TECHNICAL NOTE 1

DATE:	09 March 2023	**CONFIDENTIALITY:**	Public
SUBJECT:	Trip Distribution Methodology and Summary Note		
PROJECT:	70104118 - Hywel Dda Land Services	**AUTHOR:**	Abby Morris
CHECKED:	Lindsay McCauley	**APPROVED:**	Andrew Wilkinson

INTRODUCTION

WSP was commissioned by BDP to support Hywel Dda University Health Board (HDUHB) to understand the traffic implications of providing a new hospital in West Wales and to prepare traffic diagrams to support wider engagement activities. There are currently existing hospitals (Withybush, Glangwili, Bronglais and Prince Philip) within the Health Board's area. The new hospital would combine some of the existing services into a new facility. There are three (3) locations being considered for the new hospital, two (2) in Whitland and one (1) in St Clears. The sites are known as: St Clears (Formerly Site 17), Whitland Spring Gardens (Formerly Site 12) & Whitland: Tŷ Newydd (Formerly Site C). These will be referred to by their new names herein.

METHODOLOGY

The methodology undertaken to generate and understand the traffic impacts of the proposed hospital on the highway network is summarised within this Technical Note.

Data Sources

WSP have taken multiple steps to understand the traffic impacts of the new hospital at each of the three (3) locations being considered. WSP obtained publicly available traffic data by:

- Interrogating the Carmarthenshire Planning Website for developments near the sites which have Transport Assessments (TAs) which contain traffic data; and,
- Obtaining Department for Transport (DfT) Annual Average Daily Traffic (AADT) counts.

The following sources of data were interrogated to support this assessment:

- Survey data from a TA prepared in 2018 by ADL for Drive Thrus in St Clears;
- Survey data from a 'Transport Statement' prepared in 2014 by Jubb for Redevelopment of the Former Whitland Creamery;
- 2018 AADT Survey Data conducted by DfT;
- NOMIS: Location of usual residence and place of work by method of travel to work;
- 2019 survey data from West Wales Hospitals Data Collection Report (Transport Study) prepared by WSP for Pembrokeshire County Council; and,
- Growth rates obtained from TEMPro for the following periods:2014-2018, 2019-2027, and 2018-2027.

Establishing the Baseline

ASSUMPTIONS

WSP are aware the Transport for Wales (TfW) have a strategic model built for the South West and Mid Wales called the South West and Mid Wales Traffic Model (SWMWTM). The strategic model is built for the anticipated traffic volumes in the year 2027. On this basis, to facilitate use of this model in future assessments, WSP have considered the impacts of the hospital on this future year scenario (i.e. 2027). In order to enable this, WSP have obtained growth rates from software known as TEMPro (Trip End Model Presentation Program), which enables users to view the National Trip End Model (NTEM) dataset and provides the user with forecasts of trip ends and associated documentation. The NTEM is a '*model [which] forecasts the growth in trip origin-destinations (or productions-attractions) up to 2051 for use in transport modelling*'. Using TEMPro software, WSP obtained growth rates for the area of each hospital to growth the data collected to the horizon year 2027.

Traffic surveys at relevant locations will be required to support further assessment; however, for the purposes of this initial assessment, WSP have obtained traffic data available publicly which is considered to provide a sufficiently robust assessment.

Trip distribution/redistribution of traffic associated with each of the existing hospitals to each of the locations being considered for a future hospital location has been distributed using existing staff post code data. Further details of this will be provided herein.

EXISTING HOSPITALS

WSP obtained traffic surveys in 2019 to support a transport study to understand the level of traffic generated at four (4) hospitals – Bronglais, Prince Philip, Withybush and Glangwili. The observed 2019 traffic data for each of the impacted hospitals has been used to identify the current number of arrivals and departures to each of the impacted facilities during peak times. Once this is established for the impacted hospitals, we can redistribute the trips accordingly.

GLANGWILI HOSPITAL

Glangwili traffic movement data is provided in the 'West Wales Hospitals Data Collection Report'. Flow diagrams (appended in Appendix A) were prepared using the flow data from the report. Flow diagrams were prepared for a future year of 2027 – in line with the South West and Mid Wales Traffic Model.

WITHYBUSH HOSPITAL

Withybush traffic movement data is provided in the 'West Wales Hospitals Data Collection Report'. Flow diagrams (appended in Appendix B) were prepared using the flow data from the report. Flow diagrams were prepared a future year of 2027 – in line with the South West and Mid Wales Traffic Model.

PROPOSED SITES

Observed data at each of the proposed new site locations has been used to identify the number of arrivals/departures to the locations during peak hours.

As previously stated, traffic surveys at relevant locations will be required to support further assessment; however, for the purposes of this initial assessment, WSP have obtained traffic data available publicly.

ST CLEARS (FORMERLY SITE 17)

Survey data from a TA prepared in 2018 by ADL for Drive Thrus in St Clears provides traffic count data for the A40/A477 roundabout during the AM and PM peak hours. To support our assessment, WSP took the traffic data from the TA and prepared flow diagrams. Traffic data in the TA was from 2017. The observed traffic data, plus the traffic data associated with the proposed McDonalds and Costa were added together to inform the baseline scenario. Once this was obtained, this data has been grown/increased to the year 2027 using TEMPRO growth rates and flow diagrams were prepared for the 2027 background flows and are appended in Appendix C.

WHITLAND: SPRING GARDENS (FORMERLY SITE 12) & WHITLAND: TŶ NEWYDD (FORMERLY SITE C)

Survey data from a 'Transport Statement' prepared in 2014 by Jubb for Redevelopment of the Former Whitland Creamery and 2018 AADT Survey Data conducted by DfT were utilised to build a baseline traffic profile around Sites 12 and C in Whitland. In particular:

- The Transport Statement flows were used to provide traffic figures for Market Street/Spring Gardens, which forms the southern arm of the B4328/A40 roundabout junction.
- AADT counts conducted by DFT were obtained for:
  - Traffic travelling North and South along the highway which forms the northern arm of the roundabout;
  - Traffic travelling East and West along the A40 at two locations: (1) East of the roundabout junction along the A40 and West of the roundabout junction along the A40.

Of this data, only the data obtained for the highway forming the northern arm of the roundabout provides a broken-down hourly traffic profile. Therefore, the peak AM and PM hours within this dataset have been identified, and the percentage of journeys undertaken during these hours across the daily period have been calculated. This information was applied to the AADT data for the A40 as follows:

- The AM and PM percentages have been applied to the data for the remaining sites: East of the A40 and West of the A40. Multiplying the daily traffic flows by the AM and PM peak hour percentages produces the peak AM and PM hourly traffic flows for the A40 junction arms and the northern arm of the roundabout. The flows for the southern arm are taken from the Transport Statement traffic data.

All data from the roundabout junction was then grown to the year 2027 using TEMPRO growth rates.

The AADT data is a 24-hour profile of a section of highway and does not clearly show how the traffic is distributed through the day. To better distribute traffic in the westbound and eastbound directions, NOMIS (Census 2011) data (place of residence and work) has been used to calculate the percentage of journeys travelling to the East and to the West of Whitland. This has been applied to the observed traffic flows as it is typical that traffic flows are not equal in opposing directions in a peak hour. NOMIS data has been used to better understand where people are travelling to work to establish what the likely differences in traffic would be in each direction. This establishes a more realistic profile for each peak period.

The data has been used to produce base flow diagrams for Whitland: Spring Gardens and Whitland: Tŷ Newydd for the AM and PM peak hours for the year 2027. The flow diagrams are appended in Appendix D.

General Assumptions

IMPACT ON EXISTING HOSPITALS

It has been assumed that the construction of a new hospital will result in the relocation of 68% of staff from Glangwili Hospital, and 65% of staff from Withybush Hospital. On this basis, it has been assumed that 68% and 65% of journeys associated with these hospitals will be relocated to the new hospital location (which will either be St Clears, Whitland: Tŷ Newydd or Whitland: Spring Gardens).

Using the traffic flow diagrams for the Withybush and Glangwili Hospitals, we were able to establish an overall arrivals and departures profile for the peak hours for each hospital.

Table 1 shows the arrival and departures associated with Glangwili Hospital for the peak hours.

Table 1: Glangwili Hospital Peak Hour Flows

	Arrivals	Departures
AM Peak	894	181
PM Peak	437	461

Table 2 shows the arrival and departures associated with Withybush for the peak hours.

Table 2: Withybush Hospital Peak Hour Flows

	Arrivals	Departures
AM Peak	500	285
PM Peak	165	426

The percentage of staff being relocated to each of the hospitals was then applied to the respective hospital to obtain the arrival and departure trips associated with the new hospital from each of the existing hospitals. Table 3 shows the arrival and departure profile of the trips taken from Glangwili Hospital (68%) to be reassigned to the new hospital.

Table 3: 68% of Glangwili Hospital Peak Hour Flows

	Arrivals	Departures
AM Peak	608	123
PM Peak	297	314

Table 4 shows the arrival and departure profile of the trips taken from Withybush Hospital (65%) to be reassigned to the new hospital.

Table 4: 65% of Withybush Hospital Peak Hour Flows

	Arrivals	Departures
AM Peak	325	185
PM Peak	107	277

The arrival and departure flows demonstrated in Table 3 and Table 4 were used to establish the new hospital profiles at each of the sites.

EXISTING HOSPITAL TRIP REDISTRIBUTION

To establish the trips associated with the new hospital, the reduction in arrival and departure flows for each existing hospital were redistributed to whichever of the potential site locations was being assessed.

WSP utilised staff post code data received from HDUHB to generate generalised trip distributions for trips also made by patients arriving to and departing from the existing hospitals.

For each existing hospital, the postcodes were assigned a location (i.e. Swansea, Carmarthen, Fishguard, etc.) and the number of staff for each location was totalled to establish a percentage distribution to the various locations of origin (i.e. staff place of residence). The respective distribution profiles were then applied to each of the existing hospitals to understand how many trips would be arriving from and departing to the various destinations. More specifically for Glangwili Hospital (as an example):

- Using the staff residence post codes, the total number of staff were grouped and totalled by common origination locations, i.e. 1494 members of staff reside within Carmarthen and travel to Glangwili Hospital, 239 members of staff travel reside within Kidwelly and travel to Glangwili Hospital, etc.

- For each location that staff have been identified to be travelling from (i.e. their place of residence), the routes which they take to get there have been identified using Google Maps and identifying the best and quickest route. Once the routes have been understood, WSP were able to apply the trips to key routes and junctions. WSP then created a profile for the key junctions around the proposed site locations to understand how people are travelling through these key junctions at present.

- The places of residence were then used to understand the routes people would take to the three (3) potential site locations (i.e. in Whitland and St Clears). We then used this to understand the change at each junction. This showed that the overall net change would be minimal for those already travelling past Whitland and/or St Clears to their respective places of work (either Glangwili or Withybush Hospital). However, it should be noted that, albeit small numbers, those staff living east of St Clears would not travel past Whitland or St Clears and so any staff travelling to Glangwili Hospital from east of St Clears would be additional to the junctions near the sites. Likewise, those staff living west of Whitland would not travel past Whitland or St Clears to get to Withybush Hospital and would therefore be additional trips through the junctions near the sites. Notwithstanding this, WSP are content that the approximation derived using this method is still appropriate for this initial analysis.

- The trips, as per Table 3 (above) for Glangwili Hospital, would be distributed along the network in line with the location of residence data distribution profile to understand the trip profile to/from each site. Flow diagrams were then assembled for each site demonstrating the likely trip profile of the diverted Glangwili Hospital trips around the potential new hospital sites.

The methodology used above was repeated for Withybush Hospital. Once both sets of flow diagrams were completed, the two profiles were totalled to form ‘New Hospital’ flow diagrams (i.e. diverted Glangwili Hospital trips + diverted Withybush Hospital trips).

Flow diagrams were prepared for the AM and PM peak hour for each of the potential new hospital sites and are appended in Appendix E.

IMPACT ASSESSMENT

The flow diagrams prepared for the baseline 2027 traffic at each of the potential new sites was compared to the proposed ‘New Hospital’ traffic at each of the sites to obtain a percentage impact. The percentage impact is calculated by dividing the proposed hospital traffic by the base 2027 traffic data which yields the percent uplift against the existing traffic.

WSP have prepared flow diagrams which contain all of the above information (appended in Appendix F) which are provided for public engagement/consultation purposes.

MITIGATION

It is appreciated that the new hospital will generate new / additional traffic in either Whitland or St Clears and appropriate intervention and mitigation measures will be required. The assessment undertaken at present is a like for like scenario whereby all vehicle trips to the existing hospitals have simply been relocated to the new hospital without any mode shift measures considered. Mode shift is when people change how they travel, typically shifting away from a private car to a more sustainable mode (i.e. bus, train, bicycle or walking). Transport Policy seeks to prioritise more sustainable modes of transport and key policy, including the Llwybr Newydd: The Wales Transport Strategy 2021 and Active Travel Act 2021, specifies a 'Sustainable Transport Hierarchy' - putting walking and cycling (and wheeling) at the top of the hierarchy, followed by public transport, ultra-low emission vehicles and then other private motor vehicles. This hierarchy sets the tone on how transport should be planned and prioritised now and in the future, to enable a more sustainable and resilient Wales. In order to promote mode shift, measures are introduced to change enable the change by either making driving by private vehicle more inconvenient, or by making other modes easier and/or more attractive options.

As part of the ongoing works to consider traffic and transport relating to the proposed new hospital, mitigation measures will be considered in the form of:

- Improved bus services: increased frequency, better/longer routes, later hours of operation, bus routes linked to train station(s);
- Active Travel: enhancing active travel routes, ensuring the hospital includes shower / locker facilities to support commuting by cycling, walking/running or other wheeler modes;
- Incentivise: cycle to work scheme, cycle training, grants, etc.;
- Rail: provide a shuttle bus service to/from the nearest station to/from the hospital;
- Car sharing: priority/free parking given to car sharing journeys for parking on site; and,
- Travel Planning: prepare a travel plan for new staff to facilitate journey planning and provide staff with personalised travel planning opportunities if they wish to consult and have a tailored travel plan.

It is evident that significant highway schemes will not be considered in future and so other interventions will be required to ensure that the impacts of the new hospital can be mitigated. The measures indicated above would help to facilitate mode shift and mitigate against increases in traffic in the vicinity of the selected site such that there was no significant impact on the public highway (as required by planning policy).

NEXT STEPS

The next steps to be undertaken to better understand and to mitigate the impacts of a new hospital on the highway network would require additional work which would include, but would not be limited to:

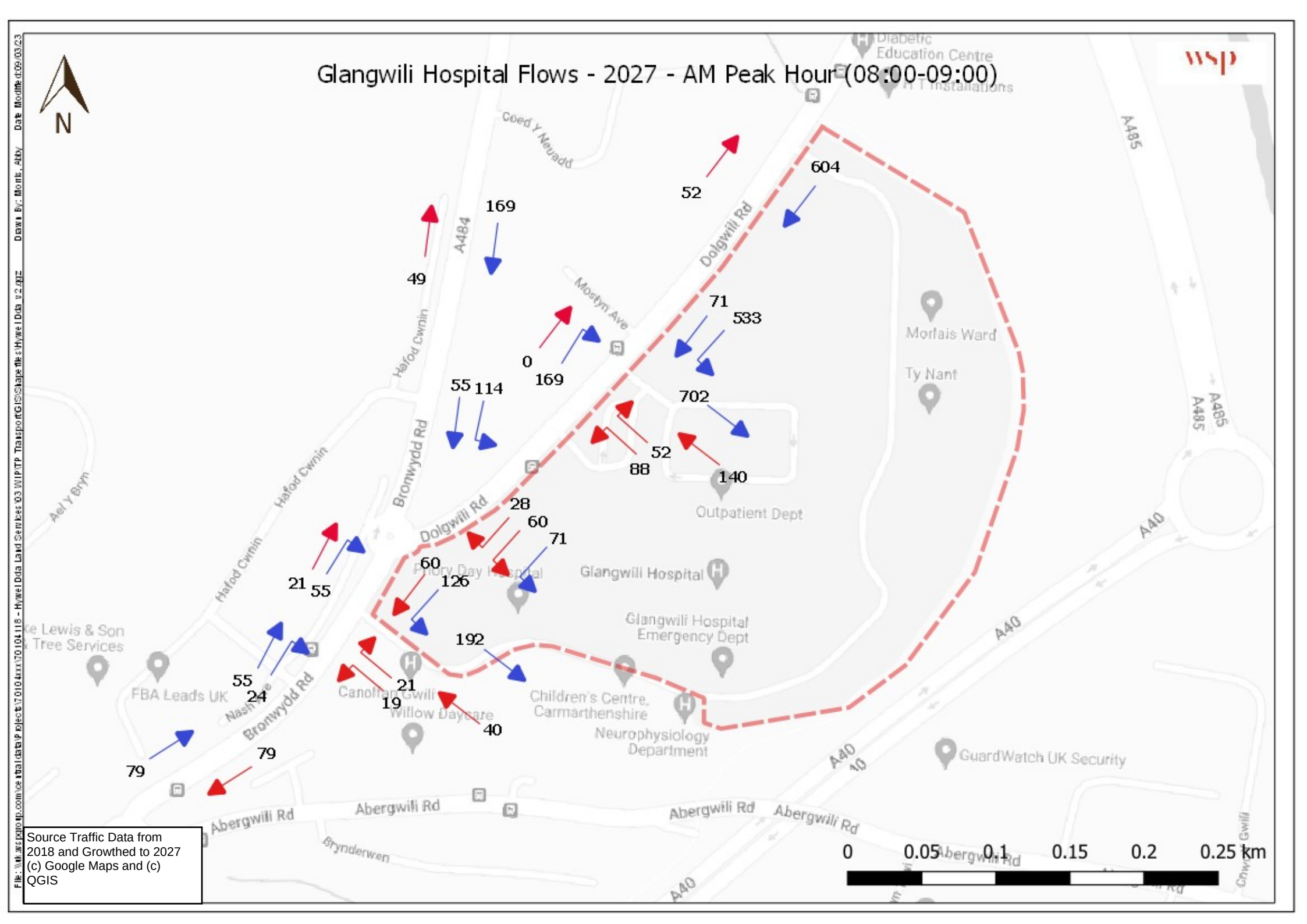
- Obtain up to date traffic surveys at key junctions;
- Model the impacts at the key junctions in standalone and in the strategic transport model (SWMWTM);
- Summarise and more accurately define the impacts on the existing transport provision as a result of the new hospital;
- Prepare mitigation measures options that could be applied to the existing transport provision; and,

- Prepare a Transport Assessment and Travel Plan for the selected site.

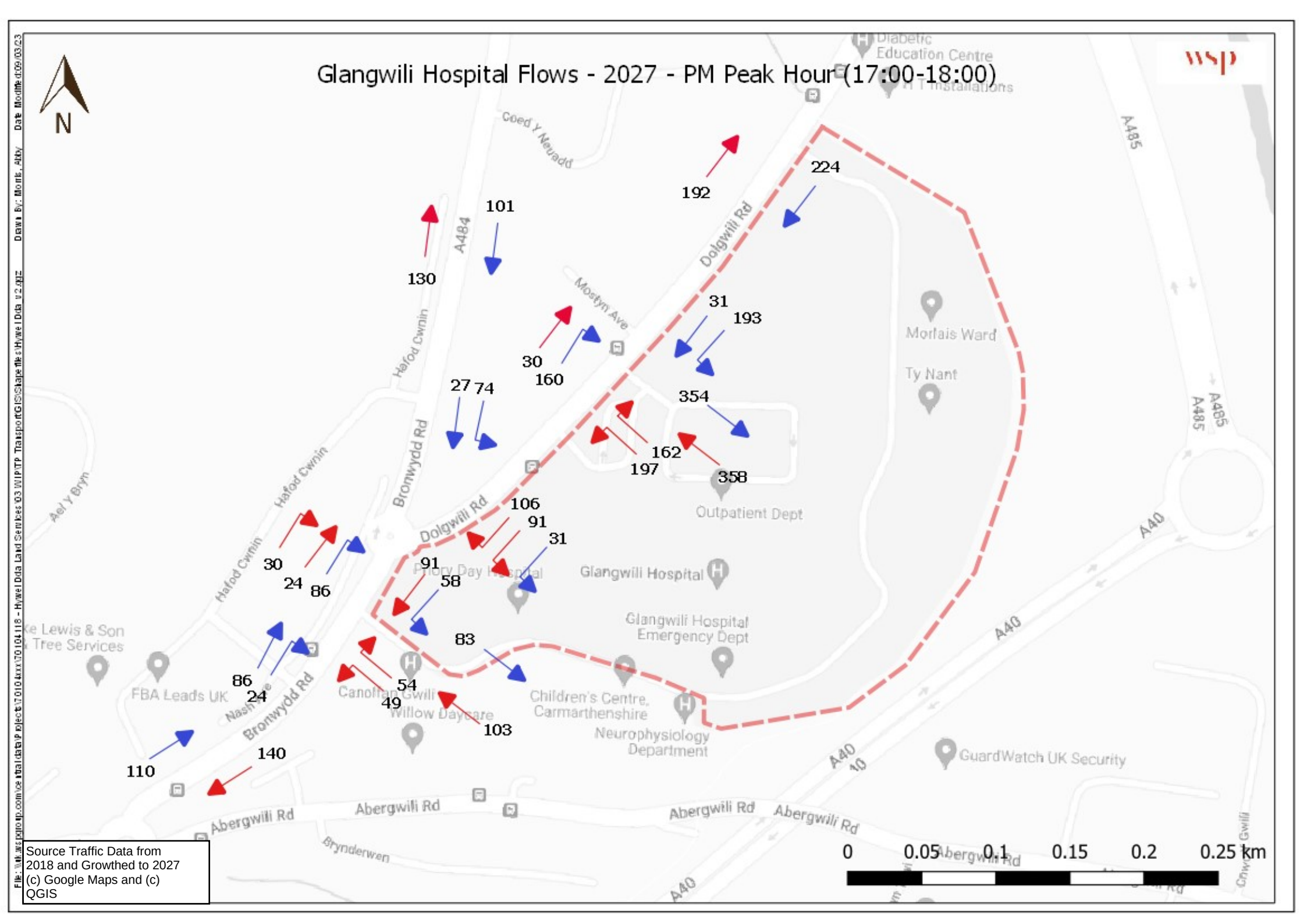
Appendices

Appendix A Glangwili Hospital Flows
Appendix B Withybush Hospital Flows
Appendix C St Clears (Formerly Site 17) 2027 Background Flows
Appendix D Whitland: Spring Gardens (Formerly Site 12) & Tŷ Newydd (Formerly Site C) 2027 Background Flows
Appendix E Hospital Flows at Proposed Sites (St Clears, Whitland: Spring Gardens & Tŷ Newydd)
Appendix F Presentation Diagrams (St Clears, Whitland: Spring Gardens & Tŷ Newydd)

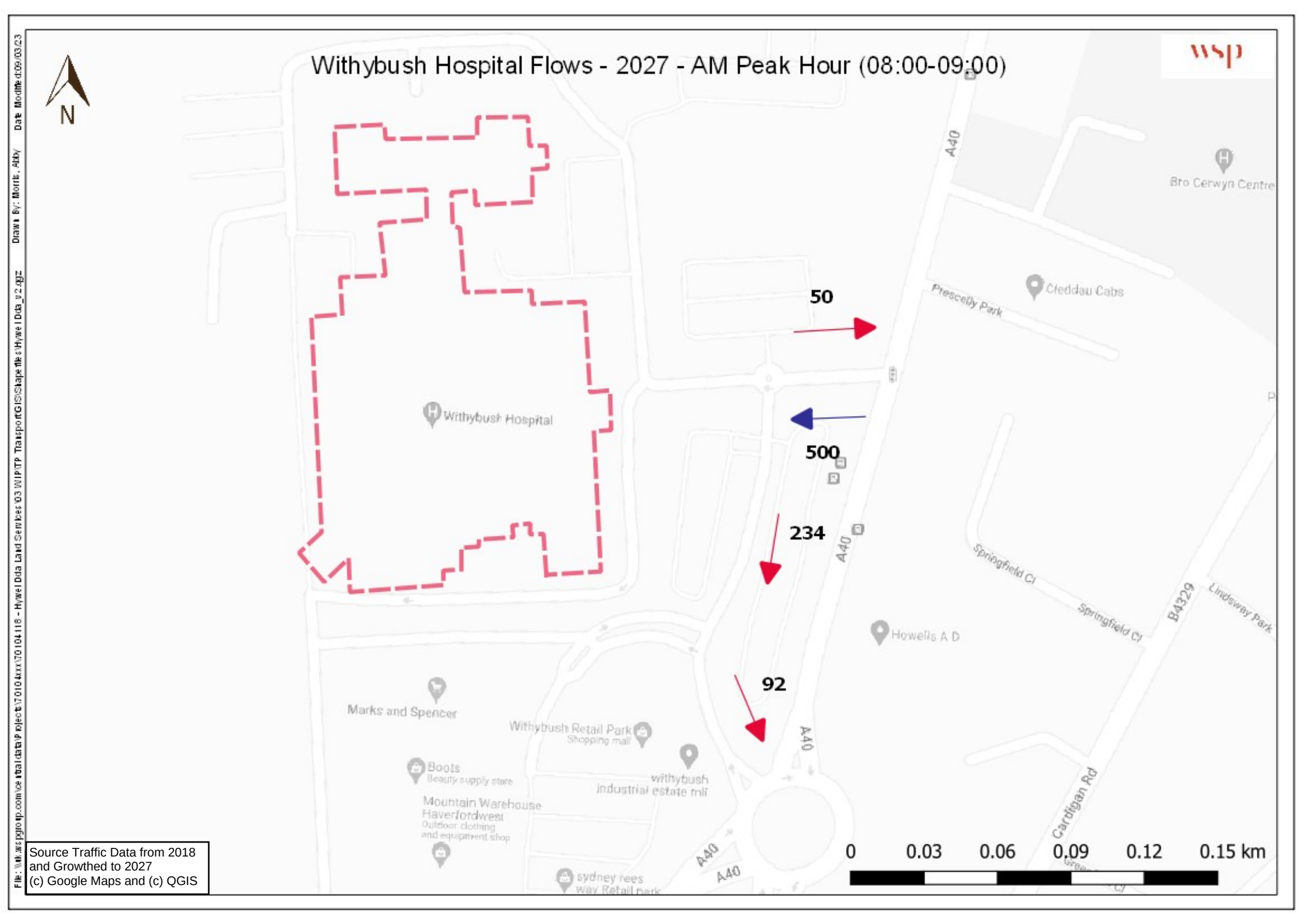
APPENDIX A GLANGWILI HOSPITAL FLOWS

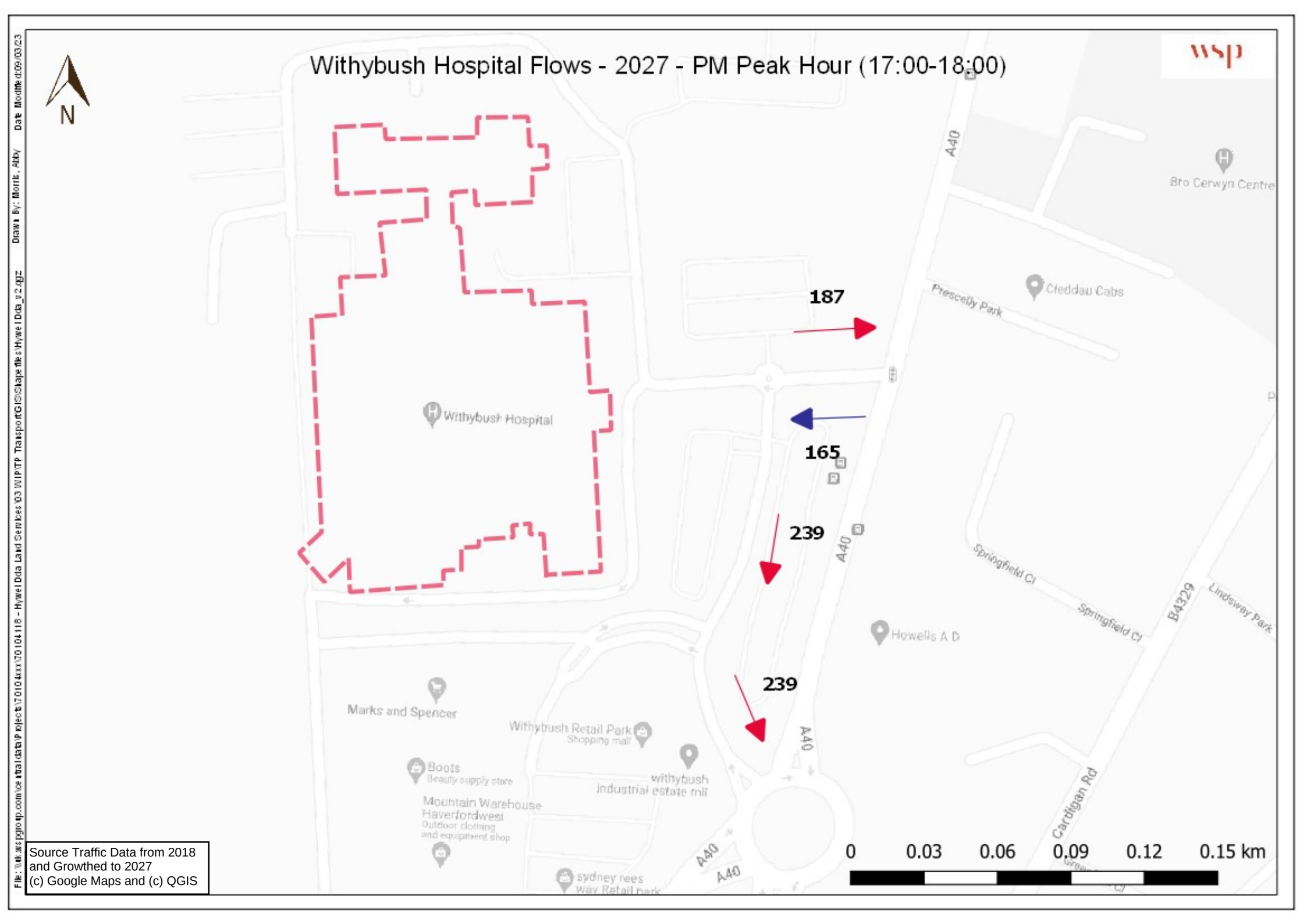


Source Traffic Data from 2018 and Growthed to 2027 (c) Google Maps and (c) QGIS

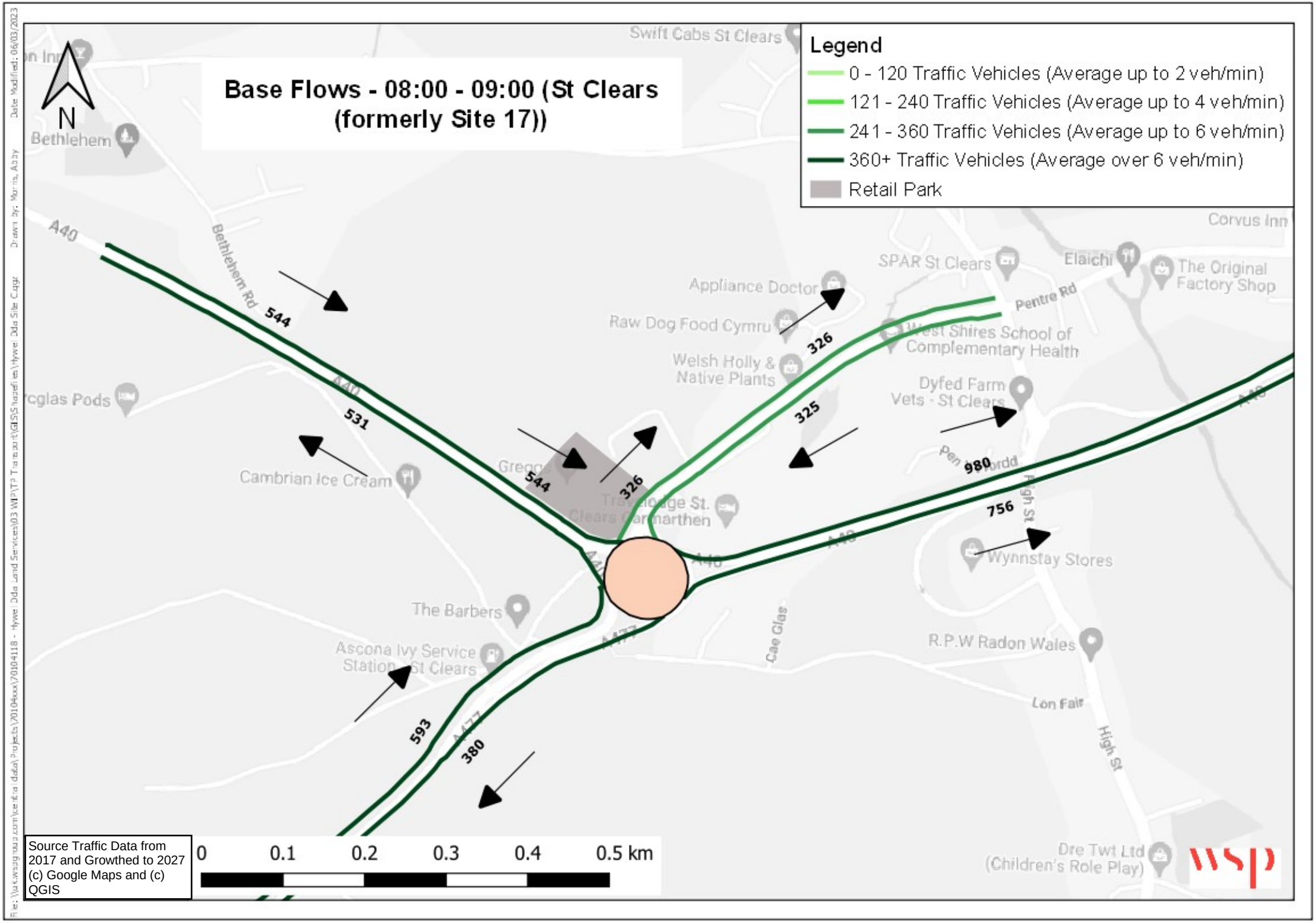

Glangwili Hospital Flows - 2027 - PM Peak Hour (17:00-18:00)
N
Source Traffic Data from 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
0 0.05 0.1 0.15 0.2 0.25 km
Dolgwili Rd
Bronwydd Rd
Halfod Cwmin
Mostyn Ave
Goed y Neuadd
A484
A485
A40
Abergwili Rd
Brynderwen
Diabetic Education Centre
Morfais Ward
Ty Nant
Outpatient Dept
Glangwili Hospital
Glangwili Hospital Emergency Dept
Children's Centre, Carmarthenshire
Neurophysiology Department
Willow Daycare
FBA Leads UK
GuardWatch UK Security
192
224
101
130
31
193
30
160
27
74
354
162
197
358
106
91
31
30
24
86
91
58
83
86
24
54
49
103
110
140

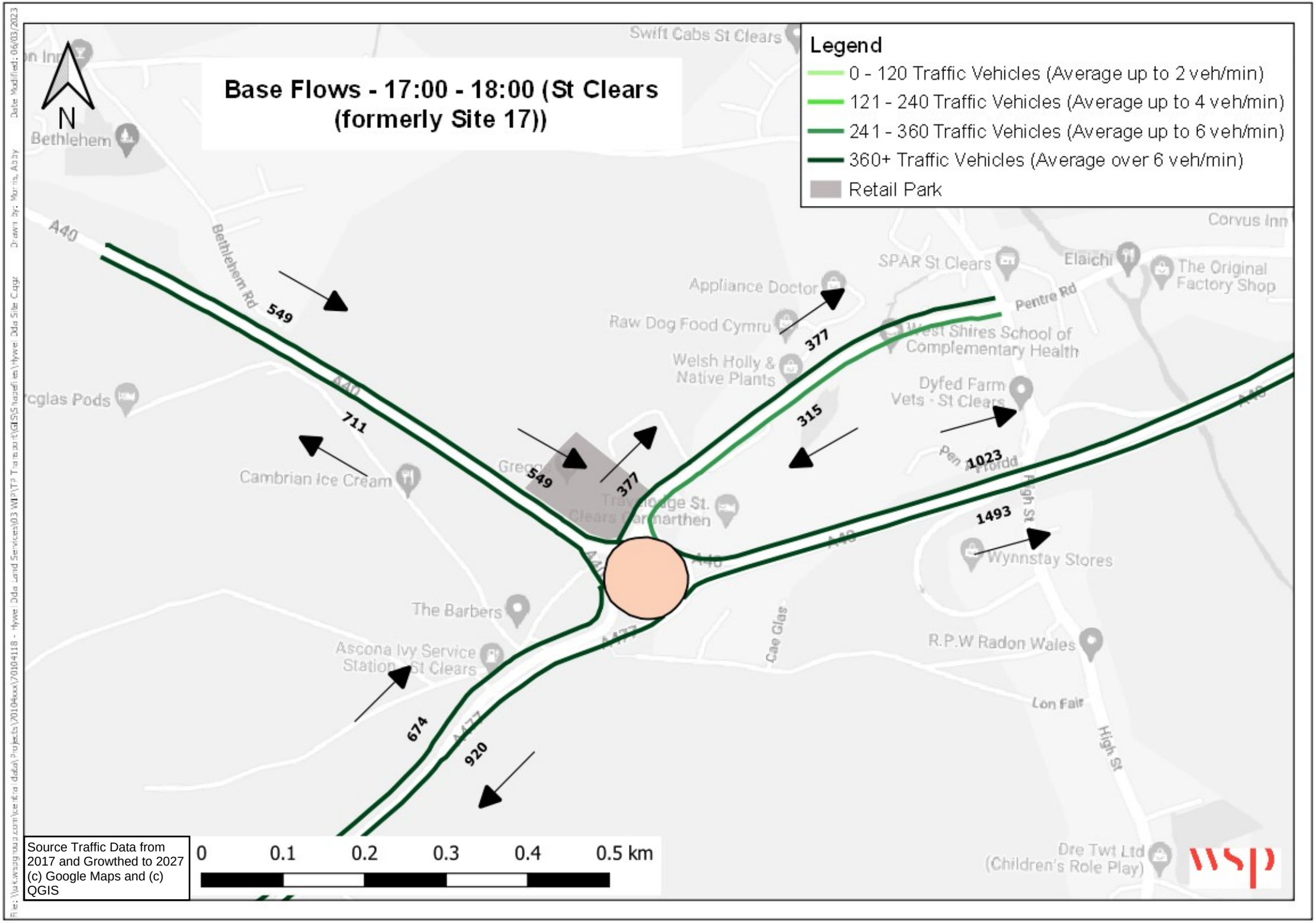
APPENDIX B WITHYBUSH HOSPITAL FLOWS


Withybush Hospital Flows - 2027 - AM Peak Hour (08:00-09:00)
N
50
500
234
92
Withybush Hospital
A40
Bro Cerwyn Centre
Cleddau Cabs
Prescelly Park
Springfield Cl
Springfield Cl
B4329
Lindsway Park
Howells A D
Marks and Spencer
Withybush Retail Park
Shopping mall
Boots
Beauty supply store
withybush industrial estate mill
Mountain Warehouse Haverfordwest
Outdoor clothing and equipment shop
sydney rees way Retail park
Cardigan Rd
0
0.03
0.06
0.09
0.12
0.15 km
Source Traffic Data from 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS

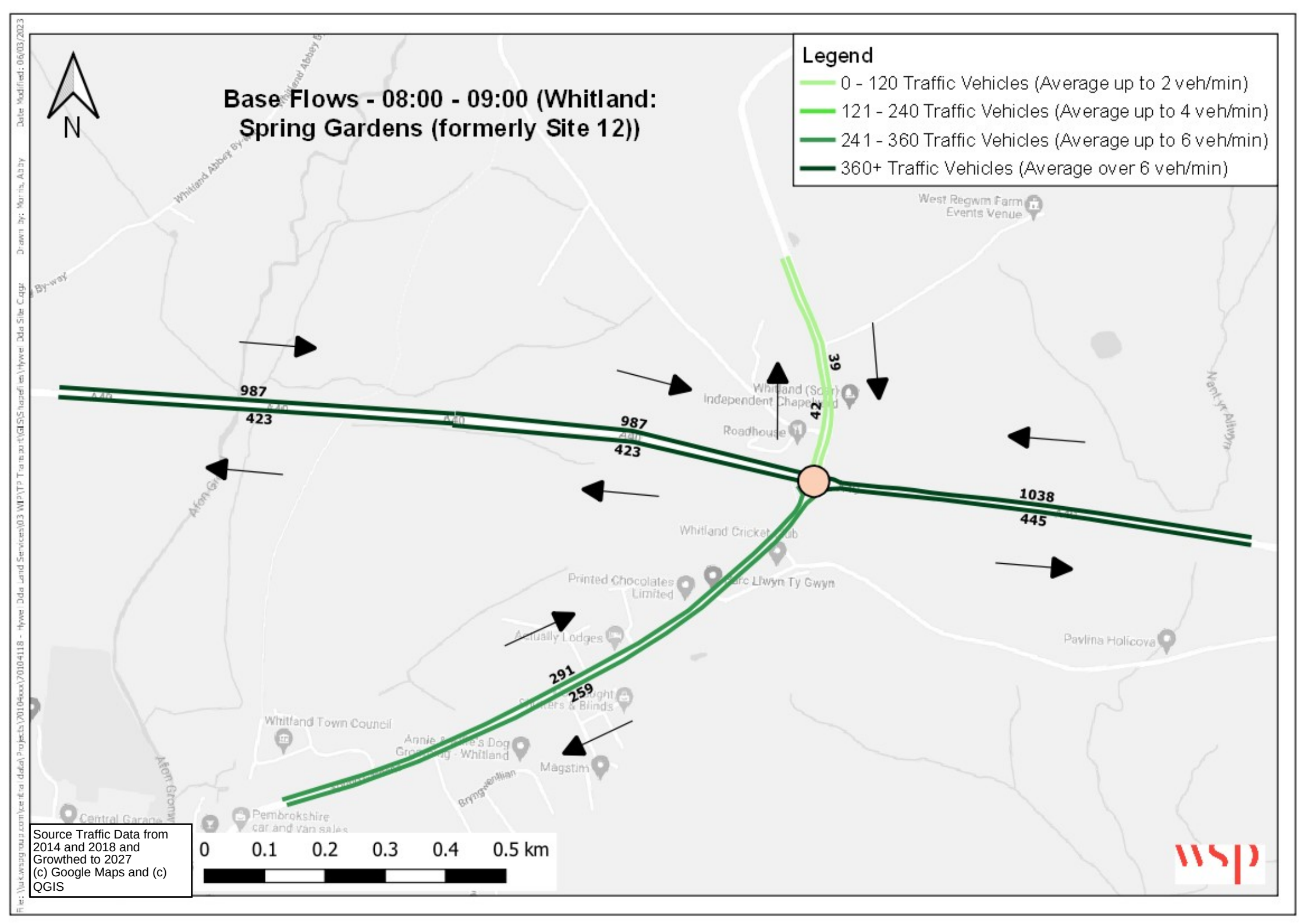

Withybush Hospital Flows - 2027 - PM Peak Hour (17:00-18:00)
N
187
165
239
239
Withybush Hospital
A40
Bro Cerwyn Centre
Cleddau Cabs
Prescelly Park
Springfield Cl
Springfield Cl
B4329
Lindsway Park
Howells A D
Marks and Spencer
Withybush Retail Park
Shopping mall
Boots
Beauty supply store
withybush industrial estate mill
Mountain Warehouse Haverfordwest
Outdoor clothing and equipment shop
sydney rees way Retail park
Cardigan Rd
0
0.03
0.06
0.09
0.12
0.15 km
Source Traffic Data from 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS

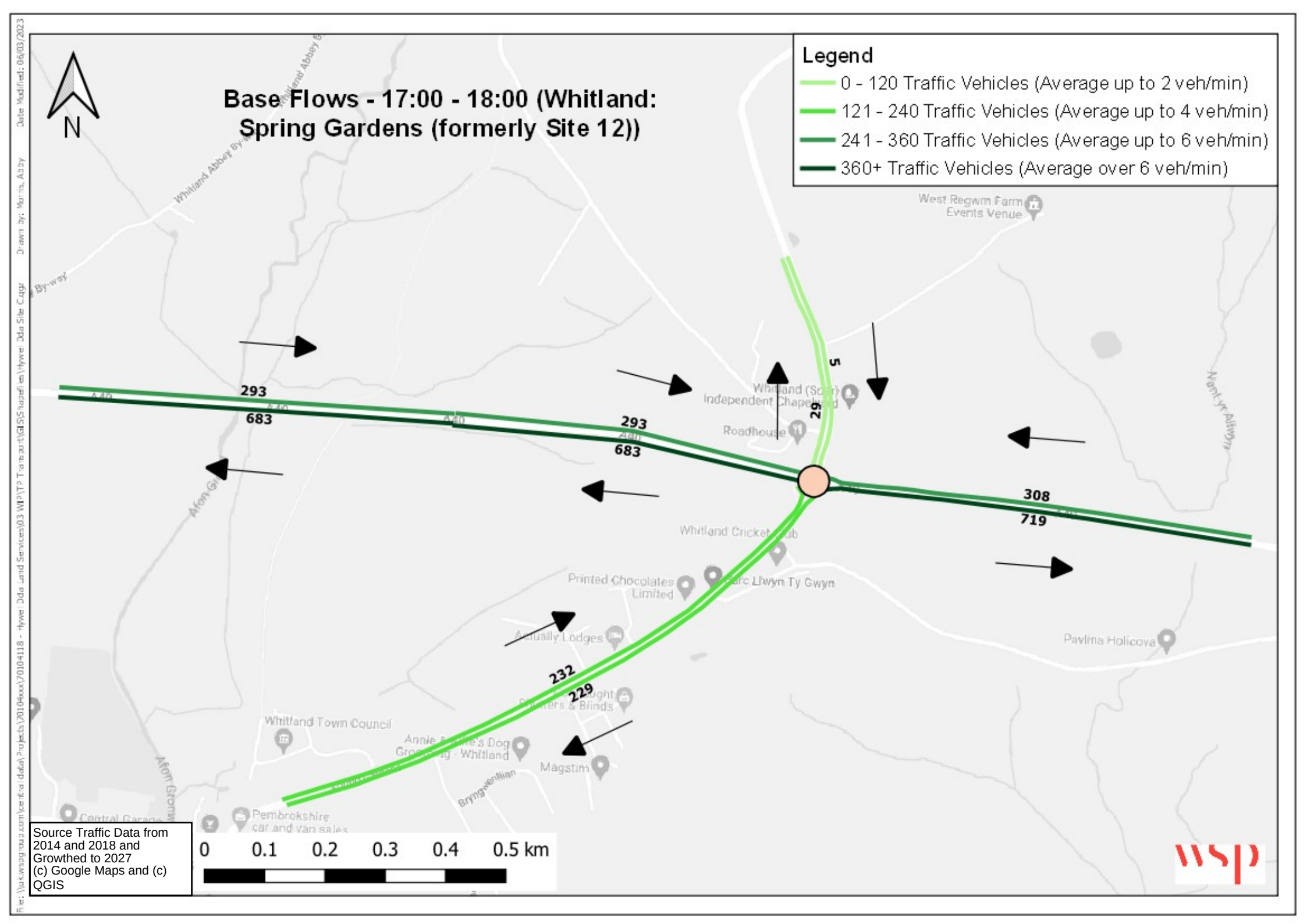
APPENDIX C ST CLEARS (FORMERLY SITE 17) 2027 BACKGROUND FLOWS

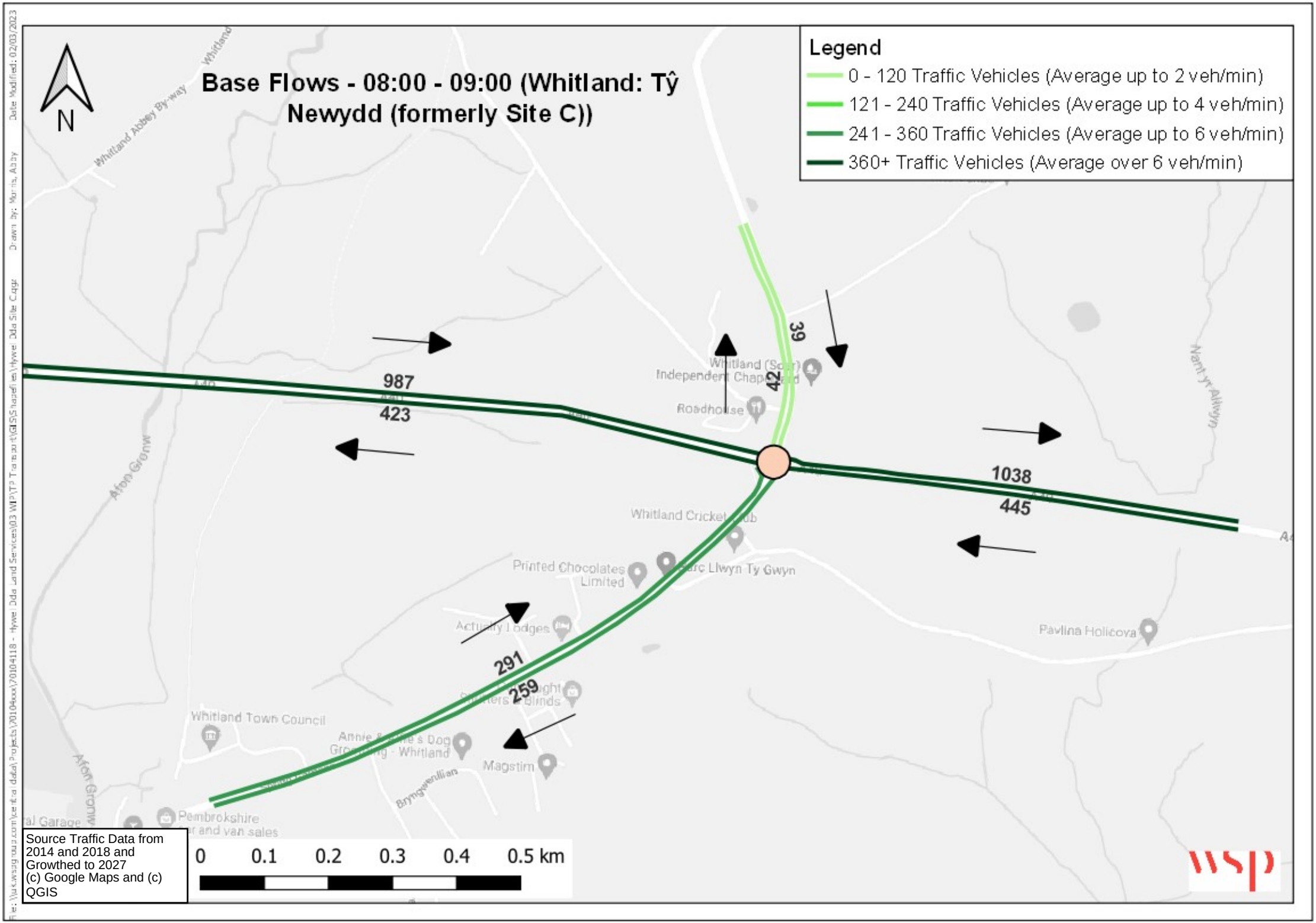

Base Flows - 08:00 - 09:00 (St Clears (formerly Site 17))
Legend
0 - 120 Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Traffic Vehicles (Average up to 6 veh/min)
360+ Traffic Vehicles (Average over 6 veh/min)
Retail Park
N
A40
Bethlehem Rd
544
531
326
325
980
756
593
380
Source Traffic Data from 2017 and Growthed to 2027
(c) Google Maps and (c) QGIS
0
0.1
0.2
0.3
0.4
0.5 km

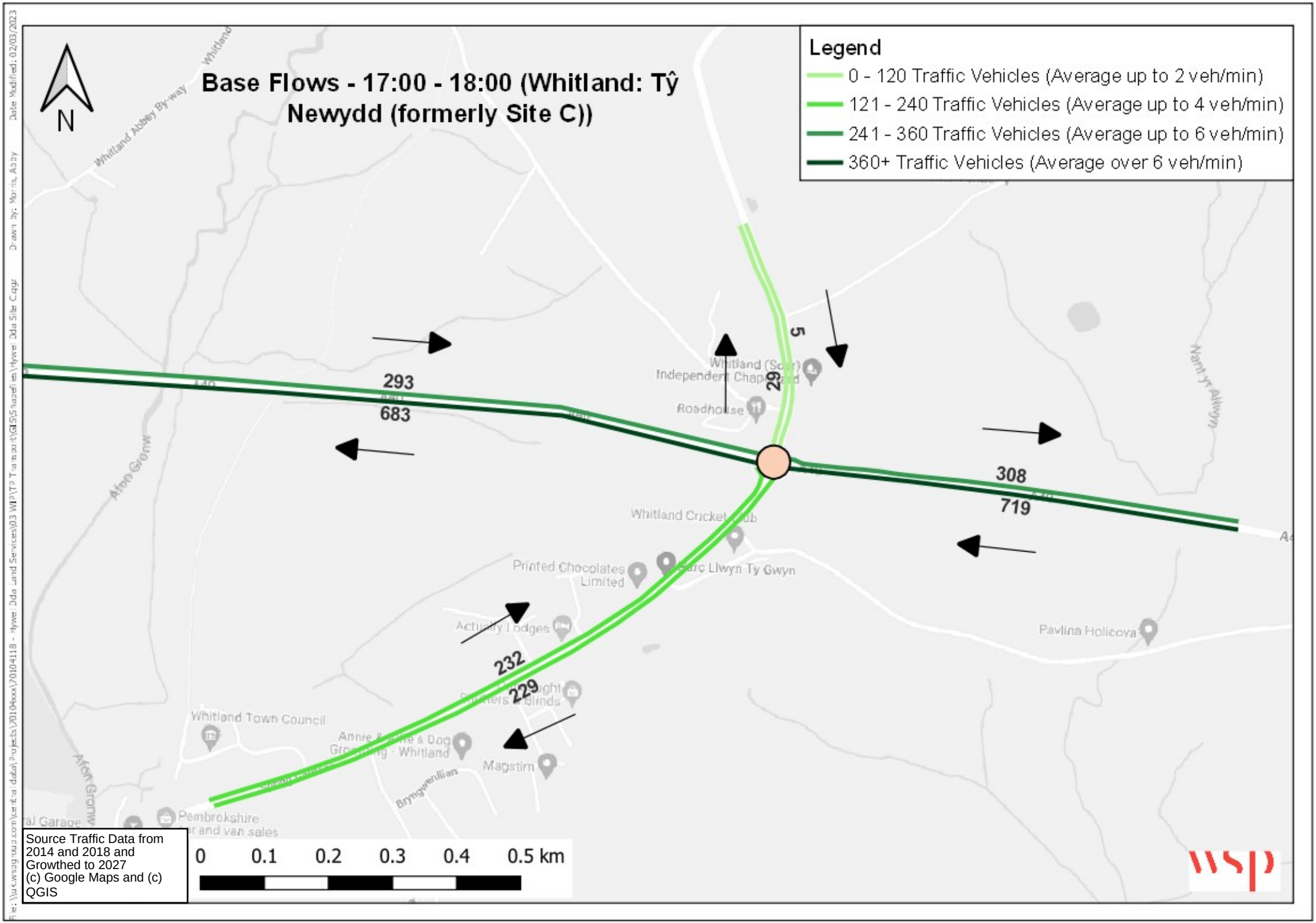

Base Flows - 17:00 - 18:00 (St Clears (formerly Site 17))
Legend
0 - 120 Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Traffic Vehicles (Average up to 6 veh/min)
360+ Traffic Vehicles (Average over 6 veh/min)
Retail Park
N
A40
Bethlehem Rd
549
711
377
315
1023
1493
674
920
Swift Cabs St Clears
Bethlehem
Corvus Inn
SPAR St Clears
Elaichi
The Original Factory Shop
Appliance Doctor
Raw Dog Food Cymru
Welsh Holly & Native Plants
Pentre Rd
West Shires School of Complementary Health
Dyfed Farm Vets - St Clears
Cambrian Ice Cream
Wynnstay Stores
The Barbers
Ascona Ivy Service Station
R.P.W Radon Wales
Cae Glas
Lon Fair
High St
Dre Twt Ltd (Children's Role Play)
0
0.1
0.2
0.3
0.4
0.5 km
Source Traffic Data from 2017 and Growthed to 2027
(c) Google Maps and (c) QGIS

APPENDIX D WHITLAND: SPRING GARDENS (FORMERLY SITE 12) & TŶ NEWYDD (FORMERLY SITE C) 2027 BACKGROUND FLOWS

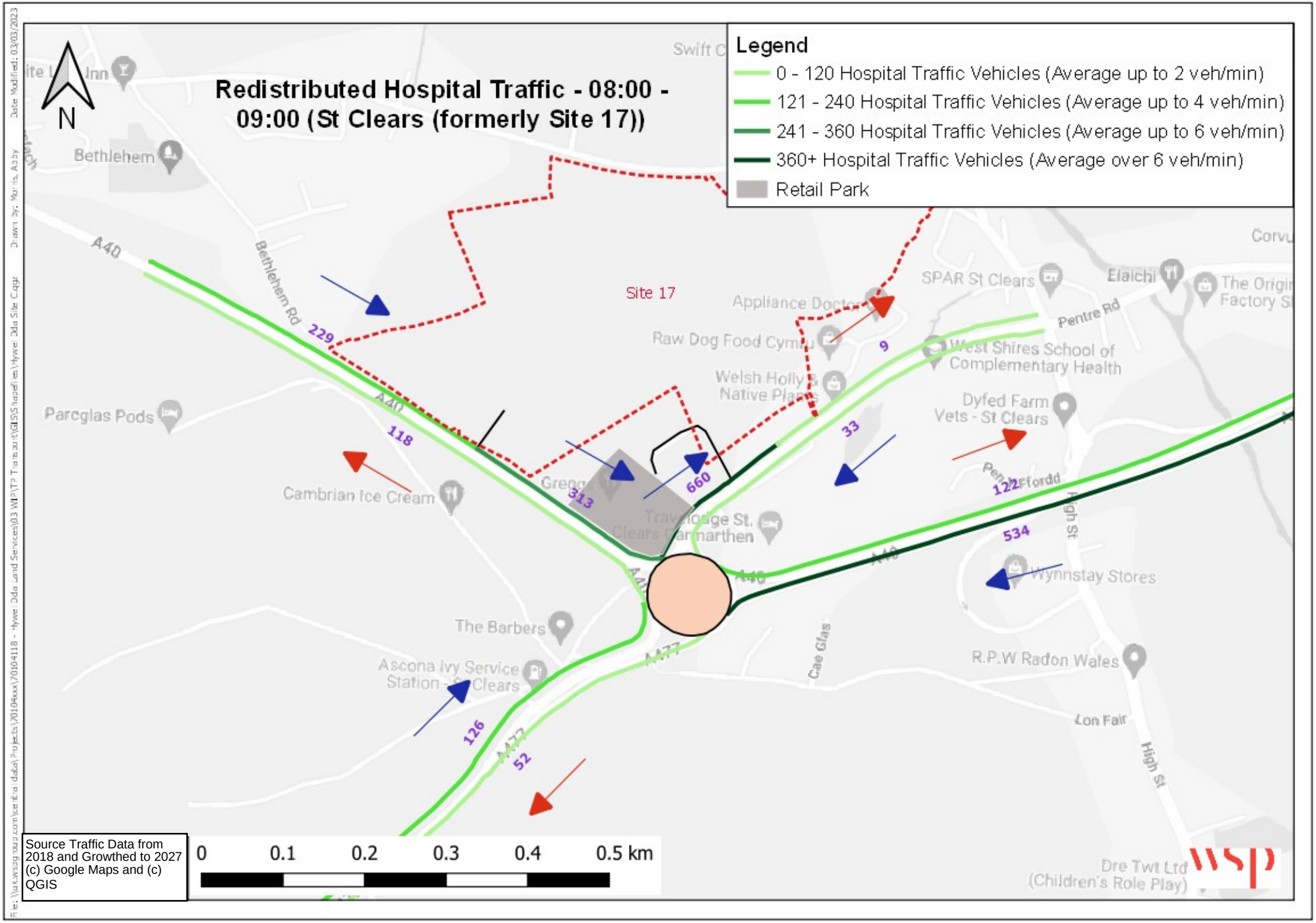

Base Flows - 08:00 - 09:00 (Whitland: Spring Gardens (formerly Site 12))
N
Legend
0 - 120 Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Traffic Vehicles (Average up to 6 veh/min)
360+ Traffic Vehicles (Average over 6 veh/min)
987
423
987
423
39
42
1038
445
291
259
West Regwm Farm Events Venue
Roadhouse
Whitland Cricket Club
Printed Chocolates Limited
Actually Lodges
Pavlina Holicova
Whitland Town Council
Magstim
Pembrokeshire car and van sales
Central Garage
0
0.1
0.2
0.3
0.4
0.5 km
Source Traffic Data from 2014 and 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS

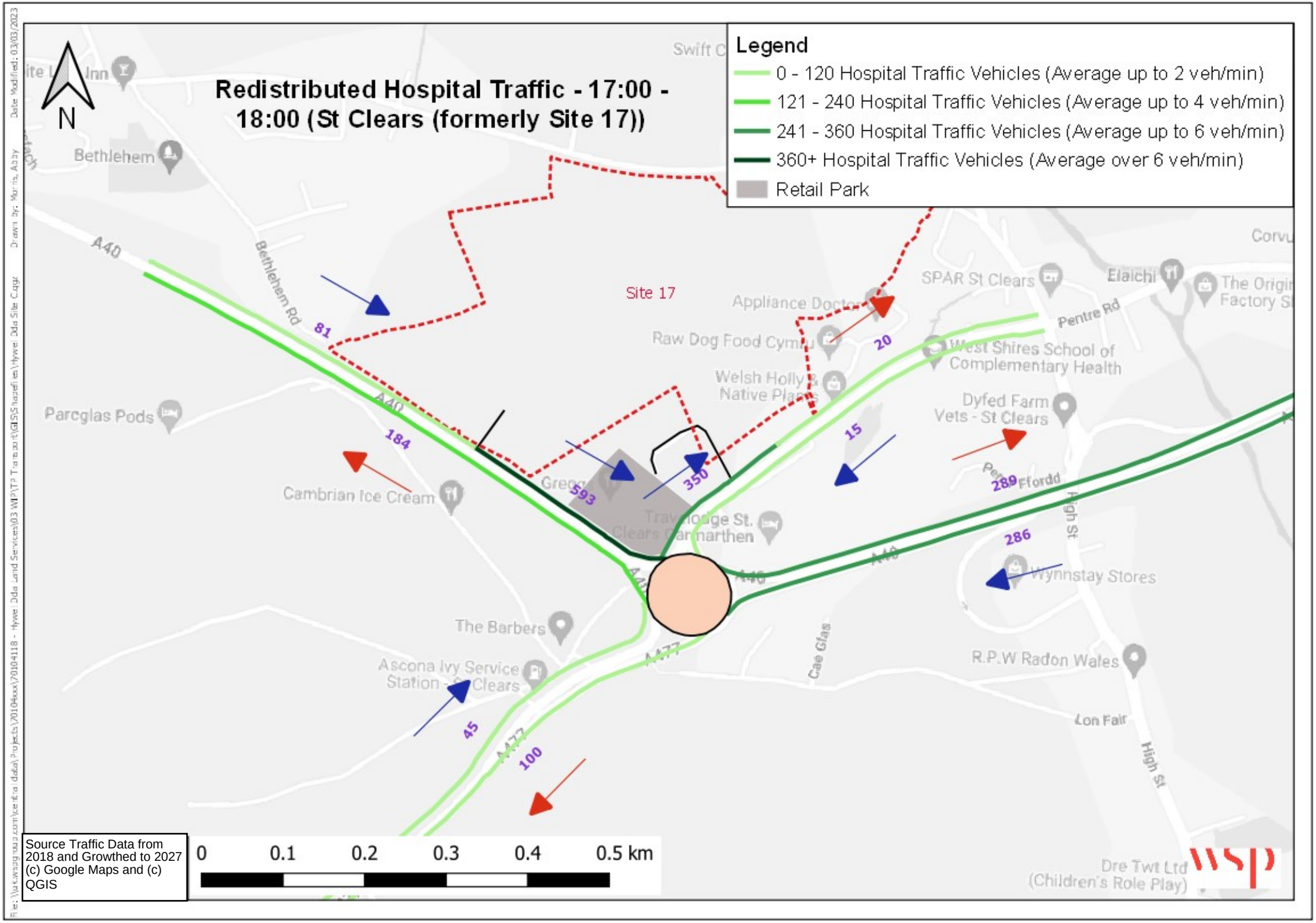

Base Flows - 17:00 - 18:00 (Whitland: Spring Gardens (formerly Site 12))
N
Legend
0 - 120 Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Traffic Vehicles (Average up to 6 veh/min)
360+ Traffic Vehicles (Average over 6 veh/min)
293
683
293
683
29
5
308
719
232
229
Source Traffic Data from 2014 and 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
0
0.1
0.2
0.3
0.4
0.5 km
West Regwm Farm Events Venue
Roadhouse
Whitland Cricket Club
Printed Chocolates Limited
Pavlina Holicova
Whitland Town Council
Magstim
Pembrokshire car and van sales
Central Garage


Base Flows - 08:00 - 09:00 (Whitland: Tŷ Newydd (formerly Site C))
N
Legend
0 - 120 Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Traffic Vehicles (Average up to 6 veh/min)
360+ Traffic Vehicles (Average over 6 veh/min)
987
423
39
42
1038
445
291
259
Whitland Abbey By-way
Afon Gronw
Roadhouse
Whitland Cricket Club
Printed Chocolates Limited
Parc Llwyn Ty Gwyn
Pavlina Holicova
Whitland Town Council
Magstim
Pembrokshire
Source Traffic Data from 2014 and 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
0 0.1 0.2 0.3 0.4 0.5 km

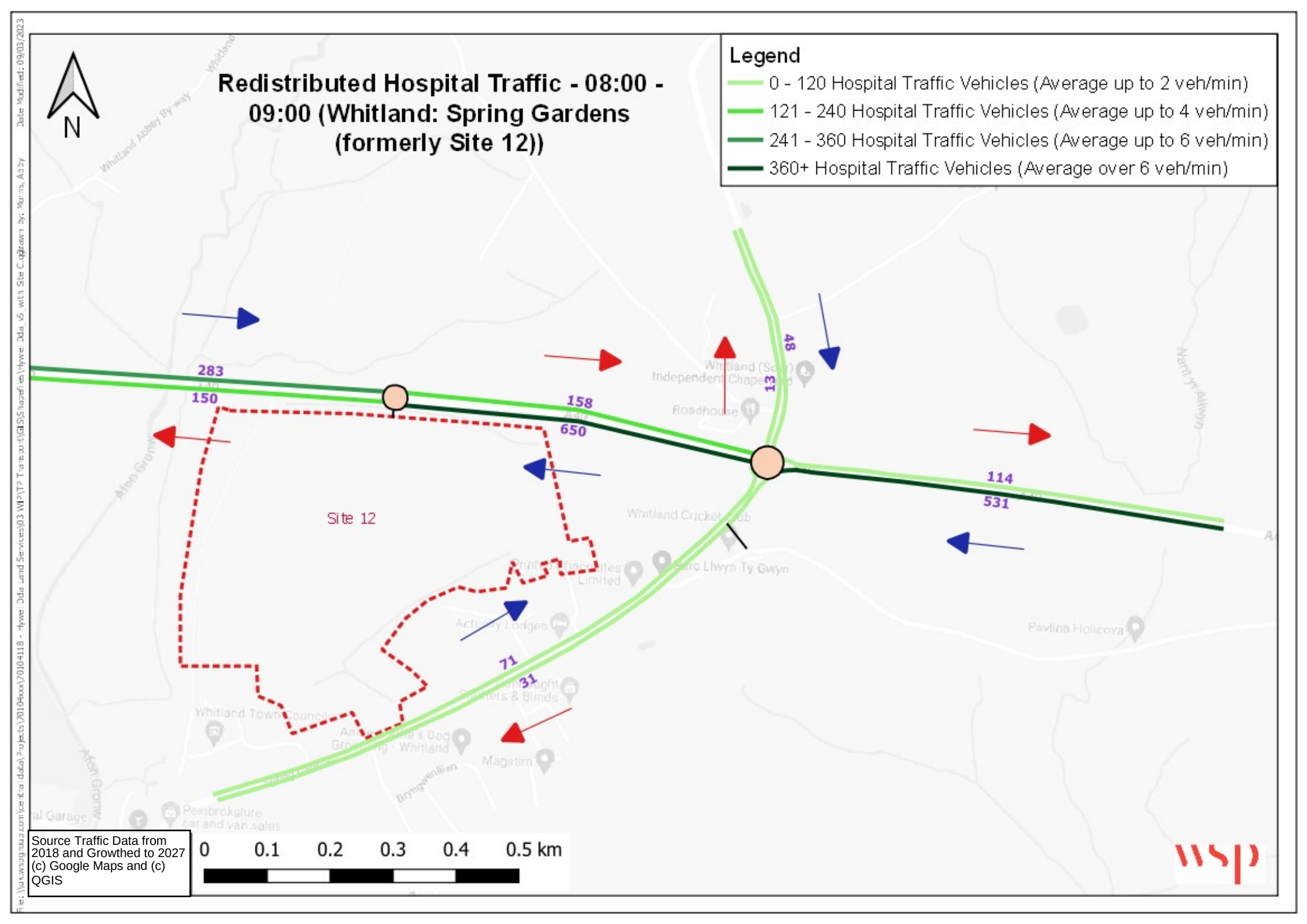

Base Flows - 17:00 - 18:00 (Whitland: Tŷ Newydd (formerly Site C))
N
Legend
0 - 120 Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Traffic Vehicles (Average up to 6 veh/min)
360+ Traffic Vehicles (Average over 6 veh/min)
293
683
5
29
308
719
232
229
Whitland Abbey By-way
Whitland
Afon Gronw
Roadhouse
Whitland Cricket Club
Printed Chocolates Limited
Parc Llwyn Ty Gwyn
Pavlina Holicova
Whitland Town Council
Magstim
Pembrokshire
Source Traffic Data from 2014 and 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
0 0.1 0.2 0.3 0.4 0.5 km

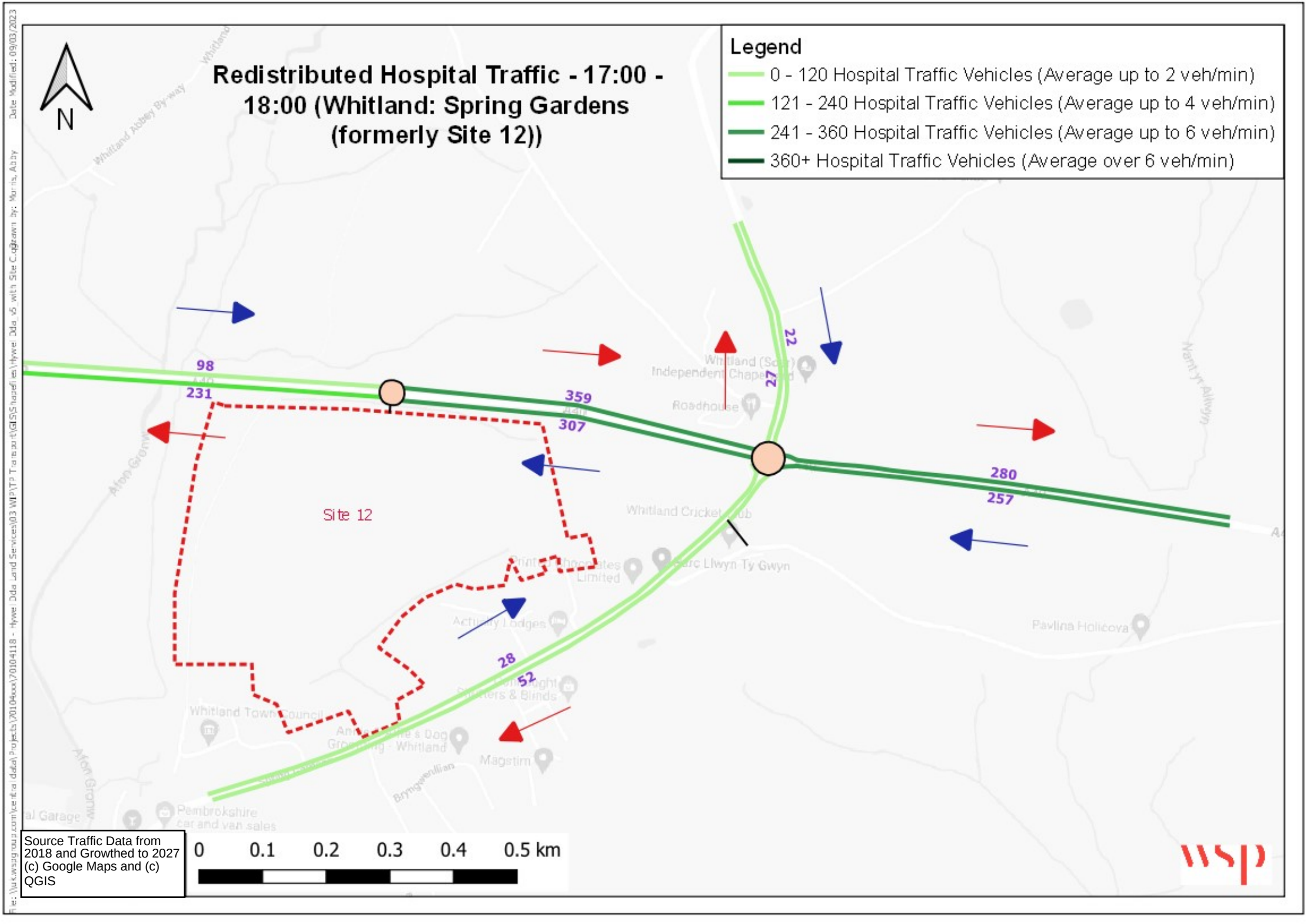
APPENDIX E HOSPITAL FLOWS AT PROPOSED SITES (ST CLEARS, WHITLAND: SPRING GARDENS & TŶ NEWYDD)

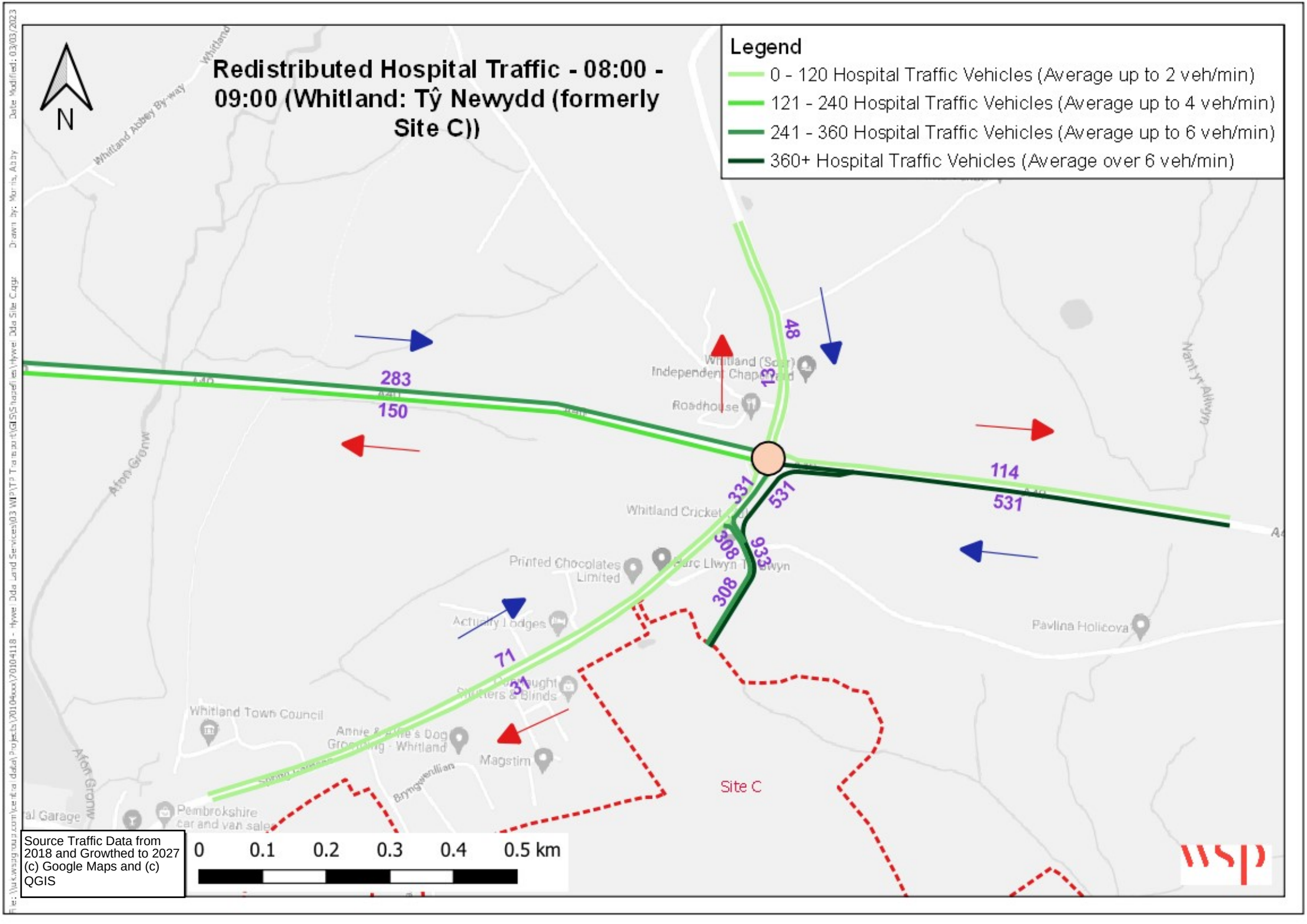

Redistributed Hospital Traffic - 08:00 - 09:00 (St Clears (formerly Site 17))
N
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
Retail Park
Site 17
A40
Bethlehem Rd
Bethlehem
Parcglas Pods
Cambrian Ice Cream
Greggs
Travelodge St. Clears Carmarthen
Appliance Doctor
Raw Dog Food Cymru
Welsh Holly & Native Plants
SPAR St Clears
Elaichi
Pentre Rd
West Shires School of Complementary Health
Dyfed Farm Vets - St Clears
Pentrefordd
High St
Wynnstay Stores
The Barbers
Ascona Ivy Service Station - St Clears
A477
Cae Glas
R.P.W Radon Wales
Lon Fair
Dre Twt Ltd (Children's Role Play)
229
118
313
660
33
9
122
534
126
52
0
0.1
0.2
0.3
0.4
0.5 km
Source Traffic Data from 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
wsp

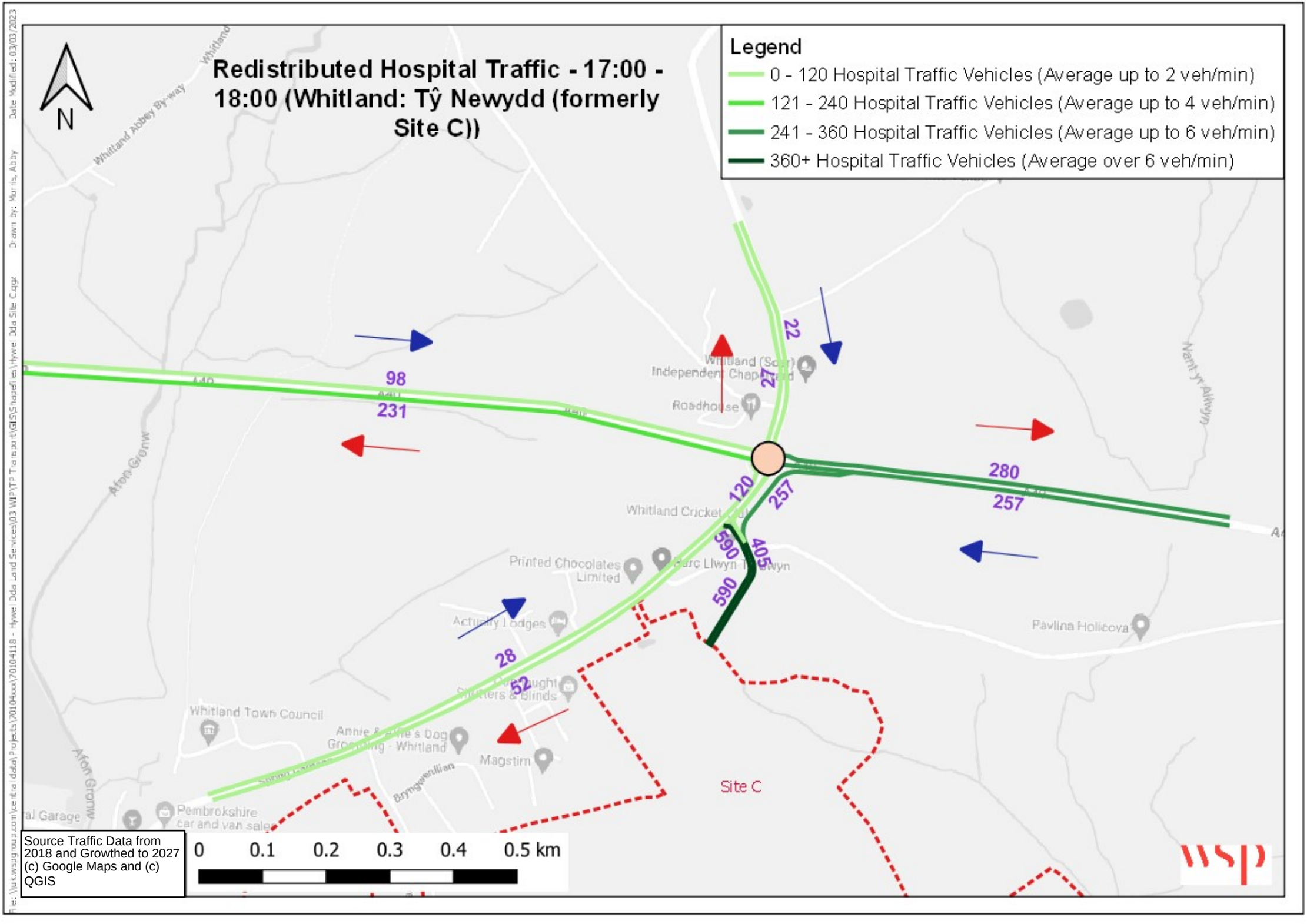


Source Traffic Data from 2018 and Growthed to 2027 (c) Google Maps and (c) QGIS

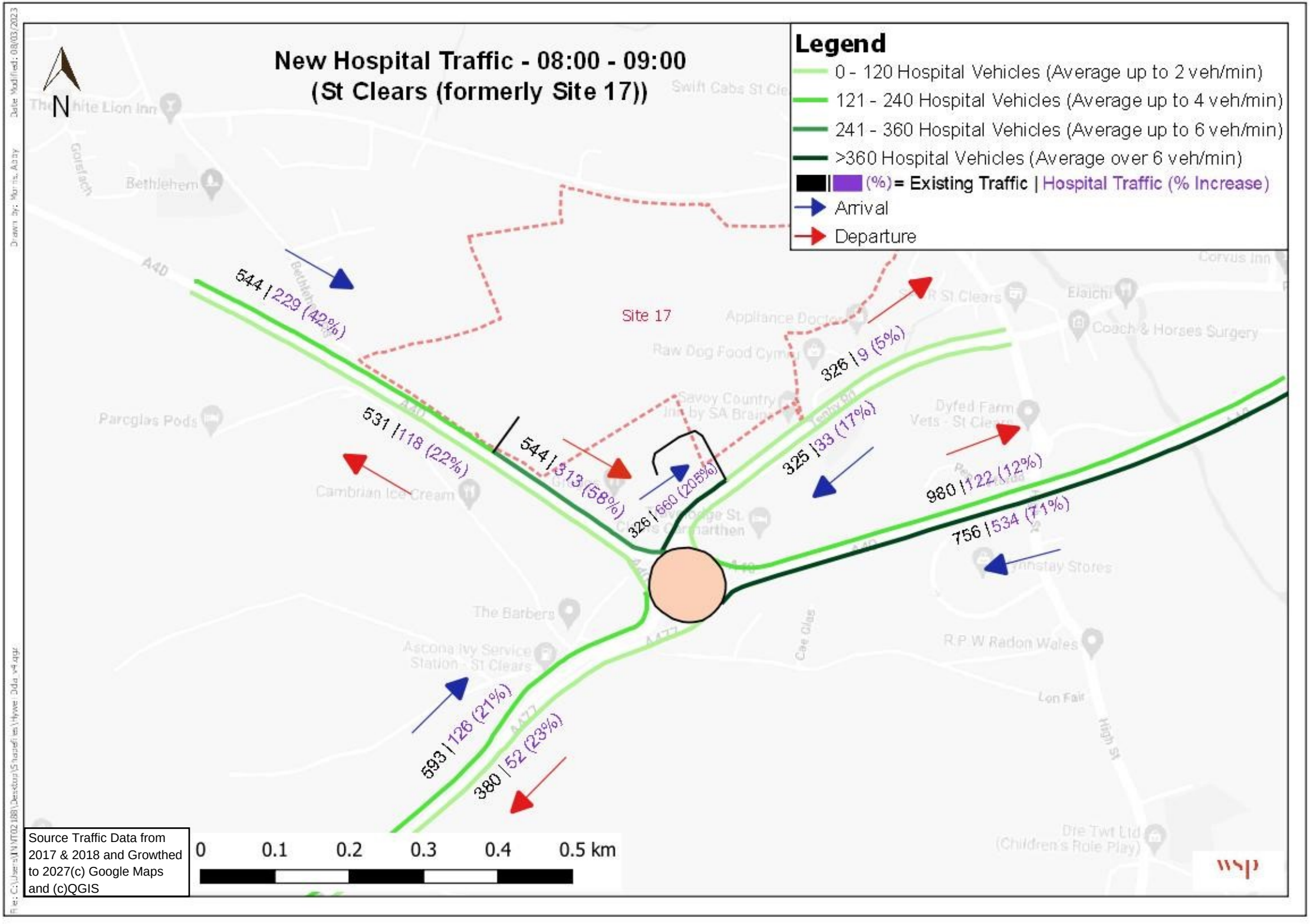

Redistributed Hospital Traffic - 08:00 - 09:00 (Whitland: Spring Gardens (formerly Site 12))
N
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
283
150
158
650
48
13
114
531
71
31
Site 12
Whitland Cricket Club
Whitland Town Council
Roadhouse
Pembrokshire
Source Traffic Data from 2018 and Growthed to 2027 (c) Google Maps and (c) QGIS
0
0.1
0.2
0.3
0.4
0.5 km

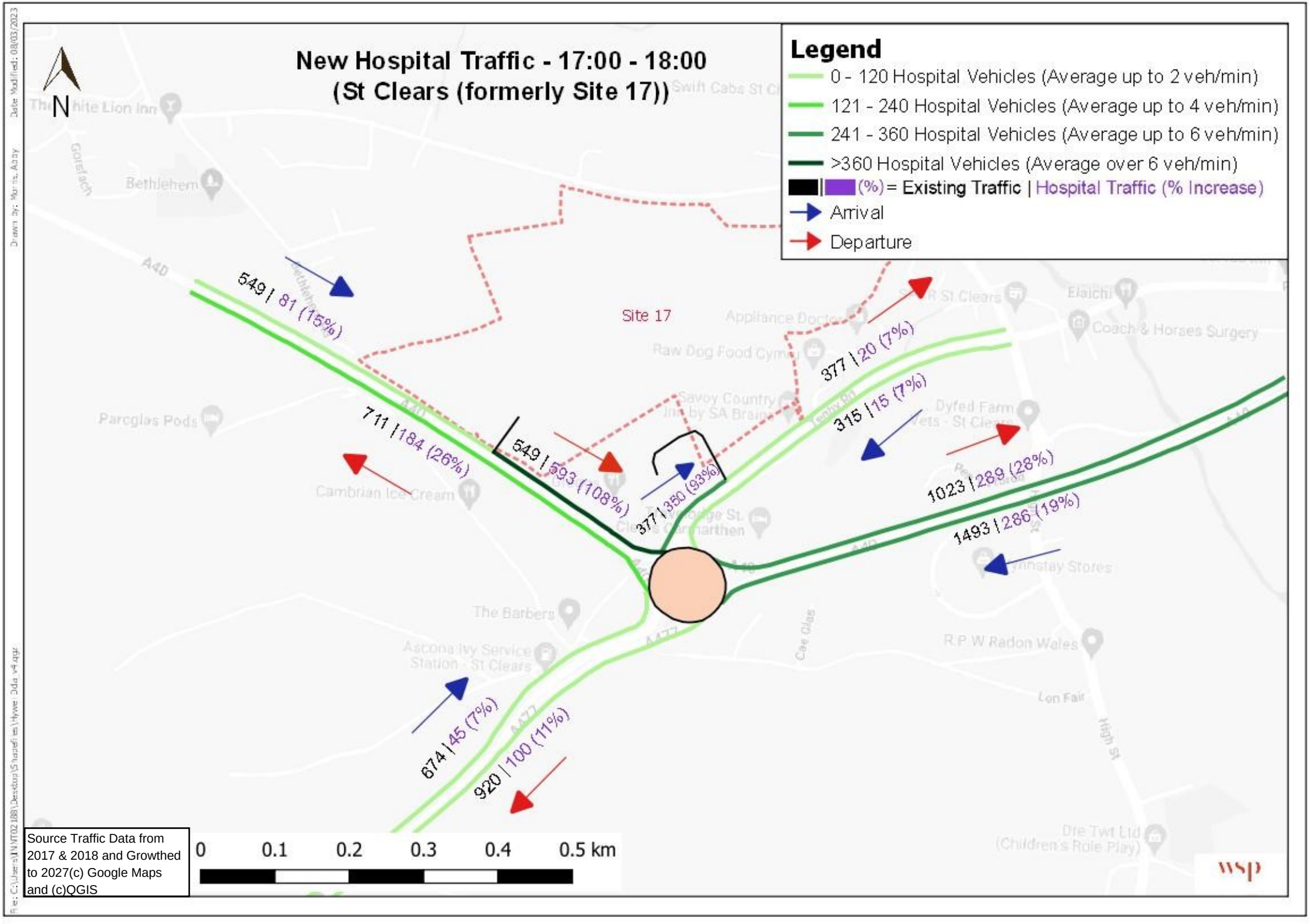

Redistributed Hospital Traffic - 17:00 - 18:00 (Whitland: Spring Gardens (formerly Site 12))
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
N
98
231
359
307
22
27
280
257
28
52
Site 12
Whitland Cricket Club
Whitland Town Council
Roadhouse
Pembrokshire
Source Traffic Data from 2018 and Growthed to 2027 (c) Google Maps and (c) QGIS
0
0.1
0.2
0.3
0.4
0.5 km


Redistributed Hospital Traffic - 08:00 - 09:00 (Whitland: Tŷ Newydd (formerly Site C))
N
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
283
150
48
13
114
531
331
531
308
933
308
71
31
Site C
Whitland Town Council
Printed Chocolates Limited
Roadhouse
Whitland Cricket
Pembrokshire car and van sales
Magstim
Pavlina Holicova
Afon Gronw
Whitland Abbey By-way
Whitland
0 0.1 0.2 0.3 0.4 0.5 km
Source Traffic Data from 2018 and Growthed to 2027 (c) Google Maps and (c) QGIS
wsp

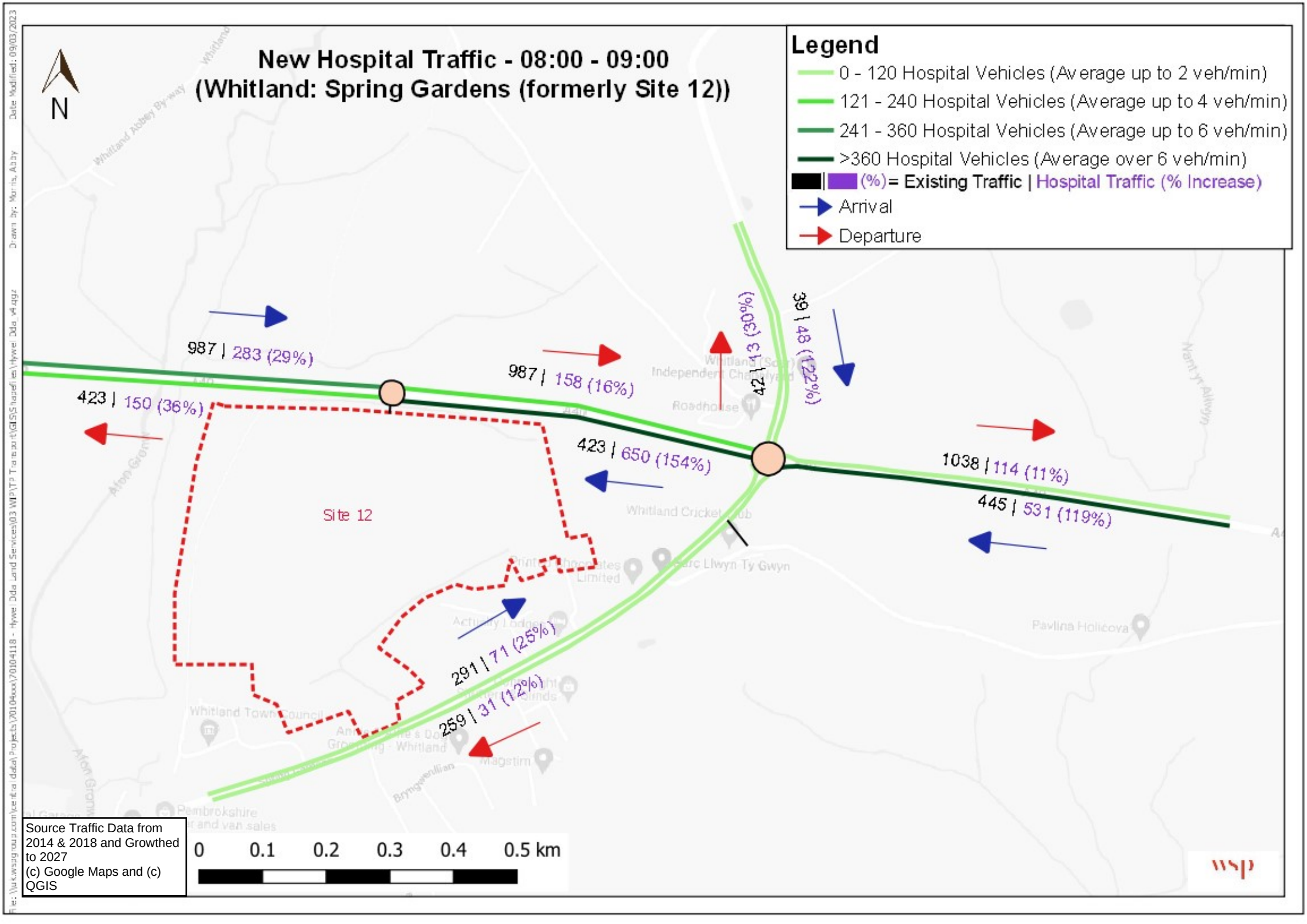

Redistributed Hospital Traffic - 17:00 - 18:00 (Whitland: Tŷ Newydd (formerly Site C))
N
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
98
231
22
27
280
257
120
257
590
505
590
28
52
Site C
Whitland Town Council
Printed Chocolates Limited
Roadhouse
Whitland Cricket
Pavlina Holicova
Magstim
Pembrokshire car and van sales
Afon Gronw
Whitland Abbey By-way
0
0.1
0.2
0.3
0.4
0.5 km
Source Traffic Data from 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
wsp

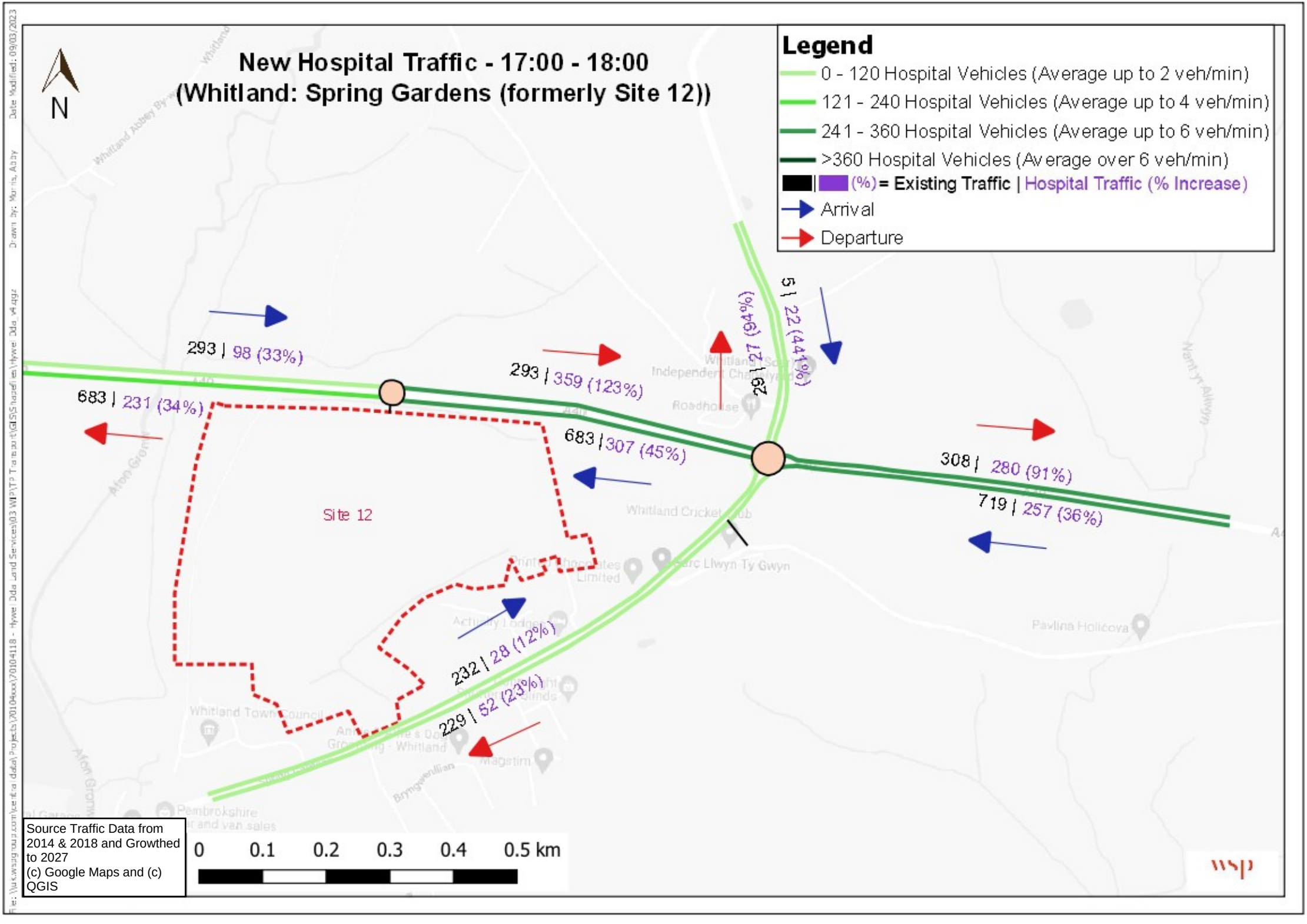
APPENDIX F PRESENTATION DIAGRAMS (ST CLEARS, WHITLAND: SPRING GARDENS & TŶ NEWYDD)

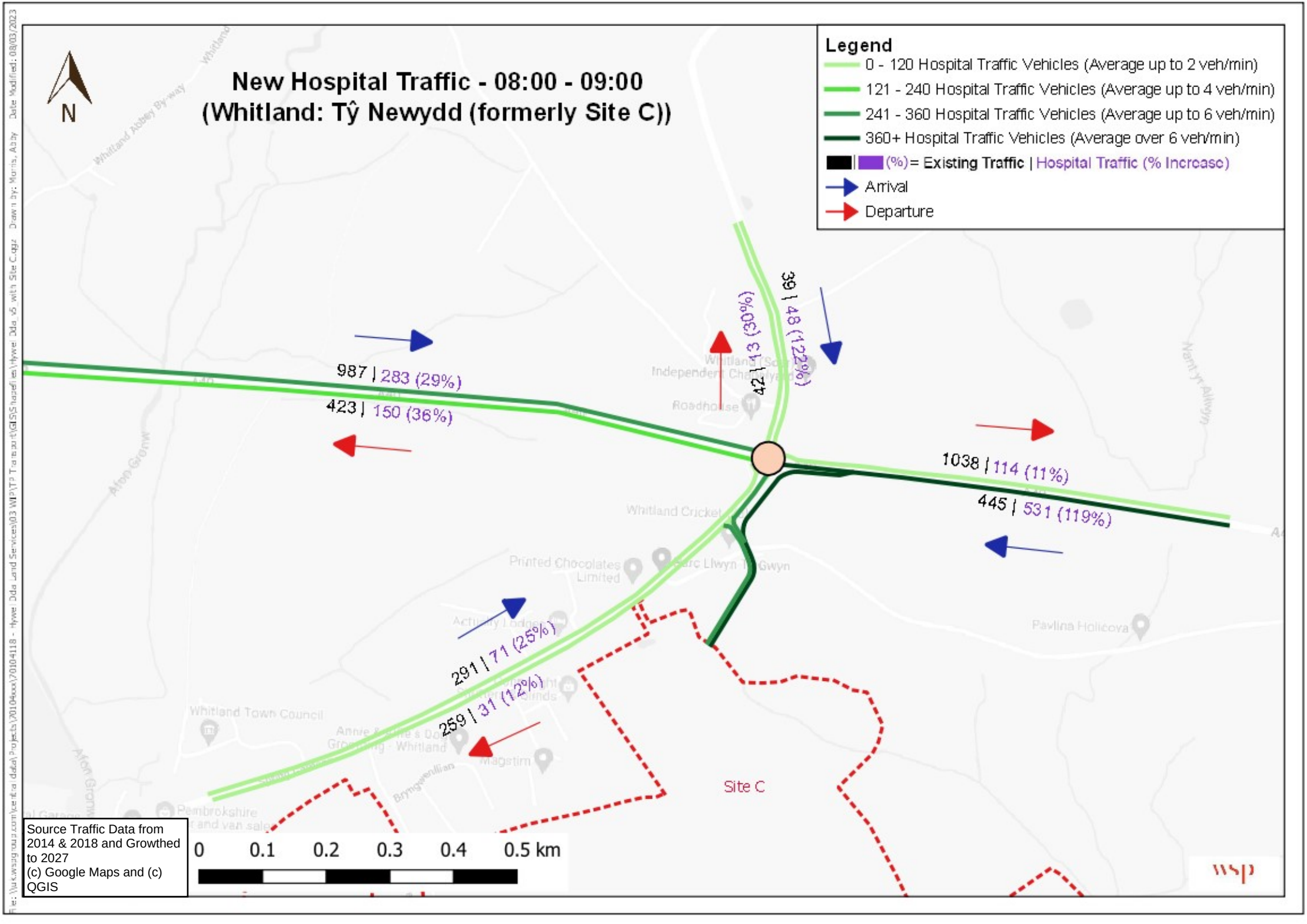

New Hospital Traffic - 08:00 - 09:00
(St Clears (formerly Site 17))
N
Legend
0 - 120 Hospital Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Vehicles (Average up to 6 veh/min)
>360 Hospital Vehicles (Average over 6 veh/min)
(%) = Existing Traffic | Hospital Traffic (% Increase)
Arrival
Departure
Site 17
544 | 229 (42%)
531 | 118 (22%)
544 | 313 (58%)
326 | 660 (205%)
326 | 9 (5%)
325 | 33 (17%)
980 | 122 (12%)
756 | 534 (71%)
593 | 126 (21%)
380 | 52 (23%)
A40
A477
0
0.1
0.2
0.3
0.4
0.5 km
Source Traffic Data from 2017 & 2018 and Growthed to 2027(c) Google Maps and (c)QGIS

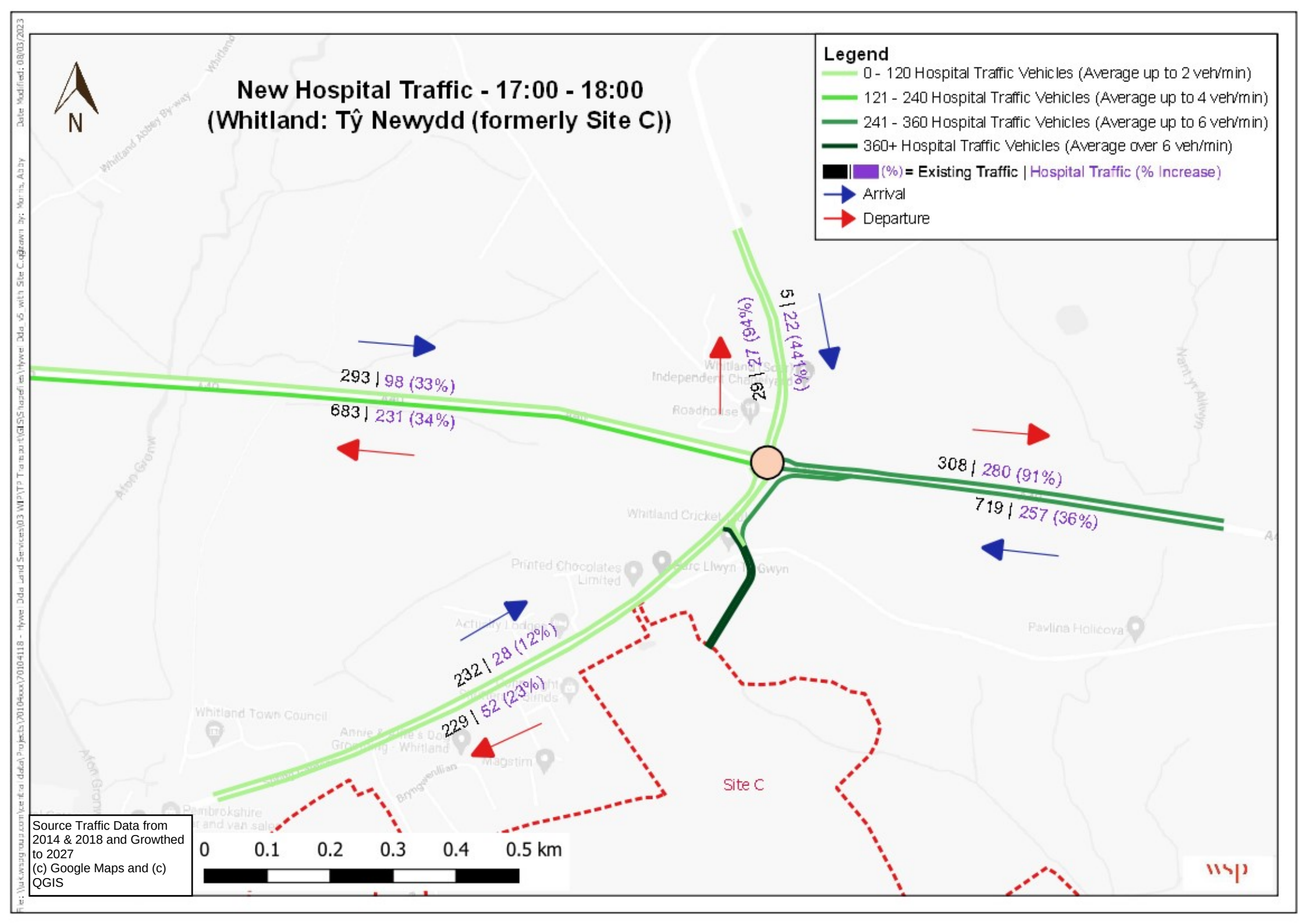


Source Traffic Data from 2017 & 2018 and Growthed to 2027(c) Google Maps and (c)QGIS


New Hospital Traffic - 08:00 - 09:00
(Whitland: Spring Gardens (formerly Site 12))
N
Legend
0 - 120 Hospital Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Vehicles (Average up to 6 veh/min)
>360 Hospital Vehicles (Average over 6 veh/min)
(%)= Existing Traffic | Hospital Traffic (% Increase)
Arrival
Departure
987 | 283 (29%)
987 | 158 (16%)
423 | 150 (36%)
423 | 650 (154%)
42 | 13 (30%)
39 | 48 (122%)
1038 | 114 (11%)
445 | 531 (119%)
291 | 71 (25%)
259 | 31 (12%)
Site 12
Whitland Cricket Club
Whitland Town Council
Pembrokshire
0
0.1
0.2
0.3
0.4
0.5 km
Source Traffic Data from 2014 & 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
wsp


New Hospital Traffic - 17:00 - 18:00
(Whitland: Spring Gardens (formerly Site 12))
N
Legend
0 - 120 Hospital Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Vehicles (Average up to 6 veh/min)
>360 Hospital Vehicles (Average over 6 veh/min)
(%) = Existing Traffic | Hospital Traffic (% Increase)
Arrival
Departure
293 | 98 (33%)
683 | 231 (34%)
293 | 359 (123%)
683 | 307 (45%)
29 | 27 (94%)
51 | 22 (44%)
308 | 280 (91%)
719 | 257 (36%)
232 | 28 (12%)
229 | 52 (23%)
Site 12
Whitland Cricket Club
Whitland Town Council
Pembrokshire
0 0.1 0.2 0.3 0.4 0.5 km
Source Traffic Data from 2014 & 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
Date Modified: 09/03/2023
Drawn by: Morris, Abby
wsp


New Hospital Traffic - 08:00 - 09:00
(Whitland: Tŷ Newydd (formerly Site C))
N
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
(%)= Existing Traffic | Hospital Traffic (% Increase)
Arrival
Departure
987 | 283 (29%)
423 | 150 (36%)
42 | 13 (30%)
39 | 48 (122%)
1038 | 114 (11%)
445 | 531 (119%)
291 | 71 (25%)
259 | 31 (12%)
Site C
Whitland Town Council
Whitland Cricket
Printed Chocolates Limited
Pavlina Holicova
Roadhouse
Whitland Abbey By-way
Afon Gronw
Bryngwenllian
Pembrokeshire
0 0.1 0.2 0.3 0.4 0.5 km
Source Traffic Data from 2014 & 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
wsp


New Hospital Traffic - 17:00 - 18:00
(Whitland: Tŷ Newydd (formerly Site C))
N
Legend
0 - 120 Hospital Traffic Vehicles (Average up to 2 veh/min)
121 - 240 Hospital Traffic Vehicles (Average up to 4 veh/min)
241 - 360 Hospital Traffic Vehicles (Average up to 6 veh/min)
360+ Hospital Traffic Vehicles (Average over 6 veh/min)
(%) = Existing Traffic | Hospital Traffic (% Increase)
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Departure
293 | 98 (33%)
683 | 231 (34%)
29 | 27 (94%)
51 | 22 (44%)
308 | 280 (91%)
719 | 257 (36%)
232 | 28 (12%)
229 | 52 (23%)
Site C
Whitland Town Council
Printed Chocolates Limited
Pavlina Holicova
Source Traffic Data from 2014 & 2018 and Growthed to 2027
(c) Google Maps and (c) QGIS
0 0.1 0.2 0.3 0.4 0.5 km