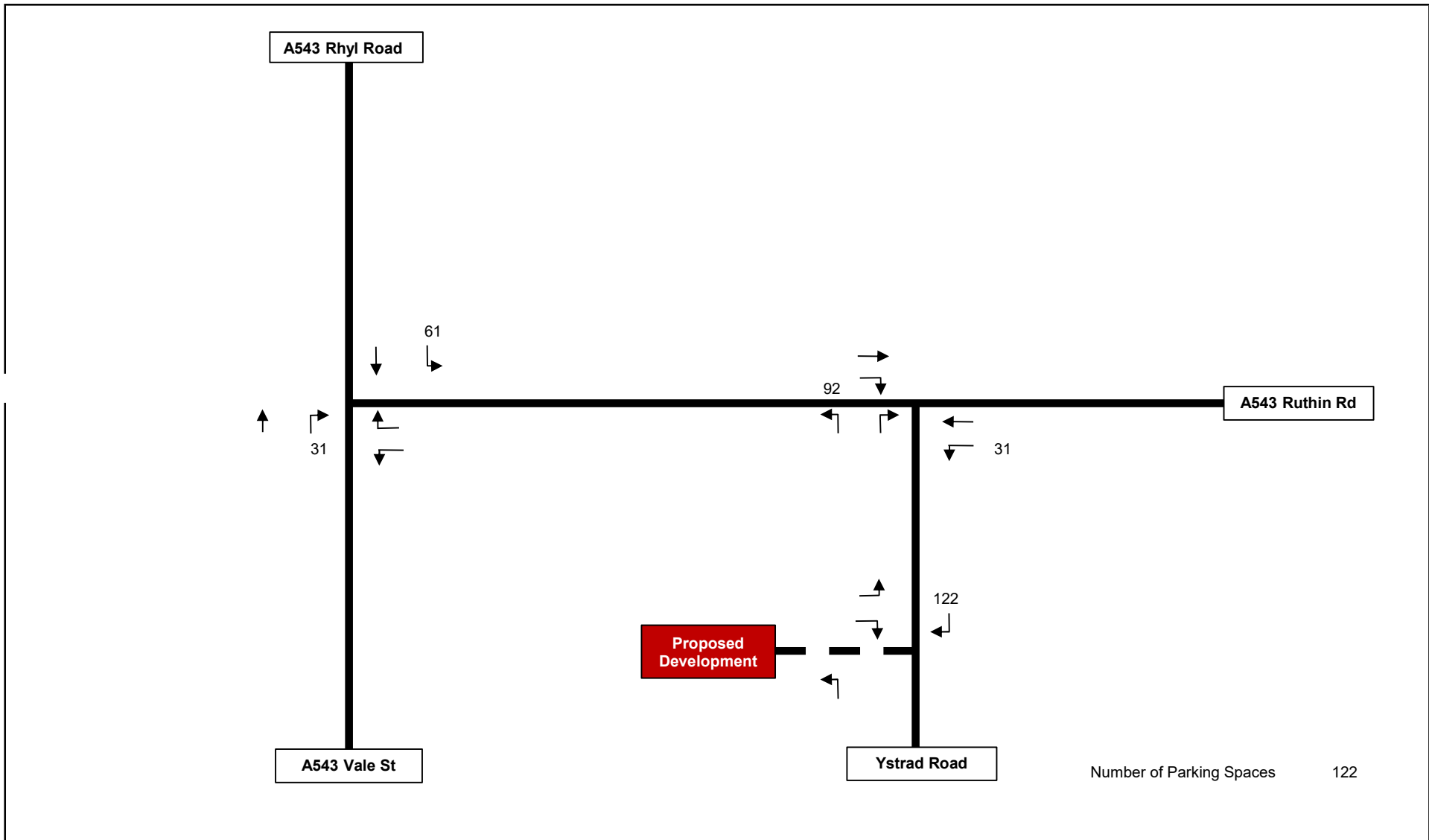
	<b>2027 Weekday AM Base Flows (PCU Flows)</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 3</b>	




	<b>2027 Weekday PM Base Flows (PCU Flows)</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 4</b>	

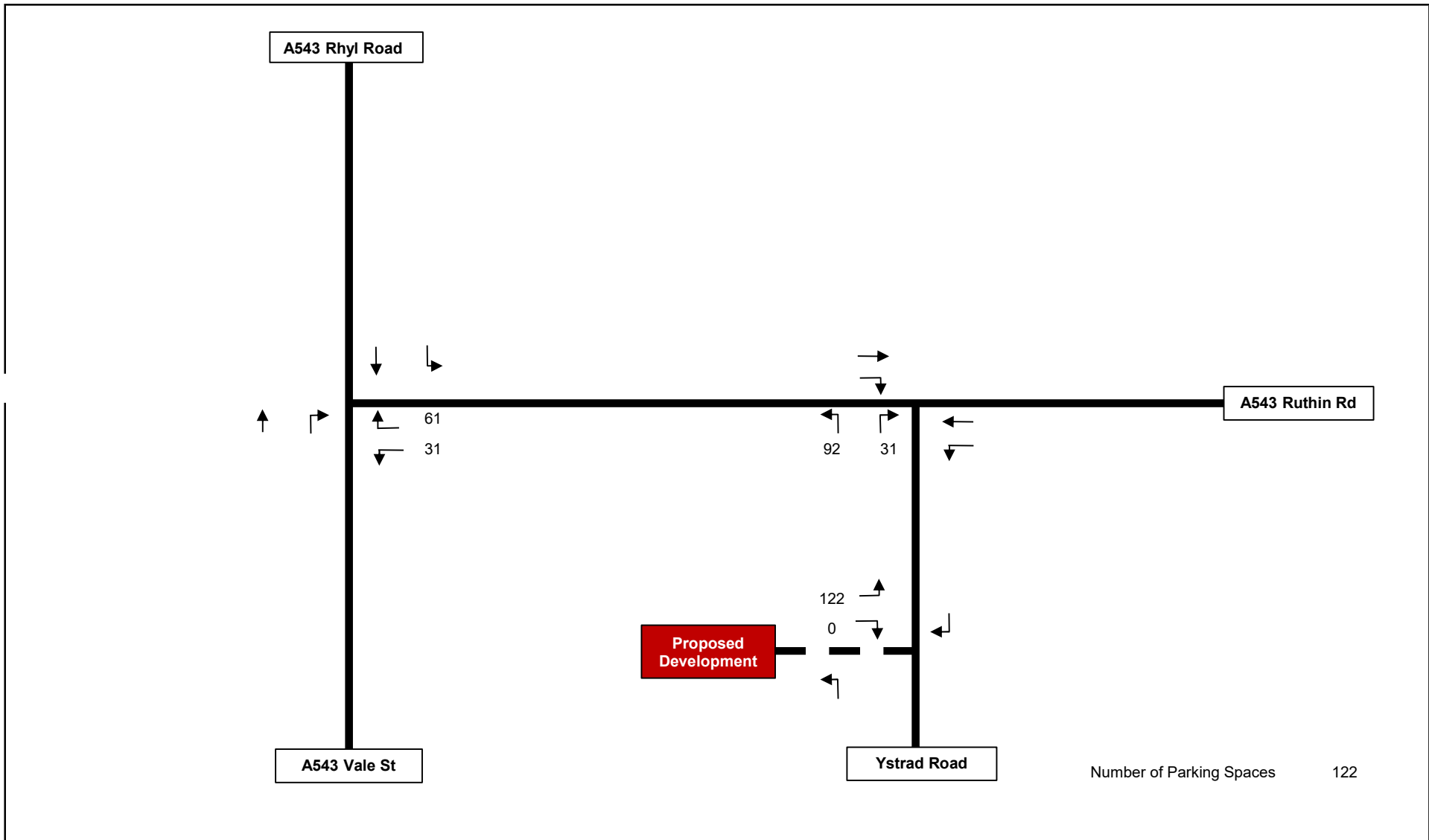



	<b>Trip Distribution</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 5</b>	

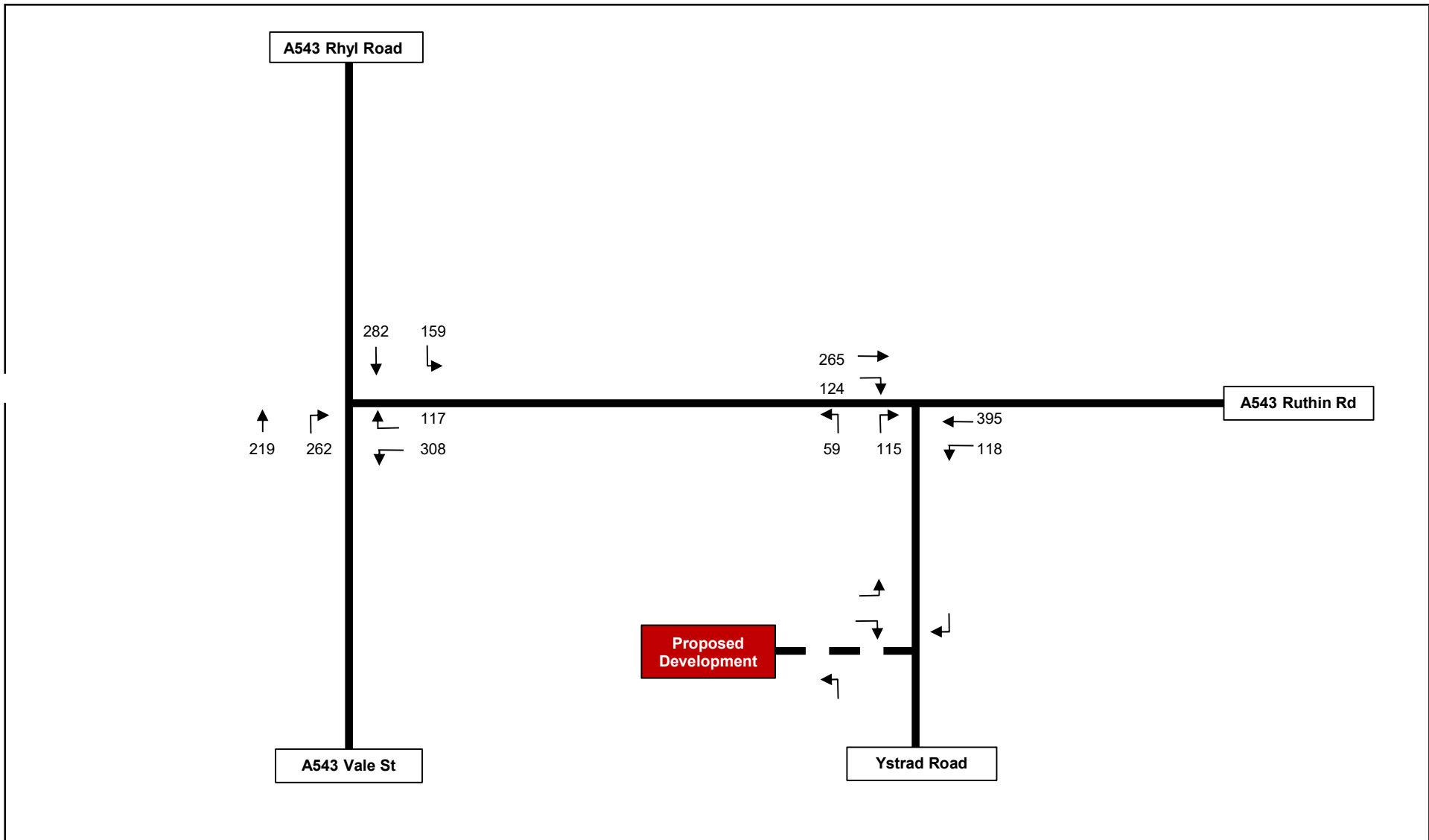


Number of Parking Spaces 122

	<p>Trip Generation AM Peak</p>	<p>24/05/2022</p>	<p>079942</p>
	<p>Ysgol Plas Brondyffryn</p>	<p>Figure 6</p>	

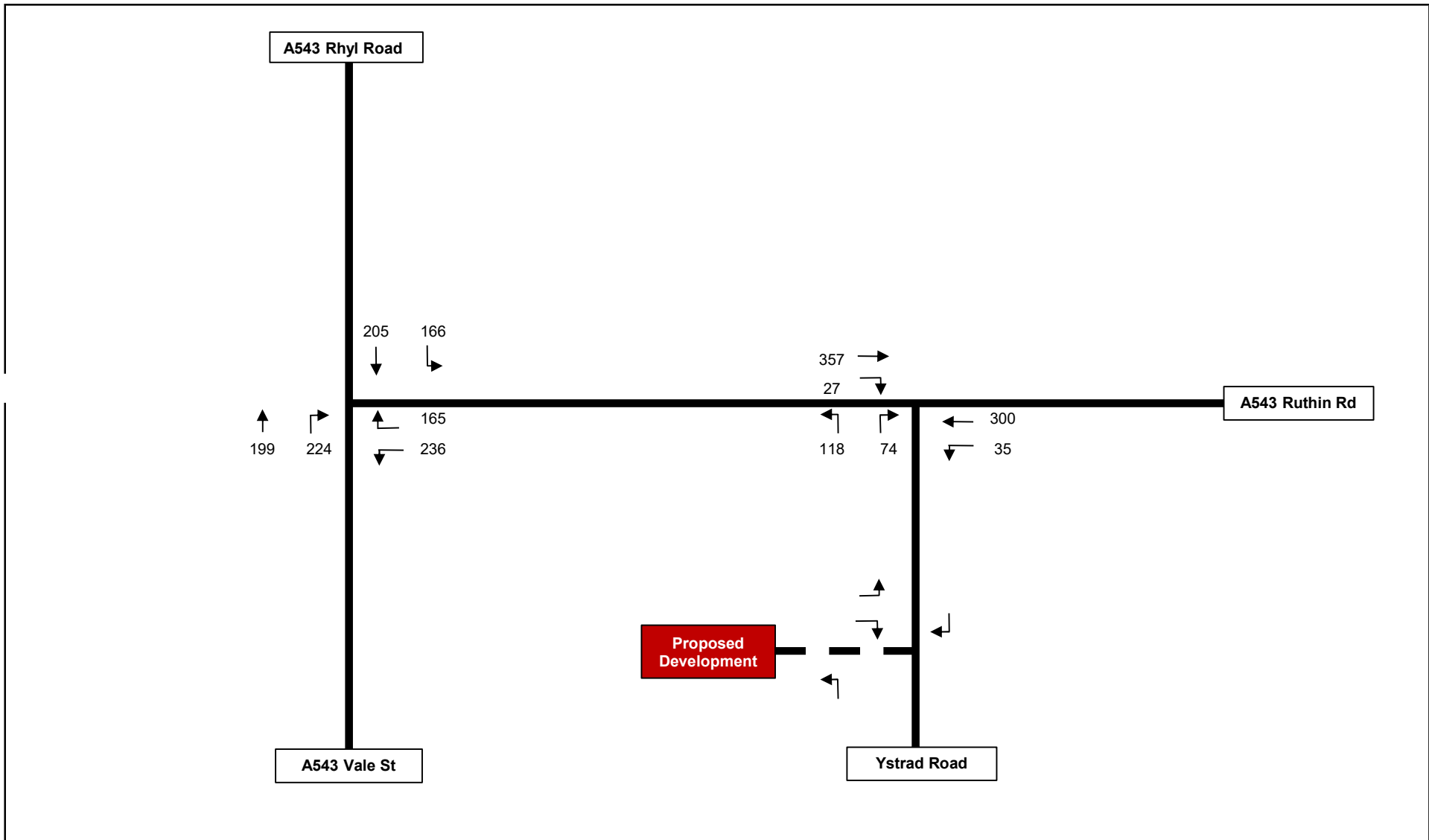


	Trip Generation PM Peak	24/05/2022	079942
	Ysgol Plas Brondyffryn	Figure 7	



	<b>2027 Weekday AM Base + Dev Flows (PCU Flows)</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 8</b>	





	<b>2027 Weekday PM Base + Dev Flows (PCU Flows)</b>	<b>24/05/2022</b>	<b>079942</b>
	<b>Ysgol Plas Brondyffryn</b>	<b>Figure 9</b>	

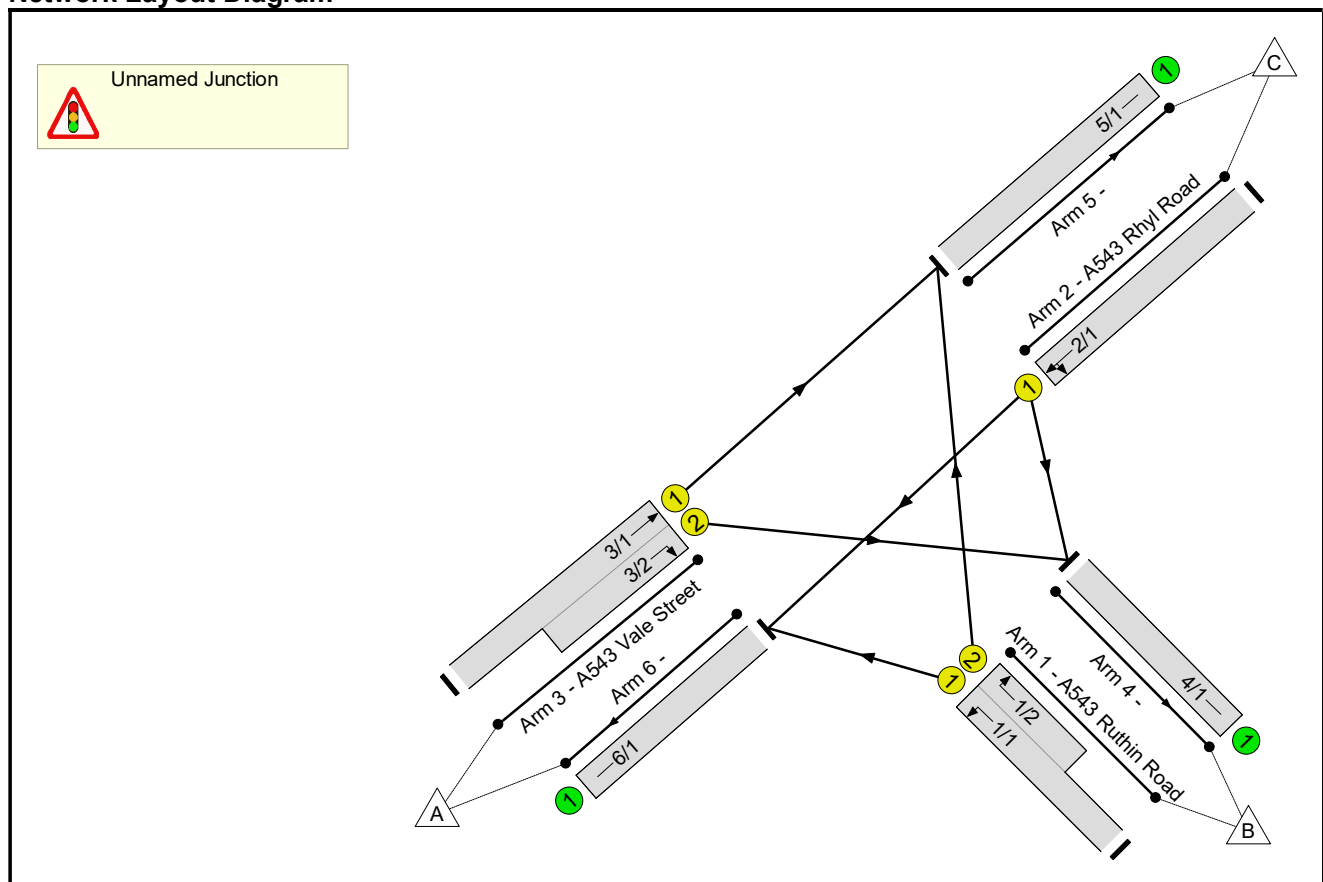
## Appendix D – Junction Output Files

Full Input Data And Results  
**Full Input Data And Results**

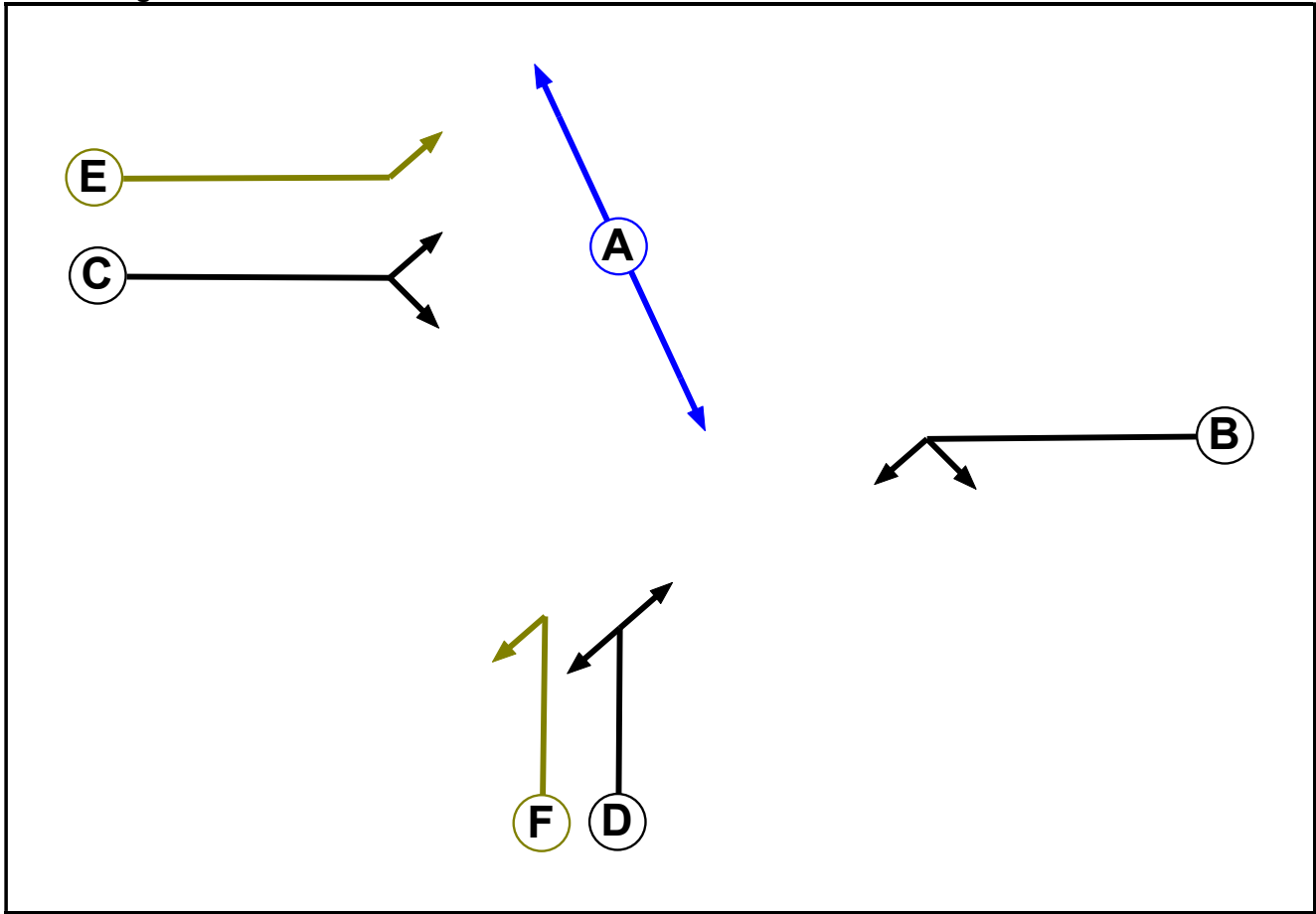
**User and Project Details**

<b>Project:</b>	
<b>Title:</b>	
<b>Location:</b>	
<b>Additional detail:</b>	
<b>File name:</b>	A543 Ruthin Road Vale Street Signals.lsg3x
<b>Author:</b>	
<b>Company:</b>	
<b>Address:</b>	

**Network Layout Diagram**



**Phase Diagram**



**Phase Input Data**

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Pedestrian		10	10
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Filter	C	3	0
F	Filter	D	3	0

Full Input Data And Results

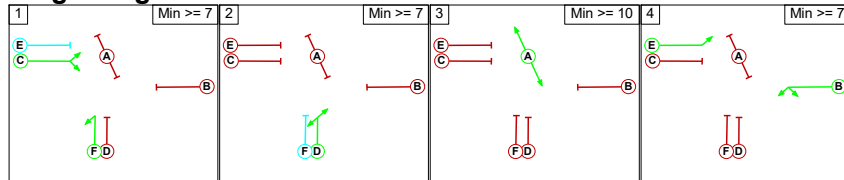
**Phase Intergrens Matrix**

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

**Phases in Stage**

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

**Stage Diagram**



**Phase Delays**

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

**Prohibited Stage Change**

		To Stage			
		1	2	3	4
From Stage	1		8	X	X
	2	6		6	6
	3	6	6		6
	4	6	X	X	

Full Input Data And Results

**Give-Way Lane Input Data**

**Junction: Unnamed Junction**

There are no Opposed Lanes in this Junction

Full Input Data And Results

**Lane Input Data**

Junction: Unnamed Junction												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A543 Ruthin Road)	U	D F	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Left	18.00
1/2 (A543 Ruthin Road)	U	D	2	3	6.0	Geom	-	3.00	0.00	Y	Arm 5 Right	20.00
2/1 (A543 Rhyll Road)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 4 Left	22.00
											Arm 6 Ahead	25.00
3/1 (A543 Vale Street)	U	C E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	50.00
3/2 (A543 Vale Street)	U	C	2	3	8.0	Geom	-	3.00	0.00	Y	Arm 4 Right	16.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

**Traffic Flow Groups**

Flow Group	Start Time	End Time	Duration	Formula
1: '2022 AM Peak Survey Base'	08:00	09:00	01:00	
2: '2022 PM Peak Survey Base'	17:00	18:00	01:00	
3: '2027 AM Peak Base'	08:00	09:00	01:00	
4: '2027 PM Peak Base'	17:00	18:00	01:00	
5: '2027 AM Peak Base + Dev'	08:00	09:00	01:00	
6: '2027 PM Peak Base + Dev'	17:00	18:00	01:00	

**Scenario 1: '2022 AM Survey Base'** (FG1: '2022 AM Peak Survey Base', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination				
	A	B	C	Tot.	
Origin	A	0	223	211	434
	B	296	0	113	409
	C	272	94	0	366
	Tot.	568	317	324	1209

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 1: 2022 AM Survey Base
<b>Junction: Unnamed Junction</b>	
1/1 (with short)	409(In) 296(Out)
1/2 (short)	113
2/1	366
3/1 (with short)	434(In) 211(Out)
3/2 (short)	223
4/1	317
5/1	324
6/1	568

**Lane Saturation Flows**

<b>Junction: Unnamed Junction</b>								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A543 Ruthin Road)	3.00	0.00	Y	Arm 6 Left	18.00	100.0 %	1768	1768
1/2 (A543 Ruthin Road)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
2/1 (A543 Rhyl Road)	4.00	0.00	Y	Arm 4 Left	22.00	25.7 %	1897	1897
				Arm 6 Ahead	25.00	74.3 %		
3/1 (A543 Vale Street)	3.00	0.00	Y	Arm 5 Ahead	50.00	100.0 %	1859	1859
3/2 (A543 Vale Street)	3.00	0.00	Y	Arm 4 Right	16.00	100.0 %	1751	1751
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

**Scenario 2: '2022 PM Survey Base'** (FG2: '2022 PM Peak Survey Base', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination				
	A	B	C	Tot.	
Origin	A	0	216	192	408
	B	199	0	101	300
	C	198	160	0	358
	Tot.	397	376	293	1066



Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 2: 2022 PM Survey Base
<b>Junction: Unnamed Junction</b>	
1/1 (with short)	300(In) 199(Out)
1/2 (short)	101
2/1	358
3/1 (with short)	408(In) 192(Out)
3/2 (short)	216
4/1	376
5/1	293
6/1	397

**Lane Saturation Flows**

<b>Junction: Unnamed Junction</b>								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A543 Ruthin Road)	3.00	0.00	Y	Arm 6 Left	18.00	100.0 %	1768	1768
1/2 (A543 Ruthin Road)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
2/1 (A543 Rhyl Road)	4.00	0.00	Y	Arm 4 Left	22.00	44.7 %	1894	1894
				Arm 6 Ahead	25.00	55.3 %		
3/1 (A543 Vale Street)	3.00	0.00	Y	Arm 5 Ahead	50.00	100.0 %	1859	1859
3/2 (A543 Vale Street)	3.00	0.00	Y	Arm 4 Right	16.00	100.0 %	1751	1751
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

**Scenario 3: '2027 AM Base'** (FG3: '2027 AM Peak Base', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination				
	A	B	C	Tot.	
Origin	A	0	231	219	450
	B	308	0	117	425
	C	282	98	0	380
	Tot.	590	329	336	1255

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 3: 2027 AM Base
<b>Junction: Unnamed Junction</b>	
1/1 (with short)	425(In) 308(Out)
1/2 (short)	117
2/1	380
3/1 (with short)	450(In) 219(Out)
3/2 (short)	231
4/1	329
5/1	336
6/1	590

**Lane Saturation Flows**

<b>Junction: Unnamed Junction</b>								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A543 Ruthin Road)	3.00	0.00	Y	Arm 6 Left	18.00	100.0 %	1768	1768
1/2 (A543 Ruthin Road)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
2/1 (A543 Rhyl Road)	4.00	0.00	Y	Arm 4 Left	22.00	25.8 %	1897	1897
				Arm 6 Ahead	25.00	74.2 %		
3/1 (A543 Vale Street)	3.00	0.00	Y	Arm 5 Ahead	50.00	100.0 %	1859	1859
3/2 (A543 Vale Street)	3.00	0.00	Y	Arm 4 Right	16.00	100.0 %	1751	1751
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

**Scenario 4: '2027 PM Base'** (FG4: '2027 PM Peak Base', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination				
	A	B	C	Tot.	
Origin	A	0	224	199	423
	B	206	0	104	310
	C	205	166	0	371
	Tot.	411	390	303	1104

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 4: 2027 PM Base
<b>Junction: Unnamed Junction</b>	
1/1 (with short)	310(In) 206(Out)
1/2 (short)	104
2/1	371
3/1 (with short)	423(In) 199(Out)
3/2 (short)	224
4/1	390
5/1	303
6/1	411

**Lane Saturation Flows**

<b>Junction: Unnamed Junction</b>								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A543 Ruthin Road)	3.00	0.00	Y	Arm 6 Left	18.00	100.0 %	1768	1768
1/2 (A543 Ruthin Road)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
2/1 (A543 Rhyl Road)	4.00	0.00	Y	Arm 4 Left	22.00	44.7 %	1894	1894
				Arm 6 Ahead	25.00	55.3 %		
3/1 (A543 Vale Street)	3.00	0.00	Y	Arm 5 Ahead	50.00	100.0 %	1859	1859
3/2 (A543 Vale Street)	3.00	0.00	Y	Arm 4 Right	16.00	100.0 %	1751	1751
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

**Scenario 5: '2027 AM Base + Dev'** (FG5: '2027 AM Peak Base + Dev', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination				
	A	B	C	Tot.	
Origin	A	0	262	219	481
	B	308	0	117	425
	C	282	159	0	441
	Tot.	590	421	336	1347

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 5: 2027 AM Base + Dev
<b>Junction: Unnamed Junction</b>	
1/1 (with short)	425(In) 308(Out)
1/2 (short)	117
2/1	441
3/1 (with short)	481(In) 219(Out)
3/2 (short)	262
4/1	421
5/1	336
6/1	590

**Lane Saturation Flows**

<b>Junction: Unnamed Junction</b>								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A543 Ruthin Road)	3.00	0.00	Y	Arm 6 Left	18.00	100.0 %	1768	1768
1/2 (A543 Ruthin Road)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
2/1 (A543 Rhyl Road)	4.00	0.00	Y	Arm 4 Left	22.00	36.1 %	1896	1896
				Arm 6 Ahead	25.00	63.9 %		
3/1 (A543 Vale Street)	3.00	0.00	Y	Arm 5 Ahead	50.00	100.0 %	1859	1859
3/2 (A543 Vale Street)	3.00	0.00	Y	Arm 4 Right	16.00	100.0 %	1751	1751
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

**Scenario 6: '2027 PM Base + Dev' (FG6: '2027 PM Peak Base + Dev', Plan 1: 'Network Control Plan 1')**

**Traffic Flows, Desired**

**Desired Flow :**

	Destination				
		A	B	C	Tot.
Origin	A	0	224	199	423
	B	236	0	165	401
	C	205	166	0	371
	Tot.	441	390	364	1195

Full Input Data And Results

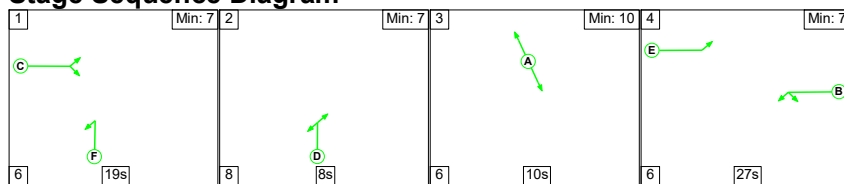
**Traffic Lane Flows**

Lane	Scenario 6: 2027 PM Base + Dev
<b>Junction: Unnamed Junction</b>	
1/1 (with short)	401(In) 236(Out)
1/2 (short)	165
2/1	371
3/1 (with short)	423(In) 199(Out)
3/2 (short)	224
4/1	390
5/1	364
6/1	441

**Lane Saturation Flows**

<b>Junction: Unnamed Junction</b>								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A543 Ruthin Road)	3.00	0.00	Y	Arm 6 Left	18.00	100.0 %	1768	1768
1/2 (A543 Ruthin Road)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
2/1 (A543 Rhyl Road)	4.00	0.00	Y	Arm 4 Left	22.00	44.7 %	1894	1894
				Arm 6 Ahead	25.00	55.3 %		
3/1 (A543 Vale Street)	3.00	0.00	Y	Arm 5 Ahead	50.00	100.0 %	1859	1859
3/2 (A543 Vale Street)	3.00	0.00	Y	Arm 4 Right	16.00	100.0 %	1751	1751
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

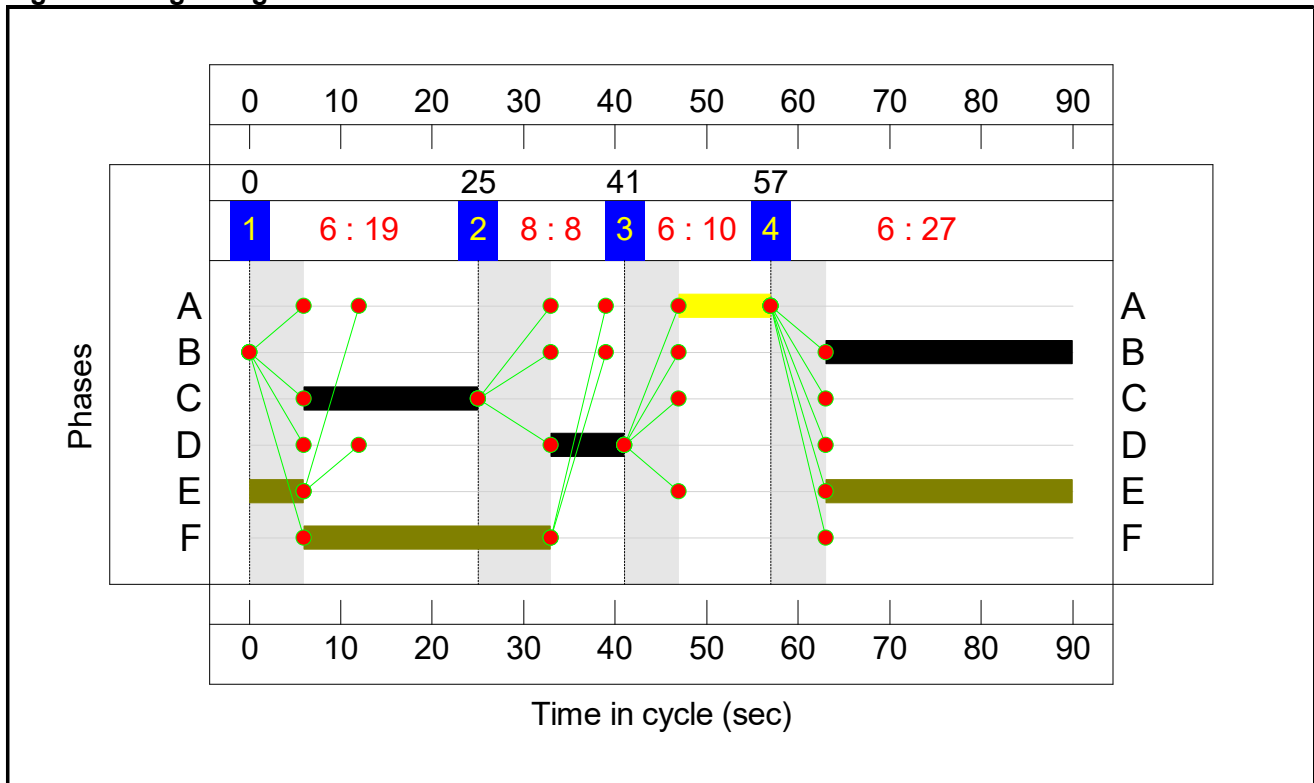
**Scenario 1: '2022 AM Survey Base'** (FG1: '2022 AM Peak Survey Base', Plan 1: 'Network Control Plan 1')  
**Stage Sequence Diagram**



**Stage Timings**

Stage	1	2	3	4
Duration	19	8	10	27
Change Point	0	25	41	57

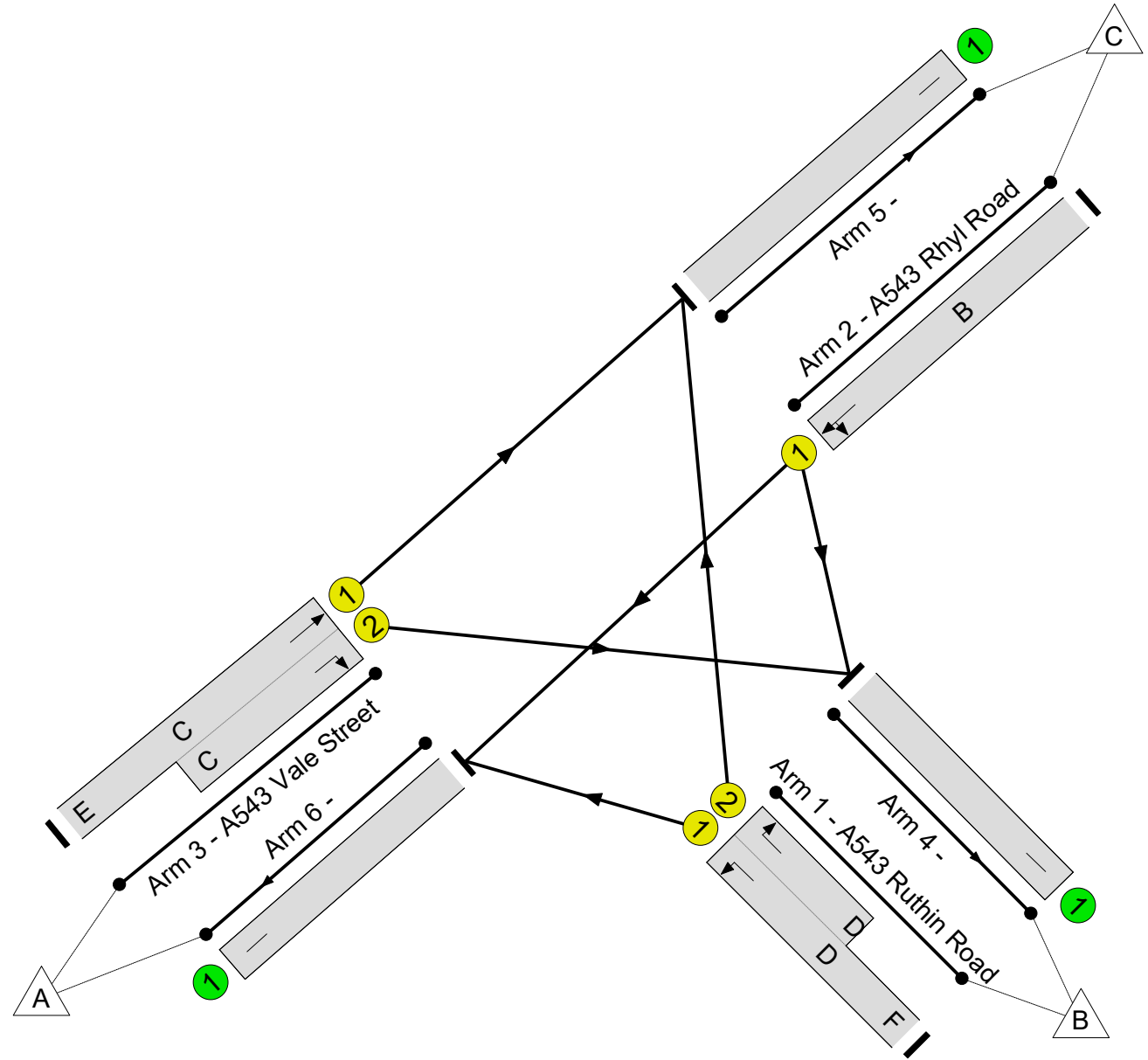
### Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**

Full Input Data And Results

Unnamed Junction  
PRC: 41.8 %  
Total Traffic Delay: 10.4 pcuHr





Full Input Data And Results

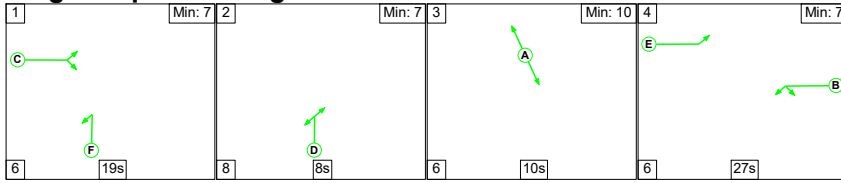
**Network Results**

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
<b>Network</b>	-	-	N/A	-	-		-	-	-	-	-	-	63.4%
<b>Unnamed Junction</b>	-	-	N/A	-	-		-	-	-	-	-	-	63.4%
1/1+1/2	A543 Ruthin Road Right Left	U	N/A	N/A	D	F	1	35:8	27	409	1768:1781	467+178	63.4 : 63.4%
2/1	A543 Rhyl Road Left Ahead	U	N/A	N/A	B		1	27	-	366	1897	590	62.0%
3/1+3/2	A543 Vale Street Right Ahead	U	N/A	N/A	C	E	1	52:19	33	434	1859:1751	342+361	61.7 : 61.7%
4/1		U	N/A	N/A	-		-	-	-	317	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	568	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	0	0	0	7.9	2.5	0.0	10.4	-	-	-	-
<b>Unnamed Junction</b>	-	-	0	0	0	7.9	2.5	0.0	10.4	-	-	-	-
1/1+1/2	409	409	-	-	-	2.8	0.9	-	3.7	32.4	5.3	0.9	6.1
2/1	366	366	-	-	-	2.7	0.8	-	3.5	34.4	7.7	0.8	8.5
3/1+3/2	434	434	-	-	-	2.4	0.8	-	3.2	26.9	5.0	0.8	5.8
4/1	317	317	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1			PRC for Signalled Lanes (%):		41.8	Total Delay for Signalled Lanes (pcuHr):			10.42	Cycle Time (s): 90			
			PRC Over All Lanes (%):		41.8	Total Delay Over All Lanes(pcuHr):			10.42				

Full Input Data And Results

Scenario 2: '2022 PM Survey Base' (FG2: '2022 PM Peak Survey Base', Plan 1: 'Network Control Plan 1')

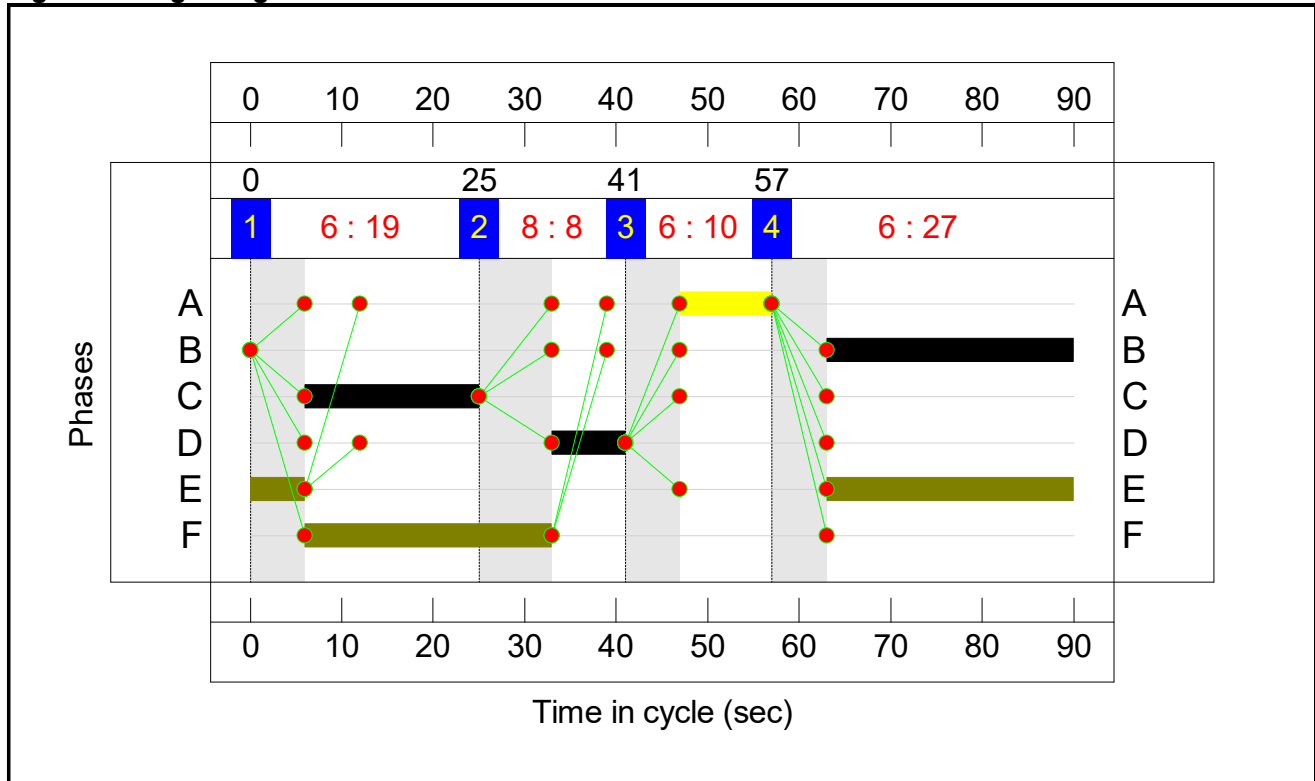
Stage Sequence Diagram



Stage Timings


Stage	1	2	3	4
Duration	19	8	10	27
Change Point	0	25	41	57

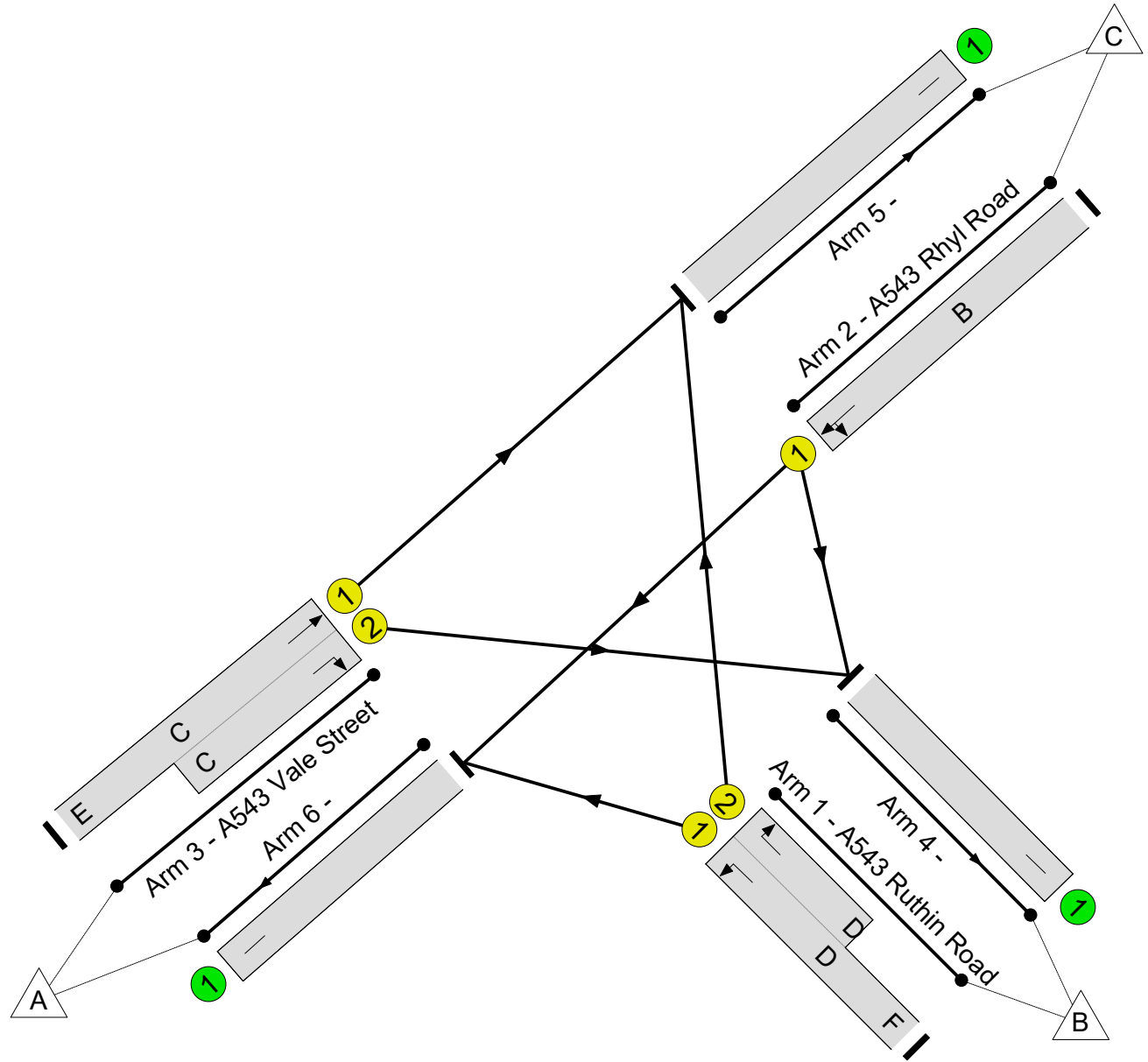
Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**

Full Input Data And Results

 **Unnamed Junction**  
PRC: 48.1 %  
Total Traffic Delay: 9.2 pcuHr



Full Input Data And Results

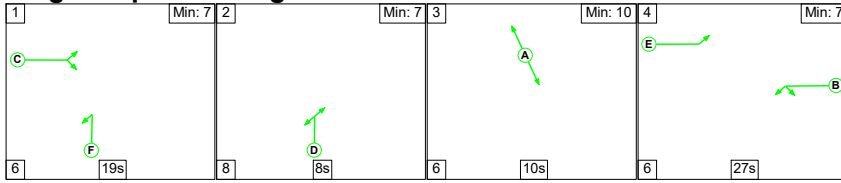
**Network Results**

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
<b>Network</b>	-	-	N/A	-	-		-	-	-	-	-	-	60.8%
<b>Unnamed Junction</b>	-	-	N/A	-	-		-	-	-	-	-	-	60.8%
1/1+1/2	A543 Ruthin Road Right Left	U	N/A	N/A	D	F	1	35:8	27	300	1768:1781	351+178	56.7 : 56.7%
2/1	A543 Rhyl Road Left Ahead	U	N/A	N/A	B		1	27	-	358	1894	589	60.8%
3/1+3/2	A543 Vale Street Right Ahead	U	N/A	N/A	C	E	1	52:19	33	408	1859:1751	322+362	59.6 : 59.6%
4/1		U	N/A	N/A	-		-	-	-	376	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	293	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	397	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	0	0	0	7.0	2.2	0.0	9.2	-	-	-	-
<b>Unnamed Junction</b>	-	-	0	0	0	7.0	2.2	0.0	9.2	-	-	-	-
1/1+1/2	300	300	-	-	-	2.1	0.7	-	2.7	32.9	3.3	0.7	4.0
2/1	358	358	-	-	-	2.6	0.8	-	3.4	34.1	7.6	0.8	8.3
3/1+3/2	408	408	-	-	-	2.3	0.7	-	3.1	26.9	4.7	0.7	5.5
4/1	376	376	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	293	293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	397	397	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1			PRC for Signalled Lanes (%):		48.1	Total Delay for Signalled Lanes (pcuHr):			9.18	Cycle Time (s): 90			
			PRC Over All Lanes (%):		48.1	Total Delay Over All Lanes(pcuHr):			9.18				

Full Input Data And Results

Scenario 3: '2027 AM Base' (FG3: '2027 AM Peak Base', Plan 1: 'Network Control Plan 1')

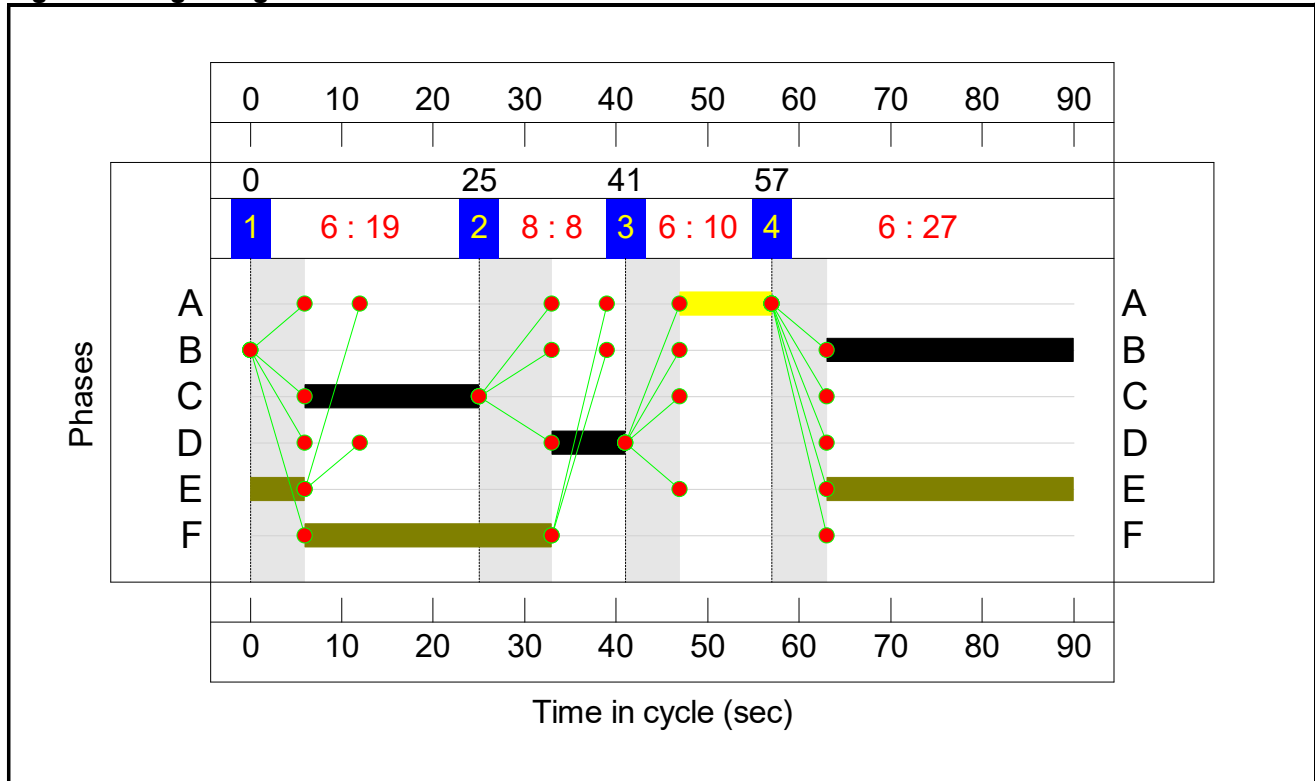
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	19	8	10	27
Change Point	0	25	41	57

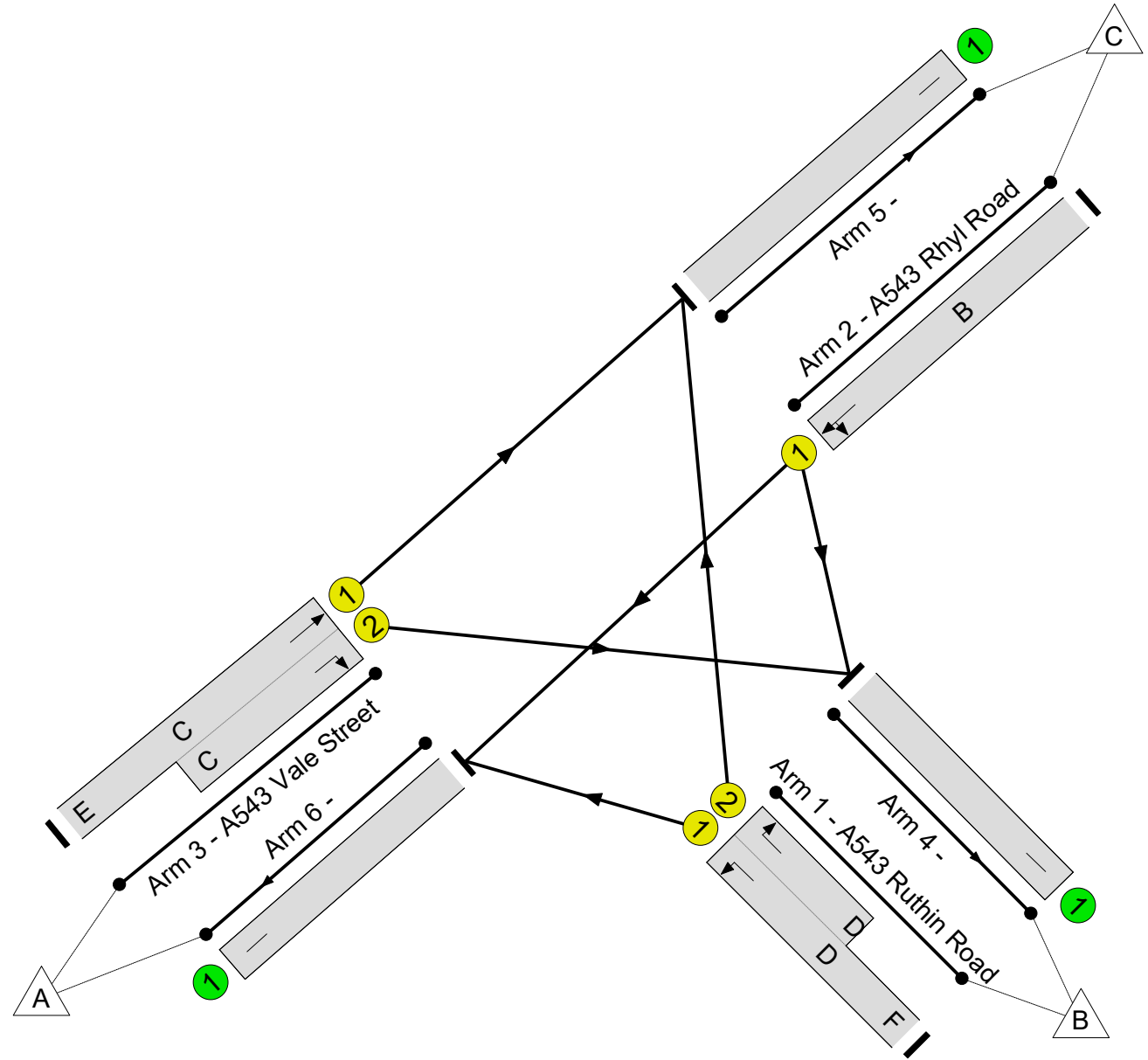
Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**

Full Input Data And Results

Unnamed Junction  
PRC: 37.0 %  
Total Traffic Delay: 11.0 pcuHr





Full Input Data And Results

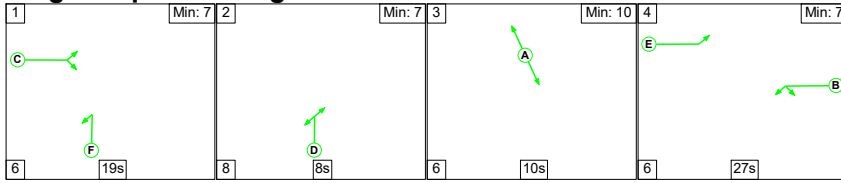
**Network Results**

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
<b>Network</b>	-	-	N/A	-	-		-	-	-	-	-	-	65.7%
<b>Unnamed Junction</b>	-	-	N/A	-	-		-	-	-	-	-	-	65.7%
1/1+1/2	A543 Ruthin Road Right Left	U	N/A	N/A	D	F	1	35:8	27	425	1768:1781	470+178	65.6 : 65.7%
2/1	A543 Rhyl Road Left Ahead	U	N/A	N/A	B		1	27	-	380	1897	590	64.4%
3/1+3/2	A543 Vale Street Right Ahead	U	N/A	N/A	C	E	1	52:19	33	450	1859:1751	342+361	64.0 : 64.0%
4/1		U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	336	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	590	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	0	0	0	8.3	2.7	0.0	11.0	-	-	-	-
<b>Unnamed Junction</b>	-	-	0	0	0	8.3	2.7	0.0	11.0	-	-	-	-
1/1+1/2	425	425	-	-	-	2.9	0.9	-	3.9	33.0	5.6	0.9	6.5
2/1	380	380	-	-	-	2.8	0.9	-	3.7	35.2	8.1	0.9	9.0
3/1+3/2	450	450	-	-	-	2.5	0.9	-	3.4	27.4	5.1	0.9	6.0
4/1	329	329	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	336	336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	590	590	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1			PRC for Signalled Lanes (%):		37.0	Total Delay for Signalled Lanes (pcuHr):			11.03	Cycle Time (s): 90			
			PRC Over All Lanes (%):		37.0	Total Delay Over All Lanes(pcuHr):			11.03				

Full Input Data And Results

Scenario 4: '2027 PM Base' (FG4: '2027 PM Peak Base', Plan 1: 'Network Control Plan 1')

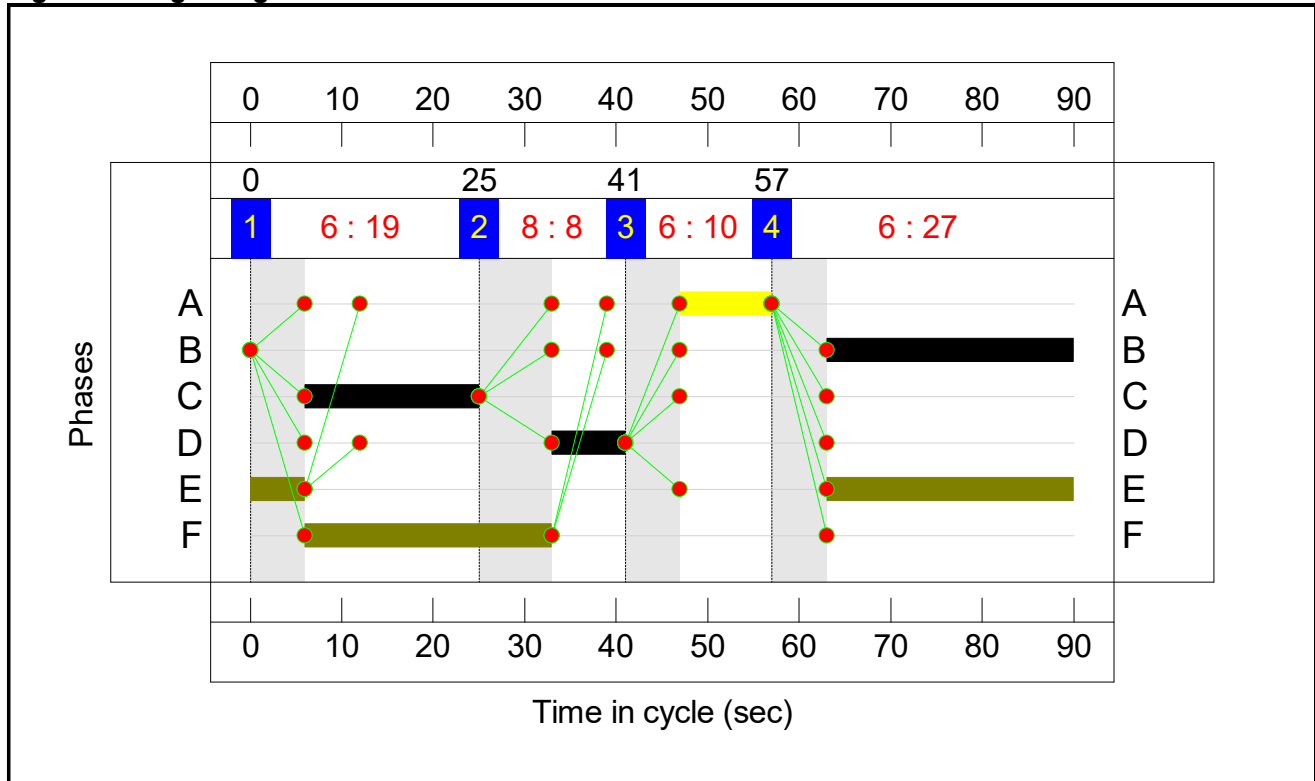
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	19	8	10	27
Change Point	0	25	41	57

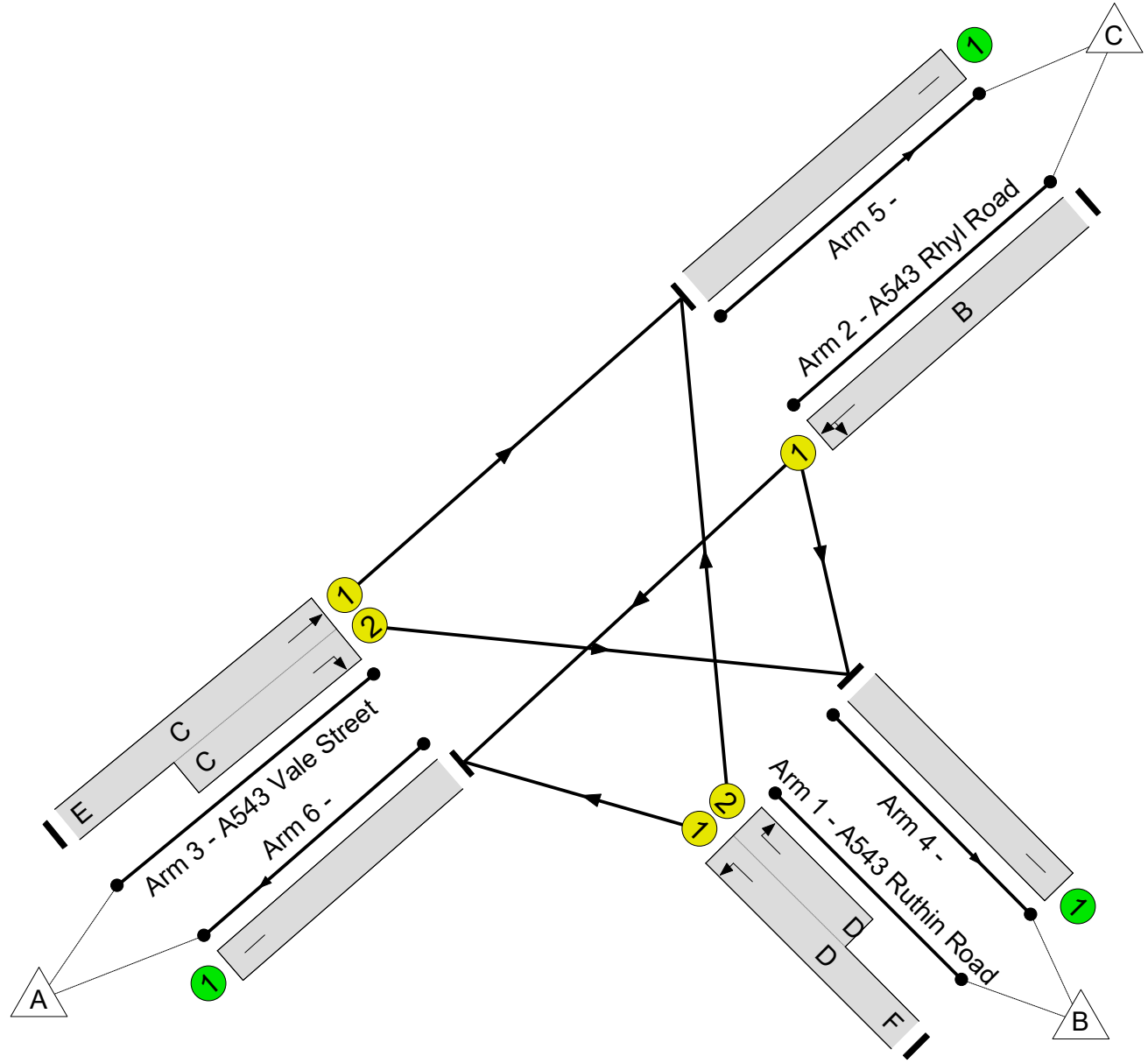
Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**

Full Input Data And Results

Unnamed Junction  
PRC: 42.9 %  
Total Traffic Delay: 9.7 pcuHr



Full Input Data And Results

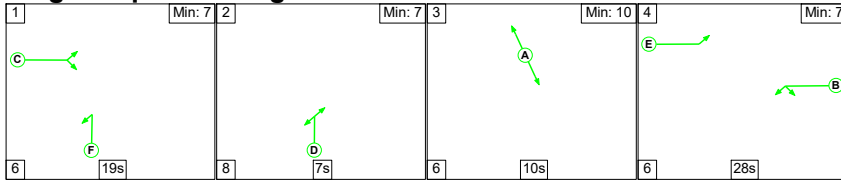
**Network Results**

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
<b>Network</b>	-	-	N/A	-	-		-	-	-	-	-	-	63.0%
<b>Unnamed Junction</b>	-	-	N/A	-	-		-	-	-	-	-	-	63.0%
1/1+1/2	A543 Ruthin Road Right Left	U	N/A	N/A	D	F	1	35:8	27	310	1768:1781	353+178	58.4 : 58.4%
2/1	A543 Rhyl Road Left Ahead	U	N/A	N/A	B		1	27	-	371	1894	589	63.0%
3/1+3/2	A543 Vale Street Right Ahead	U	N/A	N/A	C	E	1	52:19	33	423	1859:1751	322+362	61.8 : 61.8%
4/1		U	N/A	N/A	-		-	-	-	390	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	411	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	0	0	0	7.3	2.3	0.0	9.7	-	-	-	-
<b>Unnamed Junction</b>	-	-	0	0	0	7.3	2.3	0.0	9.7	-	-	-	-
1/1+1/2	310	310	-	-	-	2.2	0.7	-	2.9	33.3	3.5	0.7	4.2
2/1	371	371	-	-	-	2.7	0.8	-	3.6	34.7	7.9	0.8	8.8
3/1+3/2	423	423	-	-	-	2.4	0.8	-	3.2	27.4	5.0	0.8	5.8
4/1	390	390	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	303	303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	411	411	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1			PRC for Signalled Lanes (%):		42.9	Total Delay for Signalled Lanes (pcuHr):			9.66	Cycle Time (s): 90			
			PRC Over All Lanes (%):		42.9	Total Delay Over All Lanes(pcuHr):			9.66				

Full Input Data And Results

Scenario 5: '2027 AM Base + Dev' (FG5: '2027 AM Peak Base + Dev', Plan 1: 'Network Control Plan 1')

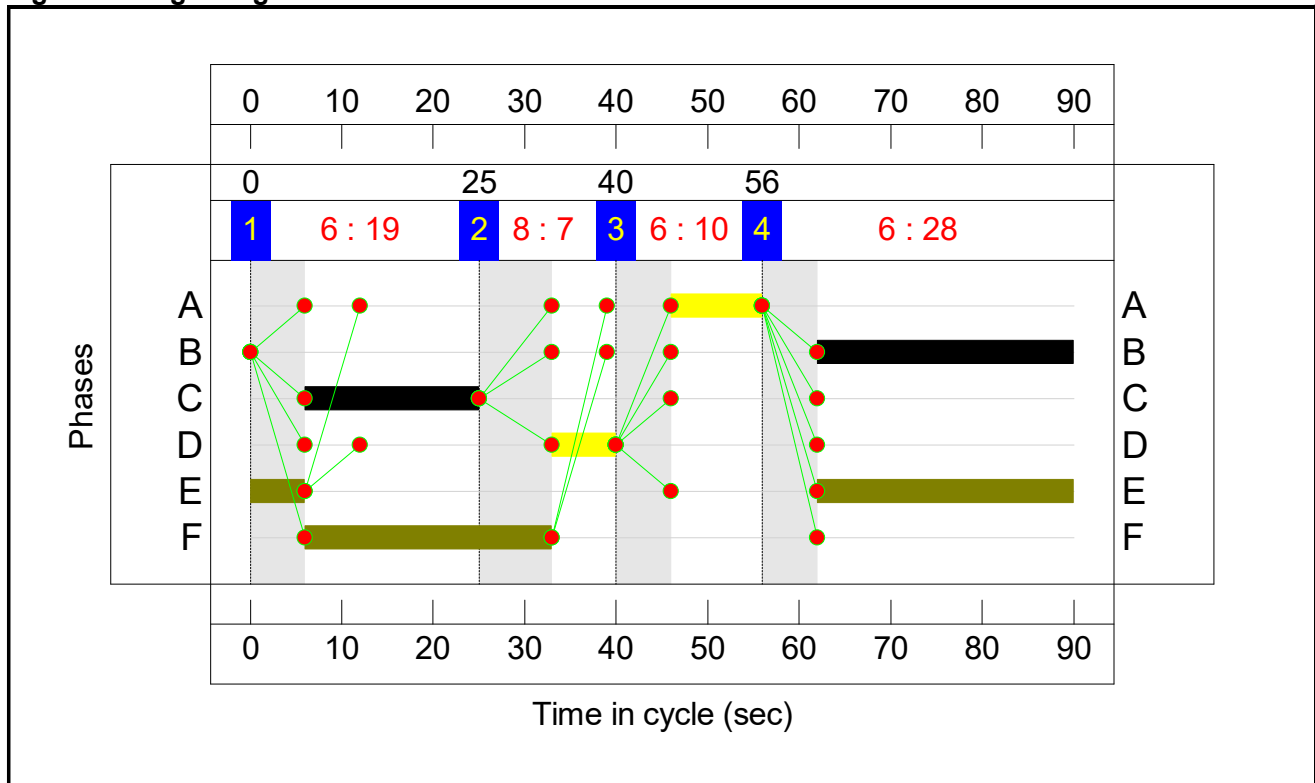
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	19	7	10	28
Change Point	0	25	40	56

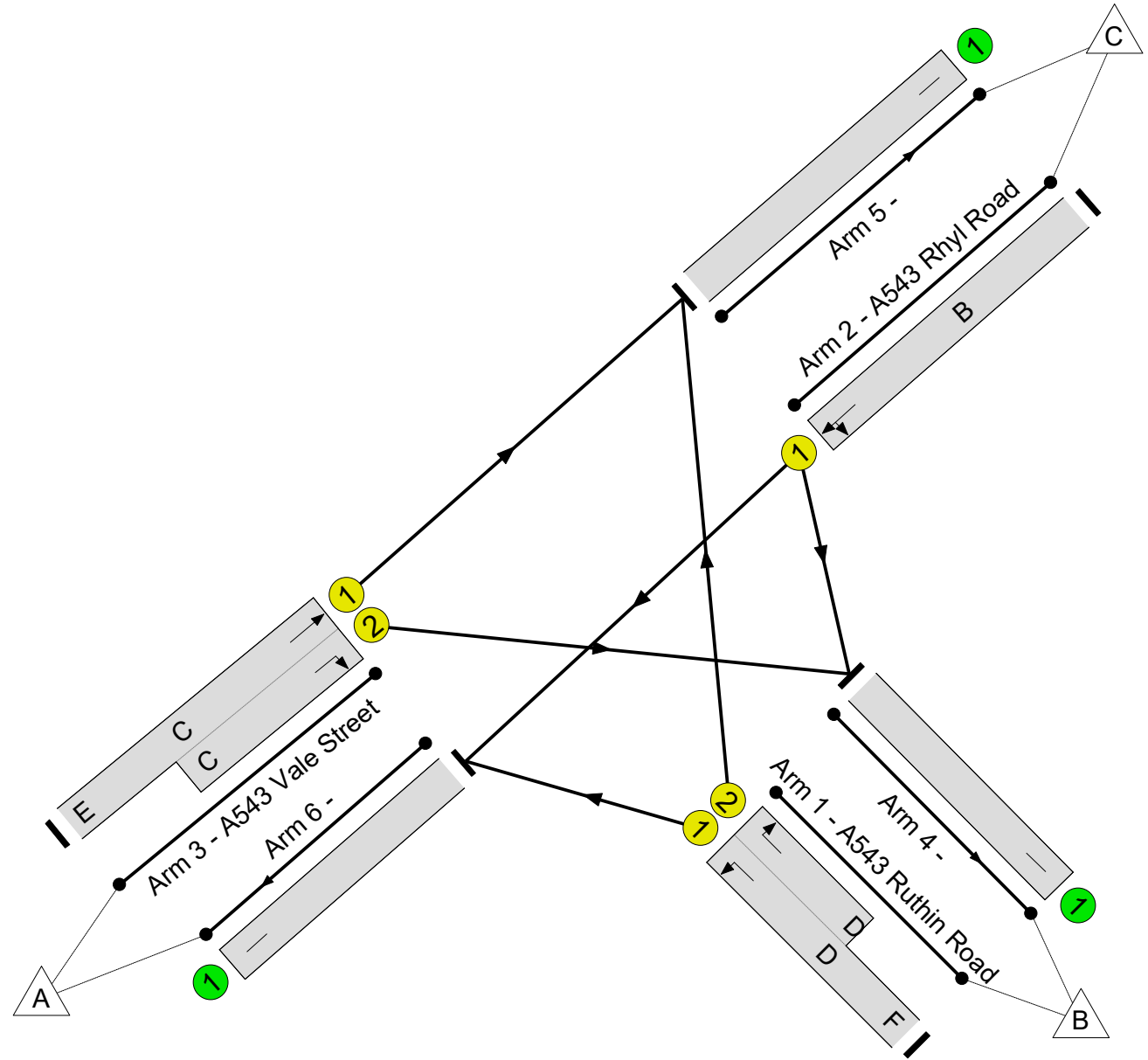
Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**

Full Input Data And Results

Unnamed Junction  
PRC: 21.8 %  
Total Traffic Delay: 13.1 pcuHr





Full Input Data And Results

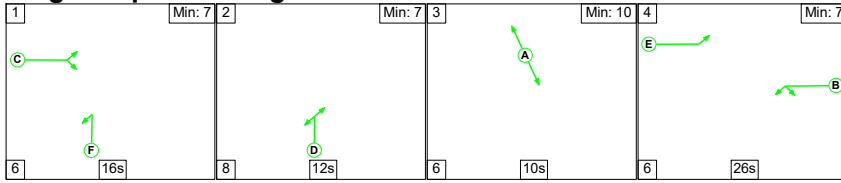
**Network Results**

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
<b>Network</b>	-	-	N/A	-	-		-	-	-	-	-	-	73.9%
<b>Unnamed Junction</b>	-	-	N/A	-	-		-	-	-	-	-	-	73.9%
1/1+1/2	A543 Ruthin Road Right Left	U	N/A	N/A	D	F	1	34:7	27	425	1768:1781	417+158	73.9 : 73.9%
2/1	A543 Rhyl Road Left Ahead	U	N/A	N/A	B		1	28	-	441	1896	611	72.2%
3/1+3/2	A543 Vale Street Right Ahead	U	N/A	N/A	C	E	1	53:19	34	481	1859:1751	304+364	72.1 : 72.1%
4/1		U	N/A	N/A	-		-	-	-	421	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	336	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	590	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	0	0	0	9.2	3.9	0.0	13.1	-	-	-	-
<b>Unnamed Junction</b>	-	-	0	0	0	9.2	3.9	0.0	13.1	-	-	-	-
1/1+1/2	425	425	-	-	-	3.0	1.4	-	4.4	37.5	5.6	1.4	7.0
2/1	441	441	-	-	-	3.3	1.3	-	4.6	37.4	9.7	1.3	11.0
3/1+3/2	481	481	-	-	-	2.8	1.3	-	4.1	30.7	6.0	1.3	7.2
4/1	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	336	336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	590	590	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1			PRC for Signalled Lanes (%):		21.8	Total Delay for Signalled Lanes (pcuHr):			13.11	Cycle Time (s): 90			
			PRC Over All Lanes (%):		21.8	Total Delay Over All Lanes(pcuHr):			13.11				

Full Input Data And Results

Scenario 6: '2027 PM Base + Dev' (FG6: '2027 PM Peak Base + Dev', Plan 1: 'Network Control Plan 1')

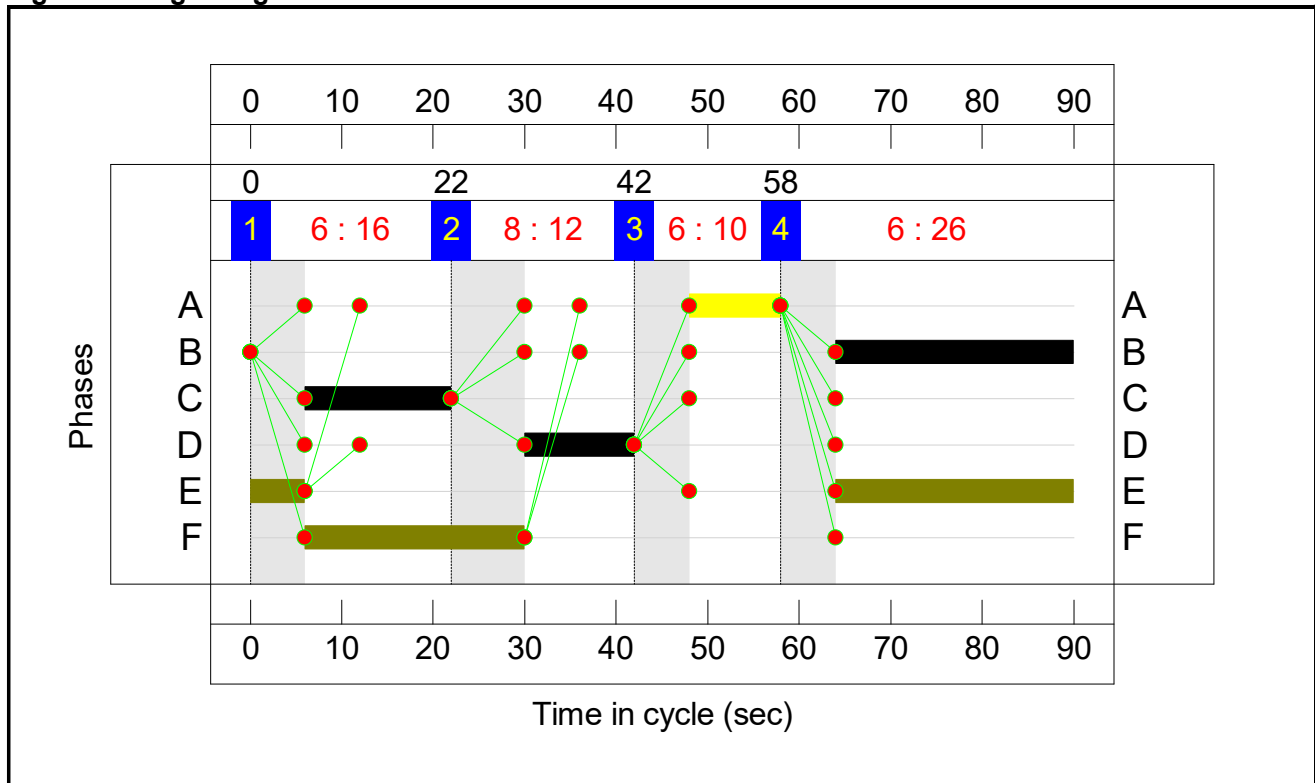
Stage Sequence Diagram



Stage Timings


Stage	1	2	3	4
Duration	16	12	10	26
Change Point	0	22	42	58

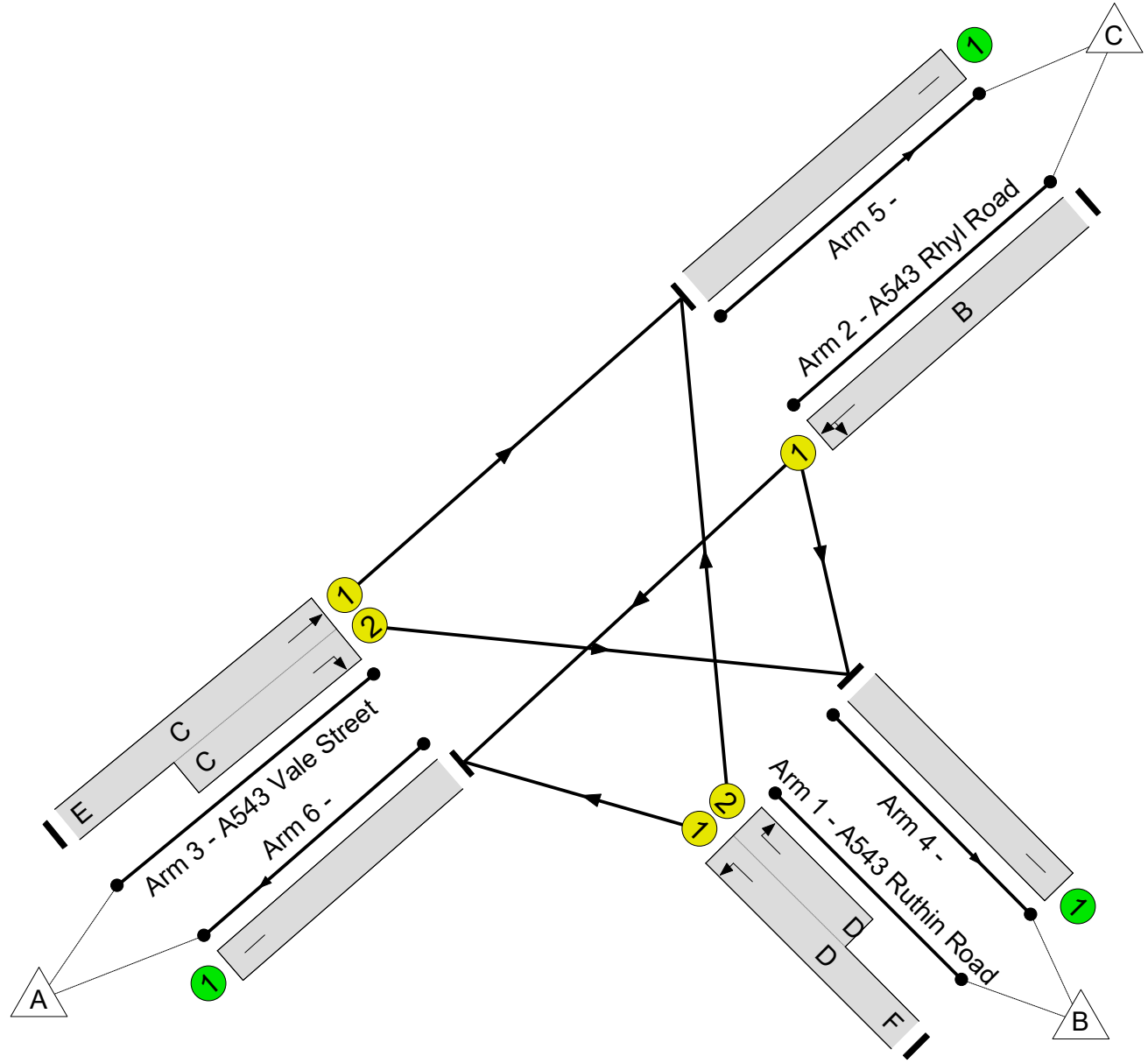
Signal Timings Diagram



Full Input Data And Results  
**Network Layout Diagram**

Full Input Data And Results

 **Unnamed Junction**  
PRC: 32.8 %  
Total Traffic Delay: 11.3 pcuHr



Full Input Data And Results

**Network Results**

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
<b>Network</b>	-	-	N/A	-	-		-	-	-	-	-	-	67.8%
<b>Unnamed Junction</b>	-	-	N/A	-	-		-	-	-	-	-	-	67.8%
1/1+1/2	A543 Ruthin Road Right Left	U	N/A	N/A	D	F	1	36:12	24	401	1768:1781	355+248	66.5 : 66.5%
2/1	A543 Rhyl Road Left Ahead	U	N/A	N/A	B		1	26	-	371	1894	568	65.3%
3/1+3/2	A543 Vale Street Right Ahead	U	N/A	N/A	C	E	1	48:16	32	423	1859:1751	294+331	67.8 : 67.8%
4/1		U	N/A	N/A	-		-	-	-	390	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	364	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	441	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network</b>	-	-	0	0	0	8.4	3.0	0.0	11.3	-	-	-	-
<b>Unnamed Junction</b>	-	-	0	0	0	8.4	3.0	0.0	11.3	-	-	-	-
1/1+1/2	401	401	-	-	-	2.8	1.0	-	3.8	34.4	4.0	1.0	5.0
2/1	371	371	-	-	-	2.8	0.9	-	3.8	36.5	8.0	0.9	9.0
3/1+3/2	423	423	-	-	-	2.7	1.0	-	3.7	31.8	5.2	1.0	6.2
4/1	390	390	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	364	364	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	441	441	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1			PRC for Signalled Lanes (%):		32.8	Total Delay for Signalled Lanes (pcuHr):			11.32	Cycle Time (s): 90			
			PRC Over All Lanes (%):		32.8	Total Delay Over All Lanes(pcuHr):			11.32				

Junctions 9
PICADY 9 - Priority Intersection 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:** Ystrad Rd - A543 Ruthin Rd Priority Junction.j9  
**Path:** \\lifs03\projects\ TP\079942.100 - Ysgol Plas Brondyffryn\Q3-Design\3A-Calculations\TP  
**Report generation date:** 20/05/2022 13:09:33

- »2022 Base, AM
- »2022 Base, PM
- »2027 Base, AM
- »2027 Base, PM
- »2027 Base + Dev, AM
- »2027 Base + Dev, PM

**Summary of junction performance**

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
<b>2022 Base</b>										
Stream B-C	D1	0.1	8.21	0.12	A	D2	0.1	6.61	0.05	A
Stream B-A		0.4	12.75	0.29	B		0.1	9.75	0.11	A
Stream C-AB		0.1	5.44	0.08	A		0.1	4.93	0.06	A
<b>2027 Base</b>										
Stream B-C	D3	0.2	8.40	0.13	A	D4	0.1	6.67	0.05	A
Stream B-A		0.5	13.26	0.31	B		0.1	9.94	0.11	A
Stream C-AB		0.2	5.45	0.08	A		0.1	4.91	0.07	A
<b>2027 Base + Dev</b>										
Stream B-C	D5	0.2	8.66	0.13	A	D6	0.3	7.83	0.21	A
Stream B-A		0.5	15.52	0.34	C		0.3	11.93	0.21	B
Stream C-AB		0.7	7.32	0.31	A		0.1	4.91	0.07	A

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

## File summary

### File Description

Title	
Location	
Site number	
Date	05/05/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CURTINS\Jonathan.Ashcroft
Description	

## Units

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

## Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		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)
D1	2022 Base	AM	ONE HOUR	00:00	01:30	15
D2	2022 Base	PM	ONE HOUR	00:00	01:30	15
D3	2027 Base	AM	ONE HOUR	00:00	01:30	15
D4	2027 Base	PM	ONE HOUR	00:00	01:30	15
D5	2027 Base + Dev	AM	ONE HOUR	00:00	01:30	15
D6	2027 Base + Dev	PM	ONE HOUR	00:00	01:30	15

## Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

# 2022 Base, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.32	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Arms

### Arms

Arm	Name	Description	Arm type
A	A543 Ruthin Road East		Major
B	Ystrad Rd		Minor
C	A543 Ruthin Road West		Major

### Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - A543 Ruthin Road West	7.25			150.0	✓	0.00

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

### Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Ystrad Rd	One lane plus flare	10.00	5.75	4.00	3.50	3.50		1.00	50	55

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	594	0.102	0.259	0.163	0.369
B-C	690	0.100	0.253	-	-
C-B	661	0.242	0.242	-	-

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

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

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



## Traffic 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)
D1	2022 Base	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A543 Ruthin Road East		✓	465	100.000
B - Ystrad Rd		✓	168	100.000
C - A543 Ruthin Road West		✓	287	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	84	381
	B - Ystrad Rd	111	0	57
	C - A543 Ruthin Road West	256	31	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	2	2
	B - Ystrad Rd	4	0	4
	C - A543 Ruthin Road West	2	2	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.12	8.21	0.1	A
B-A	0.29	12.75	0.4	B
C-AB	0.08	5.44	0.1	A
C-A				
A-B				
A-C				

## Main Results for each time segment

### 00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	43	581	0.074	43	0.1	6.948	A
B-A	84	473	0.177	83	0.2	9.573	A
C-AB	32	707	0.045	32	0.1	5.437	A
C-A	184			184			
A-B	63			63			
A-C	287			287			

### 00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	51	556	0.092	51	0.1	7.410	A
B-A	100	449	0.222	99	0.3	10.700	B
C-AB	41	718	0.057	41	0.1	5.422	A
C-A	217			217			
A-B	76			76			
A-C	343			343			

### 00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	63	519	0.121	63	0.1	8.197	A
B-A	122	416	0.294	122	0.4	12.704	B
C-AB	56	735	0.076	55	0.1	5.406	A
C-A	260			260			
A-B	92			92			
A-C	419			419			

### 00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	63	519	0.121	63	0.1	8.209	A
B-A	122	416	0.294	122	0.4	12.747	B
C-AB	56	735	0.076	56	0.1	5.411	A
C-A	260			260			
A-B	92			92			
A-C	419			419			

### 01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	51	556	0.092	51	0.1	7.426	A
B-A	100	449	0.222	100	0.3	10.748	B
C-AB	41	718	0.057	41	0.1	5.428	A
C-A	217			217			
A-B	76			76			
A-C	343			343			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	43	580	0.074	43	0.1	6.968	A
B-A	84	473	0.177	84	0.2	9.632	A
C-AB	32	707	0.046	32	0.1	5.444	A
C-A	184			184			
A-B	63			63			
A-C	287			287			

# 2022 Base, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.04	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2022 Base	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A543 Ruthin Road East		✓	324	100.000
B - Ystrad Rd		✓	68	100.000
C - A543 Ruthin Road West		✓	371	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	34	290
	B - Ystrad Rd	42	0	26
	C - A543 Ruthin Road West	345	26	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	2	2
	B - Ystrad Rd	4	0	4
	C - A543 Ruthin Road West	2	2	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.05	6.61	0.1	A
B-A	0.11	9.75	0.1	A
C-AB	0.06	4.93	0.1	A
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	629	0.031	19	0.0	6.141	A
B-A	32	480	0.066	31	0.1	8.337	A
C-AB	29	775	0.038	29	0.1	4.924	A
C-A	250			250			
A-B	26			26			
A-C	218			218			

#### 00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	615	0.038	23	0.0	6.329	A
B-A	38	459	0.082	38	0.1	8.881	A
C-AB	38	799	0.048	38	0.1	4.830	A
C-A	295			295			
A-B	31			31			
A-C	261			261			

#### 00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	595	0.048	29	0.1	6.607	A
B-A	46	430	0.107	46	0.1	9.740	A
C-AB	53	833	0.063	53	0.1	4.706	A
C-A	356			356			
A-B	37			37			
A-C	319			319			

#### 00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	595	0.048	29	0.1	6.608	A
B-A	46	430	0.107	46	0.1	9.746	A
C-AB	53	833	0.063	53	0.1	4.708	A
C-A	356			356			
A-B	37			37			
A-C	319			319			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	615	0.038	23	0.0	6.334	A
B-A	38	459	0.082	38	0.1	8.889	A
C-AB	38	799	0.048	38	0.1	4.830	A
C-A	295			295			
A-B	31			31			
A-C	261			261			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	629	0.031	20	0.0	6.146	A
B-A	32	480	0.066	32	0.1	8.351	A
C-AB	30	775	0.038	30	0.1	4.928	A
C-A	250			250			
A-B	26			26			
A-C	218			218			

# 2027 Base, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.41	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2027 Base	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A543 Ruthin Road East		✓	482	100.000
B - Ystrad Rd		✓	174	100.000
C - A543 Ruthin Road West		✓	298	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	87	395
	B - Ystrad Rd	115	0	59
	C - A543 Ruthin Road West	265	33	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	2	2
	B - Ystrad Rd	4	0	4
	C - A543 Ruthin Road West	2	2	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.13	8.40	0.2	A
B-A	0.31	13.26	0.5	B
C-AB	0.08	5.45	0.2	A
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	44	577	0.077	44	0.1	7.026	A
B-A	87	468	0.185	86	0.2	9.762	A
C-AB	35	709	0.049	34	0.1	5.442	A
C-A	190			190			
A-B	65			65			
A-C	297			297			

#### 00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	53	551	0.096	53	0.1	7.520	A
B-A	103	444	0.233	103	0.3	10.987	B
C-AB	44	721	0.062	44	0.1	5.430	A
C-A	223			223			
A-B	78			78			
A-C	355			355			

#### 00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	65	511	0.127	65	0.1	8.388	A
B-A	127	409	0.310	126	0.5	13.208	B
C-AB	60	738	0.082	60	0.2	5.419	A
C-A	268			268			
A-B	96			96			
A-C	435			435			

#### 00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	65	511	0.127	65	0.2	8.402	A
B-A	127	409	0.310	127	0.5	13.261	B
C-AB	60	738	0.082	60	0.2	5.424	A
C-A	268			268			
A-B	96			96			
A-C	435			435			



01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	53	550	0.096	53	0.1	7.537	A
B-A	103	444	0.233	104	0.3	11.043	B
C-AB	45	721	0.062	45	0.1	5.435	A
C-A	223			223			
A-B	78			78			
A-C	355			355			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	44	576	0.077	45	0.1	7.047	A
B-A	87	468	0.185	87	0.2	9.827	A
C-AB	35	709	0.049	35	0.1	5.449	A
C-A	190			190			
A-B	65			65			
A-C	297			297			

# 2027 Base, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.07	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2027 Base	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A543 Ruthin Road East		✓	335	100.000
B - Ystrad Rd		✓	71	100.000
C - A543 Ruthin Road West		✓	384	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	35	300
	B - Ystrad Rd	44	0	27
	C - A543 Ruthin Road West	357	27	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	2	2
	B - Ystrad Rd	4	0	4
	C - A543 Ruthin Road West	2	2	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.05	6.67	0.1	A
B-A	0.11	9.94	0.1	A
C-AB	0.07	4.91	0.1	A
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	626	0.032	20	0.0	6.178	A
B-A	33	477	0.070	33	0.1	8.429	A
C-AB	31	779	0.040	31	0.1	4.907	A
C-A	258			258			
A-B	26			26			
A-C	226			226			

#### 00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	611	0.040	24	0.0	6.376	A
B-A	40	455	0.087	39	0.1	9.007	A
C-AB	40	804	0.050	40	0.1	4.810	A
C-A	305			305			
A-B	31			31			
A-C	270			270			

#### 00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	591	0.050	30	0.1	6.671	A
B-A	48	425	0.114	48	0.1	9.933	A
C-AB	56	840	0.067	56	0.1	4.686	A
C-A	367			367			
A-B	39			39			
A-C	330			330			

#### 00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	591	0.050	30	0.1	6.672	A
B-A	48	425	0.114	48	0.1	9.939	A
C-AB	56	840	0.067	56	0.1	4.688	A
C-A	367			367			
A-B	39			39			
A-C	330			330			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	611	0.040	24	0.0	6.381	A
B-A	40	455	0.087	40	0.1	9.018	A
C-AB	41	804	0.050	41	0.1	4.811	A
C-A	305			305			
A-B	31			31			
A-C	270			270			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	20	626	0.032	20	0.0	6.186	A
B-A	33	477	0.070	33	0.1	8.444	A
C-AB	31	779	0.040	31	0.1	4.911	A
C-A	258			258			
A-B	26			26			
A-C	226			226			

# 2027 Base + Dev, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.43	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2027 Base + Dev	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A543 Ruthin Road East		✓	513	100.000
B - Ystrad Rd		✓	174	100.000
C - A543 Ruthin Road West		✓	389	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	118	395
	B - Ystrad Rd	115	0	59
	C - A543 Ruthin Road West	265	124	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	2	2
	B - Ystrad Rd	4	0	4
	C - A543 Ruthin Road West	2	2	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.13	8.66	0.2	A
B-A	0.34	15.52	0.5	C
C-AB	0.31	7.32	0.7	A
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	44	572	0.078	44	0.1	7.088	A
B-A	87	441	0.197	86	0.3	10.517	B
C-AB	130	704	0.185	129	0.3	6.380	A
C-A	163			163			
A-B	89			89			
A-C	297			297			

#### 00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	53	543	0.098	53	0.1	7.630	A
B-A	103	410	0.252	103	0.3	12.175	B
C-AB	168	715	0.235	167	0.4	6.708	A
C-A	182			182			
A-B	106			106			
A-C	355			355			

#### 00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	65	498	0.130	65	0.2	8.641	A
B-A	127	368	0.344	126	0.5	15.415	C
C-AB	228	731	0.312	227	0.7	7.292	A
C-A	200			200			
A-B	130			130			
A-C	435			435			

#### 00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	65	497	0.131	65	0.2	8.663	A
B-A	127	368	0.344	127	0.5	15.519	C
C-AB	228	732	0.312	228	0.7	7.320	A
C-A	200			200			
A-B	130			130			
A-C	435			435			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	53	543	0.098	53	0.1	7.655	A
B-A	103	410	0.252	104	0.4	12.275	B
C-AB	168	715	0.235	169	0.4	6.743	A
C-A	182			182			
A-B	106			106			
A-C	355			355			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	44	571	0.078	45	0.1	7.114	A
B-A	87	440	0.197	87	0.3	10.613	B
C-AB	131	704	0.186	131	0.3	6.419	A
C-A	162			162			
A-B	89			89			
A-C	297			297			

# 2027 Base + Dev, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.23	A

### Junction Network Options

Driving side	Lighting
Left	Normal/unknown

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2027 Base + Dev	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A543 Ruthin Road East		✓	335	100.000
B - Ystrad Rd		✓	192	100.000
C - A543 Ruthin Road West		✓	384	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	35	300
	B - Ystrad Rd	74	0	118
	C - A543 Ruthin Road West	357	27	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A543 Ruthin Road East	B - Ystrad Rd	C - A543 Ruthin Road West
From	A - A543 Ruthin Road East	0	2	2
	B - Ystrad Rd	4	0	4
	C - A543 Ruthin Road West	2	2	0



## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.21	7.83	0.3	A
B-A	0.21	11.93	0.3	B
C-AB	0.07	4.91	0.1	A
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	89	655	0.136	88	0.2	6.597	A
B-A	56	447	0.125	55	0.1	9.543	A
C-AB	31	779	0.040	31	0.1	4.907	A
C-A	258			258			
A-B	26			26			
A-C	226			226			

#### 00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	636	0.167	106	0.2	7.060	A
B-A	67	426	0.156	66	0.2	10.417	B
C-AB	40	804	0.050	40	0.1	4.810	A
C-A	305			305			
A-B	31			31			
A-C	270			270			

#### 00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	130	608	0.214	130	0.3	7.820	A
B-A	81	395	0.206	81	0.3	11.907	B
C-AB	56	840	0.067	56	0.1	4.684	A
C-A	367			367			
A-B	39			39			
A-C	330			330			

#### 00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	130	608	0.214	130	0.3	7.833	A
B-A	81	395	0.206	81	0.3	11.932	B
C-AB	56	840	0.067	56	0.1	4.686	A
C-A	367			367			
A-B	39			39			
A-C	330			330			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	106	636	0.167	106	0.2	7.078	A
B-A	67	426	0.156	67	0.2	10.445	B
C-AB	41	804	0.050	41	0.1	4.811	A
C-A	305			305			
A-B	31			31			
A-C	270			270			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	89	655	0.136	89	0.2	6.620	A
B-A	56	447	0.125	56	0.1	9.581	A
C-AB	31	779	0.040	31	0.1	4.912	A
C-A	258			258			
A-B	26			26			
A-C	226			226			