

ALDI Neath Abbey Rd, Neath

TECHNICAL NOTE 2 - TRANSPORT

February 2020

1. Introduction

- 1.1. This Technical Note (TN) has been produced to provide highways related information respect of a proposed ALDI foodstore on Neath Abbey Rd, Neath, South Wales. This TN should be read in conjunction with the submitted TS report and TN1 dated September 2018.
- 1.2. This TN aims to address further pre-application highways comments received from Neath Port Talbot County Borough Council (NPTCBC). This TN builds on the previous TN1 (September 2018) and has been updated in February 2020 to include detailed layout changes to the proposed site access and trip rates requested by NPTCBC.
- 1.3. The proposed development is to consist of an ALDI store of circa 1,824 sq.m. GFA including associated car parking (125 spaces). An illustration of the site layout is provided in Figure 1.

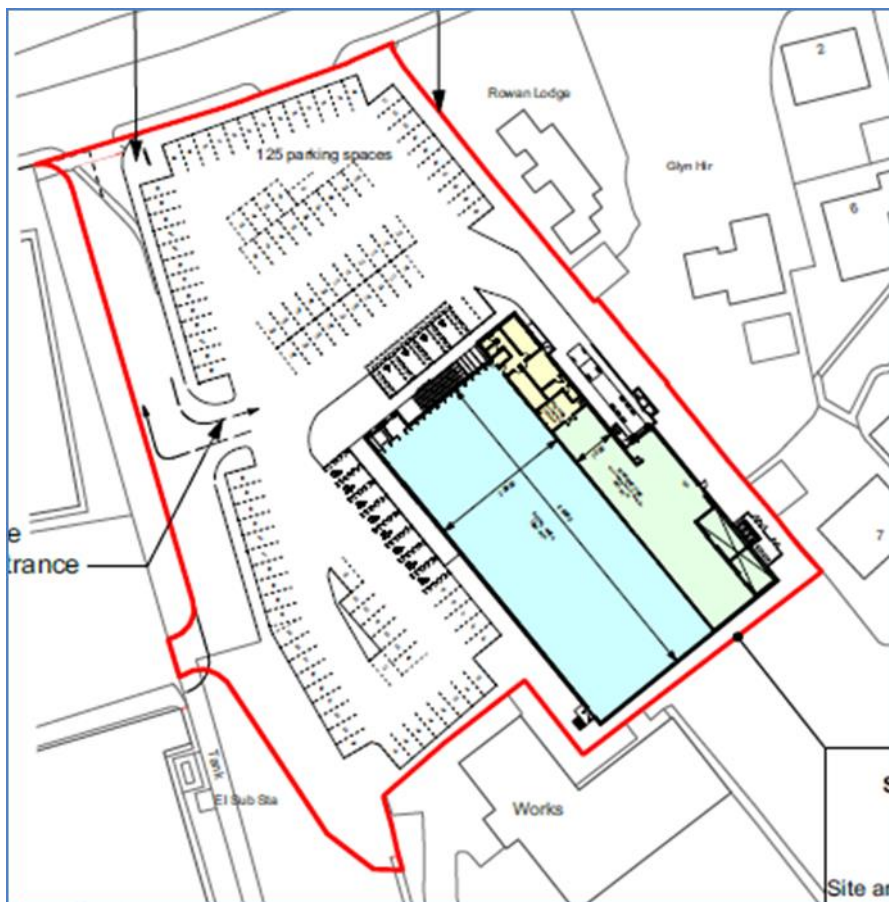


Figure 2.1 – Scheme Layout Drawing Extract

- 1.4. The main point of road access to the development would be located on the A474 Neath Abbey Road via a priority junction, located 200m distance from the A474/A4230 roundabout.



2. Scope of Assessment

- 2.1. The pre-application comments received from NPTCBC in relation to the offsite highways related aspects of the proposed development were as follows:
- Recommendations for a right turn lane on the A474 to serve the site access
 - Missing details of the site access highway works junction improvements
 - Full assessment of surrounding highway network ref. TAN18
 - A 15-year assessment period requirement
 - Recent committed developments taking place in vicinity of the site
 - 2017 ATC flows may be out of date and interaction of queueing of vehicles at the A474/Dwr-Y-Felin Rd traffic signals
 - Visibility splay at the site access and footway provisions
- 2.2. In January 2020 further discussions were held with NPTCBC with changes agreed to the proposed site access layout and updated trip rates were agreed with NPTCBC, together with an allowance for other businesses that will seek to use the new junction from within the site such as CSN Engineering and the adjoining business who we understand have rights of access over this junction.
- 2.3. This TN aims to fairly and reasonably address the above points to provide reassurance to NPTCBC that the proposed development would not lead to material impacts on the local highway network

3. Base Traffic Flows

- 3.1. A Manual Classified count was undertaken on Tuesday 15th October 2019 at the A474/A4230 roundabout and the A474 /Dwr-Y-Felin Rd traffic signal junction.
- 3.2. As per the previous TN, an Automatic Traffic Counter was placed on the A474 in the vicinity of the site access for a 7 day period commencing 12th September 2017. This fell within a neutral month in the year for traffic. However, NPTCBC consider that this data is no longer valid for use due to local committed development and increases to the school which have led to changes in traffic flows along the A474.
- 3.3. A comparison of traffic flows may be seen in the table below which shows the MCC traffic flows entering and leaving the A474 / A4230 roundabout compared to the ATC. The flows recorded by the ATC can be seen to be lower particularly in the AM. It is therefore considered reasonable to re-base the A474 flows at the site access to the same as the MCC flows arriving / leaving the A474/A4230 roundabout to ensure the assessment takes account of the recent changes to local traffic conditions.

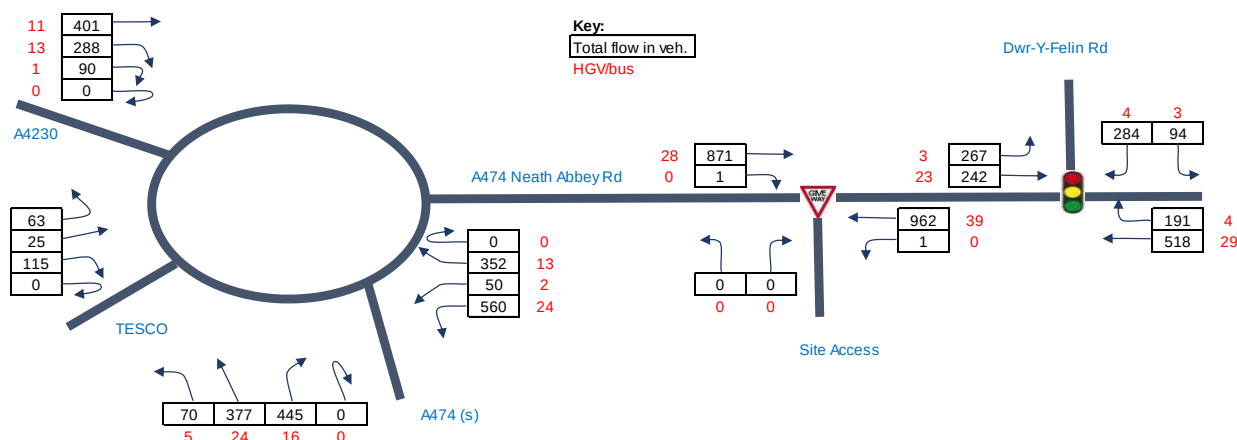
Table 3.1 - Comparison of ATC to MCC Flows

Peak	ATC September 2017			MCC October 2019		
	Eastbound	Westbound	Two-way	Eastbound	Westbound	Two-way
AM Peak	511	866	1,377	871	962	1,833
PM Peak	817	829	1,646	885	978	1,863

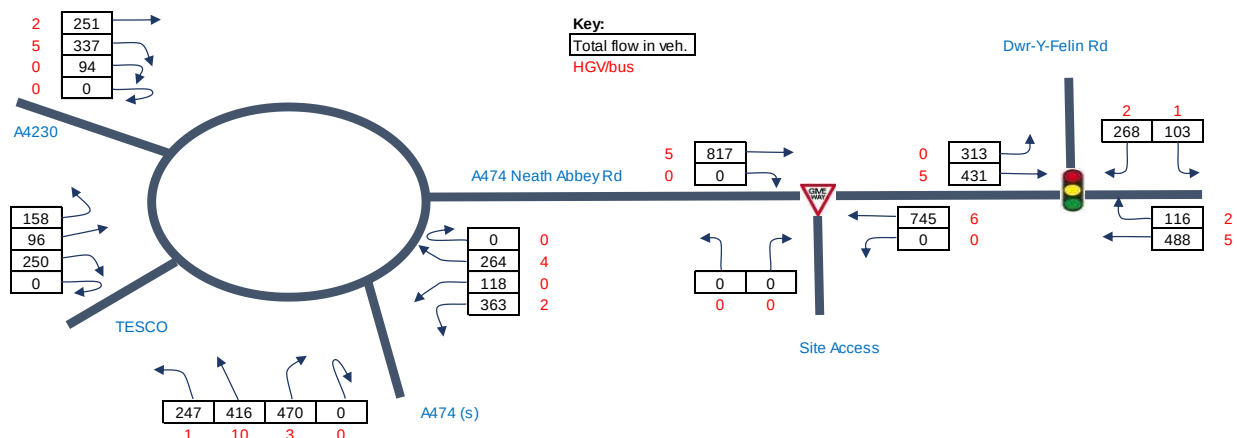
- 3.4. An ATC was placed on the existing industrial access road serving the site for a seven-day period between 15/10/2019 and 21/10/2019. This data reveals that in the AM peak hour there were two inbound trips and zero outbound trips. Likewise, in the PM peak hour there were zero trips into or out of the site access. No vehicles were HGV.
- 3.5. A summary of the 2019 base traffic flows is provided in Figure 3.1 overleaf for the three junctions included within the assessment. The full traffic data is provided at Appendix A.

Figure 3.1 - 2019 Observed Traffic Flows

2019 AM Peak Observed



2019 PM Peak Observed



3.6. The base observed traffic flows were growthed to the proposed 2021 opening year of the development and the future 15-year horizon of 2036 of using TEMPro7.2b for MSOA Neath Port Talbot 007. The growth factors applied to the base observed traffic are set out in Table 4.2.

Table 3.2 - Base Traffic Growth Factors

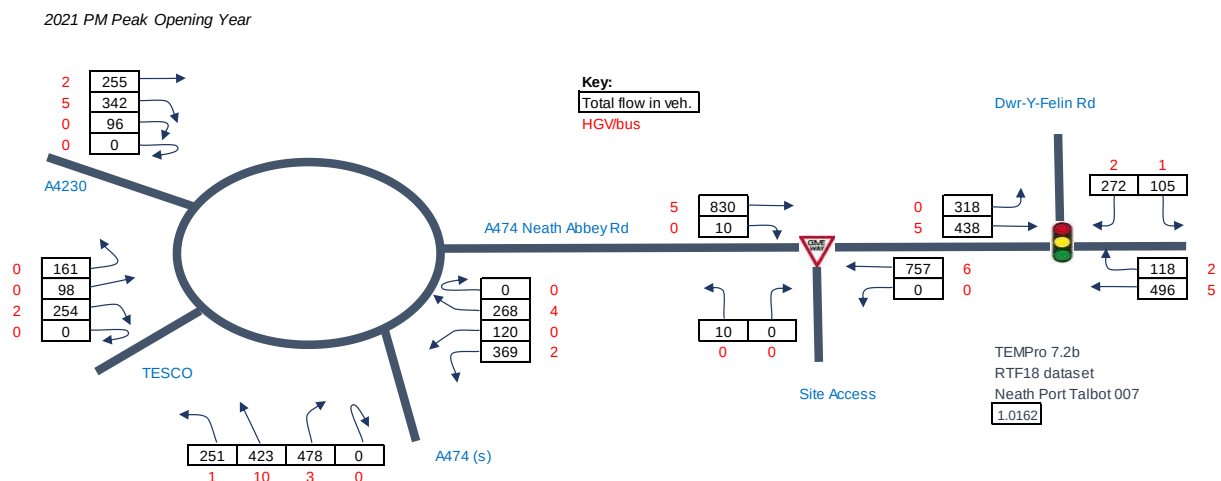
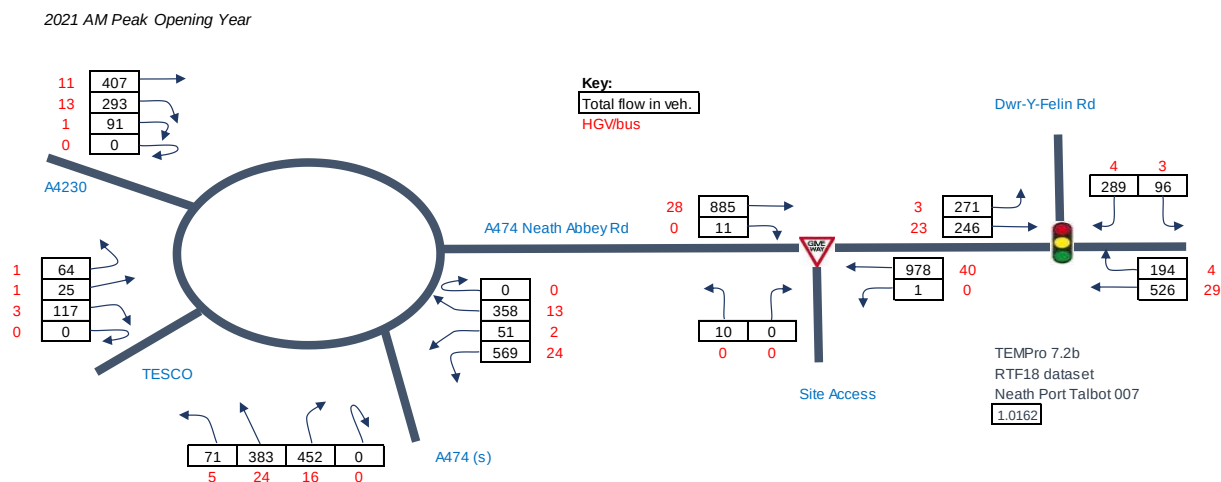
Peak	2019-2021	2019-2036
AM Peak	1.0162	1.0162
PM Peak	1.1377	1.1394

3.7. To allow for any future increased use of the site access junction by CSN Engineering and adjoining businesses, an increase in vehicles allocated to and from the site access was included. A nominal flow of 10 extra inbound and 10 outbound trips were included, assigned to/from the A465 via A474(S). Given virtually no traffic uses the access at present during the network peaks, this is considered a very robust assumption.

3.8. Figure 3.2 overleaf illustrates the opening year base traffic flows growthed using TEMPro.

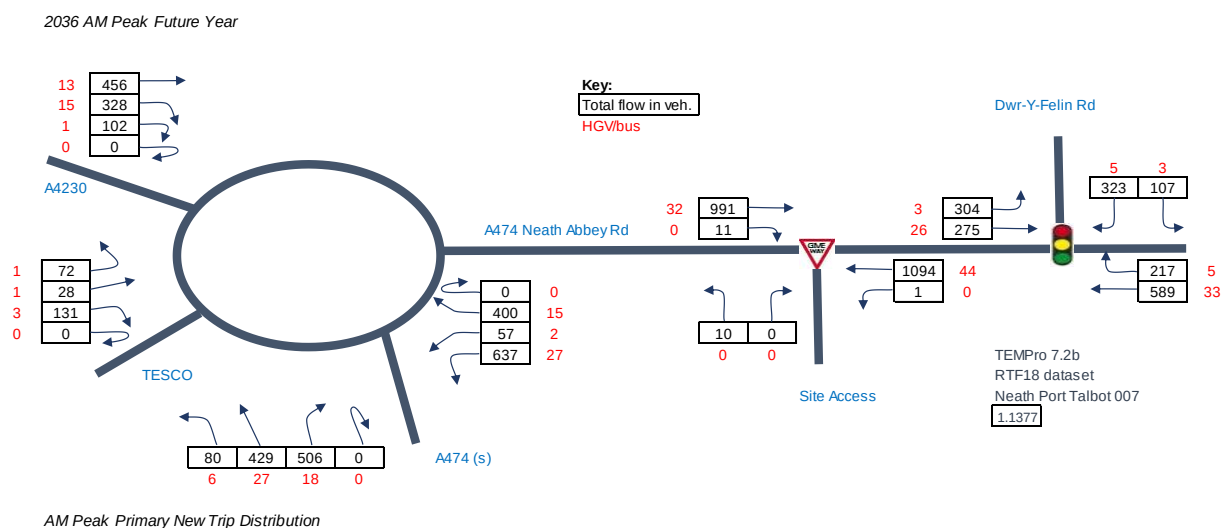


Figure 3.2 - 2021 Base Traffic Flows

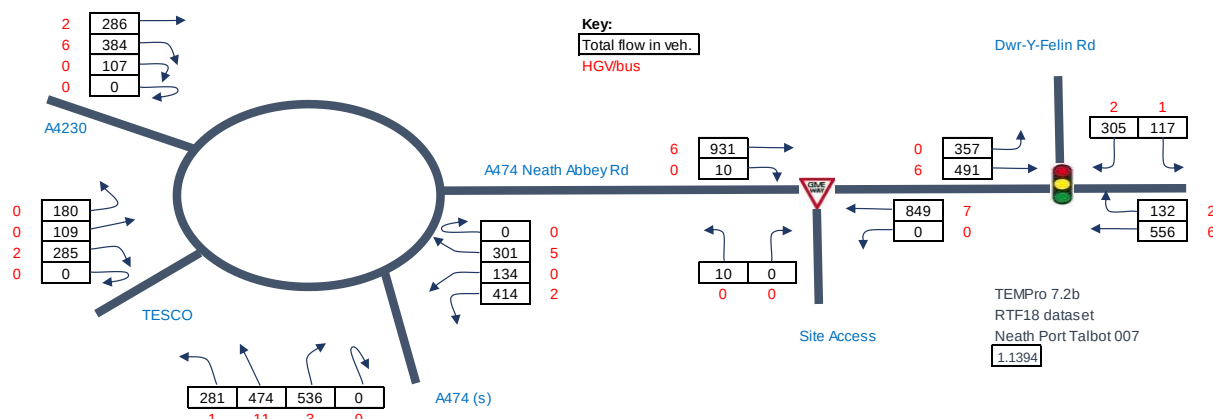


3.9. Figure 3.3. provides the 2036 future year base flows growthed using TEMPro.

Figure 3.3 - 2036 Base Traffic Flows



2036 PM Peak Future Year



4. Trip Generation, Distribution and Assignment

- 4.1. The proposed site is to consist of a proposed ALDI store of circa 1,824 sq.m. GFA. The trip generation from the ALDI discount foodstore was derived in TN1 and obtained from TRICS interrogation. At request from NPTCBC this have been updated to new figures. (see **Appendix B**). This is summarised in Table 4.1.

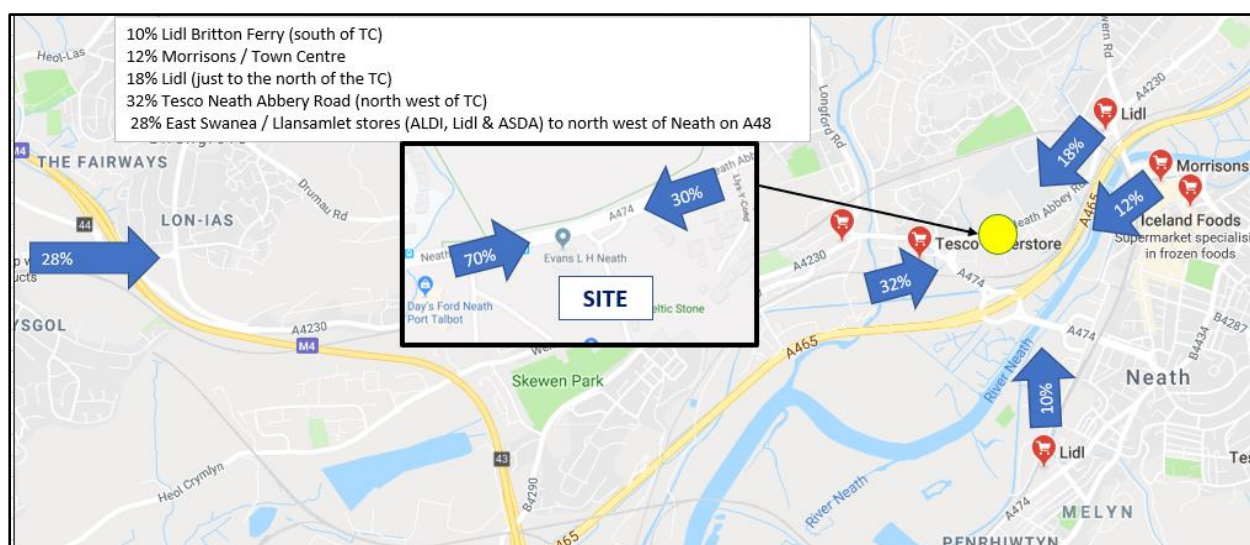
Table 4.1 – ALDI Trip Generation

Peak	Trip Rate Per 100 sq.m			Traffic Flows		
	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way
AM Peak	2.648	1.865	4.513	48	34	82
PM Peak	4.552	4.671	9.223	83	85	168

- 4.2. Distribution of trips to and from the proposed foodstore was split into primary new trips and secondary trips already present on the highway network. The assignment of primary trips was based on the observed distribution of traffic from the traffic survey.
- 4.3. The quanta of pass by / diverted trips was undertaken using first principles. The TRICS research report 14/1 sets out that the standard application of the pass-by and diverted trip proportions in research report 95/2 is not considered so relevant and a site by site approach should be used instead.
- 4.4. An assessment methodology set out at section 11 in TRICS paper 14/1. The location type for the proposed store is located 1,800m driving distance from the town centre and is on the A474, a principal route running parallel to the A465.
- 4.5. ALDI is of course a convenience store but also with some comparison elements and as a result linked trips would be made between town centre and ALDI as part of a top up shopping trip, and this aspect is important not to underestimate.
- 4.6. The number of facilities at the store is more limited as a result of the limited offer, there is no click and collect, and the GFA is much less than 4,000 sq.m.

- 4.7. In terms of the pass-by percentage, given circa 1,800 vehicles pass on the A474 during the weekday network peaks the proportion of trips already passing the site should be reasonable.
- 4.8. The store is also located in good proximity to workplace areas and it is not unreasonable to expect a proportion of linked trips between land-uses.
- 4.9. It is proposed that the primary new trips would be 10%, secondary diverted trips 60% and pass-by trips 30%.
- 4.10. Information was sought from the planning consultant as to the retail draw of trips diverted from other local stores. Figure 4.1 provides a summary.

Figure 4.1 - Diverted Trip Distribution

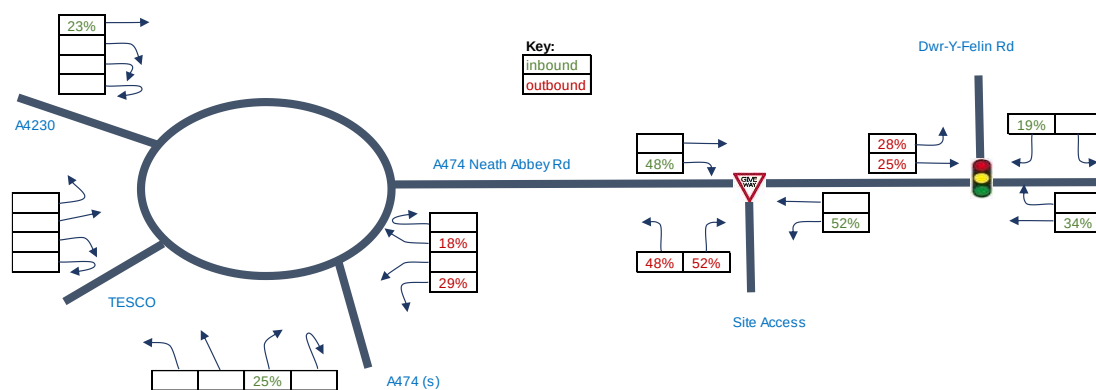


- 4.11. The majority of any diverted trips would therefore be related to the west and south. Of these, all diverted trips related to the Tesco store would already be on the local study area, given the store is served off the A474/A4230 roundabout.
- 4.12. Many of the diverted trips to and from the local stores would also be passing through the network, but this is hard to quantify with any certainty.
- 4.13. For robustness it is assumed none of the diverted store trips other than Tesco are anywhere in the local study area, and thus these trips would essentially be considered as primary new trips taking the proportion of effectively 'new' trips to 50.8%. These trips would all be assigned as per existing turning movements at the local junctions.
- 4.14. Figure 4.2 provides a summary of the primary new trips assigned to the study area road network.

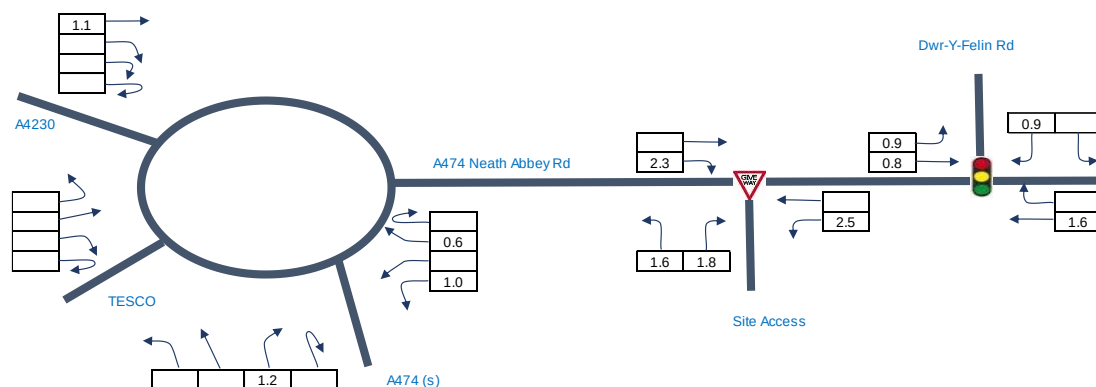


Figure 4.2 – New Primary Trips

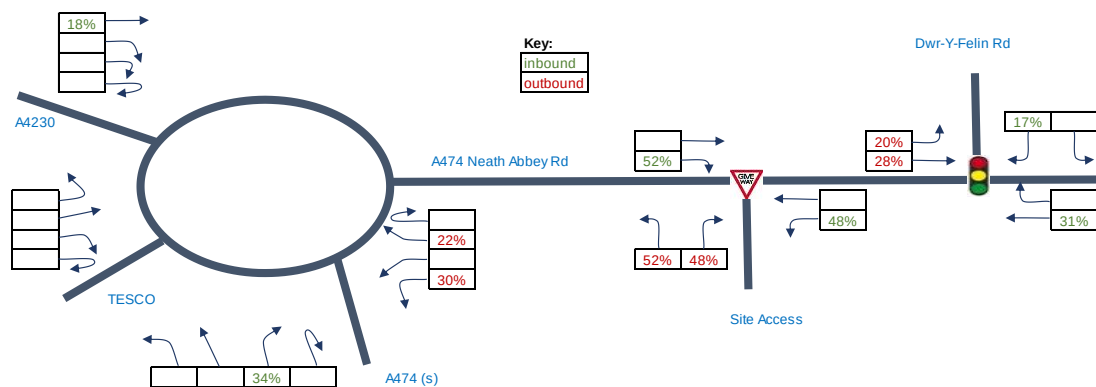
AM Peak Primary New Trip Distribution



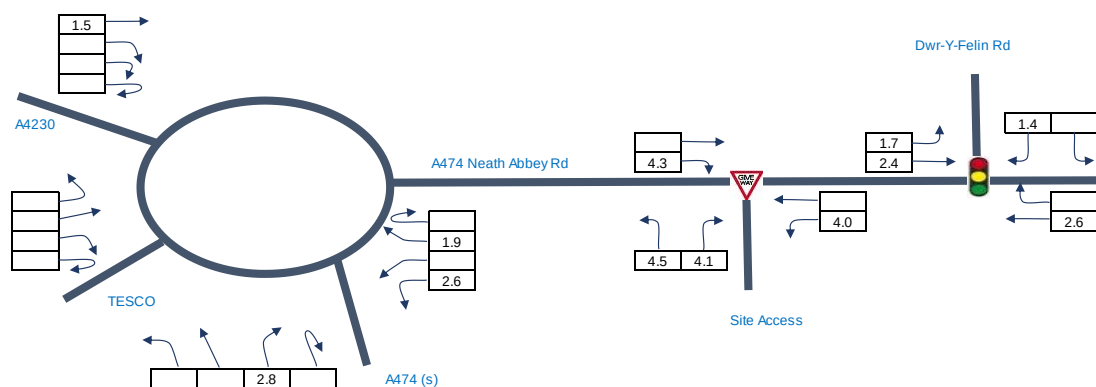
AM Peak Primary New Trip Assignment



PM Peak Primary New Trip Distribution



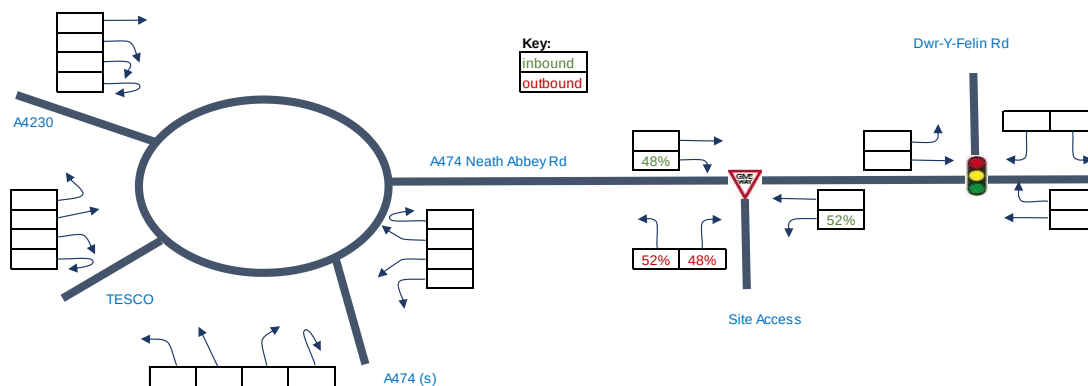
PM Peak Primary New Trip Assignment



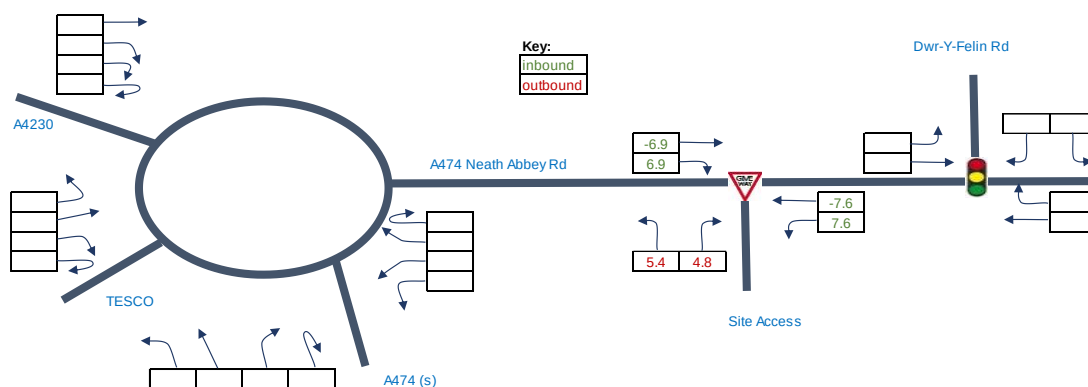
4.15. Figure 4.3 provides a summary of the secondary pass-by trips assigned to the study area network.

Figure 4.3 – Secondary Pass-by Trips

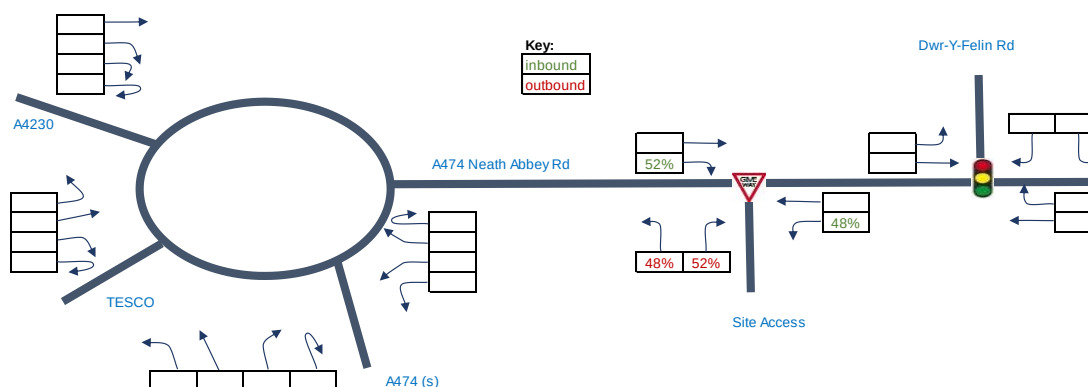
AM Peak Secondary Passby Trip Distribution



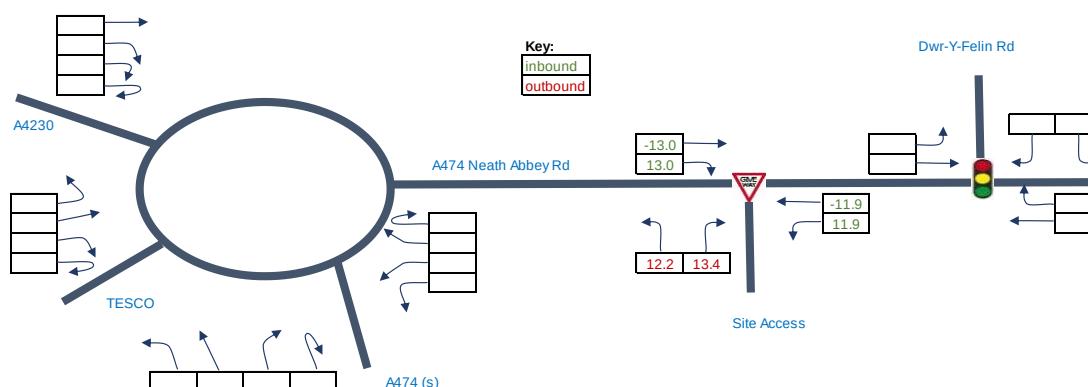
AM Peak Secondary Passby Trip Assignment



PM Peak Secondary Passby Trip Distribution



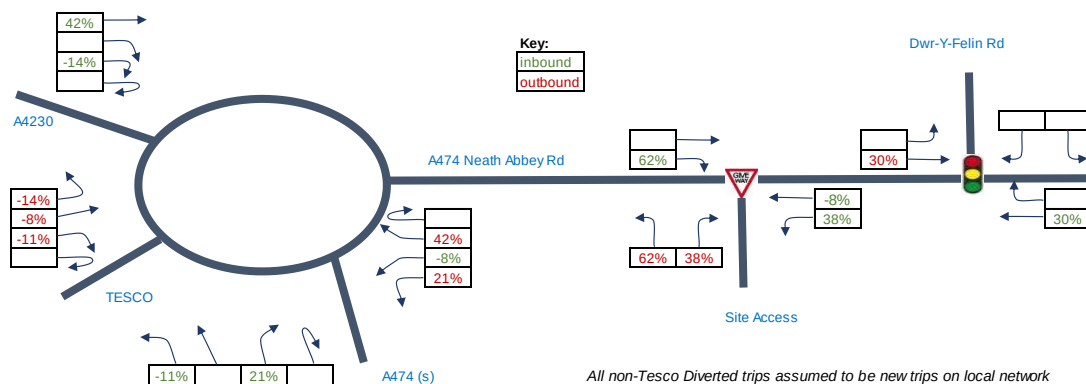
PM Peak Secondary Passby Trip Assignment



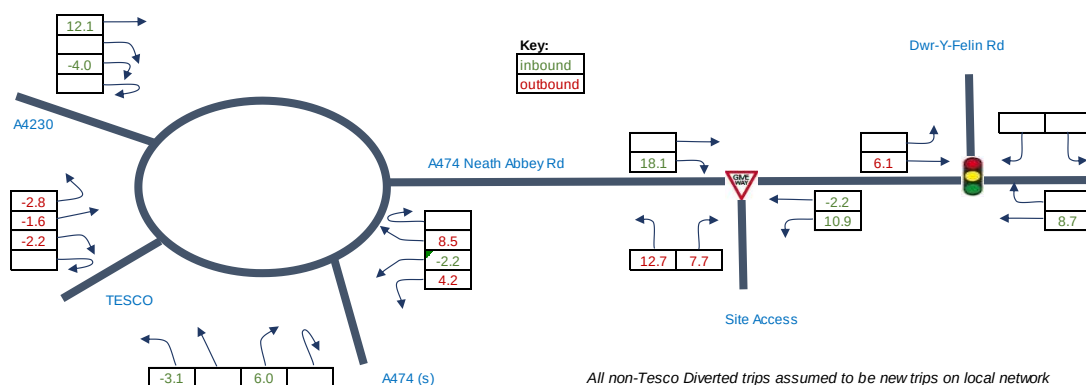
4.16. Figure 4.4 provides a summary of the secondary pass-by trips assigned to the study area network.

Figure 4.4 – Secondary Diverted Trips

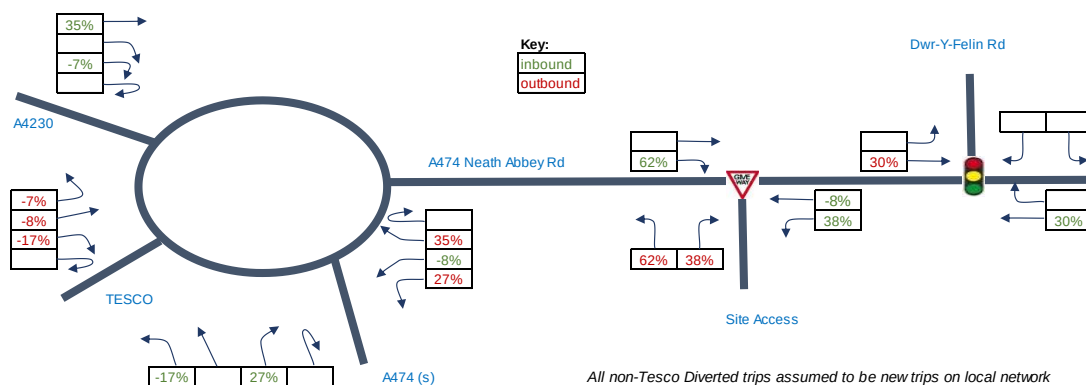
AM Peak Secondary Diverted Trip Distribution



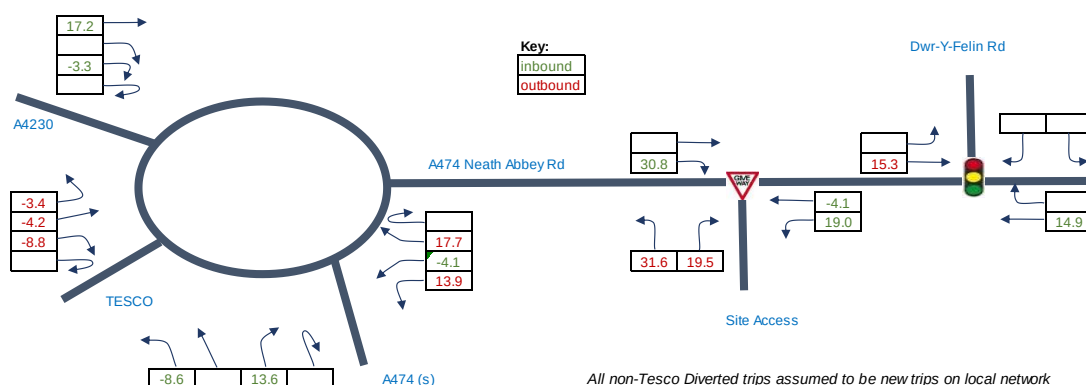
AM Peak Secondary Diverted Trip Assignment



PM Peak Secondary Diverted Trip Distribution



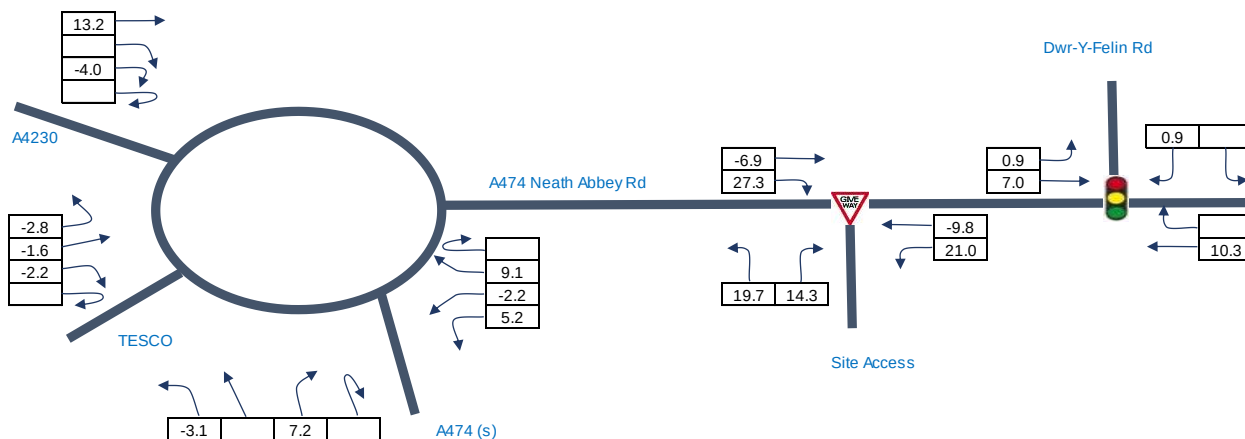
PM Peak Secondary Diverted Trip Assignment



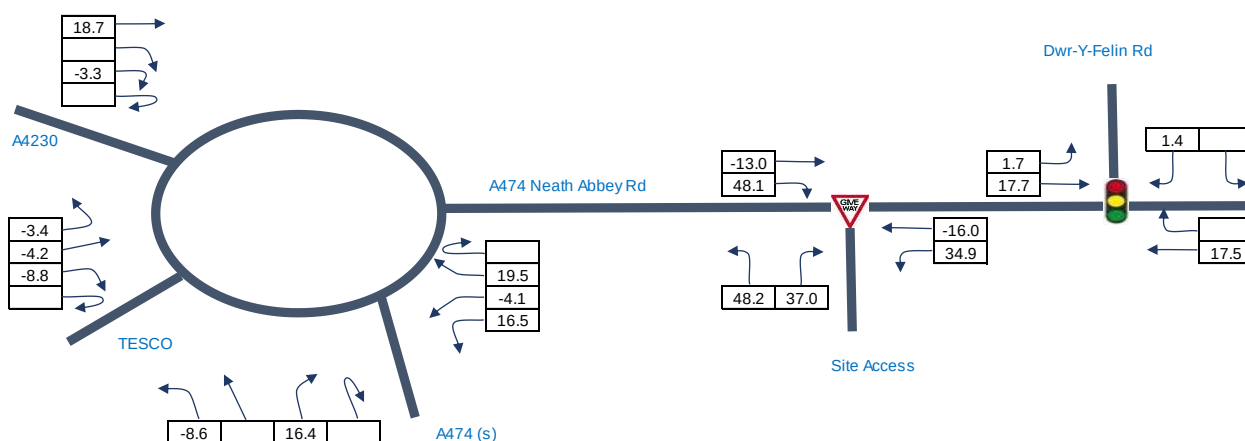
4.17. Figure 4.5 provides a summary of the secondary pass-by trips assigned to the study area network.

Figure 4.5 – All Development Trips

AM Peak Trip Assignment



PM Peak Trip Assignment

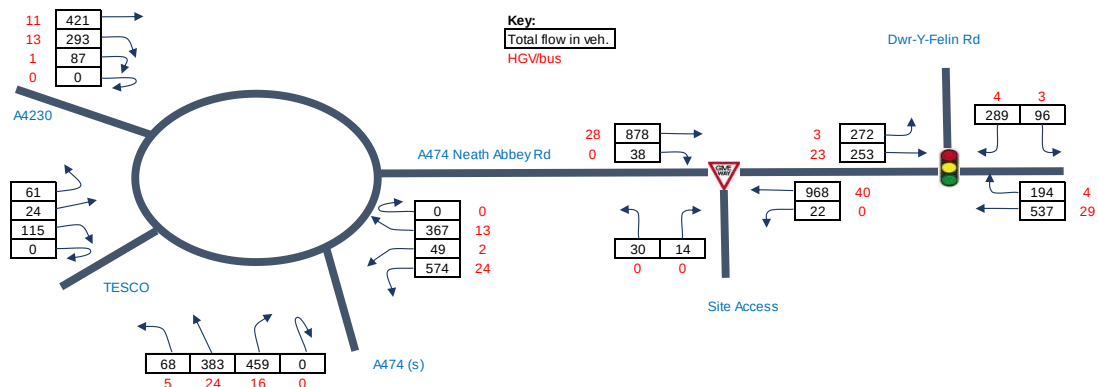


4.18. The base plus development flows for 2021 opening year and the 2036 future year (i.e. combining the flows shown in Figure 4.5 with Figure 3.2 and Figure 3.3) are summarised in Figure 4.6 overleaf.

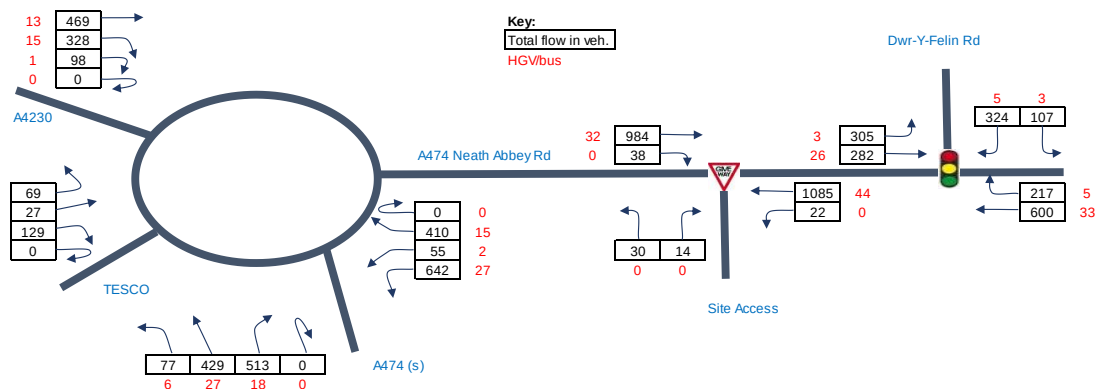


Figure 4.6 – 2021 and 2036 Base + Development Traffic Flows

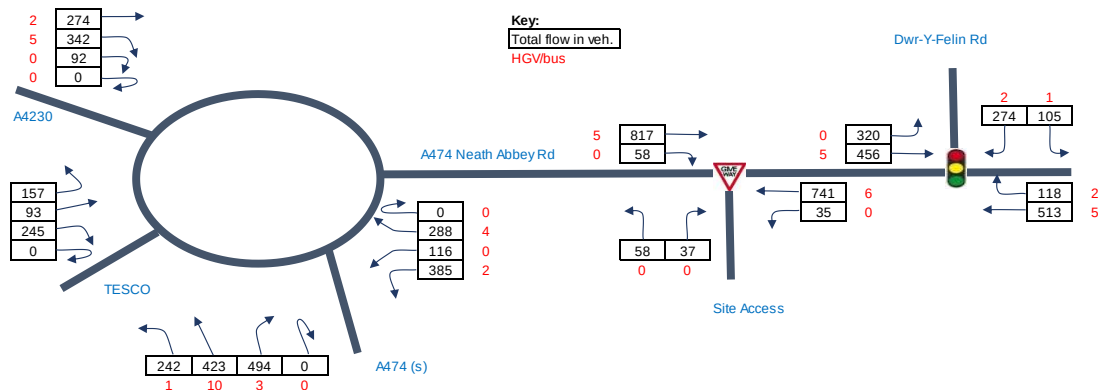
2021 AM Peak Opening Year + Development



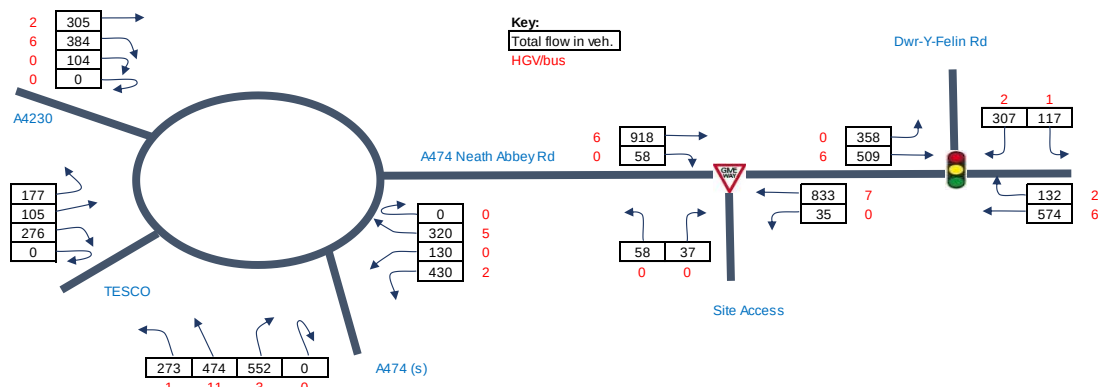
2036 AM Peak Future Year + Development



2021 PM Peak Opening Year + Development



2036 PM Peak Future Year + Development



4.19. The above flows were then taken forward for junction capacity testing using industry standard Junctions 9 and LinSg software.

5. Operational Assessment

5.1. An assessment of the impact of the development at the three junctions contained within the study area has been undertaken using the above information.

Site Access

5.2. The proposed site access junction has been tested both with and without a right turn lane on the A474 in order to determine the effectiveness in capacity terms. An illustration of the proposed design with a right turn lane is provided in Figure 5.1.

Figure 5.1 – Indicative Site Access with Right Turn Lane



5.3. The traffic flows set out in Section 4 were applied to a Junctions 9 model (PICADY module) of the proposed site access with a right turn lane. A summary of the operational assessment for the proposed site access junction is provided in Table 5.1 below for the layout including a right turn lane. The full model results are included at **Appendix C**.

Table 5.1 – A474 Neath Abbey Rd / Proposed Site Access Junction Capacity (RTL)

Peak	Arm	RFC	Queue	Delay
2021 AM Peak + ALDI	Site Access	0.24	1	23s
	A474 Right Turn	0.10	0	10s
2021 PM Peak + ALDI	Site Access	0.37	1	20s
	A474 Right Turn	0.13	0	9s
2036 AM Peak + ALDI	Site Access	0.40	1	50s
	A474 Right Turn	0.11	0	11s
2036 PM Peak + ALDI	Site Access	0.45	1	28s
	A474 Right Turn	0.14	0	9s

- 5.4. The results of the capacity assessment suggest that the proposed site access junction would remain comfortably within capacity with the addition of development with a predicted low maximum RFC value of 0.40. There are no material queues predicted either on the site egress or on the A474(W) right turn. The average delay to vehicles on the right turn inbound turning movement is no more than 11 seconds.

A474 / A4230 Roundabout

- 5.5. A capacity assessment was undertaken using Junctions 9 (ARCADY Module). Geometry was carefully measured from online mapping sources. A summary of the operational assessment is provided in Table 5.3 and Table 5.4 below. The full model results are included at **Appendix D**.

Table 5.3 – A474 / A4230 Roundabout Junction AM Peak Assessment

Scenario	Arm	Queue	Delay	RFC
2019 AM Baseline	A4230 (W)	2	6s	0.61
	A474 Neath Abbey Rd (E)	2	6s	0.64
	A474 (S)	1	3s	0.46
	Tesco Access	0	4s	0.21
2021 AM Base	A4230 (W)	2	7s	0.62
	A474 Neath Abbey Rd (E)	2	6s	0.65
	A474 (S)	1	3s	0.46
	Tesco Access	0	4s	0.22
2036 AM Base	A4230 (W)	2	9s	0.71
	A474 Neath Abbey Rd (E)	3	9s	0.74
	A474 (S)	1	4s	0.53
	Tesco Access	0	5s	0.26
2021 AM Base + Dev	A4230 (W)	2	7s	0.63
	A474 Neath Abbey Rd (E)	2	6s	0.66
	A474 (S)	1	3s	0.47
	Tesco Access	0	4s	0.21
2036 AM Base + Dev	A4230 (W)	3	9s	0.72
	A474 Neath Abbey Rd (E)	3	9s	0.75
	A474 (S)	1	4s	0.53
	Tesco Access	0	5s	0.26

- 5.6. The results of the AM peak capacity assessment reveal that the junction is currently within capacity. The highest ratio of flow to capacity (RFC) is 0.64 which currently occurs on the A474 Neath Abbey Rd approach. The model suggests this situation isn't expected to materially change in the 2021 opening year or 2036 future year baseline. The additional of development traffic is expected to make a marginal effect on operational performance. The highest ratio of flow to capacity (RFC) with development would be 0.75.

Table 5.4 – A474 / A4230 Roundabout Junction PM Peak Assessment

Scenario	Arm	Queue	Delay	RFC
2019 PM Baseline	A4230 (W)	1	6s	0.56
	A474 Neath Abbey Rd (E)	1	5s	0.51
	A474 (S)	1	4s	0.55
	Tesco Access	1	6s	0.50
2021 PM Base	A4230 (W)	1	6s	0.58
	A474 Neath Abbey Rd (E)	1	5s	0.52
	A474 (S)	1	4s	0.56
	Tesco Access	1	7s	0.51
2036 PM Base	A4230 (W)	2	9s	0.67
	A474 Neath Abbey Rd (E)	2	6s	0.60
	A474 (S)	2	5s	0.64
	Tesco Access	2	9s	0.61
2021 PM Base + Dev	A4230 (W)	1	7s	0.59
	A474 Neath Abbey Rd (E)	1	5s	0.54
	A474 (S)	1	4s	0.57
	Tesco Access	1	7s	0.50
2036 PM Base + Dev	A4230 (W)	2	9s	0.69
	A474 Neath Abbey Rd (E)	2	6s	0.62
	A474 (S)	2	5s	0.65
	Tesco Access	2	9s	0.61

5.7. The results of the PM peak capacity assessment reveal that the junction is currently within capacity. The highest ratio of flow to capacity (RFC) is 0.56 which currently occurs on the A4230 (W) approach. The model suggests this situation isn't expected to materially change in the 2021 opening year or 2036 future year baseline. The additional of development traffic is expected to make a marginal effect on operational performance. The highest ratio of flow to capacity (RFC) with development would be 0.69.

A474 Neath Abbey Rd / Dwr-Y-Felin Rd Signals

5.8. A capacity assessment was undertaken using LinSig 3 software. Geometry was measured from online mapping sources. A summary of the operational assessment is provided in Table 5.5 and Table 5.6 below. The full model results are included at **Appendix E**.



Table 5.5 – A474 / Dwr-Y-Felin Signal Junction AM Peak Assessment

Scenario	Arm	Queue	DoS %	Delay
2019 AM Baseline	A474 Neath Abbey Rd (W)	13	70.4%	31s
	Dwr-Y-Felin Rd	9	74.2%	41s
	A474 Neath Abbey Rd (E)	15	74.0%	27s
2021 AM Base	A474 Neath Abbey Rd (W)	14	71.5%	31s
	Dwr-Y-Felin Rd	9	75.4%	41s
	A474 Neath Abbey Rd (E)	15	75.2%	27s
2036 AM Base	A474 Neath Abbey Rd (W)	17	80.0%	36s
	Dwr-Y-Felin Rd	12	84.4%	50s
	A474 Neath Abbey Rd (E)	20	84.2%	33s
2021 AM Base + Dev	A474 Neath Abbey Rd (W)	14	72.5%	31s
	Dwr-Y-Felin Rd	9	75.6%	41s
	A474 Neath Abbey Rd (E)	15	76.3%	28s
2036 AM Base + Dev	A474 Neath Abbey Rd (W)	17	81.0%	36s
	Dwr-Y-Felin Rd	12	84.6%	50s
	A474 Neath Abbey Rd (E)	21	85.3%	34s

Table 5.6 – A474 / Dwr-Y-Felin Signal Junction PM Peak Assessment

Scenario	Arm	Queue	DoS %	Delay
2019 PM Baseline	A474 Neath Abbey Rd (W)	21	85.9%	37s
	Dwr-Y-Felin Rd	10	85.0%	56s
	A474 Neath Abbey Rd (E)	10	56.4%	20s
2021 PM Base	A474 Neath Abbey Rd (W)	22	87.3%	38s
	Dwr-Y-Felin Rd	11	86.3%	58s
	A474 Neath Abbey Rd (E)	10	57.3%	21s
2036 PM Base	A474 Neath Abbey Rd (W)	34	97.9%	70s
	Dwr-Y-Felin Rd	18	96.7%	95s
	A474 Neath Abbey Rd (E)	13	64.1%	23s
2021 PM Base + Dev	A474 Neath Abbey Rd (W)	23	88.3%	39s
	Dwr-Y-Felin Rd	12	88.5%	64s
	A474 Neath Abbey Rd (E)	11	58.3%	21s
2036 PM Base + Dev	A474 Neath Abbey Rd (W)	36	98.7%	75s
	Dwr-Y-Felin Rd	21	99.4%	116s
	A474 Neath Abbey Rd (E)	13	65.2%	23s



- 5.9. The results of the observed baseline capacity assessment for the A474 /Dwr-Y-Felin signals reveal that the junction is currently within capacity during both peaks, with some queues forming mainly as a result of the high link flows. The highest degree of saturation (DoS) value is 74% in the AM peak and 86% in the PM peak.
- 5.10. The model suggests that, as a result of the assumed background traffic growth, the junction is expected to encounter some capacity issues by the 2036 future year. The model predicts the junction would exceed practical capacity (90%) in the 2036 PM peak with queues forming and delays building.
- 5.11. The addition of development traffic is not expected to lead to any material changes in the 2021 opening year with all approaches remaining within capacity in both peaks. Similarly, the proposed development is not expected to lead to any material changes in the 2036 future year in terms of operational performance and would remain below theoretical capacity (100%).
- 5.12. The expected queue on A474 Neath Abbey Road (W) is not materially increased by the proposed development and does not extend to the proposed access junction or school access.

6. Conclusions

- 6.1. This TN has aimed to fairly and reasonably address the pre-application and subsequent highways comments received from Neath Port Talbot County Borough Council (NPTCBC) with the objective of providing reassurance that the proposed development would not lead to material impacts on the local highway network.
- 6.2. This report has undertaken a full assessment of the surrounding local junctions in accordance with TAN18 and has shown no material or severe impact from the proposed development. The assessment has included a 15-year assessment period as requested by NPTCBC and is based on up to date traffic surveys undertaken in October 2019 which takes into account recent committed development in the vicinity of the site.
- 6.3. An assessment of the site access with right turn lane has been undertaken which has revealed that the junction would remain well within capacity at network peak times. The assessment undertaken at the A474 / A4230 Roundabout and the A474 Neath Abbey Rd / Dwr-Y-Felin Rd traffic signals has revealed a minor effect on the expected operational performance
- 6.4. Based on these findings, and with the additional knowledge that the distribution and assignment work only partially discounted secondary diverted trips already present on the A474, the development proposals are not expected to lead to an unacceptable off-site highways impact on the adjacent transportation network.



Appendices