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Appendix B

ADDENDUM TRANSPORT ASSESSMENT

Persimmon Homes South West

Tatworth Road, Chard

April 2021

Application Reference 16/02874/FUL

Addendum Transport Assessment

Report control

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Primary Author:	Mark Anderson	Initialled:	MA
Contributor:	Tim Bright	Initialled:	TB
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1 Introduction

Background

1.1 Vectos has been commissioned by Persimmon Homes South West to produce an Addendum Transport Assessment (ATA) considering the traffic impact associated with proposals for 252 dwellings on land at Tatworth Road, Chard. The site sits entirely within the Chard Eastern Development Area (CEDA) which is a strategic land allocation in the adopted South Somerset District Council (SSDC) Local Plan 2002-2028.

1.2 This TA Addendum considers the historic work undertaken by Peter Brett's Associates (now Stantec) in support of planning application 16/02874/FUL, which was submitted in 2016 and only recently considered at Planning Committee in April 2021.

1.3 At committee the application was deferred, as Members sought further information in relation to transport matters, including surety that the original 2015 TA was sufficiently robust and demonstrating that the cumulative impact of the proposals had been considered in light of recent development proposals within Chard.

1.4 Vectos has drafted this ATA to consider the key data and assumptions included within the original 2015 Transport Assessment (TA), specifically whether the original TA can still be considered sufficiently robust in terms of its assessment of the proposed development and the cumulative impacts of other committed development on the surrounding highway network. On this basis, this report should be read alongside the previous Transport Assessment where the relevant analysis is contained.

Planning History

1.5 It is noteworthy that Somerset County Council as the local highway authority (LHA), raised no objection to the proposals on the basis of the 2015 PBA TA. Of specific note are the following comments with respect to traffic impact:

'Junction modelling was undertaken for 8 different junctions including 1) Forton Road/Tatworth Road/Church St Junction, 2) A358 Old Town/Holyrood St Junction, 3) High St/Crowshute Link Junction, 4) Furnham Road/Millfield Roundabout, 5) East Street/Tapstone Road/Crewkerne Road/Victoria Avenue Junction, 6) Furnham Road/East St/Fore St, 7) Tatworth Road/Site Access and 8) Forton Road/Site Access.

The TA concluded that the traffic impact at 3 of these junctions, (2,4 and 6 respectively) would result in significant delays. The Highway Authority point out that these are worst case scenarios and would be reduced by the introduction of Travel Plan measures to encourage modal shift and the construction of link road infrastructure. The Highway Authority conclude that all three of these junctions would be operating at or over capacity by 2023 without development traffic. Moreover, the traffic levels generated by the development are relatively low with just over 1 additional vehicle per minute. On this basis, the HA do not conclude that the highway impact would be severe and refusal on traffic impact grounds is not reasonable'.

Report Structure

1.6 To allow the LHA to report to the Planning Committee on the concerns raised, this report has been set out using the following sections:

- **Section 2 – Baseline Traffic Condition** – Due to the time which has elapsed, this section provides a comparison of the original 2015 base flows with more recent 2017 and 2018 base flows. It also provides a review of any recent works to the neighbouring public highway during the intervening period. Alongside this, this section also considers changes to personal injury accident statistics during the intervening period;
- **Section 3 – Trip Generation Review** – Consideration of the original Total Person trip rate assumptions applied in 2015, along with the level of development assessed;
- **Section 4 – Trip Distribution and Assignment** – Consideration of the original distribution and assignment assumptions and how this is impacted by trip internalisation and localisation;
- **Section 5 – Traffic Growth & Committed Development Assumptions** – A comparison of the original committed development and growth rate assumptions applied in the PBA TA. Providing a comparison of the historic estimates with actual levels of development;
- **Section 6 – Traffic Impact** – A review of the traffic impact identified in the original PBA today along with sensitivity tests comprising junction capacity assessments from neighbouring developments that include both recent traffic count data and traffic generation and assignments taking account of application 16/02874/FUL;
- **Section 7 – Travel Plan** – A high level commentary on the Travel Plan targets and measures; and
- **Section 8 – Summary & Conclusions.**

1.7 This ATA concludes that the data, assumptions and methodology used in key areas of the original TA represent a robust assessment of the impact of the proposed and cumulative development on the local highway network. It also concludes that traffic impact analysis undertaken alongside more recent development includes for the assignment of traffic from land at Tatworth Road for both 2024 and 2028 assessment years which have been agreed by the LHA. These provide a robust sensitivity assessment of the proposal, for both the projected year of first occupation (2023) and occupation + 5 years (2028). Based on the original PBA TA and more recent assessments, it is concluded that the impact of the proposal falls within the traffic impact thresholds already considered and agreed by the LHA.

2 Baseline Traffic Conditions

2.1 To establish the validity of historic 2015 traffic data a review has been undertaken comparing the original 2015 data with recent surveys undertaken in 2017/18 and submitted alongside neighbouring developments within Chard.

2.2 The baseline traffic data used in the PBA TA was based on traffic surveys undertaken in January and February 2015 at the following locations, with a copy included in **Appendix A**:

- Forton Road / Church Street;
- Church Street / Holyrood Street / Old Town;
- Crowshute Link / High Street;
- Furnham Road / East Street / Fore Street (Convent Signals);
- Tapstone Road / Victoria Avenue / Crewkerne Road / East Street (Victoria Roundabout);
- Millfield / Old Town / Furnham Road (Millfield Roundabout); and
- Link counts on Tatworth Road and Forton Road.

2.3 A comparison of traffic flows has been undertaken with more recent 2018 traffic count surveys submitted as part of planning application 19/01053/FUL (94 dwellings at Land at Thorhild), located to the north of the site on Tatworth Road. The 2018 surveys can be considered relevant as they are no more than 3 years old and due to Covid restrictions, surveys could not be undertaken since March 2020. A copy of the traffic flows diagrams submitted alongside application 19/01053/FUL are included at **Appendix B**.

2.4 The Transport Assessment associated with the planning application for Land at Thorhild included surveys at four of the above junction locations. These junction locations were:

- Church Street / Holyrood Street / Old Town;
- Furnham Road / East Street / Fore Street (Convent Signals);
- Millfield / Old Town / Furnham Road (Millfield Roundabout); and
- Forton Road / Church Street;

2.5 A summary of the traffic count comparison is shown below which identifies total traffic turning movements in passenger car units (pcus) at each junction in both the AM and PM peak periods.

Table 2.1: Traffic Flows Comparison at Church Street / Holyrood Street / Old Town

	PBA 2015 Flows	2018 Flows	Difference	% Difference
AM	1092	1141	49	4%
PM	1336	1233	-103	-8%

Table 2.2: Traffic Flows Comparison at Furnham Road / East Street / Fore Street (Convent Signals)

	PBA 2015 Flows	2018 Flows	Difference	% Difference
AM	1431	1539	108	8%
PM	1836	1661	-175	-10%

Table 2.3: Traffic Flows Comparison at A358 Furnham Road / Millfield

	PBA 2015 Flows	2018 Flows	Difference	% Difference
AM	936	951	15	2%
PM	1194	1079	-115	-11%

Table 2.4: Traffic Flows Comparison at A358 Tatworth Road / Church Street / Forton Road

	PBA 2015 Flows	2018 Flows	Difference	% Difference
AM	1040	1081	41	4%
PM	1200	1070	-130	-12%

2.6 In the AM peak, the 2018 traffic counts are shown to be between 2 - 8% higher than the 2015 traffic counts although it is noteworthy that traffic flows can vary by up to 10% on any day and the observed differences are within this typical daily variation.

2.7 During the PM peak, where all junction counts are highest, the 2018 traffic counts are lower than the 2015 traffic counts by between 8% and 12%, and this includes the Convent signals raised as a particular point of concern by the LPA. On this basis it can be concluded that the 2015 traffic counts are still sufficiently robust as a proxy for more recent 2018 traffic surveys.

2.8 It is notable that the Land at Thorhild Transport Assessment did not include the assessment of either the Tapstone Road / Victoria Avenue / Crewkerne Road / East Street (Victoria Roundabout) or the Crowshute Link / High Street junctions. In the absence of suitable 2018 data a comparison of the

2015 traffic flows has been undertaken with 2017 traffic surveys undertaken as part of the Land East Of Mount Hindrance planning application (Ref: 18_04057_OUT), being the most recent data available for these two junctions. A copy of the traffic flow diagrams are included at **Appendix C**.

2.9 A summary of the traffic count comparison is shown below which shows total traffic turning movements in passenger car units (pcus) at each junction in both the AM and PM peak periods.

Table 2.5: Traffic Flows Comparison at A30 / Victoria Avenue / Tapstone Road / Crewkerne Road (Victoria Roundabout)

	PBA 2015 Flows	2017 Flows	Difference	% Difference
AM	1245	1313	68	5%
PM	1511	1665	154	10%

2.10 At the Victoria Roundabout, the 2017 traffic counts are shown to be higher than the 2015 traffic counts by 5% in the AM peak and 10% in the PM peak although these differences are within the typical variation in traffic flows.

Table 2.6: Traffic Flows Comparison at High Street / Crowshute Link

	PBA 2015 Flows	2017 Flows	Difference	% Difference
AM	1057	1116	59	6%
PM	1390	1296	-94	-7%

2.11 At the High Street / Crowshute Link junction, the 2017 traffic counts are higher than the 2015 traffic counts by 6% in the AM peak but lower by 7% in the PM where traffic flows are shown to be highest.

Personal Injury Accidents

2.12 Alongside the original PBA TA a review of the personal injury accidents was completed to identify an inherent safety issues with the surrounding highway network. Due to the time which has elapsed a high level review has been undertaken to establish if the number of accidents has increased over the last three years which may be an indication of a material change in the frequency and severity of accidents.

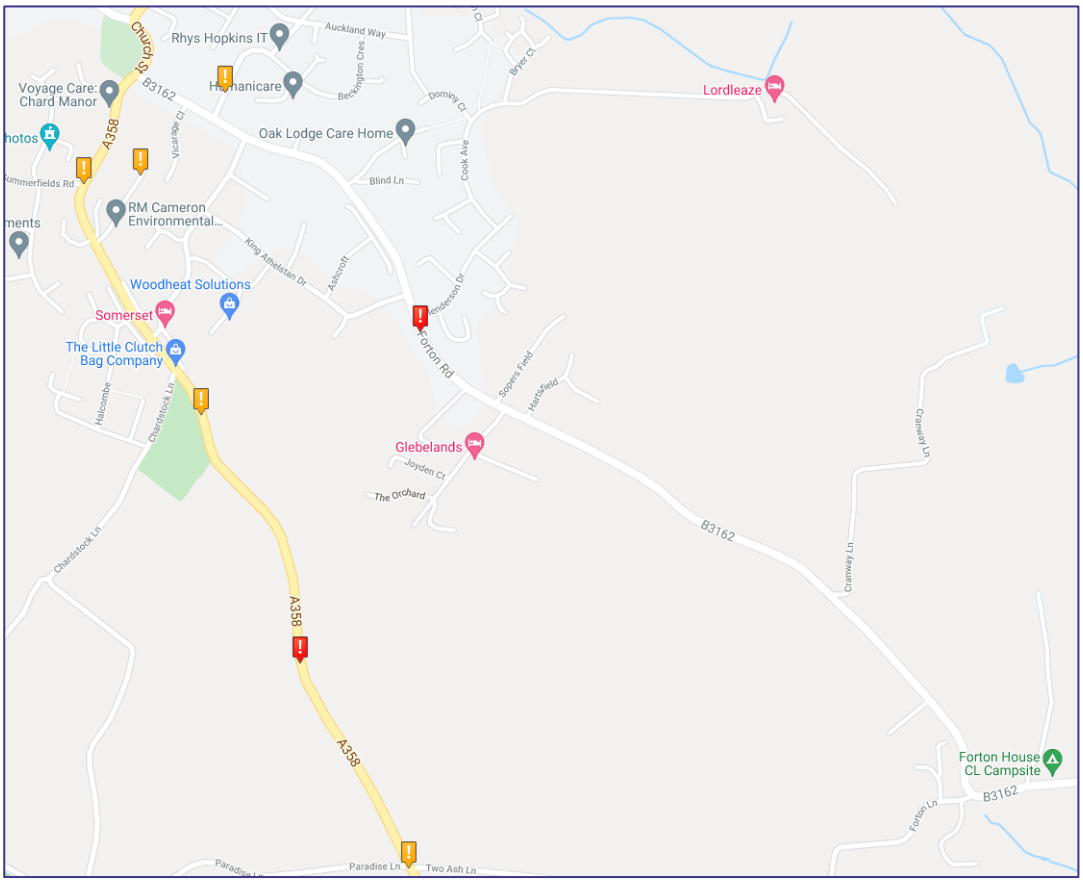
2.13 The 2015 PBA TA identified that there were 10 personal injury accidents (PIA) within the study area for the 2008 – 2013 period and this included two serious accidents. We have reviewed PIA data for the same study area for the most recent five year period (2016 – 2020) using the Crashmap website and this shows that there were 5 PIA including 2 serious PIA within the study area.

2.14 A comparison of the 2015 PBA TA (2008 – 2013) and 2016 -2020 PIA data is shown below in **Table 2.7** and an extract from the Crashmap website showing PIA locations is shown in **Figure 2.1**.

Table 2.7: Comparison of Personal Injury Accidents

	2015 PBA TA (2008 – 2013)	2016 - 2020
Tatworth Road between Two Ash Lane and Chardstock Lane	4	3
Tatworth Road between Chardstock Lane and Summerfields Road	1	1
Tatworth Road between Summerfield Road and Old Town	3	0
Forton Road between Church Street and Forton Lane	2	1
Total	10	5

Figure 2.1: Extract from Crashmap Website



2.15 Therefore, based on the above analysis, the number of PIAs within the study areas has reduced since the 2015 PBA TA and therefore the 2015 PBA PIA analysis is considered robust.

3 Trip Generation Review

3.1 This section considers the original Total Person trip rate assumptions applied in the original PBA TA on a high-level basis, along with the level of development assessed in the original PBA TA for the site. It identifies that the original trip rate assumptions were suitably robust and when undertaking a similar exercise based on recent data provided within the TRICS data, the level of total person trips generated per unit has been reducing over time. This is further demonstrated by trends within the National Travel Survey 2019 which identifies that the average number of trips made per person per year has reduced by 11% between 2002 and 2019.

3.2 Prior to undertaking a revised trip rate assessment it is important to note that the 2015 PBA TA, overestimated the original quantum of development by 73 dwellings, assessing 325 units as opposed to the 252 included in the final proposal. This represents an overestimation of 29% even before an updated trip rate calculation has been conducted.

3.3 Vectos has undertaken a trip rate assessment review using the latest TRICS surveys to calculate total person trips for private houses. The parameters used in the TRICS assessment were as follows:

- Land use: Residential;
- Sub Land Use: Houses Privately Owned;
- Survey Days: Weekday Only;
- Type: Multi-modal;
- Regions: England excluding Greater London;
- Number of Dwellings: 120 to 520 units;
- Location Types: Suburban area, edge of town and neighbourhood centre; and
- Date Range: 01/01/13 – 23/09/19

3.4 Person trip rates of 0.903 and 0.852 for the AM and PM peak were calculated from TRICS and based on the 325 dwellings considered in the 2015 PBA TA, 293 and 277 person trips are forecast for the AM and PM peak periods. A comparison of the 2015 PBA TA and the trip assessment review is shown in **Table 3.1** below, with a copy of the TRICS Report included at **Appendix D**.

Table 3.1: Total Person Trip Comparison

	PBA 2015 TA	Trip Assessment Review	Difference	% Difference
AM	328	293	-35	-10.6%
PM	315	277	-38	-12%

3.5 As shown in **Table 3.1** above, the total person trips calculated in the 2015 PBA TA are higher than those calculated as part of this trip assessment review. Therefore, the forecast development trip assessment included in the 2015 PBA TA is considered sufficiently robust when compared with surveys contained within the nationally recognised TRICS database.

3.6 Considering the overage in the number of dwellings assessed within the PBA TA and the potential difference in total person trips set out in **Table 3.1** above, the total person traffic generation may have been overestimated by as much as 100 trips in both the morning and evening peaks, amounting to as much as 30%. A summary of this calculation is provided in **Table 3.2** below.

Table 3.2: Total Person Trip Comparison – Adjustment to 252 Dwellings

	PBA 2015 TA 325 Units	PBA 2015 TA Adjusted to 252 Units (22% reduction)	Trip Assessment Review Adjusted to 252 Units (22% Reduction)	Difference	
				Trips	%
AM	328	256	229	-99	-30%
PM	315	246	216	-99	-31%

3.7 On the basis of the above, it can be concluded that even without further exploration of the journey purpose proportions, on the basis of the total person trips alone the level of development traffic identified within the 2015 PBA TA can be considered to be an overestimation of the likely impact on the transportation network and should therefore be considered robust should this assessment be submitted alongside an application in 2021.

4 Trip Distribution & Assignment

4.1 It is noteworthy that the PBA TA distributes all development traffic based on 2011 Census Journey to Work data. Whilst this still remains the most current data currently available, it is notable that education, retail and personal business journey purposes make up a sizable proportion of home-based trips during the peak periods. These types of trips are much more likely to be undertaken to more local destination within Chard rather than the disbursed distribution of journey to work trips, particularly during the peak hours.

4.2 The PBA TA distributes 44% of all trips to destinations outside Chard and therefore the application of a journey to work distribution to all development vehicle trips would overestimate the impact of the development on the junctions included within the study area as local trips, which do not impact on the study area to the same degree, have not been considered explicitly.

4.3 It is notable that no consideration has been given to trip internalisation within the wider Chard Eastern Development Area. At a basic level, the development would create a new population density around key areas of commerce that may previously have depended on wider catchments to realise their success. This includes support for local shops, community facilities and the ongoing vibrancy of the town centre and wider services and facilities within Chard.

4.4 Vectos have developed the concept of the 20-minute town, which identifies the typical mix of destinations that you might typically expect to be within a 20-minute walk of the site to support local living, establishing clearly that the site is in the right location for growth. Clearly the site benefits from its proximity to the existing town centre which can encourage sustainable forms of transport and encourage the localisation of trips within the town centre in addition to the internalisation of trips within the development area. This reduction of trips not only applies to the development site but the neighbouring residential areas.

4.5 Vectos has been working with the RTPI on specific research around place-based solutions to net-zero carbon transport, drawing on our EU research and future strategies around urban extensions and garden villages. When considering local travel and local living and the interactions of on-site provision and movements within local districts, this suggests traditional trip rates applied to development are often twice those typically observed post implementation when you consider the complexities of movement.

4.6 The key factor is considering what the external trip rates are after applying containment factors and breaking down the reasons for travel rather than applying typical trip rate assignments based on travel to work alone, being an approach, all too often wrongly applied with travel to work making up only 40% of the reasons to travel during the morning peak. COVID, has been a catalyst for flexibility in living patterns which will make the peak period less relevant in the future.

4.7 It is notable that the TA applied TEMPro growth rates to existing base flows where no growth has been observed during the same period, notably the Convent Junction during its busiest afternoon period. It is therefore conceivable that the junction capacity analysis undertaken, utilised over inflated flows.

5 Traffic Growth & Committed Development Assumptions

5.1 The following section provides a comparison of the original committed development and growth rate assumptions applied to the PBA TA. It compares historic estimates with actual levels of development to establish whether the original predictions can be considered sufficiently robust.

5.2 The 2015 PBA TA included two committed development sites, namely:

- Application 12/03419/OUT (Land at Avishayes Road, Chard) for 88 dwellings; and
- Application 15/04772/OUT (Land between Tatworth and Forton Road) for up to 200 dwellings.

5.3 It should be noted that the committed development considered within the 2015 PBA TA was agreed with Somerset County Council (SCC) Highways at the time. Also, the Ministry of Housing, Communities & Local Government provides guidance on Transport Assessment and what they should contain. In terms of committed development, this is identified as development that is consented or allocated where there is a reasonable degree of certainty it will proceed within the next 3 years.

5.4 The 2015 PBA assessment included both 2018 and 2023 traffic assessments representing the year of first occupation and the design year, 5 years post occupation. With reference to the Highways England document 'The Strategic Road Network – Planning for the Future – A guide to working with Highways England on Planning Matters', it is clearly states that for the purpose of determining the level of mitigation required, an assessment at the time of first occupation should be conducted, assuming full build out of the site.

5.5 It is therefore surmised that the TA, in assessing a 2023 scenario will establish the impact at the year of first occupation in this respect and can therefore be considered for the purpose of agreeing a suitable package of mitigation.

5.6 To demonstrate that the assessment during the 2023 year of occupation is sufficiently robust, a review has been undertaken of both the committed and traffic growth assumptions applied to the proposal and also the actual build out rate within Chard.

TEMPro Assumptions

5.7 With reference to the TA, the following build rates identified in Table 5.1 were estimated between the period 2014/15 – 2023, with the TEMPro parameters amended to reflect these assumptions:

Table 5.1 – TEMPRO Build Rate Assumptions

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
46	44	99	185	149	149	149	149	149

5.8 The actual build rates up to 2021, have been identified in Table 5.2 below, being sources from the Local Planning Authority:

Table 5.2: Actual Local Authority Buildout Rate

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
97	66	34	23	12	75	45	11*	-

Note: * First quarter 2021 only

5.9 It is evident that the assumptions used within TEMPro have overestimated the rate of development across this period, the net differences identified in Table 5.3.

Table 5.3: Net Difference 2014/15 - 2021

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
51	22	-65	-162	-137	-74	-104	-	-

5.10 On the basis of the calculations set out above, there is currently an under provision in the housing trajectory of 469 dwellings up to the beginning of 2021.

Committed Development (Manually Applied)

5.11 In addition to applying TEMPro growth to the network flows, committed development flows have been applied. With reference to the TA, the following committed development was applied:

- Application 12/03419/OUT - Land at Avishayes Road – 88 Dwellings; and
- Application 15/04772/OUT - Land between Tatworth and Forton Road – 200 dwellings.

5.12 On the basis of that set out above, 288 additional dwellings have also been manually applied to the network based on the traffic impact assessments completed for the above sites.

5.13 Concerns have been raised by the LPA with respect to the potential shortfall in committed development considered within the original TA. On the basis of the definition for committed development contained within the governments Planning Practice Guidance, being any development

likely to come forward in the next three years, the following additional committed development sites have been identified as potentially coming forward in the three year period from 2021:

- Application 19/01053/FUL – Land at Thorhild Tatworth Road – 94 dwellings;
- Application 19/00074/FUL – Land East of Crimchard – 142 dwellings; and
- Application 18/04057/OUT – Land East of Mount Hindrance Farm – 295 Dwellings.

5.14 A review of the latest committed development sites, indicates that a further 531 dwellings would fall within the category for committed development up to the year 2023, that weren't considered separately alongside the original TA.

5.15 Notwithstanding, whilst the above committed development was not applied, it is notable that a further 287 dwellings had been applied through the TEMPro calculations, up to 2023 being the (new) year of occupation, a shortfall of 244 dwellings when additional committed development assumptions have been taken into account.

Traffic Impact Comparison (Dwellings)

5.16 It is noteworthy that in calculating the additional number of dwellings assigned onto the network, the original TA for the application site assessed the impact of 325 dwellings whilst the final proposal is for 252, a reduction of 73 dwellings.

5.17 Taking into account the overestimation of the TEMPro development, the underestimation in terms of committed sites, and the overestimation in terms of the TA and actual quantum of development proposed it is clear that the original assessment overestimated the level of development on the local network by 830 dwellings up to the beginning of 2021 and by 586 dwellings to 2023, being the year of mitigation. A summary is provided below in Table 5.4.

Table 5.4 – Summary – Committed Development and Growth Rate Assumptions

	2014/15-2021	2014/15-2023
Original Transport Assessment		
TEMPro Prediction	821	1,119
Committed Prediction	288	288
TA Overage	73	73
Total	1,182	1,480
Actual & Revised Committed Prediction		
Actual Buildout	352	363*

Committed Prediction	-	531
Total	352	894
Net	-830	-586

Note: Includes 11 units constructed early 2021*

5.18 On the basis of the calculations completed above, it is evident that the original 2015 TA undertook a robust assessment with respect to committed development and background traffic growth, overestimating the level of development by 830 dwellings for 2021 and 586 dwellings in 2023. In establishing the impact of the proposal at the year of occupation (2023), the existing TA is considered overly robust. This is tested further in the following section using traffic data and junction capacity testing submitted alongside recent applications within Chard.

6 Traffic Impact

Assessment Years

6.1 The 2015 PBA TA included two assessment years, these being 2018 (year of occupation) and 2023 (year of occupation + 5 years).

2018 Predicted & Actual 2018 Base Flow Comparison

6.2 Due to original 2015 base flows being out of date, it is possible to undertake a comparison of the PBA predicted 2018 base + committed flows (**Appendix E**), with 2018 surveyed flows from the neighbouring Land at Thorhild development (Planning Application 19_01053), included at **Appendix B**.

6.3 Surveyed 2018 flows are considered suitable as they are three years old and this comparison provides a robust assessment of whether the robust assumptions set out above have overestimated the level of traffic on the local road network.

6.4 A summary of the traffic count comparison is shown below which shows total traffic turning movements in passenger car units (pcus) at each junction in both the AM and PM peak periods.

Table 6.1: Traffic Flows Comparison at Church Street / Holyrood Street / Old Town

	PBA 2018 Flows with Committed Development	Actual 2018 Flows	Difference	% Difference
AM	1244	1141	-103	-9%
PM	1509	1233	-276	-22%

Table 6.2: Traffic Flows Comparison at Furnham Road / East Street / Fore Street (Convent Signals)

	PBA 2018 Flows with Committed Development	Actual 2018 Flows	Difference	% Difference
AM	1577	1539	-38	-2%
PM	2008	1661	-347	-17%

Table 6.3: Traffic Flows Comparison at A358 Furnham Road / Millfield

	PBA 2018 Flows with Committed Development	Actual 2018 Flows	Difference	% Difference
AM	1056	951	-105	-11%
PM	1335	1079	-256	-24%

Table 6.4: Traffic Flows Comparison at A358 Tatworth Road / Church Street / Forton Road

	PBA 2018 Flows with Committed Development	Actual 2018 Flows	Difference	% Difference
AM	1189	1081	-108	-10%
PM	1368	1070	-298	-28%

6.5 It is evident that in all instances, estimations of traffic conditions in 2018 significantly overestimated the volume of traffic through the above junctions. On this basis the original flows for 2018 included in the PBA TA provide an unnecessarily robust proxy for a 2018 base network scenario, i.e. instead of a 2018 traffic survey.

6.6 As the Land at Thorhild Transport Assessment didn't include the assessment of the Tapstone Road / Victoria Avenue / Crewkerne Road / East Street (Victoria Roundabout) and the Crowshute Link / High Street junctions, a comparison of the 2018 base + committed flows has been undertaken with 2017 traffic surveys undertaken as part of the Land East Of Mount Hindrance planning application (Ref: 18_04057_OUT)

6.7 A summary of the traffic count comparison is shown below which shows total traffic turning movements in passenger car units (pcus) at each junction in both the AM and PM peak periods.

Table 6.5: Traffic Flows Comparison at A30 / Victoria Avenue / Tapstone Road / Crewkerne Road (Victoria Roundabout)

	PBA 2018 Flows with Committed Development	Actual 2017 Flows	Difference	% Difference
AM	1344	1313	-31	-2%
PM	1630	1665	35	2%

Table 6.6: Traffic Flows Comparison at High Street / Crowshute Link

	PBA 2018 Flows with Committed Development	Actual 2017 Flows	Difference	% Difference
AM	1144	1116	-28	-2%
PM	1489	1296	-193	-13%

6.8 It can be seen that, with the exception of one scenario, at all junctions and in both peak periods the 2018 with committed development traffic flows used in the traffic assessment are clearly higher than the actual traffic flows observed in 2017/2018. This clearly demonstrates that the 2018 with committed development traffic flows used in the traffic assessment can be considered robust.

PBA 2023 Assessment Result (Revised Year of Occupation)

6.9 On the basis that the 2018 assessment year provides an overly robust estimate of the impact on the neighbouring network, because these results were agreed with SCC at the time, the impact of the proposals in 2023 can be considered to be a suitably robust estimate of the impact of the site at the revised first occupation date of 2022/23. The results agreed with SCC at the time are shown below for each junction assessed for the 2023 with committed and proposed development traffic. A copy of the results are included at **Appendix F**.

Table 6.7: 2023 B3162 Forton Road / A358 Tatworth Road / A358 Church Street Junction Capacity Results

	Forton Road		Tatworth Road	
	RFC	Q (pcu)	RFC	Q (pcu)
2023 Without Development				
AM	0.760	3	0.020	0
PM	0.680	2	0.040	0
2023 With Development				
AM	0.900	7	0.020	0
PM	0.800	4	0.040	0

Table 6.8: 2023 A358 Old Town / Holyrood Street Junction Capacity Results

	Holyrood Street		Old Town	
	RFC	Q (pcu)	RFC	Q (pcu)
2023 Without Development				
AM	0.500	1	0.220	0
PM	0.950	8	0.350	1
2023 With Development				
AM	0.570	1	0.230	0
PM	1.090	20	0.360	1

Table 6.9: 2023 A30 High Street / B3162 Crowshute Link Junction Capacity Results

	Crowshute Link		High Street	
	RFC	Q (pcu)	RFC	Q (pcu)
2023 Without Development				
AM	0.630	2	0.480	1
PM	0.750	3	0.650	3
2023 With Development				
AM	0.680	2	0.520	1
PM	0.800	4	0.660	3

Table 6.10: 2023 A358 Furnham Road / Millfield Junction Capacity Results

	Millfield (East)		A358 Millfield (West)		A358 Furnham Road	
	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)
2023 Without Development						
AM	0.230	0	0.440	1	0.690	2
PM	0.580	1	0.460	1	0.890	7
2023 With Development						
AM	0.240	0	0.500	1	0.720	3
PM	0.630	2	0.490	1	0.960	13

Table 6.11: 2023 A30 East Street / Tapstone Road / A30 Crewkerne Road / Victoria Avenue Junction Capacity Results

	A30 Crewkerne Road		Tapstone Road		A30 East Street		Victoria Avenue	
	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)
2023 Without Development								
AM	0.420	1	0.140	0	0.430	1	0.260	0
PM	0.410	1	0.360	1	0.540	1	0.290	0
2023 With Development								
AM	0.420	1	0.140	0	0.450	1	0.260	0
PM	0.420	1	0.360	1	0.540	1	0.290	0

Table 6.12: 2023 A358 Furnham Road / A30 East Street / A30 Fore Street (Convent Junction) Capacity Results

	A358 Furnham Rd (North)		A30 East Street		A358 Furnham Rd (South)		A30 Fore Street	
	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)
2023 Without Development								
AM	89.7	19	90.8	19	90.9	21	74.8	13
PRC = -1.0%								
PM	110.1	52	108.7	57	108.7	58	101.8	37
PRC = -22.3%								
2023 With Development								
AM	95.0	22	95.2	23	96.3	26	77.0	14
PRC = -7.0%								
PM	113.4	63	114.5	73	113.8	78	104.9	43
PRC = -27.2%								

6.10 In establishing the relative robustness of the 2023 junction capacity analysis included within the PBA TA the following should be noted:

- The Total Person trip rate may be overestimated by as much as 12%;
- The level of development has been overestimated by 29%;
- The level of background development has been overestimated by 586 dwellings;
- Traffic has been assigned from the development using Travel to Work Data which ignores other trip purposes which collectively make up a higher proportion of trips during the network peak hours; and
- The level of internalisation resulting from a mix of land uses has not been considered which will lead to a greater level of trips residing within the vicinity of the site.

6.11 As such this impact presented for the 2023 revised year of occupation can be considered unnecessarily robust. It is therefore noteworthy that whilst the LHA agreed the impact attributed to proposals at Tatworth Road above, in reality this is likely to be much lower than that identified.

6.12 With respect to the Convent Junction, it is noteworthy that during the PM peak, when the junction is busiest, the proposals will only result in 76 additional movements across the hour, amounting to approximately one vehicle every minute which cannot be considered severe in terms of the NPPF test. Indeed, with the original analysis potentially overestimating the level of trips by as much as 30%, this may be closer to 53 vehicles during the peak hour, and should consideration of trip internalisation and localisation apply in addition to further detailed consideration of trip purpose, this is likely to be even lower.

Sensitivity Assessments

2024 Assessment – Land at Thorhild

6.13 Whilst it has been demonstrated that the 2023 assessment included within the original PBA TA is sufficiently robust, it should be noted that land at Tatworth Road has also been considered as committed development alongside more recent proposals, notably Land at Thorhild, located to north (application 19_01053) which was approved in August 2020. The TA submitted alongside that application manually applied the traffic flows included within the PBA TA and as such considers the impact of both the latest committed development flows agreed with the LHA and also land at Tatworth Road. This therefore provides a useful sensitivity test, albeit for a slightly higher assessment year of 2024 providing additional surety for the LHA that the PBA TA is still sufficiently robust.

6.14 The results agreed with SCC at the time are shown below for each junction assessed for the 2024 with committed and proposed development traffic. A copy of the results are included at **Appendix G**.

Table 6.13: 2024 B3162 Forton Road / A358 Tatworth Road / A358 Church Street Junction Capacity Results

	Forton Road		Tatworth Road	
	RFC	Q (pcu)	RFC	Q (pcu)
AM	0.89	5.9	0.03	0
PM	0.59	1.4	0.03	0

Table 6.14: 2024 A358 Old Town / Holyrood Street Junction Capacity Results

	Holyrood Street		Old Town	
	RFC	Q (pcu)	RFC	Q (pcu)
AM	0.33	0.5	0.22	0.4
PM	0.91	6.7	0.25	0.4

Table 6.15: 2024 A358 Furnham Road / Millfield Junction Capacity Results

	Millfield (East)		A358 Millfield (West)		A358 Furnham Road	
	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)
AM	0.56	1.3	0.19	0.2	0.93	9.5
PM	0.72	2.5	0.35	0.5	0.78	3.3

Table 6.16: 2024 A358 Furnham Road / A30 East Street / A30 Fore Street (Convent Junction) Capacity Results

	A358 Furnham Rd (North)		A30 East Street		A358 Furnham Rd (South)		A30 Fore Street	
	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)
AM	95.8	23.5	95.7	22.0	96.3	26.2	44.0	6.1
PRC = -7.0%								
PM	105.9	45.6	106.9	42.3	107.3	56.7	93.3	19.8
PRC = -19.2%								

6.15 The Convent Junction was shown to be operating above its practical reserve capacity with a PRC of -7.0% and -19.3% for the AM and PM peaks respectively. It is noteworthy that with respect to the Convent Junction, the PBA TA overestimated the impact based on that presented in the 2024 assessment for land at Thorhild. The PBA TA identifies the same PRC for 2023 as shown above for 2024, and more importantly it significantly overestimated the impact in the PM peak, with the PBA TA estimating a PRC of -27.2% for 2018 compared with the recently consented scheme for Thorhild that identified a PRC of -19.2% for 2024. It should be noted that the Thorhild TA is based on more recent traffic surveys (2018) and the latest committed development assumptions including the PBA TA flows. This should provide sufficient confidence that the previously agreed PBA TA is still sufficiently robust, indeed it has significantly overestimated the impact of the proposals at the year of occupation.

6.16 All other junctions were shown to be operating within capacity in the AM and PM peak periods, including the Old Town/Holyrood Street Junction which was shown in the PBA TA to be just over capacity in 2023 during the PM peak, a marked improvement.

2028 Assessment Year – Land East of Mount Hindrance

6.17 It is notable that in utilising the 2023 PBA assessment year as the revised year of first occupation, a subsequent design year of 2023 + 5 years is no longer accounted for. On reviewing recent committed development it is noted that application 18_04057_OUT (Land East Of Mount Hindrance) includes a 2028 assessment year for many of the neighbouring junctions and can be utilised as a sensitivity for this future design year having included for committed development on the road network within Chard through the TEMPro growth forecast.

6.18 The junction assessments set out below have been agreed with the LHA alongside application 18_04057_OUT. A copy of the results are included at **Appendix H**.

Table 6.17: 2028 A30 High Street / B3162 Crowshute Link Junction Capacity Results

	Crowshute Link		High Street	
	RFC	Q (pcu)	RFC	Q (pcu)
AM	0.65	2	0.49	1
PM	0.82	4	0.67	2

Table 6.18: 2028 A30 East Street / Tapstone Road / A30 Crewkerne Road / Victoria Avenue Junction Capacity Results

	A30 Crewkerne Road		Tapstone Road		A30 East Street		Victoria Avenue	
	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)
AM	0.38	1	0.17	0	0.5	1	0.31	0
PM	0.46	1	0.44	1	0.6	1	0.36	1

Table 6.19: 2028 A358 Furnham Road / A30 East Street / A30 Fore Street (Convent Junction) Capacity Results

	A358 Furnham Rd (North)		A30 East Street		A358 Furnham Rd (South)		A30 Fore Street	
	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)	DoS (%)	Q (pcu)
AM	104.9	37.0	105.3	33.0	107.3	48.0	104.3	30.0
PRC = -19.3%								
PM	114.4	60.0	115.2	64.0	116.5	67.0	93.0	20.0
PRC = -29.4%								

Table 6.21: 2028 A358 Old Town / Holyrood Street Junction Capacity Results

	Holyrood Street		Old Town	
	RFC	Q (pcu)	RFC	Q (pcu)
AM	0.91	6	0.52	2
PM	1.28	22	0.59	3

6.19 With reference to the above junction capacity testing, the Convent Junction was shown to be operating above its practical reserve capacity with a PRC of -19.3% and -29.4% for the AM and PM peaks respectively.

6.20 As described above, with respect to the Convent Junction, it is noteworthy that during the PM peak, when the junction is busiest, the proposals will only result in 76 additional movements across the hour, amounting to approximately one vehicle every minute which cannot be considered severe in terms of the NPPF test. Indeed, with the original analysis potentially overestimating the level of trips by as much as 30%, this may be closer to 53 vehicles during the peak hour, and should consideration of trip internalisation and localisation apply in addition to further detailed consideration of trip purpose, this is likely to be even lower.

6.21 All other junctions were shown to be operating within capacity in the AM and PM peak periods apart from the A358 Old Town / Holyrood Street junction where the Holyrood Street approach to the junction was shown to be operating above capacity in the PM peak.

7 Travel Plan

7.1 A Travel Plan (TP) has been submitted alongside the application which seeks to reduce reliance on single occupancy car use. This includes a range of measures to ensure that sustainable travel opportunities are available at the outset which includes:

- Infrastructure improvements including shared footway/cycleway link between Tatworth Road and Forton Road;
- Green Travel Vouchers to allow purchase of walking, cycling and motorcycling equipment, items that will facilitate home-working and subsidised public transport tickets;
- Cycle parking;
- New bus waiting facilities close to the site on Tatworth Road and Forton Road;
- Promotion of car sharing
- High speed broadband to facilitate home working; and
- Appointment of a Travel Plan Coordinator.

7.2 Travel Plan targets have been proposed which seek to reduce the number of single occupancy car trips by a minimum of 10% over the minimum 5-year TP monitoring period, with ongoing monitoring which is likely to include the installation of Automatic Traffic Counters to establish the impact on car trips over time.

7.3 The TP includes enforcement measures should targets not be met, including the implementation of additional TP measures if required which could include:

- More active marketing incorporating a shift of focus;
- Further promotional support for non-car modes of transport;
- Additional on-site infrastructure for walking and cycling;
- Additional parking management on-site including signing and lining for example; and
- Personalised Travel Planning, providing tailored information for each household.

7.4 In accordance with the SCC Travel Plan guidance a safeguarding sum will be available in the event enforcement measures are required to be implemented.

7.5 For further information, reference should be made to the Travel Plan document by Peter Brett Associates, submitted alongside the application.

8 Summary & Conclusions

Summary

8.1 Vectos has been commissioned by Persimmon Homes South West to produce an Addendum Transport Assessment, reviewing the validity of the traffic impact analysis contained within the Transport Assessment produced by Peter Brett Associates in 2015 (2015 PBA TA). This was submitted in support of planning application 16/02874/FUL for 252 dwellings and associated employment, community and leisure uses, and accompanying infrastructure.

8.2 The review of the 2015 PBA TA has been undertaken to consider if the TA still presents a robust assessment of the proposed development and the cumulative impacts of other committed development on the local highway network.

8.3 The review has considered baseline traffic data, highway safety, committed development and traffic growth assumptions, proposed development trips, proposed development traffic levels and development impacts. These are considered to be the key areas which identify the traffic impact of the development proposals.

8.4 The review has identified that the data, assumptions and methodology used in these key areas still represent a robust assessment of the impact of the proposed and cumulative development on the local highway network.

8.5 In the AM peak, more recent 2018 traffic counts are shown to be between 2 - 8% higher than the 2015 traffic counts although it is noteworthy that traffic flows can vary by up to 10% on any day and the observed differences are within this typical daily variation.

8.6 During the PM peak, where all junction counts are highest, the 2018 traffic counts are lower than the 2015 traffic counts by between 8% and 12%, including the Convent Signals raised as a particular point of concern by the LPA. On this basis it can be concluded that the 2015 traffic counts are still sufficiently robust as a proxy for more recent 2018 traffic surveys particularly during the PM peak period.

8.7 The number of PIAs within the study areas has reduced since the 2015 PBA TA and therefore the 2015 PBA PIA analysis is considered robust.

8.8 The 2015 PBA TA assumed that the proposed level of development on the site would be 325 dwellings, whilst the actual quantum of development is 252 units. The 2015 PBA TA overestimates the level of development by 73 dwellings, representing a 29% uplift in traffic. The latest TRICS surveys indicate a lower level of total person trips, in the order of 11-12% less during the network peak hours, it is clear that the impact of the 252 units proposed has been further overestimated in this regard, by as much as 30% or 100 total person trips in the AM and PM peaks.

8.9 The 2015 PBA TA distributes 44% of all trips to destinations outside Chard. The application of a journey to work distribution to all development vehicle trips would overestimate the impact of the development on the junctions included within the study area as local trips which do not impact on the study area to the same degree as journey to works trips have not been considered explicitly.

8.10 Therefore, based on the issues identified above, the level of development traffic identified within the 2015 PBA TA can be considered to be an overestimation of the likely impact on the transportation network and should therefore be considered to be robust.

8.11 Current travel trends demonstrate that trips per person are reducing and the National Travel Survey 2019 identifies that the average trips made per person per year has reduced 11% between 2002 and 2019.

8.12 It is evident that the original 2015 TA undertook a robust assessment with respect to committed development and background traffic growth, overestimating the level of development by 830 dwellings for 2021 and 586 dwellings in 2023. In establishing the impact of the proposal at the year of occupation (2023), the existing TA is considered sufficiently robust.

8.13 When considering the level of impact, it is therefore important to consider the following:

- The Total Person trip rate may be overestimated by as much as 12%;
- The level of development has been overestimated by 29%;
- The level of background development has been overestimated by 586 dwellings;
- Traffic has been assigned from the development using Travel to Work Data which ignores other trip purposes which collectively make up a higher proportion of trips during the network peak hours; and
- The level of internalisation resulting from a mix of land uses has not been considered which will lead to a greater level of trips residing within the vicinity of the site.

8.14 It is evident that in all instances, estimations of traffic conditions in 2018 significantly overestimated the volume of traffic through the above junctions. On this basis the original flows for 2018 included in the PBA TA provide an unnecessarily robust proxy for a 2018 base network scenario, i.e. instead of a 2018 traffic survey.

8.15 Considering a 2024 sensitivity test extracted from the TA for land at Thorhild (granted August 2020), it is noteworthy that with respect to the Convent Junction, the PBA TA overestimated the impact based on that presented in the 2024 assessment. The PBA TA identifies the same AM peak PRC for 2023 as shown above for 2024, and more importantly it significantly overestimated the impact in the PM peak, with the PBA TA estimating a PRC of -27.2% for 2018 compared with the recently consented scheme for Thorhild that identified a PRC of -19.2% for 2024.

8.16 The proposals will only result in 76 additional movements across the hour, amounting to approximately one vehicle every minute which cannot be considered severe in terms of the NPPF test. Indeed, with the original analysis potentially overestimating the level of trips by as much as 30%, this may be closer to 53 vehicles during the peak hour, and should consideration of trip internalisation and localisation apply in addition to further detailed consideration of trip purpose, this is likely to be even lower.

8.17 Travel Plan targets have been proposed which seek to reduce the number of single occupancy car trips by a minimum of 10% over the minimum 5-year TP monitoring period, with ongoing monitoring which is likely to include the installation of Automatic Traffic Counters to establish the impact on car trips over time.

Conclusions

8.18 The review of the 2015 PBA TA has been undertaken to consider if the TA still presents a robust assessment of the proposed development and the cumulative impacts of other committed development on the local highway network.

8.19 The review has considered baseline traffic data, highway safety, committed development and traffic growth assumptions, proposed development trips, proposed development traffic levels and development impacts. These are considered to be the key areas which identify the traffic impact of the development proposals.

8.20 The review has identified that the data, assumptions and methodology used in these key areas still represents a robust assessment of the impact of the proposed and cumulative development on the local highway network.

Appendices

Appendix A

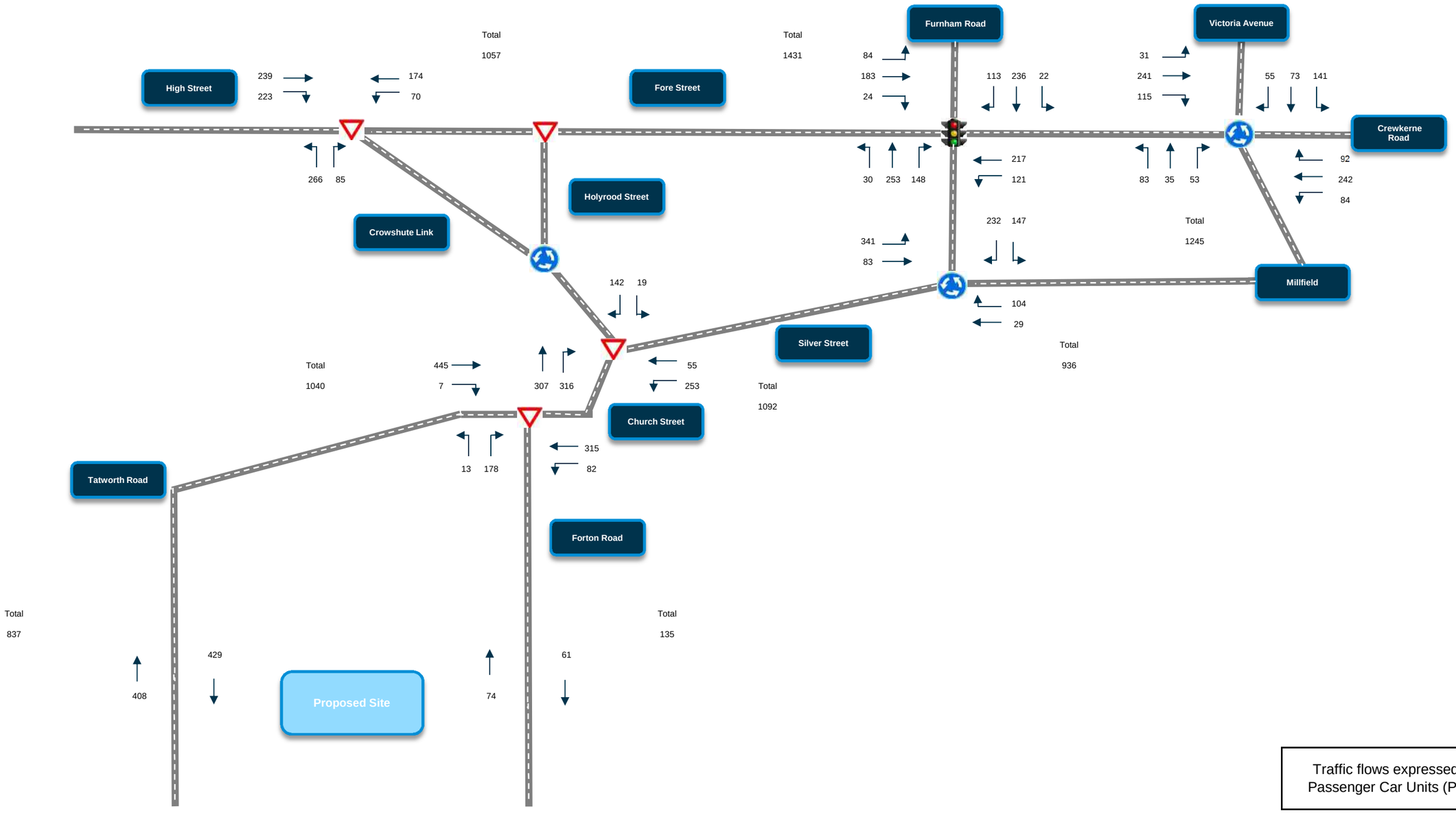
2015 Traffic Counts

Source: Peter Brett Associates Transport Assessment dated May 2016

Planning Application: 16/02874/FUL

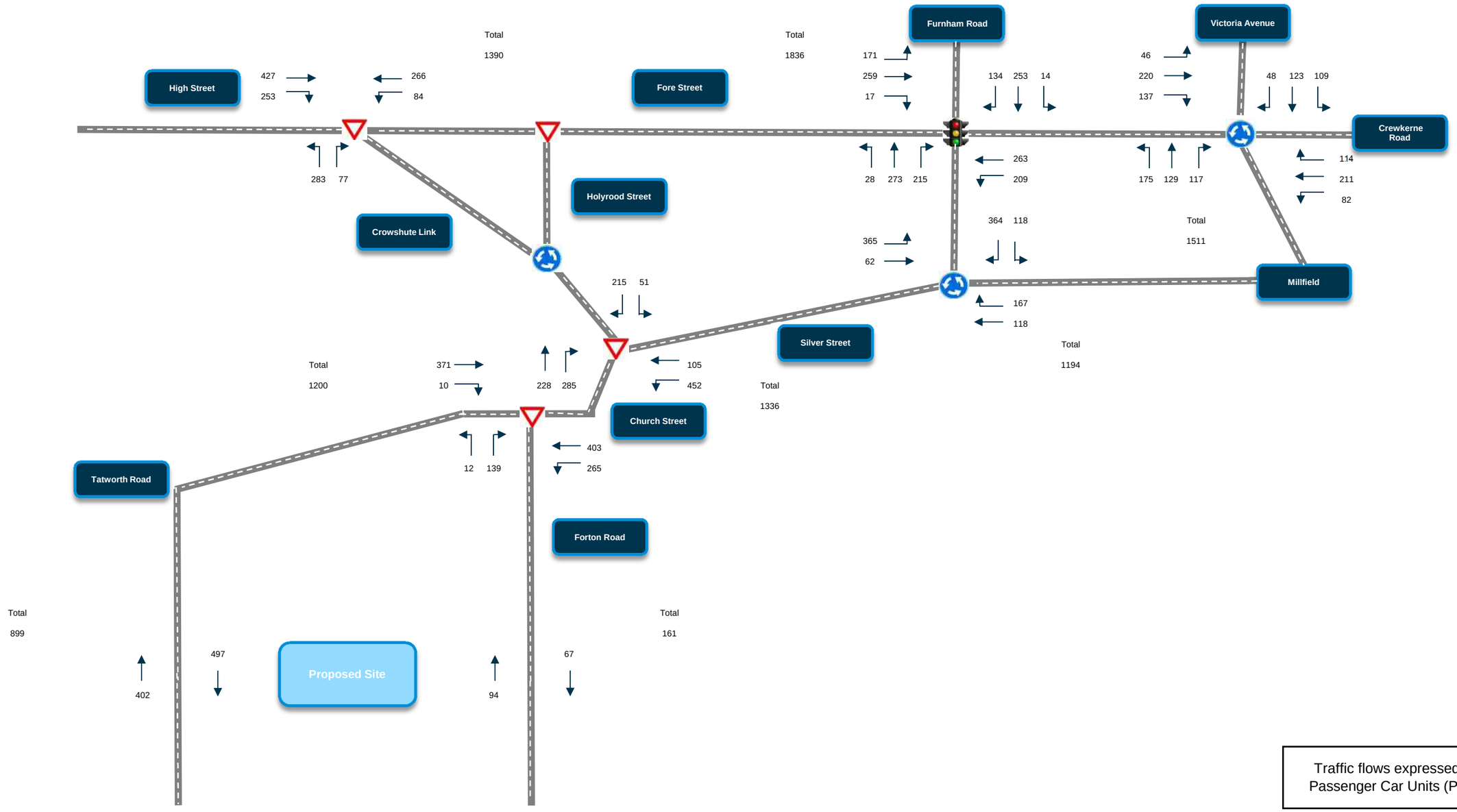
Hyperlink to Document:

https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=7888665



Traffic flows expressed as Passenger Car Units (PCU)

peterbrett	**Client:** Persimmon Homes South West Ltd	**Figure Title:** Surveyed Traffic - AM Peak	
		Project Number: 29372	**Project Name:** Land between Forton Road and Tatworth Road, Chard
		Date: May-16	**Figure Number:** Figure 6-1 / **Revision**
		Scale: NTS	
Lakeside House, Blackbrook Park Avenue, Taunton, TA1 2PX © Peter Brett Associates LLP		**Drawn:** CM	
Telephone (01823) 44510 Email: taunton@peterbrett.com Web: www.peterbrett.com		**Checked:** AS	



Traffic flows expressed as Passenger Car Units (PCU)

peterbrett	**Client:** Persimmon Homes South West Ltd	**Figure Title:** Surveyed Traffic - PM Peak	
		Project Number: 29372	**Project Name:** Land between Forton Road and Tatworth Road, Chard
		Date: May-16	**Figure Number:** Figure 6-2 / **Revision**
		Scale: NTS	
Lakeside House, Blackbrook Park Avenue, Taunton, TA1 2PX © Peter Brett Associates LLP		**Drawn:** CM	
Telephone (01823) 44510 Email: taunton@peterbrett.com Web: www.peterbrett.com		**Checked:** AS	

Appendix B

2018 Traffic Counts

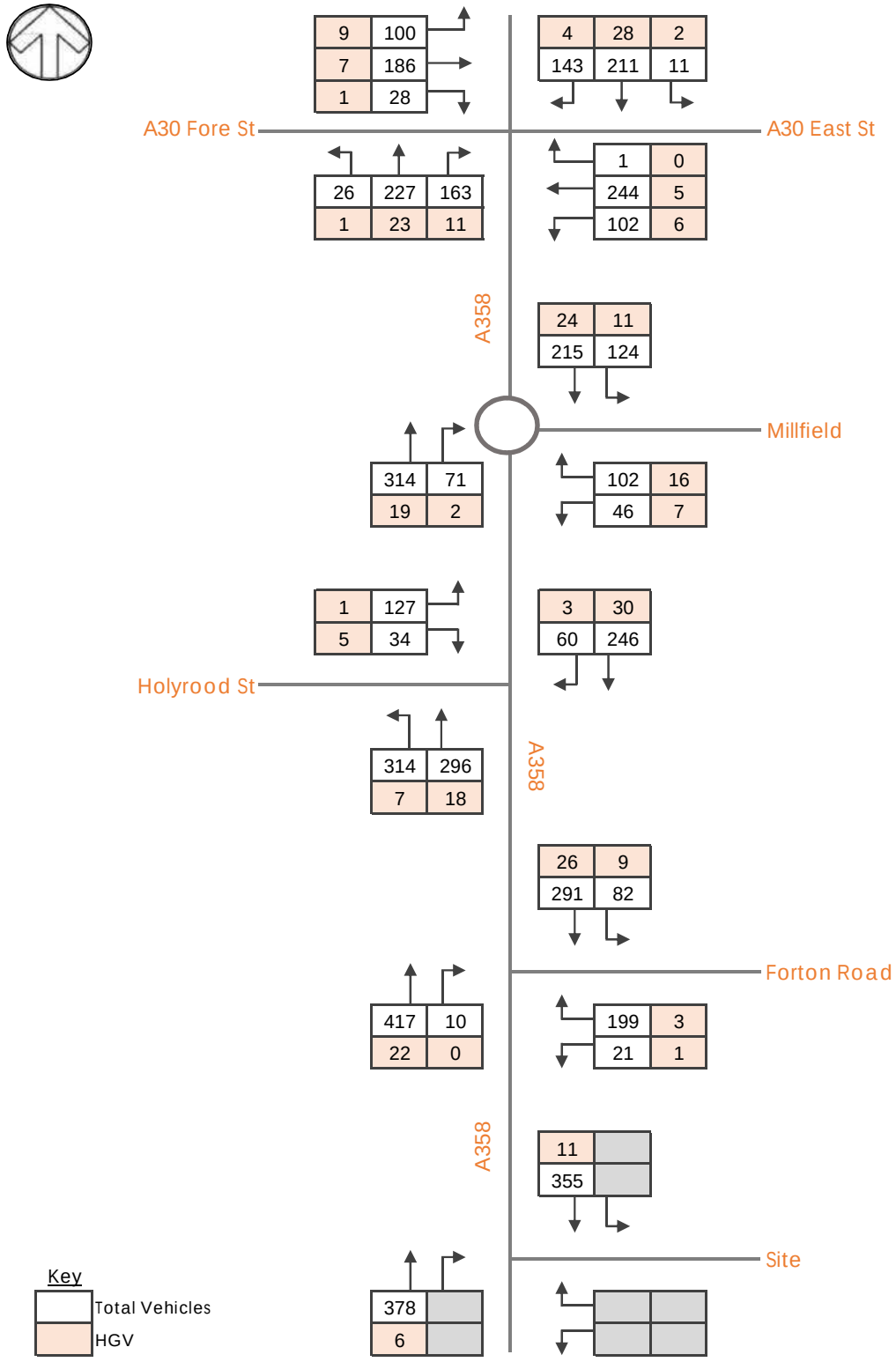
Source: AWP Transport Assessment dated March 2019

Planning Application: 19/01053/FUL

Hyperlinks to Document:

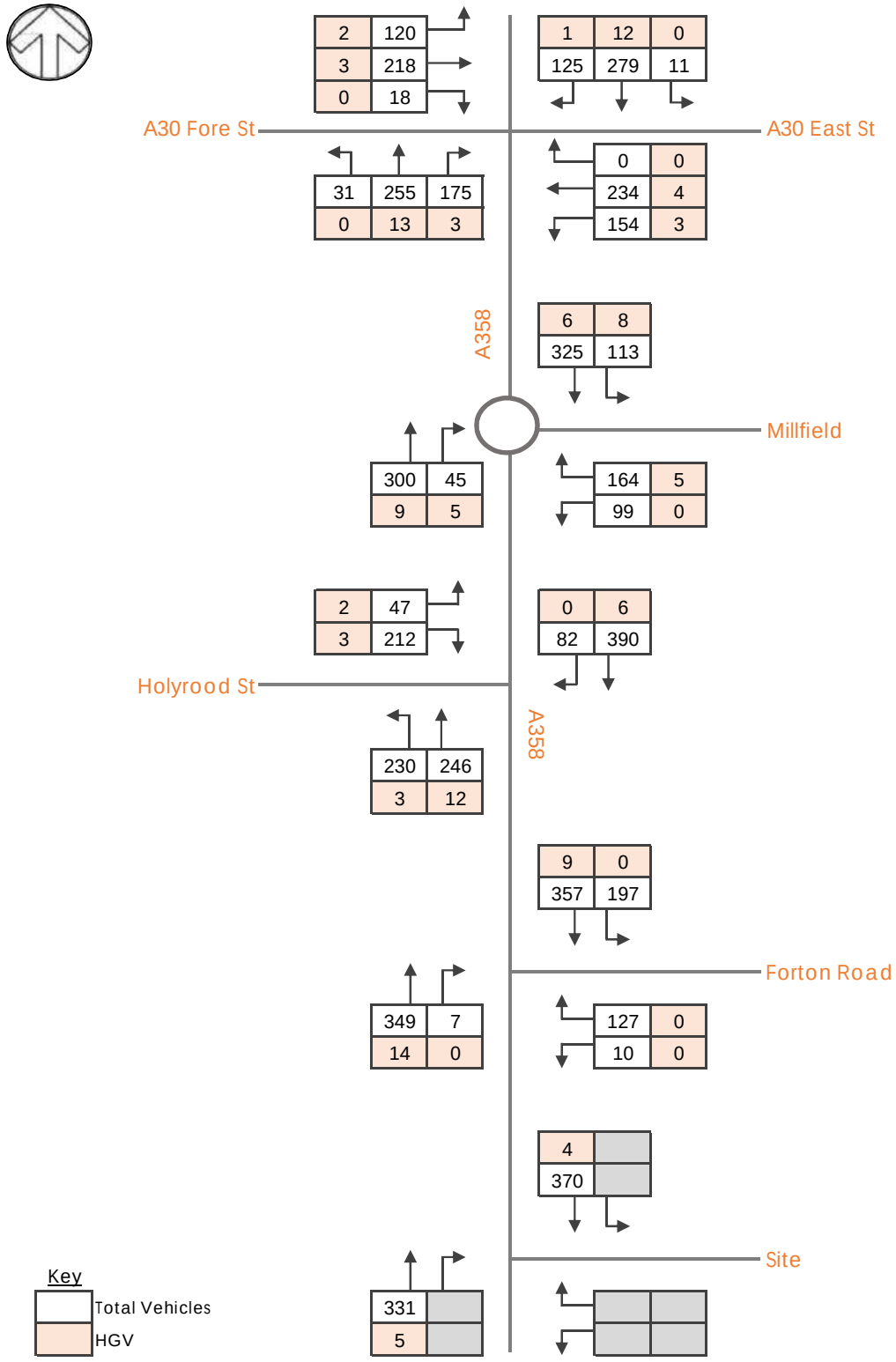
TA Vol.1:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8923438

TA Vol 2:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8923442



awcockward partnership

TITLE	FIGURE
2018 Traffic Survey AM	7A
PROJECT	
0797 Thorhild, Chard	



awcockward partnership	TITLE	FIGURE
	2018 Traffic Survey PM	7B
	PROJECT	
	0797 Thorhild, Chard	

Appendix C

2017 Traffic Counts

Source: Key Transport Consultants Ltd Transport Assessment dated May 2018

Planning Application: 18/04057/OUT

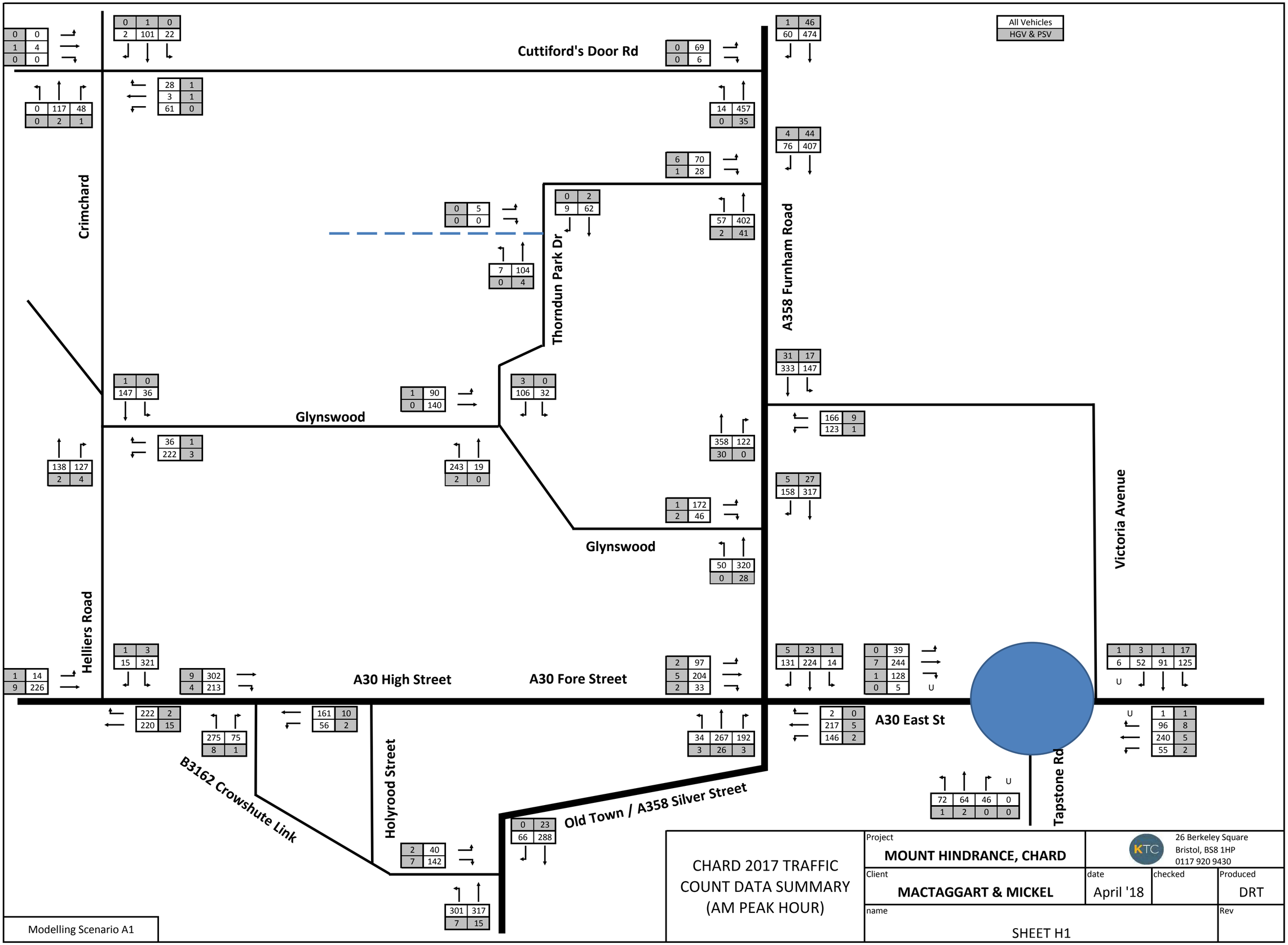
Hyperlinks to Document:

TA Pt 1:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8908643

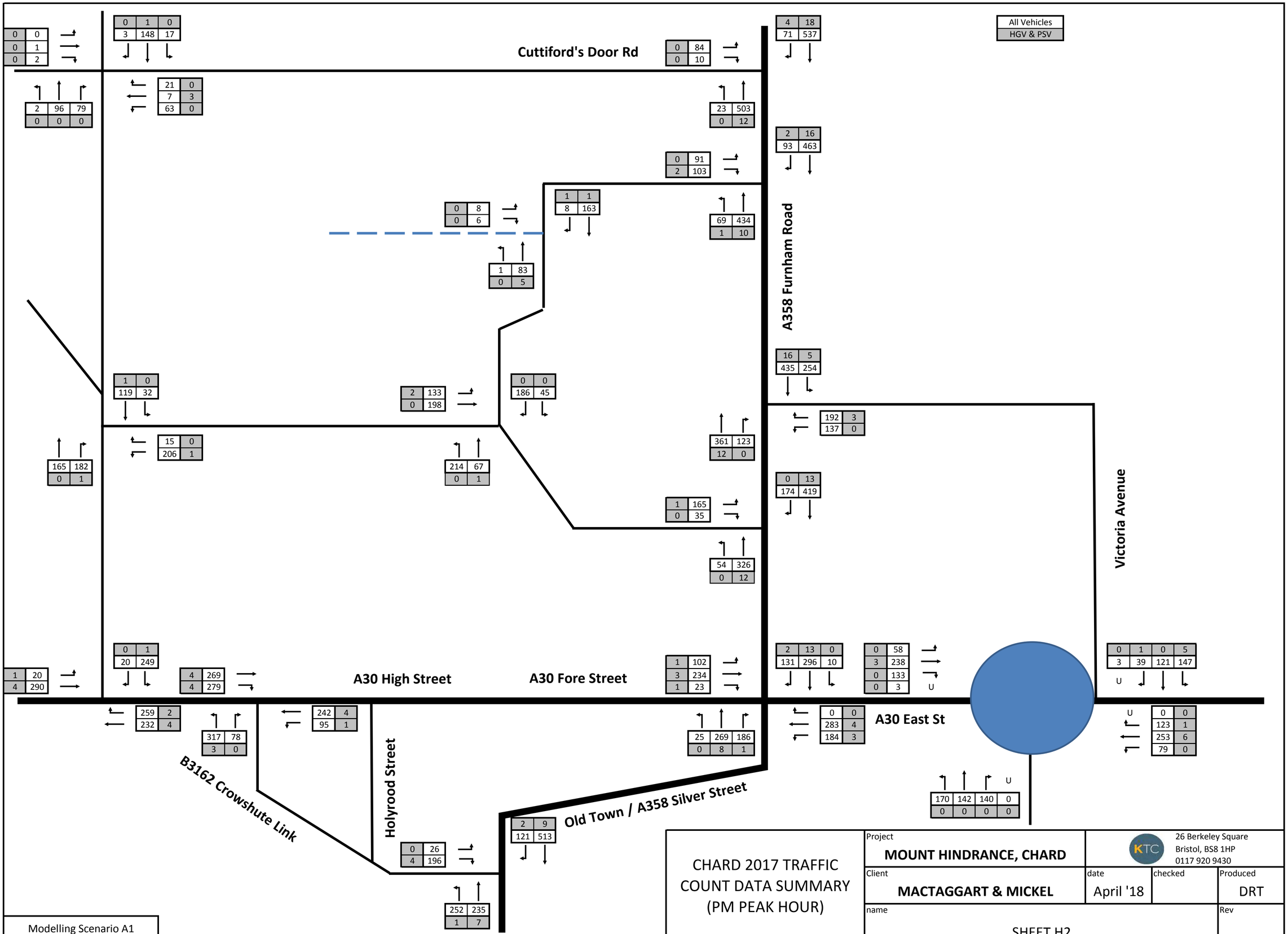
TA Pt 2:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8908644

Appendices A – N:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8908645

Appendices N – Q:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8908646



F:\DATA\Jobs\0359 Mount Hindrance, Chard\2017\Traffic Modelling E temp



F:\DATA\Jobs\0359 Mount Hindrance, Chard\2017\Traffic Modelling E temp

Appendix D

TRICS Output

Calculation Reference: AUDIT-152304-210422-0427

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	2 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	3 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	3 days
04	EAST ANGLIA		
	NF	NORFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
06	WEST MIDLANDS		
	ST	STAFFORDSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days
09	NORTH		
	DH	DURHAM	1 days

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

Primary Filtering selection:

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

Parameter: No of Dwellings
Actual Range: 125 to 432 (units:)
Range Selected by User: 120 to 520 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 23/09/19

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

Selected survey days:

Monday	6 days
Tuesday	2 days
Wednesday	3 days
Thursday	3 days
Friday	1 days

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

Selected survey types:

Manual count	15 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	12
Neighbourhood Centre (PPS6 Local Centre)	2

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

Selected Location Sub Categories:

Residential Zone	13
Village	1

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

Secondary Filtering selection:

Use Class:

C3	15 days

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

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	2 days
5,001 to 10,000	4 days
10,001 to 15,000	6 days
20,001 to 25,000	2 days

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

Population within 5 miles:

5,001 to 25,000	3 days
25,001 to 50,000	1 days
50,001 to 75,000	3 days
75,001 to 100,000	3 days
125,001 to 250,000	5 days

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

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	9 days
1.6 to 2.0	2 days

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

Travel Plan:

Yes	6 days
No	9 days

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

PTAL Rating:

No PTAL Present	15 days

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

LIST OF SITES relevant to selection parameters

1 DH-03-A-02 MIXED HOUSES DURHAM
LEAZES LANE
BISHOP AUCKLAND
ST HELEN AUCKLAND
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total No of Dwellings: 125
Survey date: MONDAY *27/03/17* *Survey Type: MANUAL*

2 DS-03-A-02 MIXED HOUSES DERBYSHIRE
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

3 ES-03-A-03 MIXED HOUSES & FLATS EAST SUSSEX
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total No of Dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

4 ES-03-A-04 MIXED HOUSES & FLATS EAST SUSSEX
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total No of Dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

5 HF-03-A-03 MIXED HOUSES HERTFORDSHIRE
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

6 KC-03-A-06 MIXED HOUSES & FLATS KENT
MARGATE ROAD
HERNE BAY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 363
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

7 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total No of Dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

8 KC-03-A-08 MIXED HOUSES KENT
MAIDSTONE ROAD
CHARING

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 159
Survey date: TUESDAY *22/05/18* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9	NE-03-A-02 HANOVER WALK SCUNTHORPE	SEMI DETACHED & DETACHED	NORTH EAST LINCOLNSHIRE
	Edge of Town No Sub Category Total No of Dwellings:	432	
	Survey date: MONDAY	*12/05/14*	*Survey Type: MANUAL*
10	NF-03-A-06 BEAUFORT WAY GREAT YARMOUTH BRADWELL	MIXED HOUSES	NORFOLK
	Edge of Town Residential Zone Total No of Dwellings:	275	
	Survey date: MONDAY	*23/09/19*	*Survey Type: MANUAL*
11	SC-03-A-05 REIGATE ROAD HORLEY	MIXED HOUSES	SURREY
	Edge of Town Residential Zone Total No of Dwellings:	207	
	Survey date: MONDAY	*01/04/19*	*Survey Type: MANUAL*
12	ST-03-A-07 BEACONSIDE STAFFORD MARSTON GATE	DETACHED & SEMI-DETACHED	STAFFORDSHIRE
	Edge of Town Residential Zone Total No of Dwellings:	248	
	Survey date: WEDNESDAY	*22/11/17*	*Survey Type: MANUAL*
13	WS-03-A-04 HILLS FARM LANE HORSHAM BROADBRIDGE HEATH	MIXED HOUSES	WEST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings:	151	
	Survey date: THURSDAY	*11/12/14*	*Survey Type: MANUAL*
14	WS-03-A-08 ROUNDSTONE LANE ANGMERING	MIXED HOUSES	WEST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings:	180	
	Survey date: THURSDAY	*19/04/18*	*Survey Type: MANUAL*
15	WS-03-A-09 LITTLEHAMPTON ROAD WORTHING WEST DURRINGTON	MIXED HOUSES & FLATS	WEST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings:	197	
	Survey date: THURSDAY	*05/07/18*	*Survey Type: MANUAL*

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	233	0.074	15	233	0.300	15	233	0.374
08:00 - 09:00	15	233	0.117	15	233	0.360	15	233	0.477
09:00 - 10:00	15	233	0.133	15	233	0.161	15	233	0.294
10:00 - 11:00	15	233	0.119	15	233	0.149	15	233	0.268
11:00 - 12:00	15	233	0.122	15	233	0.136	15	233	0.258
12:00 - 13:00	15	233	0.147	15	233	0.141	15	233	0.288
13:00 - 14:00	15	233	0.149	15	233	0.139	15	233	0.288
14:00 - 15:00	15	233	0.162	15	233	0.181	15	233	0.343
15:00 - 16:00	15	233	0.255	15	233	0.166	15	233	0.421
16:00 - 17:00	15	233	0.268	15	233	0.160	15	233	0.428
17:00 - 18:00	15	233	0.330	15	233	0.144	15	233	0.474
18:00 - 19:00	15	233	0.296	15	233	0.172	15	233	0.468
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.172			2.209			4.381

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

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

Parameter summary

Trip rate parameter range selected:	125 - 432 (units:)
Survey date date range:	01/01/13 - 23/09/19
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	233	0.109	15	233	0.510	15	233	0.619
08:00 - 09:00	15	233	0.178	15	233	0.725	15	233	0.903
09:00 - 10:00	15	233	0.204	15	233	0.293	15	233	0.497
10:00 - 11:00	15	233	0.191	15	233	0.265	15	233	0.456
11:00 - 12:00	15	233	0.196	15	233	0.246	15	233	0.442
12:00 - 13:00	15	233	0.252	15	233	0.237	15	233	0.489
13:00 - 14:00	15	233	0.254	15	233	0.237	15	233	0.491
14:00 - 15:00	15	233	0.266	15	233	0.303	15	233	0.569
15:00 - 16:00	15	233	0.521	15	233	0.287	15	233	0.808
16:00 - 17:00	15	233	0.546	15	233	0.287	15	233	0.833
17:00 - 18:00	15	233	0.608	15	233	0.244	15	233	0.852
18:00 - 19:00	15	233	0.533	15	233	0.326	15	233	0.859
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.858			3.960			7.818

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

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

Appendix E

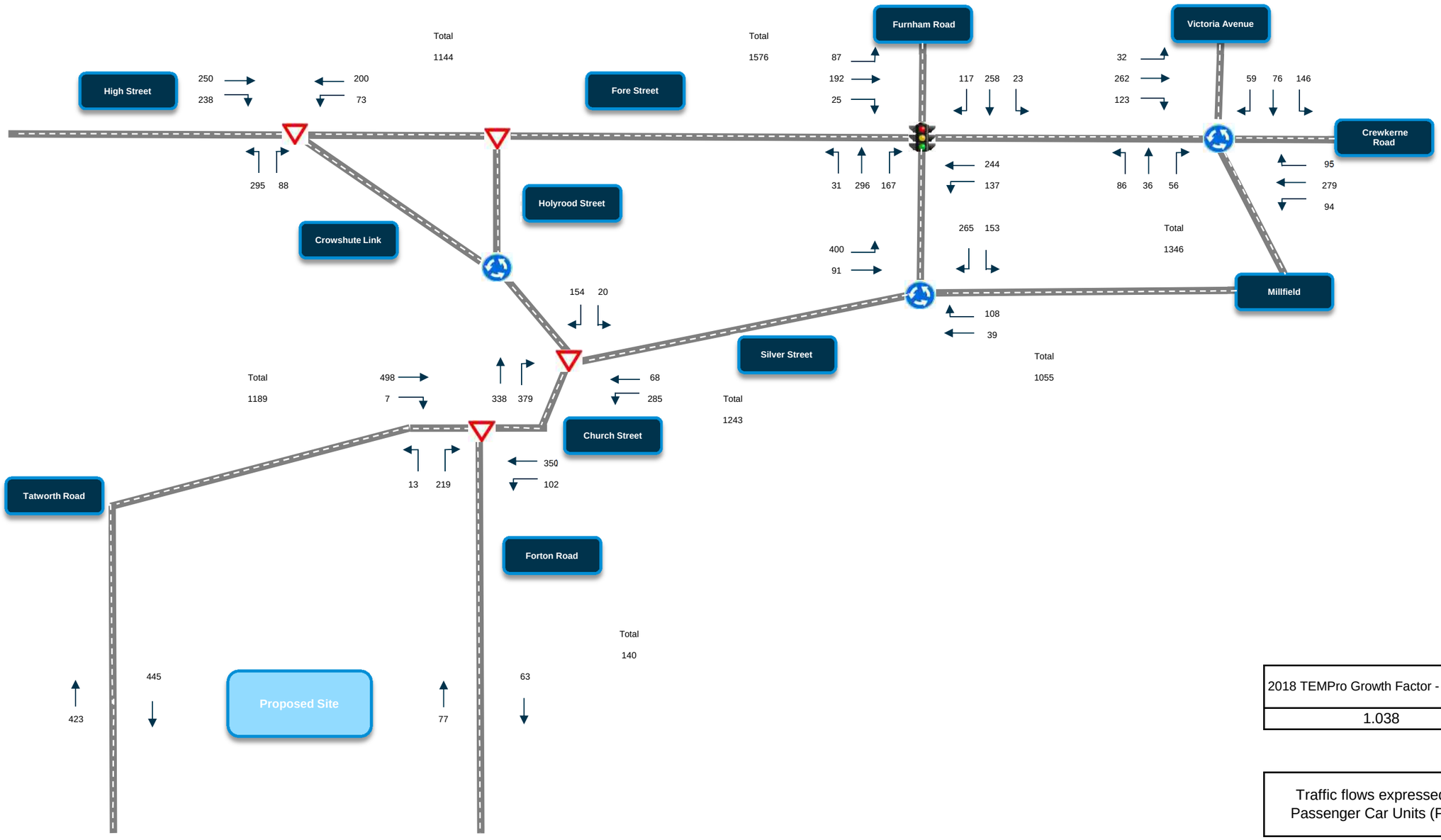
2018 + Committed Development Traffic Flows

Source: Peter Brett Associates Transport Assessment dated May 2016

Planning Application: 16/02874/FUL

Hyperlink to Document:

https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=7888665



2018 TEMPro Growth Factor - AM Peak
1.038

Traffic flows expressed as Passenger Car Units (PCU)

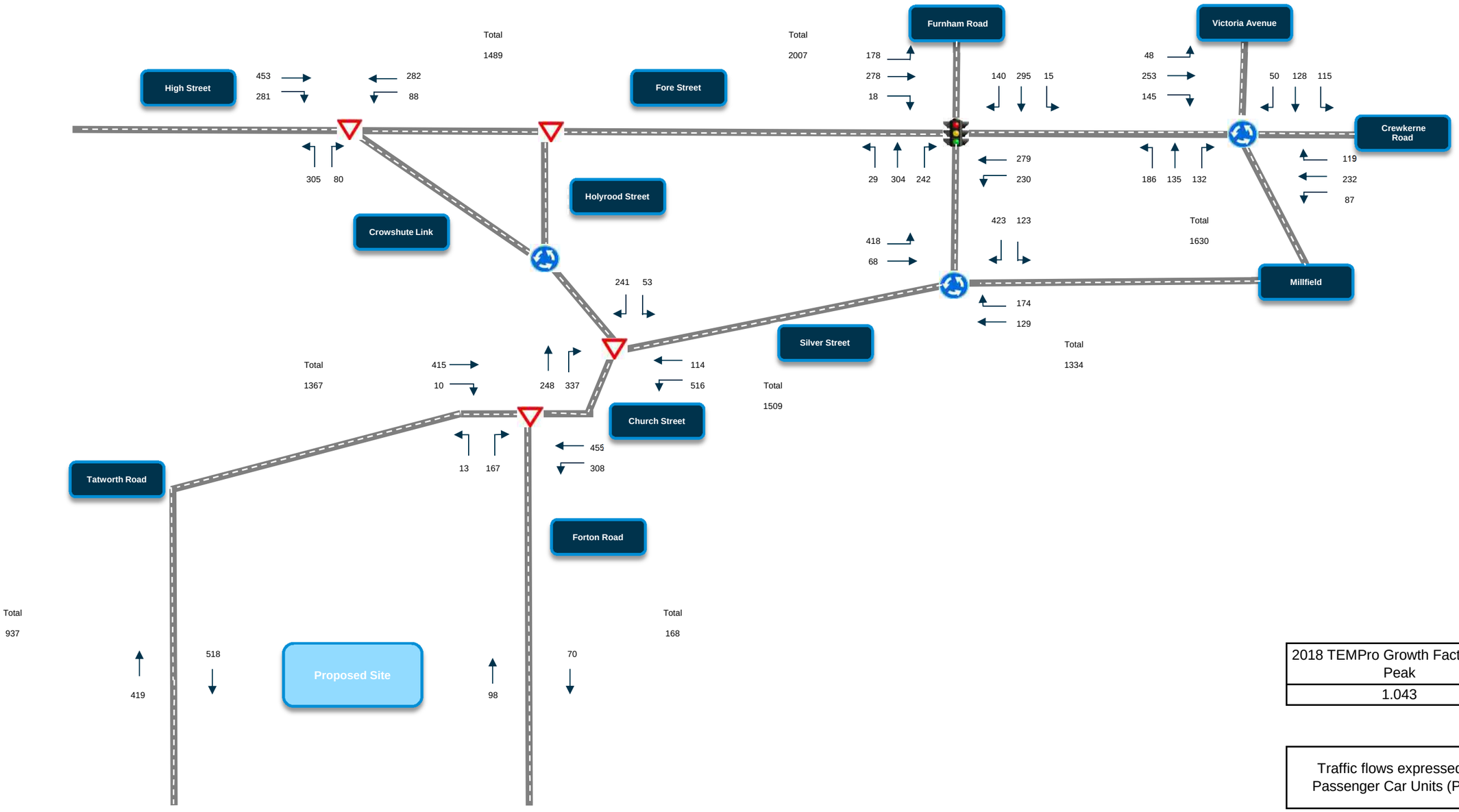
peterbrett

Lakeside House, Blackbrook Park Avenue, Taunton, TA1 2PX © Peter Brett Associates LLP
Telephone (01823) 44510 Email: taunton@peterbrett.com Web: www.peterbrett.com

Client: Persimmon Homes South West Ltd

Figure Title: 2018 Base + Committed Development Traffic - AM Peak

Project Number:	29372	**Project Name:**	Land between Forton Road and Tatworth Road, Chard
Date:	May-16	**Figure Number:**	Figure 6-11
Scale:	NTS	**Revision**	
Drawn:	CM		
Checked:	AS		



2018 TEMPro Growth Factor - PM Peak
1.043

Traffic flows expressed as Passenger Car Units (PCU)

peterbrett

Lakeside House, Blackbrook Park Avenue, Taunton, TA1 2PX © Peter Brett Associates LLP
Telephone (01823) 44510 Email: taunton@peterbrett.com Web: www.peterbrett.com

Client: Persimmon Homes South West Ltd

Figure Title: 2018 Base + Committed Development Traffic - PM Peak

Project Number:	29372	**Project Name:**	Land between Forton Road and Tatworth Road, Chard
Date:	May-16	**Figure Number:**	Figure 6-12
Scale:	NTS	**Revision**	
Drawn:	CM		
Checked:	AS		

Appendix F

2023 Junction Capacity Results

Source: Peter Brett Associates Transport Assessment dated May 2016

Planning Application: 16/02874/FUL

Hyperlink to Document:

https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=7888665

6.5.3 It has also been identified that planning application 15/04772/OUT was submitted in October 2015 for the development of up to 200 dwellings on land between Tatworth and Forton Road, located to the north of this site. The development is considered likely to come forward given that the land forms part of the Growth Area so it has also been accounted for as committed development.

6.5.4 The vehicle trips generated by this development have been included using trip generation figures obtained from the supporting TA produced by Ashley Helme, dated October 2015.

6.5.5 The resulting total committed development traffic flows are shown in **Figures 6-7** and **6-8**.

6.6 Development Traffic Assignment

6.6.1 **Chapter 5** presented the likely distribution of vehicle trips associated with the proposed development based on an analysis of 2011 Census data relating to existing commuting patterns in Chard.

6.6.2 An online route planner has been used to determine the most likely direction of travel between the site and each identified employment zone. However, there are often multiple assignment routes available to any particular destination, and it is not possible from the Census data to ascertain the route taken. The assumed assignment has therefore, where appropriate, split the proportion of trips between routes whilst ensuring that the correct totals for each destination are achieved.

6.6.3 The resulting assignment of vehicle trips is shown in **Figures 6-9** and **6-10**.

6.7 Junction Capacity Assessment

6.7.1 The assessment of traffic signal controlled junctions has been undertaken using LINSIG 3 which is an industry standard traffic modelling software package. For signalised junctions, a Degree of Saturation (DoS - %) value of less than 90% typically demonstrates that a junction arm or turning movement is operating 'within capacity' and is therefore unlikely to experience excessive congestion.

6.7.2 The LINSIG results also include Practical Reserve Capacity (PRC) which provides a summary statistic for the entire junction. A negative PRC value typically indicates that the junction will be over the capacity threshold on one arm or more.

6.7.3 The assessment of priority controlled junctions has been undertaken using the PICADY and ARCADY modules of JUNCTIONS 9 which is also standard traffic modelling software. For priority junctions, it is generally considered that a junction is operating within capacity where the Ratio of Flow to Capacity (RFC) is less than 85%. A junction is said to be operating at capacity between 90%-100% RFC. All RFC values above 100% mean that a junction is operating above capacity and vehicle queues will begin to accumulate.

6.7.4 The following traffic flow scenarios have been modelled for the 2018 and 2023 future years, for the weekday AM and PM peak hours:

- 2018 base (**Figures 6-11** and **6-12**)
- 2018 base + committed development (**Figures 6-13** and **6-14**)
- 2018 base + committed development + proposed development (**Figures 6-15** and **6-16**)
- 2023 base (**Figures 6-17** and **6-18**)
- 2023 base + committed development (**Figures 6-19** and **6-20**)

- 2023 base + committed development + proposed development (**Figures 6-21** to **6-22**)

B3162 Forton Road / A358 Tatworth Road / A358 Church Street Junction

6.7.5 This junction has been modelled using PICADY and the results are shown in **Table 6-5**.

	Forton Road		Tatworth Road	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.510	1	0.020	0
2018 base + committed	0.630	2	0.020	0
2018 base + committed + proposed development	0.760	3	0.020	0
2023 base	0.620	2	0.020	0
2023 base + committed	0.760	3	0.020	0
2023 base + committed + proposed development	0.900	7	0.020	0

PM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.450	1	0.030	0
2018 base + committed	0.540	1	0.030	0
2018 base + committed + proposed development	0.640	2	0.030	0
2023 base	0.570	1	0.030	0
2023 base + committed	0.680	2	0.040	0
2023 base + committed + proposed development	0.800	4	0.040	0

Table 6-5 Summary results for B3162 Forton Road / A358 Tatworth Road / A358 Church Street junction

6.7.6 The analysis shows that the junction is forecast to operate within capacity in both peak hours and with minimal queuing predicted to occur on any approach.

6.7.7 In the 2023 'with development' scenario in the AM peak, the junction is forecast to be approaching capacity with a maximum RFC of 0.900 and maximum queue of just 7 vehicles on the Forton Road approach. It can also be seen that the development itself will only extend the queue on Forton Road by 4 pcu's in this scenario. This level of impact is not considered to be significant at this junction.

6.7.8 The capacity results are provided in full in **Appendix F**.

A358 Old Town / Holyrood Street Junction

6.7.9 This junction has been modelled using PICADY and the results are shown in **Table 6-6**.

	Holyrood Street		Old Town	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.370	1	0.150	0
2018 base + committed	0.410	1	0.190	0
2018 base + committed + proposed development	0.470	1	0.200	0
2023 base	0.450	1	0.180	0
2023 base + committed	0.500	1	0.220	0
2023 base + committed + proposed development	0.570	1	0.230	0

PM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.640	2	0.270	1
2018 base + committed	0.730	3	0.290	1
2018 base + committed + proposed development	0.850	5	0.300	1
2023 base	0.810	4	0.320	1
2023 base + committed	0.950	8	0.350	1
2023 base + committed + proposed development	1.090	20	0.360	1

Table 6-6 Summary results for A358 Church Street / A358 Old Town / Holyrood Street Junction

6.7.10 The analysis shows that the junction is forecast to operate within capacity in both peak hours and with minor queuing predicted to occur on any approach in all but one traffic scenario.

6.7.11 In the 2023 'with development' scenario in the PM peak, the junction operates just over capacity with a maximum RFC of 1.090 and maximum queue of 20 pcu's on the Holyrood Street approach. It is however important to understand that the junction is shown to be very close to capacity on Holyrood Street in the 2023 baseline scenario before the development traffic is included. Hence it is not the development traffic that is the main determinate for this impact.

6.7.12 Whilst the modelling forecasts that the addition of development traffic is forecast to extend the maximum queue at this location by 12 pcu's, the development is only forecast to generate an additional 20 vehicles on the Holyrood Street approach over the course of the PM peak hour.

This equates to an average of 1 additional vehicle every 3 minutes and is therefore not considered to represent a significant impact.

6.7.13 The 2023 'with development' scenario should also be regarded as a 'worst case' impact because in reality it will be diluted as a result of the modal shift that should be achieved by implementing the package of measures and initiatives proposed in the site Travel Plan. It is also possible that the wider growth area development and link road infrastructure could be substantially completed by 2023, meaning that traffic flows through the centre of Chard, including at this junction, may be significantly reduced.

6.7.14 The capacity results are provided in full in **Appendix G**.

A30 High Street / B3162 Crowshute Link Junction

6.7.15 This junction has been modelled using PICADY and the results are shown in **Table 6-7**.

	Crowshute Link		High Street	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.500	1	0.430	1
2018 base + committed	0.540	1	0.450	1
2018 base + committed + proposed development	0.570	1	0.450	1
2023 base	0.590	1	0.500	1
2023 base + committed	0.630	2	0.480	1
2023 base + committed + proposed development	0.680	2	0.520	1

PM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.570	1	0.520	1
2018 base + committed	0.590	2	0.560	1
2018 base + committed + proposed development	0.620	2	0.570	2
2023 base	0.710	2	0.610	2
2023 base + committed	0.750	3	0.650	3
2023 base + committed + proposed development	0.800	4	0.660	3

Table 6-7 Summary results for A30 High Street / B3162 Crowshute Link Junction

6.7.16 The analysis shows that the junction is forecast to operate within capacity in both peak hours and with minor queuing predicted to occur on any approach for all traffic scenarios.

6.7.17 The capacity results are provided in full in **Appendix H**.

A358 Furnham Road / Millfield Junction

6.7.18 This junction has been modelled using ARCADY and the results are shown in **Table 6-8**.

	A358 Millfield (East)		A358 Millfield (West)		A358 Furnham Road	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.180	0	0.350	1	0.570	1
2018 base + committed	0.200	0	0.390	1	0.610	2
2018 base + committed + proposed development	0.210	0	0.450	1	0.640	2
2023 base	0.210	0	0.400	1	0.650	2
2023 base + committed	0.230	0	0.440	1	0.690	2
2023 base + committed + proposed development	0.240	0	0.500	1	0.720	3

PM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.450	1	0.370	1	0.720	3
2018 base + committed	0.480	1	0.400	1	0.780	3
2018 base + committed + proposed development	0.520	1	0.430	1	0.850	5
2023 base	0.550	1	0.420	1	0.830	4
2023 base + committed	0.580	1	0.460	1	0.890	7
2023 base + committed + proposed development	0.630	2	0.490	1	0.960	13

Table 6-8 Summary results for A358 Furnham Road / Millfield Junction

6.7.19 The analysis demonstrates that the junction is forecast to operate within capacity and with minimal queuing during the AM peak hour in all scenarios, but at capacity during the PM peak hour in the 2023 'with development' scenario. It is however important to understand that the junction is shown to be approaching capacity on the Furnham Road approach in the 2023 PM peak hour baseline scenarios before the development traffic is included.

6.7.20 Whilst the modelling forecasts that the addition of development traffic is forecast to extend the maximum queue at this location by 6 pcu's, the development is only forecast to generate an additional 75 vehicles on the Furnham Road approach over the course of the PM peak hour. This equates to an average of approximately 1 additional vehicle every minute and is therefore not considered to represent a significant impact.

6.7.21 The 2023 'with development' scenario should also be regarded as a 'worst case' impact because in reality it will be diluted as a result of the modal shift that should be achieved by implementing the package of measures and initiatives proposed in the site Travel Plan. It is also possible that the wider growth area development and link road infrastructure could be substantially completed by 2023, meaning that traffic flows through the centre of Chard, including at this junction, might be significantly reduced.

6.7.22 The capacity results are provided in full in **Appendix I.**

A30 East Street / Tapstone Road / A30 Crewkerne Road / Victoria Avenue Junction

6.7.23 This junction has been modelled using ARCADY and the results are shown in **Table 6-10**.

	A30 Crewkerne Road		Tapstone Road		A30 East Street		Victoria Avenue	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2018 base	0.340	1	0.120	0	0.360	1	0.220	0
2018 base + committed	0.370	1	0.120	0	0.380	1	0.220	0
2018 base + committed + proposed development	0.370	1	0.120	0	0.390	1	0.220	0
2023 base	0.390	1	0.140	0	0.420	1	0.250	0
2023 base + committed	0.420	1	0.140	0	0.430	1	0.260	0
2023 base + committed + proposed development	0.420	1	0.140	0	0.450	1	0.260	0

PM Peak	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)	RFC	Q (pcu)
2018 base	0.340	1	0.290	0	0.420	1	0.240	0
2018 base + committed	0.350	1	0.300	0	0.450	1	0.240	0
2018 base + committed + proposed development	0.360	1	0.310	0	0.460	1	0.240	0
2023 base	0.400	1	0.340	1	0.500	1	0.280	0
2023 base + committed	0.410	1	0.360	1	0.540	1	0.290	0
2023 base + committed + proposed development	0.420	1	0.360	1	0.540	1	0.290	0

Table 6-10 Summary results for A30 East Street / Tapstone Road / A30 Crewkerne Road / Victoria Avenue Junction

6.7.24 The analysis shows that the junction is forecast to operate within capacity in both peak hours and with minor queuing predicted to occur on any approach for all traffic scenarios.

6.7.25 The capacity results are provided in full in **Appendix J**.

A358 Furnham Road / A30 East Street / A30 Fore Street (Convent Junction)

6.7.26 The Chard Regeneration Framework identifies this junction as being the principle capacity constraint in the town.

6.7.27 A Microprocessor Optimised Vehicle Actuation (MOVA) system has been installed at the junction to improve its operation and capacity. MOVA is a well-established strategy for the control of traffic light signals at isolated junctions. It acts before congestion occurs by switching to a capacity maximising mode if any approach becomes overloaded helping to minimise delays experienced by drivers.

6.7.28 The operation of the junction under pre-MOVA conditions was considered as part of the Chard Regeneration Framework. The junction was modelled using 2008 base traffic flows and was shown to be operating over capacity at peak times (with DoS values exceeding 100%).

6.7.29 This model has been constructed in accordance with controller data relating specifically to this junction that was obtained from SCC's Traffic Signal team. This is in terms of the intergreens, phasing and staging at the junction. The model has also been set up to generally run the pedestrian stages every other cycle. The only exception is the pedestrian phase for the southern arm which we have assumed will run every cycle.

6.7.30 **Table 6-12** compares the volume of peak hour traffic using the junction as recorded during the 2008 and 2015 traffic surveys.

Year	MOVA System Present	AM Peak	PM Peak
2008	No	1,543	1,596
2015	Yes	1,431	1,836
Change	-	*-112 (7.3%)*	*+240 (15.0%)*

Table 6-12 Comparison of traffic flows using the A358 Furnham Road / A30 East Street / A30 Fore Street Junction

6.7.31 The analysis demonstrates that total traffic flows using the junction have decreased between 2008 and 2015 by 7.3% in the AM peak, but have increased by 15.0% over the same time period in the PM peak.

6.7.32 This junction has been modelled using LINSIG and the results are shown in **Table 6-13**.

	A358 Furnham Rd (North)		A30 East Street		A358 Furnham Rd (South)		A30 Fore Street	
AM Peak	**DoS**	**Q (pcu)**	**DoS**	**Q (pcu)**	**DoS**	**Q (pcu)**	**DoS**	**Q (pcu)**
2018 base	74.5%	14	74.7%	13	75.5%	13	65.3%	11
PRC	19.2%							
2018 base + committed	80.6%	15	81.1%	14	80.1%	16	65.8%	10
PRC	11.0%							
2018 base + committed + proposed development	85.7%	16	84.9%	16	85.9%	18	68.2%	11
PRC	4.7%							
2023 base	84.5%	16	84.4%	16	85.4%	17	74.1%	12
PRC	5.3%							
2023 base + committed	89.7%	19	90.8%	19	90.9%	21	74.8%	13
PRC	-1.0%							
2023 base + committed + proposed development	95.0%	22	95.2%	23	96.3%	26	77.0%	14
PRC	-7.0%							

PM Peak	DoS	Q (pcu)	DoS	Q (pcu)	DoS	Q (pcu)	DoS	Q (pcu)
2018 base	90.5%	18	90.6%	21	91.0%	19	86.5%	19
PRC	-1.2%							
2018 base + committed	95.4%	22	96.6%	26	95.7%	24	90.6%	21
PRC	-7.4%							
2018 base + committed + proposed development	100.9%	30	100.6%	33	100.9%	33	91.3%	22
PRC	-12.1%							
2023 base	103.5%	35	103.9%	42	104.2%	42	96.9%	30
PRC	-15.8%							
2023 base + committed	110.1%	52	108.7%	57	108.7%	58	101.8%	37
PRC	-22.3%							
2023 base + committed + proposed development	113.4%	63	114.5%	73	113.8%	78	104.9%	43
PRC	-27.2%							

Table 6-13 Summary results for A358 Furnham Road / A30 East Street / A30 Fore Street Junction

6.7.33 The analysis demonstrates that the junction is forecast to operate within capacity in all 2018 AM scenarios assessed. The 2023 AM scenarios all remain below 100% DoS but some of the arms are over 90% DoS and therefore approaching capacity.

6.7.34 The 2018 PM base forecasts the junction will already be near to capacity with a PRC of -1.2%. This means that both of the forecast scenarios in 2018 are over 90% DoS with the development model reaching a maximum of just over 100% DoS (100.9%). The 2023 PM scenarios are all operating at over 100% DoS with significant queues forecasted. This is the case however with the 2023 base as well as the 'with development' scenarios.

6.7.35 It is important to understand that the junction is near to capacity even before the proposed development traffic is included in the assessment, demonstrating that there are existing capacity issues at this location. Logically, the addition of development traffic exacerbates the capacity issue at the junction during both peak hours. This effectively means that the additional development traffic will be forced to join the back of the existing queues at the junction.

6.7.36 It should be noted that the addition of the development traffic is predicted to reduce the PRC of the junction by just 4.9% in the most critical PM peak in the 2023 forecast year. This is equivalent to an additional 76 two-way trips passing through the junction, which is in turn an

approximate increase of just 1 additional trip per minute throughout the hour. Considered in this context, it can be concluded that the development is not considered to have a significant impact on the junction.

6.7.37 This should also be regarded as a 'worst case' impact because in reality it will be diluted as a result of the modal shift that should be achieved by implementing the package of measures and initiatives proposed in the site Travel Plan. It is also possible that the wider growth area development and link road infrastructure could be substantially completed by 2023, meaning that traffic flows through the centre of Chard, including at this junction, might be significantly reduced.

6.7.38 The capacity results are provided in full in **Appendix K**.

A358 Tatworth Road / Site Access Junction

6.7.39 The proposed roundabout on Tatworth Road has been assessed using ARCADY and the results are provided in **Table 6-14**.

	Site Access		A358 Tatworth Road (South)		A358 Tatworth Road (North)	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2023 base + committed + proposed development	0.100	0	0.330	1	0.330	1
PM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2023 base + committed + proposed development	0.050	0	0.330	1	0.420	1

Table 6-14 Summary results for A358 Tatworth Road / Site Access Junction

6.7.40 The analysis shows that the proposed site access junction is forecast to operate within capacity in both peak hours and with minor queuing predicted to occur on any approach.

6.7.41 The capacity results are provided in full in **Appendix L**.

Forton Road / Site Access Junction

6.7.42 The proposed roundabout on Tatworth Road has been assessed using ARCADY and the results are provided in **Table 6-15**.

	Site Access		Forton Road	
AM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2023 base + committed + proposed development	0.050	0	0.020	0
PM Peak	**RFC**	**Q (pcu)**	**RFC**	**Q (pcu)**
2023 base + committed + proposed development	0.020	0	0.040	0

Table 6-15 Summary results for Forton Road / Site Access Junction

6.7.43 The analysis shows that the proposed site access junction is forecast to operate within capacity in both peak hours and with minor queuing predicted to occur on any approach. The capacity results do not suggest that a right turn ghost lane is required on the eastbound approach for vehicles entering the site.

6.7.44 The capacity results are provided in full in **Appendix M**.

6.8 Summary

6.8.1 This chapter has determined the base conditions on the local highway network and established the forecast distribution and assignment of the development traffic across the network to enable an assessment of the potential impact of the development in the future.

6.8.2 The proposed site access junctions on Tatworth Road and Forton Road are forecast to operate well within capacity in the 2023 'with development' scenarios. The capacity assessment has also demonstrated that the Forton Road access junction does not require a right turn ghost lane for eastbound vehicles entering the site.

6.8.3 The Forton Road / Tatworth Road priority T junction is forecast to be approaching capacity in the 2023 'with development' scenario in the AM peak, however the development itself will only extend the queue on Forton Road by 4 pcu's in this scenario. This level of impact is not considered to be significant.

6.8.4 The Old Town / Holyrood Street priority T junction is forecast to operate just over capacity in the 2023 'with development' scenario in the PM peak with a maximum RFC of 1.090 and maximum queue of 20 pcu's on the Holyrood Street approach. It is however important to understand that the junction is shown to be very close to capacity on Holyrood Street in the 2023 baseline scenario before the development traffic is included.

6.8.5 Whilst the modelling forecasts that the addition of development traffic is forecast to extend the maximum queue at this location by 12 pcu's, the development is only forecast to generate an additional 20 vehicles on the Holyrood Street approach over the course of the PM peak hour. This equates to an average of 1 additional vehicle every 3 minutes and is therefore not considered to be a significant impact.

6.8.6 The analysis has demonstrated that congestion is unlikely to be experienced at the High Street / Crowshute Link priority junction and the Victoria roundabout junction.

6.8.7 The analysis demonstrates that the Millfield / Furnham Road junction is forecast to operate within capacity and with minimal queuing during the AM peak hour in all scenarios, but at capacity during the PM peak hour in the 2023 'with development' scenario. It is however

important to understand that the junction is shown to be approaching capacity on the Furnham Road approach in the 2023 PM peak hour baseline scenarios before the development traffic is included.

6.8.8 Whilst the modelling forecasts that the addition of development traffic is forecast to extend the maximum queue at this location by 6 pcu's, the development is only forecast to generate an additional 75 vehicles on the Furnham Road approach over the course of the PM peak hour. This equates to an average of approximately 1 additional vehicle every minute and is therefore not considered to be a significant impact.

6.8.9 The Convent junction in the centre of Chard operates under the MOVA system but currently operates over capacity during the PM peak. The assessment undertaken demonstrates that the junction is forecast to operate within capacity in all 2018 AM scenarios assessed. The 2023 AM scenarios all remain below 100% DoS but some of the arms are over 90% DoS and therefore approaching capacity.

6.8.10 The 2018 PM base forecasts the junction will already be near to capacity with a PRC of -1.2%. This means that both of the forecast scenarios in 2018 are over 90% DoS with the development model reaching a maximum of just over 100% DoS (100.9%). The 2023 PM scenarios are all operating at over 100% DoS with significant queues forecasted. This is the case however with the 2023 base as well as the 'with development' scenarios.

6.8.11 It is important to understand that the junction is near to capacity even before the proposed development traffic is included in the assessment, demonstrating that there are existing capacity issues at this location. Logically, the addition of development traffic exacerbates the capacity issue at the junction during both peak hours. This effectively means that the additional development traffic will be forced to join the back of the existing queues at the junction.

6.8.12 It should be noted that the addition of the development traffic is predicted to reduce the PRC of the junction by just 4.9% in the most critical PM peak in the 2023 forecast year. This is equivalent to an additional 76 two-way trips passing through the junction, which is in turn an approximate increase of just 1 additional trip per minute throughout the hour. Considered in this context, it can be concluded that the development is not considered to have a significant impact on the junction.

6.8.13 Although the capacity assessments undertaken suggests that some congestion is likely to be experienced within the study area, this situation should be considered in the following context:

- The capacity results should be regarded as a 'worst case' impact because in reality the vehicle trips generated by the proposed site will be diluted as a result of the modal shift that should be achieved through implementing the Travel Plan.
- Where junctions are shown to operate in excess of 100% DoS or RFC, the models can become unstable and the performance results generated can be considerably less reliable. Therefore, in such circumstances, the output results need to be treated with a certain degree of caution as the model is likely to be showing exaggerated capacity and queue results.
- It is possible that the wider growth area development and link road infrastructure could be substantially completed by 2023, meaning that traffic flows through the centre of Chard, might be significantly reduced.

Appendix G

2024 Junction Capacity Results

Source: AWP Transport Assessment dated March 2019

Planning Application: 19/01053/FUL

Hyperlinks to Document

TA Vol.1:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8923438

TA Vol 2:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8923442

7 Traffic Impact Assessment

7.1 This chapter of the TA assesses the traffic impact at key junctions on the local road network. The scope of assessment has been carried out following the detailed scoping process with the Local Highway Authority.

Junctions

7.2 Somerset County Council have requested that the following junctions be assessed with regards to the impact of traffic which might be expected to arise from the proposed development:

- Site Access / A358 Tatworth Road
- Tatworth Road / Forton Road junction
- Church Street / Holyrood Street junction
- Millfield mini roundabout junction
- Convent signalised junction

7.3 Industry standard software Junctions 9 (PICADY & ARCADY modules) and LinSig3 have been used for the assessment.

7.4 2018 baseline data has been obtained at all junctions by way of undertaking manual classified turning counts.

Traffic Flows

7.5 Following scoping discussions with the Local Highway Authority, the traffic impact assessment has been completed for 2019 (potential year of opening) and 2024 (five-years post opening). It therefore considers the following scenarios:

- 2019 base
- 2019 base + committed
- 2019 base + committed + development
- 2024 base
- 2024 base + committed
- 2024 base + committed + development

Future Traffic Flows

7.6 In order to establish baseline traffic conditions at 2019 and 2024, growth rates for MSOA Levels South Somerset 022 and 023 have been obtained from the TEMPRO database (v7.2).

7.7 Table 7.1 below summarises the TEMPRO growth rates used in the traffic impact assessment that follows:

Table 7.1 - TEMPRO (v7.2) Growth Rates

MSOA Levels South Somerset 022 and 023 (averaged)

	AM Peak	PM Peak
2018-2019	1.0209	1.1312
2019-2024	1.0204	1.1314

7.8 In addition to the TEMPRO growth rates, committed development flows have been included from the proposed development sites immediately north and south of the development (planning refs: 15/04772 & 16/02874). These sites directly impact the flow of traffic on the links and junctions being assessed, and therefore it is considered appropriate to include these as committed developments.

7.9 The TEMPRO growth rates have not had alternative assumptions applied to them, and therefore it is anticipated that an element of double counting will occur in considering both the background traffic growth and the committed development flows. This provides a particularly robust assessment

A358 / Site Access Junction

7.10 The site access junction onto Tatworth Road has been assessed using Junctions 9 software. The model has been constructed using the PICADY module. Table 7.2 sets out the summary of the PICADY capacity model for the junction. The full PICADY outputs can be found in Appendix I.

Table 7.2 – A358 / Site Access Junction Priority Junction

Arm	AM Peak			PM Peak		
	RFC	Queue (Veh)	Delay (secs)	RFC	Queue (Veh)	Delay (secs)
2019 Base + Committed + Development:						
Site Access to A358 North & South	0.12	0.1	12.51	0.05	0.0	11.64
A358 South to Site Access	0.00	0.0	4.50	0.01	0.0	4.88
2024 Base + Committed + Development:						
Site Access to A358 North & South	0.12	0.1	13.30	0.05	0.1	12.29
A358 South to Site Access	0.00	0.0	4.41	0.01	0.0	4.80

7.11 The results summarised in Table 7.2 demonstrate that the proposed site access junction operates well within theoretical capacity. In the 2024 base + development scenario, the junction continues to operate well within capacity, with a maximum RFC of 0.12.

A358 / Forton Road Junction

7.12 The junction of the A358 Tatworth Road and Forton Road has been assessed using Junctions 9 software. The model has been constructed using the PICADY module. Table 7.3 sets out the summary of the PICADY capacity model for the junction. The full PICADY outputs can be found in Appendix I.

Table 7.3 – A358 / Forton Road Priority Junction

Arm	AM Peak			PM Peak		
	RFC	Queue (Veh)	Delay (secs)	RFC	Queue (Veh)	Delay (secs)
2019 Base + Committed:						
Forton Road to A358 South	0.09	0.1	14.85	0.03	0.0	9.62
Forton Road to A358 North	0.74	2.6	38.51	0.49	0.9	20.87
A358 South to Forton Road	0.02	0.0	7.76	0.02	0.0	8.95
2024 Base + Committed:						
Forton Road to A358 South	0.20	0.2	34.10	0.04	0.0	10.87
Forton Road to A358 North	0.86	5.0	67.85	0.57	1.3	26.79
A358 South to Forton Road	0.03	0.0	7.91	0.02	0.0	9.28

Arm	AM Peak			PM Peak		
	RFC	Queue (Veh)	Delay (secs)	RFC	Queue (Veh)	Delay (secs)
2019 Base + Committed + Development:						
Forton Road to A358 South	0.10	0.1	16.41	0.04	0.0	9.96
Forton Road to A358 North	0.76	2.9	43.19	0.50	1.0	22.33
A358 South to Forton Road	0.03	0.0	7.77	0.02	0.0	9.09
2024 Base + Committed + Development:						
Forton Road to A358 South	0.31	0.4	57.82	0.05	0.0	11.43
Forton Road to A358 North	0.89	5.9	80.58	0.59	1.4	29.21
A358 South to Forton Road	0.03	0.0	7.92	0.03	0.0	9.42

7.13 The results summarised in Table 7.3 demonstrate that the junction operates within theoretical capacity in both the 2019 Base + Committed + Development and 2024 Base + Committed + Development. The addition of the development traffic to the committed traffic scenarios adds just 3% to the RFC in the AM peak and 2% to the RFC in the PM peak.

7.14 The results for queuing on Forton Road indicates an increase of just one vehicle in the 2024 base + committed + development AM peak. There is no change in the queue lengths in the PM peaks.

7.15 It is therefore concluded that the impact of the proposed development could not be considered severe at this location.

A358 Church Street / Holyrood Street Junction

7.16 The junction of the A358 Church Street and Holyrood Street has been assessed using Junctions 9 software. The model has been constructed using the PICADY module. Table 7.4 sets out the summary of the PICADY capacity model for the junction. The full PICADY outputs can be found in Appendix I.

Table 7.4 – A358 / Holyrood Street Priority Junction

Arm	AM Peak			PM Peak		
	RFC	Queue (Veh)	Delay (secs)	RFC	Queue (Veh)	Delay (secs)
2019 Base + Committed:						
Holyrood Street to A358 North	0.28	0.4	9.80	0.21	0.3	18.05
Holyrood Street to A358 South	0.20	0.3	17.16	0.74	2.6	35.37
A358 North to Holyrood	0.19	0.3	10.51	0.21	0.3	8.34
2024 Base + Committed:						
Holyrood Street to A358 North	0.32	0.5	10.79	0.41	0.7	42.45
Holyrood Street to A358 South	0.24	0.3	19.33	0.86	5.1	65.05
A358 North to Holyrood	0.22	0.3	10.91	0.24	0.4	8.45
2019 Base + Committed + Development:						
Holyrood Street to A358 North	0.29	0.4	10.14	0.24	0.3	21.05
Holyrood Street to A358 South	0.22	0.3	17.78	0.77	3.1	41.29
A358 North to Holyrood	0.19	0.3	10.67	0.21	0.3	8.32
2024 Base + Committed + Development:						
Holyrood Street to A358 North	0.33	0.5	11.20	0.65	1.5	96.78
Holyrood Street to A358 South	0.26	0.3	20.16	0.91	6.7	82.74
A358 North to Holyrood	0.22	0.4	11.07	0.25	0.4	8.43

7.17 The results summarised in Table 7.4 demonstrate that the existing junction operates within theoretical capacity both in 2019 and 2024. The PM peak has the highest RFC on the Holyrood Street arm; however this does not exceed the theoretical capacity of the junction or arm. The development traffic adds just 9 vehicles to this arm in the PM peak, or approximately one vehicle every 6-7 minutes.

7.18 The modelling suggests that this results in a minor increase of 5% to the RFC in the PM peak between the base + committed and base + committed + development scenarios for 2024. This translates as just one additional queuing vehicle in both the 2019 and 2024 scenarios.

A358 / Millfield Mini Roundabout

7.19 The Millfield mini roundabout has been assessed using Junctions 9 software. The model has been constructed using the ARCADY module. Table 7.5 sets out the summary of the ARCADY capacity

model for the junction. The full ARCADY outputs can be found in Appendix J.

Table 7.5 – A358 Old Town / Millfield Mini Roundabout Junction

Arm	AM Peak			PM Peak		
	RFC	Queue (Veh)	Delay (secs)	RFC	Queue (Veh)	Delay (secs)
2019 Base + Committed:						
Millfield	0.50	1.0	8.61	0.64	1.7	10.82
A358 South	0.16	0.2	4.06	0.30	0.4	4.88
A358 North	0.82	4.2	27.99	0.69	2.1	17.34
2024 Base + Committed:						
Millfield	0.55	1.2	9.72	0.70	2.3	13.11
A358 South	0.18	0.2	4.26	0.34	0.5	5.38
A358 North	0.90	7.3	45.46	0.77	3.1	23.39
2019 Base + Committed + Development:						
Millfield	0.51	1.0	8.76	0.66	1.9	11.44
A358 South	0.16	0.2	4.09	0.30	0.4	5.00
A358 North	0.85	5.2	33.12	0.70	2.3	18.07
2024 Base + Committed + Development:						
Millfield	0.56	1.3	9.90	0.72	2.5	14.02
A358 South	0.19	0.2	4.29	0.35	0.5	5.53
A358 North	0.93	9.5	57.18	0.78	3.3	24.72

7.20 The results summarised in Table 7.5 demonstrate that the existing junction continues to operate within its theoretical capacity in both the base + committed and base + committed + development scenarios. The proposed development increases the RFC by approximately 3% in the AM peak on the A358 North arm from the base + committed scenarios, which could not be considered severe in terms of cumulative impact from the proposed development.

Convent Junction (A30/A358 Signalised Junction)

7.21 The Convent junction, where the A30 and A358 form a signalised crossroads in the centre of Chard, has been assessed using the industry standard LinSig3 software package. The model has been

built using the same parameters set out in the agreed Transport Assessment produced by PBA in association with the Gladman development to the north of the site.

7.22 The Practical Reserve Capacity (PRC) of a signalised junction is reported from an arbitrary threshold of 90%. When the modelling reports a PRC of 0%, there is therefore a further 10% buffer before a junction can be considered truly operating 'at capacity', or at 100%. The PRC percentages set out in the LinSig results therefore are based on a 90% operational capacity – ie. a -2% PRC would in reality be a junction operating at 92% capacity, with 8% 'spare' before the junction is operating at full capacity.

7.23 Table 7.6 sets out the junction capacity results. The signal timings have been optimised to provide the best possible capacity through the junction, and these are set out in the full LinSig3 output reports in Appendix K.

Table 7.6 – LinSig3 Results – Convent Junction

2019 Baseline + Committed				
Approach	**AM Peak**		**PM Peak**	
	PRC (%)	**Delay (PCUHr)**	**PRC (%)**	**Delay (PCUHr)**
Over All Lanes	4.6	24.78	-2.7	38.15
Approach	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**
A358 North Ahead Left Right	86.0%	16.6	92.2%	21.8
A30 East Street Left Ahead	85.9%	15.4	92.4%	19.7
A358 South Right Left Ahead	86.0 : 86.0%	18.1	92.1 : 92.1%	20.7
A30 Fore Street Right Ahead Left	14.6%	1.8	81.0%	14.6
2024 Baseline + Committed				
Approach	**AM Peak**		**PM Peak**	
	PRC (%)	**Delay (PCUHr)**	**PRC (%)**	**Delay (PCUHr)**
Over All Lanes	-5.4	37.97	-13.4	71.10
Approach	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**
A358 North Ahead Left Right	94.8%	22.6	100.9%	33.1
A30 East Street Left Ahead	93.4%	20.3	102.0%	32.5
A358 South Right Left Ahead	94.6 : 94.6%	24.3	101.0 : 101.0%	31.8

A30 Fore Street Right Ahead Left	43.2%	6.0	89.8%	18.8
2019 Baseline + Committed + Development				
Approach	**AM Peak**		**PM Peak**	
	PRC (%)	**Delay (PCUHr)**	**PRC (%)**	**Delay (PCUHr)**
Over All Lanes	2.2	27.67	-4.7	40.91
Approach	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**
A358 North Ahead Left Right	86.8%	16.9	94.2%	23.3
A30 East Street Left Ahead	88.1%	16.3	93.6%	20.9
A358 South Right Left Ahead	87.9 : 87.9%	19.6	93.3 : 93.3%	20.9
A30 Fore Street Right Ahead Left	40.5%	5.2	81.3%	15.0
2024 Baseline + Committed + Development				
Approach	**AM Peak**		**PM Peak**	
	PRC (%)	**Delay (PCUHr)**	**PRC (%)**	**Delay (PCUHr)**
Over All Lanes	-7.0	41.79	-19.2	117.71
Approach	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**	**Degree of Saturation (%)**	**Mean Max Queue (PCU)**
A358 North Ahead Left Right	95.8%	23.5	105.9%	45.6
A30 East Street Left Ahead	95.7%	22.0	106.9%	42.3
A358 South Right Left Ahead	96.3 : 96.3%	26.2	107.3 : 107.3%	56.7
A30 Fore Street Right Ahead Left	44.0%	6.1	93.3%	19.8

7.24 Table 7.6 shows the full junction capacity across all arms of the junction. This shows that the junction is operating with each arm within capacity for both the 2019 base + committed and base + committed + development scenarios.

7.25 In the 2024 PM peak, in both the base + committed and base + committed + development scenarios, the modelling suggests that the junction is operating over capacity with the addition of further general growth in background traffic. As stated previously, however, the application of the TEMPRO growth factors from 2019 – 2024 in addition to the committed development is likely to result in an element of double counting in traffic flows and this would be reflected in these higher RFCs.

7.26 As illustrated in Table 7.7, the additional traffic associated with the proposed development results in a negligible overall decrease in junction performance.

Table 7.7 – Difference Between Base + Committed and Base + Committed + Development in 2019 and 2024

Year	AM Peak	PM Peak
	PRC Δ%	PRC Δ%
2019	-2.4	-2
2024	-1.6	-5.8

7.27 Table 7.7 shows that the addition of the development traffic to the base + committed scenarios in both 2019 and 2024 results in a capacity decrease of approximately -2% in the AM peaks, and -2% (2019) and -5.8% (2024) in the PM peaks.

7.28 In terms of traffic movements, it is anticipated that approximately 26 trips will be using the junction in the AM peak, and approximately 24 trips using the junction in the PM peak. This equates to approximately one additional movement every 2-3 minutes.

7.29 Overall, the development traffic represents an increase in peak traffic through the junction of just 1.6% on average in 2019 and 1.4% in 2024. As set out in Section 6 of this TA, the total trip generation is well within the natural daily variation in traffic flow along the A358, and therefore the proposed development is unlikely to result in any noticeable change in conditions to drivers using the junction.

7.30 It is anticipated that much of the traffic travelling north-south across Chard would be mitigated over the Local Plan period through the development of the new link road as part of Policy PMT1. The development parcel to the north of the site, which has Outline planning permission, proposes to provide part of this link. Further developments which will be coming forward under the PMT1 policy will provide further sections to this link, which when complete will remove much of the traffic using the Convent junction.

7.31 In its responses to the adjacent Gladman and Persimmon application sites, the Highway Authority accepted that neither scheme will have a severe impact on the local road network. The

Gladman scheme includes up to 200 dwellings, whilst the Persimmon site proposes 315 dwellings. The proposed Summerfield development site proposes just 94 dwellings – half that of the Gladman scheme and a third of the Persimmon scheme - and therefore in line with the previous conclusions reached by SCC it cannot be considered to have a severe impact on the local highway network.

Conclusion

7.32 The traffic impact assessments completed in connection with this Transport Assessment have been scoped with Local Highway Authority officers.

7.33 2018 survey data has been used to derive baseline conditions for the junctions which have been assessed as part of this report. TEMPRO growth factors and known committed development which impacts the modelled network has been included to determine the overall impact of the proposed development traffic on the local highway network.

7.34 The results of the capacity modelling demonstrate that the majority of junctions will continue to operate within their theoretical capacity with the addition of the development traffic, in both the 2019 and 2024 base + committed + development scenarios.

7.35 The modelling suggests that the Convent junction could operate over theoretical capacity in the 2024 base + committed + development scenario; although this is a reflection of additional growth in general background traffic.

7.36 The proposed development contributes a small amount of traffic to the Convent junction overall, which is well within the natural day to day variation in traffic along the A358. The impact of the proposed development at this location cannot, therefore, be considered severe. In addition, the capacity of this junction is set to be substantially improved through the new link road associated with the housing allocation which will remove much of the north-south traffic presently using the junction.

7.37 In its responses to the adjacent Gladman and Persimmon application sites, the Highway Authority accepted that neither scheme will have a severe impact on the local road network. The proposed Summerfield development site proposes just 94 dwellings

– half that of the adjacent Gladman scheme and a third of the Persimmon scheme - and therefore in line with the previous conclusions reached by SCC it cannot be considered to have a severe impact on the local highway network.

7.38 It is therefore concluded that overall the local highway network would satisfactorily accommodate the additional traffic arising from the proposed development without resulting in any severe impacts. The traffic impact of the scheme therefore is considered to be acceptable at this location given the requirements of paragraph 108 of the NPPF.

Appendix H

2028 Junction Capacity Results

Source: Key Transport Consultants Ltd Transport Assessment dated May 2018

Planning Application: 18/04057/OUT

Hyperlinks to Document:

TA Pt 1:
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Appendices A – N:
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Appendices N – Q:
https://www.southsomerset.gov.uk/civica/Resource/Civica/Handler.ashx/Doc/pagestream?cd=inline&pdf=true&docno=8908646

7. TRAFFIC IMPACT

7.1 The methodology for the traffic assessment was agreed with Somerset County Council and correspondence regarding the scope is provided in **Appendix D**.

Base Traffic Flows

7.2 Manual classified counts were undertaken at 12 junctions on Tuesday 25th April 2017 and Automatic Traffic Counts (ATC's) were undertaken at 5 locations for 7 days commencing 25th April. The locations of the 2017 traffic counts are shown on **Figure 15** and the survey data is provided as **Appendix G**. Following discussions with Somerset County Council a further turning count was undertaken at the junction of Thorndun Park Drive and Glynswood on the 24th April 2018, again the data is provided in **Appendix G**.

Committed Development

7.3 The TEMPRO growth factors include allocated development in the Local Plan to the year 2028 and it was agreed with Somerset County Council that no further allowance was required for Local Plan allocations.

7.4 It was agreed that the assessment should make allowance for a proposed development site on Crimchard, immediately south of the Mount Hindrance site, which was previously promoted by David Wilson Homes and which is currently being considered for allocation in the current Local Plan review.

7.5 Confirmation was obtained from South Somerset Council that there was no non-allocated committed development that should be included in the analysis and the confirmation is provided as **Appendix H**.

Trip Generation

7.6 The trip generation rates used for housing and the local centre are derived from TRICS and are provided in Table 7.1 below. Output from TRICS is provided in **Appendix I**.

Table 7.1 – Trip Rates

	AM Peak Hour			PM Peak Hour		
	Arrival	Departure	Two-way	Arrival	Departure	Two-way
Housing (per dwelling)	0.118	0.402	0.520	0.364	0.213	0.577
Local Centre (per 100m2)	5.346	5.018	10.364	7.220	7.811	15.031

7.7 From these rates the trip generation can be derived as follows.

Table 7.2 – Trip Generation						
	AM Peak Hour			PM Peak Hour		
	Arrival	Departure	Two-way	Arrival	Departure	Two-way
Housing (295 Houses)	35	119	154	107	63	170
Local Centre (1100m2)	59	55	114	79	86	165

7.8 Although the development proposals include the relocation of Chard Football Club it is not anticipated that the football club will generate a material number of weekday peak hour trips. A programme of proposed activity at the football club is provided as **Appendix J**.

Assignment

7.9 For the assignment of trip generation from the housing Census 2011 journey to work data has been used to determine destinations for residential development. The census data and derived assignment is provided in **Appendix K**.

7.10 As there is no local convenience shop it is considered that the shop would result in a reduction of existing trips. The local centre would attract trips from the development, passing traffic and from the local area. The trip generation was therefore assigned as follows

- 50% internal trips
- 25% passing trips on Thorndun Park Drive
- 25% of trips from residential area north of Glynswood

Design Year

7.11 It is anticipated that the development would be complete by 2023 and two assessment years have been considered 2023 being year of opening and 2028 being 5 years after year of opening. 2028 coincides with the end of the current South Somerset Local Plan when all allocated development should have been completed.

7.12 Traffic Flow Diagrams are provided in **Appendix L**.

Junction Capacity Assessments

7.13 For the manual assessment junction capacity assessments were undertaken at all 13 junctions at which Manual Classified Counts were taken. The computer programs ARCADY, PICADY and LINSIG have been used to undertake the analysis.

7.14 The performance of a signal controlled junction is indicated by the degree of saturation on each approach arm. A signal controlled junction is at capacity when the degree of saturation on any

arm reaches 100%. However to allow for inaccuracies in data and daily variation of traffic flows it is normal practice to design for a maximum degree of saturation of 90% (practical capacity).

7.15 The primary indicator of performance of a priority junction or roundabout is given by the ratio of demand flow to capacity (RFC) for each arm of the junction. Capacity is reached when the demand flow at entry is sufficient to cause a continuous queue of vehicles to wait in the approach; this is reached when the RFC reached 1.0. For new junction design, where it is not possible to validate the results, it is common practice to design to a maximum RFC of 0.85. This provides a factor of safety for inaccuracies in the data and the capacity formulae. It also allows for variation in traffic flows.

7.16 Thirteen junctions were considered for the manual assessment as follows:

1. Convent traffic signals (A30/A358)
2. East Street/Victoria Ave/Crewkerne Road/Tapstone Road roundabout junction
3. Helliers Road/ A30 High Street priority junction
4. A358 Furnham Road/Thorndun Park Drive priority junction
5. A358 Furnham Road/Victoria Ave priority junction
6. A30 High Street/Crowchute Link priority junction
7. B3162 Holyrood Street/ A358 Old Town priority junction
8. A358/Cuttifords Door Road priority junction
9. Cuttiford Door Road/Crimchard priority junction
10. The Glynswood/Crimchard priority junction
11. The Glynswood/Furnham Road priority junction
12. The site access with Thorndun Park Drive priority junction
13. The Thorndun Park Drive/Glynswood priority junction

7.17 The results of the capacity assessments undertaken for the assessment are summarised in **Appendix M** and full outputs are provided as **Appendix N**.

7.18 It can be seen from the results summary that all but the following junctions operate below capacity for all scenarios.

- Convent Traffic Signals (A30/A358)
- A358 Furnham Road/Victoria Avenue Junction
- B3162 Holyrood Street/ A358 Old Town priority junction

Convent Traffic Signals (A30/A358)

7.19 As stated earlier in the report the Convent Signals junction was upgraded with MOVA –

Microprocessor Optimised Vehicle Actuation a few years ago which allows the controller to adjust stage lengths, stage sequences and timing plans based on information it receives about the volume of traffic and queuing on each arm of the junction. In some cases this can deliver an increase in capacity of 10 – 15%, however, given the simple 4 stage operation of the junction and the need to maintain an all-red stage the increase in capacity in this case may be less than 10%. It is not possible to model the effects of MOVA and therefore the performance of the junction should be better than the analysis suggests.

7.20 Surveyed 2017 traffic flows were tested on the existing layout. The results are set out in Table 7.3 below.

Table 7.3: A30 Fore Street/ A358 Furnham Road (north)/ A30 East Street/ A358 Furnham Road (south): 2017

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A30 Fore St Left Ahead Right	84.6%	13.4	71.1	75.2%	12.6	55.0
2/1	A358 Furnham Road (north) Right Left Ahead	84.9%	15.3	66.3	92.3%	19.4	81.5
3/1	A30 East Street Ahead Left	87.3%	14.9	74.8	94.0%	21.1	86.3
4/1 + 4/2	A358 Furnham Road (south) Left Ahead Right	86.0%	16.4	58.8	93.3%	18.1	83.0
Total	Cycle Time = 120 sec	PRC	3.1%		PRC	-4.4%	

7.21 It can be seen from Table 7.3 that the existing junction operates within capacity in the AM peak and PM peak hours although the practical design capacity of 90% is exceeded in the PM peak hour and hence the Practical Reserve Capacity (PRC) is -4.4%. All four of the approach arms of the junction are within capacity.

7.22 The analysis for 2023 considers scenarios with and without development. The results of the without development scenario are set out in Table 7.4.

Table 7.4: A30 Fore Street/ A358 Furnham Road (north)/ A30 East Street/ A358 Furnham Road (south): 2023

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A30 Fore St Left Ahead Right	97.4%	20.7	115.7	82.9%	15.2	60.9
2/1	A358 Furnham Road (north) Right Left Ahead	97.2%	23.0	106.9	103.3%	31.5	167.4
3/1	A30 East Street Ahead Left	98.8%	22.9	123.6	104.4%	37.5	175.9
4/1 + 4/2	A358 Furnham Road (south) Left Ahead Right	97.1%	25.2	92.8	102.9%	32.5	154.3
Total	Cycle Time = 120 sec	PRC	-9.7%		PRC	-16.0%	

7.23 It can be seen from Table 7.4 that the junction is predicted to be in excess of 90% saturation

(practical design capacity) in the AM and in excess of capacity in the PM peak hours in 2023 without development. In the AM peak the junction is predicted to have a PRC of -9.7%. All four of the approach arms of the junction are in excess of 90% saturation: A30 Fore Street (97.4%), A358 Furnham Road (north) (97.2%); A30 East Street (98.8%) and A358 Furnham Road (south) (97.1%).

7.24 In the PM peak the junction exceeds theoretical capacity (i.e. in excess of 100% saturation) and is predicted to have a PRC value of -16.0%. The A358 Furnham Road (north), the A30 East Street and the A358 Furnham Road (south) approaches are all in excess of 100% saturation, at 103.3%, 104.4% and 102.9%, respectively.

7.25 The 2023 analysis with development results are set out in Table 7.5.

Table 7.5: A30 Fore Street/ A358 Furnham Road (north)/ A30 East Street/ A358 Furnham Road (south): 2023 + Development

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A30 Fore St Left Ahead Right	97.9%	21.3	119.5	87.0%	16.4	68.2
2/1	A358 Furnham Road (north) Right Left Ahead	98.4%	25.0	112.8	106.9%	41.2	211.4
3/1	A30 East Street Ahead Left	98.8%	22.9	123.6	107.6%	44.1	223.0
4/1 + 4/2	A358 Furnham Road (south) Left Ahead Right	100.7%	30.6	123.4	109.0%	46.7	238.4
Total	Cycle Time = 120 sec	PRC	-11.9%		PRC	-21.2%	

7.26 With the addition of the development traffic to the model, the PRC of the AM scenario is predicted to decrease from -9.7% to -11.9%. The PM PRC is predicted to reduce from -16.0% to -21.2%.

7.27 The longest MMQ in the 2023 AM scenario is predicted to increase from 25.2 pcus without development to 30.6 pcus with development on the A358 Furnham Road (south) approach.

7.28 In the PM peak, the longest predicted MMQ of 37.5 pcus on the A30 East Street arm without development, is predicted to increase to 44.1 pcus with the addition of the development traffic. The MMQ on the A358 Furnham Road (south) arm is predicted to increase from 32.5 pcus to 46.7 pcus with the addition of the development traffic.

7.29 The model is run again with the 2028 traffic flows. The 2028 without development flows are set out in Table 1.4, below.

Table 7.6: A30 Fore Street/ A358 Furnham Road (north)/ A30 East Street/ A358 Furnham Road (south): 2028							
Arm No.	**Arm Name**	**AM**			**PM**		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A30 Fore St Left Ahead Right	103.5%	29.0	177.7	91.5%	18.7	78.6
2/1	A358 Furnham Road (north) Right Left Ahead	103.8%	33.3	171.9	112.0%	53.7	282.8
3/1	A30 East Street Ahead Left	105.3%	33.4	199.7	115.2%	63.6	330.6
4/1 + 4/2	A358 Furnham Road (south) Left Ahead Right	103.8%	39.6	159.5	113.6%	59.2	301.1
Total	Cycle Time = 120 sec	PRC	-17.1%		PRC	-28.0%	

7.30 It can be seen from Table 7.6, that the junction is predicted to be in excess of 100% saturation in the both the AM and PM peak hours in 2028. In the AM peak the junction is predicted to have a PRC of -17.1%. All four of the approach arms of the junction are in excess of 100% saturation: A30 Fore Street (103.5%); A358 Furnham Road (north) (103.8%); A30 East Street (105.3%) and A358 Furnham Road (south) (103.8%).

7.31 In the PM peak the junction is predicted to have a PRC value of -28.0%. The A30 Fore Street approach is in excess of its design capacity and the A358 Furnham Road (north), the A30 East Street and the A358 Furnham Road (south) approaches are all in excess of their saturation capacities, at 112.0%, 115.2% and 113.6%, respectively.

7.32 The model is rerun with the 2028 + Development scenario flows. The results are set out in Table 7.7.

Table 7.7: A30 Fore Street/ A358 Furnham Road (north)/ A30 East Street/ A358 Furnham Road (south): 2028 + Development							
Arm No.	**Arm Name**	**AM**			**PM**		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A30 Fore St Left Ahead Right	104.3%	30.2	187.3	93.0%	19.7	83.9
2/1	A358 Furnham Road (north) Right Left Ahead	104.9%	36.7	185.3	114.4%	60.0	316.8
3/1	A30 East Street Ahead Left	105.3%	33.4	199.7	115.2%	63.6	330.6
4/1 + 4/2	A358 Furnham Road (south) Left Ahead Right	107.3%	48.3	208.4	116.5%	67.3	341.8
Total	Cycle Time = 120 sec	PRC	-19.3%		PRC	-29.4%	

7.33 With the addition of the development traffic to the model, the PRC of the AM scenario is predicted to decrease from -17.1% to -19.3%. The PM PRC is predicted to reduce from -28.0% to -29.4%.

7.34 The longest MMQ in the 2028 AM scenario is predicted to increase from 39.6 pcus without

development to 48.3 pcus with development on the A358 Furnham Road (south) approach.

7.35 In the PM peak, the longest predicted MMQ of 63.6 pcus on the A30 East Street arm without development, is predicted to stay the same with the addition of the development traffic. The MMQ on the A358 Furnham Road (south) arm is predicted to increase from 59.2 pcus to 67.3 pcus with the addition of the development traffic.

7.36 It can be seen that the proposed development would have an impact on the Convent Signals but the impact is modest and certainly shouldn't be considered severe. There are a number of important points to note regarding the analysis at the Convent Signals as follows.

- The proposed development would only increase flows through the Convent Signals by 28 vehicles in the AM peak hour and 31 vehicles in the PM peak hour representing increases of 1.6% in both peak hours in 2028.
- It is not possible to model the improvement in performance at the junction provided by the installation of MOVA so performance is likely to be better than predicted.
- The 2028 scenarios include all development included in the South Somerset Local Plan together with a 110 home site on Crimchard currently being considered for allocation. No allowance has been made for a reduction in traffic through the junction as a result of the proposed new route to the east of the junction between the A358 Tatworth Road to the A358 Furnham Road which is required as part of the strategic allocation and will provide a by-pass to the junction and reduce flows through the junction.
- The impact is considered no worse than other recent planning applications which have been permitted.

A358 Furnham Road/Victoria Avenue Junction

7.37 The capacity analysis indicates that the A358 Furnham Road/Victoria Avenue junction currently (2017) operates below capacity with a maximum RFC of 0.6 in the AM peak hour and 0.76 in the PM peak hour (results summarised in **Appendix M** and full output in **Appendix N**).

7.38 The analysis does indicate that the A358 Furnham Road/Victoria Avenue Junction would be over capacity in 2023 without the proposed Mount Hindrance development (max RFC of 1.01 in the PM peak Hour). With the Mount Hindrance development the maximum RFC would increase to 1.09 in the PM peak hour and the maximum queue would increase from 11 to 16.

7.39 In 2028 without development the junction would be operating above capacity with a maximum RFC of 1.2 in the PM peak hour. With the Mount Hindrance development the maximum RFC would increase to 1.28. The maximum queue would increase from 24 to 33 vehicles.

7.40 The analysis shows that the proposed development would have an impact on the A358/Victoria Avenue junction but again the impact is modest and not severe. There are a number of important points to note regarding the analysis at the A358/Victoria Avenue Junction as follows.

- The proposed development would only increase flows through the Furnham Road/Victoria Avenue by 25 vehicles in the AM peak hour and 27 vehicles in the PM peak hour representing increases of 1.6% in the AM peak hour and 1.5% in the PM peak hour in 2028.
- The 2028 scenarios include all development included in the South Somerset Local Plan together with a 110 home site on Crimchard currently being considered for allocation. No allowance has been made for a reduction in traffic through the junction as a result of the proposed new route to the east of the junction between the A358 Tatworth Road to the A358 Furnham Road which is required as part of the strategic allocation and will provide a by-pass to the junction and reduce flows through the junction.

7.41 It would be possible to improve the performance of this junction by the installation of traffic signals linked to the existing traffic signals at Coker Way as shown on **Figure 16** Any requirement to improve this junction would be as a consequence of significant development in Chard and not be as a consequence of the Mount Hindrance development but the applicant would be willing to contribute a proportion of the cost based on the relative impact of the development.

7.42 In order to assess the operation of the junction a peak hour traffic counts undertaken at the Furnham Road/Coker Way junction on Wednesday 12th September 2012 was used to obtain flows on Coker Way. Traffic growth has not been applied to flows on Coker Way as this is a contained development. A summary of the count is provided in **Appendix O**.

7.43 2023 traffic flows were tested on the possible signal controlled layout. The results are set out in Table 7.8 below. The junction is run on a 120 second cycle time with every pedestrian crossing running at least once each cycle.

Table 7.8: A358/Victoria Avenue Possible Introduction of Signal Control: 2023

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A358 Furnham Road (south, northbound) Ahead Right	55.5%	13.3	21.1	64.4%	15.4	27.2
2/1	A358 Furnham Road (central, southbound) Left	14.3%	0.2	0.8	22.3	0.3	0.8

2/2	A358 Furnham Road (central, southbound) Ahead	34.0%	3.5	2.8	41.9%	3.5	2.5
3/1	Victoria Avenue Right Left	55.5%	9.8	39.4	63.2%	11.3	42.6
4/1	A358 Furnham Road (north, southbound) Ahead Left	46.3%	10.2	14.6	62.8%	16.5	17.3
5/1	Coker Way Left	28.3%	1.8	63.9	28.3%	1.8	63.9
5/2	Coker Way Right	6.7%	0.4	59.8	6.7%	0.4	59.8
8/1	A358 Furnham Road (central, northbound) Ahead	38.9%	2.2	1.5	38.8%	3.2	2.4
8/2	A358 Furnham Road (central, northbound) Right	3.3%	0.1	6.7	4.2%	0.2	13.4
Total	Cycle Time = 120 sec	PRC	62.1%		PRC	39.7%	

7.44 It can be seen from Table 7.8 that the junction is predicted to operate well within capacity in the AM and PM peak hours in 2023 without development. In the AM peak the junction is predicted to have a PRC of 62.1%. In the PM peak the junction is predicted to have a PRC value of 39.7%.

7.45 The signal control junction was also tested for the year 2023 with the Mount Hindrance development. The results are set out in Table 7.9.

Table 7.9: A358/Victoria Avenue Possible Introduction of Signal Control: 2023 + Development

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A358 Furnham Road (south, northbound) Ahead Right	56.4%	13.6	21.6	65.0%	15.5	27.7
2/1	A358 Furnham Road (central, southbound) Left	15.8%	0.2	0.8	23.1%	0.3	0.8
2/2	A358 Furnham Road (central, southbound) Ahead	34.0%	3.4	2.8	41.9%	3.4	2.5
3/1	Victoria Avenue Right Left	56.3%	9.9	39.6	66.0%	12.1	43.7
4/1	A358 Furnham Road (north, southbound) Ahead Left	47.9%	10.8	14.9	63.7%	16.8	17.5
5/1	Coker Way Left	30.9%	1.8	66.7	30.9%	1.8	66.7
5/2	Coker Way Right	7.3%	0.4	61.7	7.3%	0.4	61.7
8/1	A358 Furnham Road (central, northbound) Ahead	39.2%	2.3	1.6	39.9%	3.7	2.7
8/2	A358 Furnham Road (central, northbound) Right	3.4%	0.1	7.2	4.3%	0.2	14.2
Total	Cycle Time = 120 sec	PRC	59.7%		PRC	36.3%	

7.46 With the addition of the development traffic the PRC of the AM scenario is predicted to decrease from 62.1% to 59.7%. The PM PRC is predicted to reduce from 39.7% to 36.3%.

7.47 The longest MMQ in the 2023 AM scenario is predicted to increase from 13.3 pcus without development to 13.6 pcus with development on the A358 Furnham Road (south, northbound) approach.

7.48 In the PM peak, the longest predicted MMQ of 16.5 pcus on the A358 Furnham Road (north, southbound) arm without development, is predicted to increase to 16.8 pcus with the addition of the development traffic.

7.49 The results for the analysis for 2028 without development are set out in Table 7.10 below.

Table 7.10: A358/Victoria Avenue Possible Introduction of Signal Control: 2028

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)
1/1	A358 Furnham Road (south, northbound) Ahead Right	59.4%	14.8	22.0	69.7%	17.2	29.3
2/1	A358 Furnham Road (central, southbound) Left	15.1%	0.2	0.8	23.4%	0.3	0.8
2/2	A358 Furnham Road (central, southbound) Ahead	35.8%	3.5	2.7	43.6%	3.5	2.4
3/1	Victoria Avenue Right Left	61.0%	10.9	41.9	71.4%	13.0	47.9
4/1	A358 Furnham Road (north, southbound) Ahead Left	49.0%	11.0	14.6	65.7%	17.8	17.0
5/1	Coker Way Left	30.9%	1.8	66.7	30.9%	1.8	66.7
5/2	Coker Way Right	7.3%	0.4	61.7	7.3%	0.4	61.7
8/1	A358 Furnham Road (central, northbound) Ahead	41.5%	3.0	2.0	41.7%	4.3	3.0
8/2	A358 Furnham Road (central, northbound) Right	3.5%	0.2	8.7	4.7%	0.2	16.7
Total	Cycle Time = 120 sec	PRC	47.6%		PRC	26.0%	

7.50 It can be seen from Table 7.10, that the junction is predicted to be within its design and saturation capacities in the both the AM and PM peak hours in 2028. In the AM peak the junction is predicted to have a PRC of 47.6%. In the PM peak the junction is predicted to have a PRC value of 26.0%.

7.51 The results from the analysis for the year 2028 with the Mount Hindrance development are set out in Table 7.11.

Table 7.11 : A358/Victoria Avenue Possible Introduction of Signal Control: 2028 + Development

Arm No.	Arm Name	AM			PM		
		% Sat	MMQ	Delay (s/pcu)	% Sat	MMQ	Delay (s/pcu)

1/1	A358 Furnham Road (south, northbound) Ahead Right	60.4%	15.1	22.5	73.1%	18.1	32.2
2/1	A358 Furnham Road (central, southbound) Left	16.6%	0.2	0.8	24.4%	0.3	0.8
2/2	A358 Furnham Road (central, southbound) Ahead	35.8%	3.5	2.7	44.2%	3.5	2.5
3/1	Victoria Avenue Right Left	61.8%	11.0	42.2	72.6%	13.6	47.6
4/1	A358 Furnham Road (north, southbound) Ahead Left	50.6%	11.6	14.8	67.4%	18.5	18.0
5/1	Coker Way Left	30.9%	1.8	66.7	30.9%	1.8	66.7
5/2	Coker Way Right	7.3%	0.4	61.7	7.3%	0.4	61.7
8/1	A358 Furnham Road (central, northbound) Ahead	41.9%	3.1	2.1	42.8%	4.5	3.1
8/2	A358 Furnham Road (central, northbound) Right	3.5%	0.2	9.2	4.7%	0.2	16.9
Total	Cycle Time = 120 sec	PRC	45.5%		PRC	23.0%	

7.52 With the addition of the development traffic the PRC in the AM scenario is predicted to decrease from 47.6% to 45.5%. The PM PRC is predicted to reduce from 26.0% to 23.0%.

7.53 The longest MMQ in the 2028 AM scenario on A358 Furnham Road (south, northbound) is predicted to remain the same at 14.8 pcus. In the PM peak, the longest predicted MMQ of 17.8 pcus on A358 Furnham Road (north, southbound) is predicted to increase to 18.5 pcus.

7.54 With the installation of traffic signal control the junction would operate well below capacity in all scenarios tested.

A358 Old Town/ Holyrood Road Priority Junction

7.55 The analysis (results summarised in **Appendix M** and full output in **Appendix N**) indicates that the A358 Old Town/A358 Junction would be operating above capacity in 2023 in the PM peak hour without development with queuing on Holyrood Street. The maximum RFC without development is 1.02 this increases to 1.09 with development.

7.56 In 2028 without development the maximum RFC in the PM peak hour is 1.2 and this increases to 1.28 with development.

7.57 The Mount Hindrance development only puts 10 vehicles on the A358 in the PM peak hour and none on Holyrood Street. This represents an increase in total flow through the junction in the PM peak hour in 2028 of 0.7%.

7.58 It is considered that the proposed development at Mount Hindrance, Chard would not have a material impact at this junction.

Link Road Analysis

7.59 Llink flows are provided as Appendix P with flow locations marked on Figure 17.

7.60 Peak hour link road capacities are provided in the Department for Transport's Design Manual for Roads and Bridges in Technical Advice Note TA 79/99 Determination of Urban Road Capacity (Extracts provided as **Appendix Q**). Capacities are related to road classification and road width. The assessed classification and capacity for each link, which are considered conservative, is provided within the table provided as **Appendix P**. This shows that no links are operating near capacity in any scenario. Queues and delays within the study area are therefore attributable to junction capacity and not link capacity.

7.61 During public consultation events for the previous planning application on the site concern was expressed previously about junction capacity particularly junctions on the A358 Furnham Road. However concern was also expressed regarding traffic flow on Thorndun Park Drive and Crimchard.

Thorndun Park Drive

7.62 Thorndun Park Drive is typically 7m wide with limited frontage access. Just south of the cul-de sac access to the Mount Hindrance site peak hour two-way traffic flows on Thorndun Park Drive in 2017 were 166 vehicles in the morning peak hour and 246 vehicles in the PM peak hour.

7.63 The proposed development would add 71 vehicles two-way in the AM peak hour and 87 vehicles in the PM peak hour.

7.64 In 2028 the resultant two-way flows would be 278 in the AM Peak Hour and 391 in the PM peak hour which would not be anywhere near the hourly capacity of the road which is approximately 1500 two-way vehicles (from DMRB TA 79/99).

Crimchard

7.65 Crimchard is typically 7.0m wide south of Glynswood with significant on-street parking. Again the peak hour capacity of the road is approximately 1500 vehicles two-way. The peak hour two-way traffic flow on Crimchard in 2028 would be 936 in the AM peak hour and 973 vehicles two-way in the PM peak hour, well below the capacity of the road.

7.66 The Mount Hindrance development would increase two-way flows on Crimchard, south of Glynswood, by only 19 vehicles two-way in the AM peak hour and 22 vehicles two-way in the PM peak hour. These increases would be barely perceptible.

Summary

7.67 The analysis has indicated potential traffic capacity issues at the following junctions

- The convent traffic signals (A30/A358)
- The A358 Furnham Road/Victoria Avenue Junction
- The A358/Holyrood Street Junction

7.68 The impact at these junctions from traffic generated by the proposed development at Mount Hindrance is not considered significant and certainly not severe with only a small increase in traffic associated with the development.

7.69 The assessments at the Convent Signals and A358/Victoria Avenue junctions make no allowance for a reduction in traffic on the A358 which will happen when the eastern relief road, to be provided as part of existing allocations in the South Somerset Local Plan, is constructed. The junctions would operate significantly better than analysed on the relief road is implemented.

Summary

7.70 The analysis shows that the proposed development would not have a significant impact on any junctions or links in Chard.

APPENDIX M
Junction Capacity Results Summary Tables

Mount Hindrance, Chard

Junction Modelling Results Summary

Crimchard/Cuttisford's Door Road

	Crimchard (N)		Cuttisford Door (E)		Crimchard (S)		Cuttisford Door (W)	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0	0	0.22	0	0.1	0	0	0
AM 2023	0	0	0.24	0	0.11	0	0	0
AM 2023 + Development	0	0	0.27	0	0.11	0	0	0
AM 2028	0	0	0.27	0	0.12	0	0.02	0
AM 2028 + Development	0	0	0.29	0	0.12	0	0.02	0
PM 2017	0.01	0	0.22	0	0.16	0	0	0
PM 2023	0.01	0	0.25	0	0.19	0	0	0
PM 2023 + Development	0.01	0	0.26	0	0.19	0	0	0
PM 2028	0.01	0	0.27	0	0.2	0	0	0
PM 2028 + Development	0.01	0	0.28	0	0.2	0	0	0

Crimchard/Glynswood

	Glynswood		Crimchard	
	RFC	Queue	RFC	Queue
AM 2017	0.49	1	0.25	0
AM 2023	0.59	1	0.29	1
AM 2023 + Development	0.62	2	0.3	1
AM 2028	0.64	2	0.32	1
AM 2028 + Development	0.66	2	0.33	1
PM 2017	0.4	1	0.35	1
PM 2023	0.5	1	0.42	1
PM 2023 + Development	0.52	1	0.44	1
PM 2028	0.54	1	0.45	1
PM 2028 + Development	0.56	1	0.48	1

High Street/Crowshute Link

	Crowshute – High Street W		Crowshute – High Street E		High Street W	
	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0.5	1	0.28	0	0.38	1
AM 2023	0.59	1	0.35	1	0.46	1
AM 2023 + Development	0.59	1	0.35	1	0.46	1
AM 2028	0.65	2	0.4	1	0.49	1
AM 2028 + Development	0.65	2	0.41	1	0.49	1
PM 2017	0.6	1	0.34	1	0.52	1
PM 2023	0.74	3	0.47	1	0.61	2
PM 2023 + Development	0.74	3	0.47	1	0.62	2
PM 2028	0.82	4	0.6	1	0.66	2
PM 2028 + Development	0.82	4	0.6	1	0.67	2

Furnham Road/Cuttisford's Door Road

	Cuttisford Door		Furnham Rd	
	RFC	Queue	RFC	Queue
AM 2017	0.18	0	0.17	0
AM 2023	0.22	0	0.25	1
AM 2023 + Development	0.23	0	0.22	1
AM 2028	0.24	0	0.24	1
AM 2028 + Development	0.25	0	0.25	1
PM 2017	0.24	0	0.22	1
PM 2023	0.28	0	0.29	1
PM 2023 + Development	0.32	0	0.3	1
PM 2028	0.31	0	0.32	1
PM 2028 + Development	0.36	1	0.34	1

Furnham Road/Glynswood

	Glynswood		Furnham Rd	
	RFC	Queue	RFC	Queue
AM 2017	0.49	1	0.4	1
AM 2023	0.62	2	0.49	1
AM 2023 + Development	0.71	2	0.49	1
AM 2028	0.68	2	0.53	2
AM 2028 + Development	0.77	3	0.54	2
PM 2017	0.44	1	0.46	1
PM 2023	0.54	1	0.58	2
PM 2023 + Development	0.59	1	0.59	2
PM 2028	0.6	1	0.65	3
PM 2028 + Development	0.65	2	0.66	3

High Street/Helliers Road

	Helliers Rd – High St E		Helliers Rd – High St W		High Street E	
	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0.57	1	0.07	0	0.5	1
AM 2023	0.7	2	0.16	0	0.62	2
AM 2023 + Development	0.72	2	0.21	0	0.62	2
AM 2028	0.76	3	0.2	0	0.67	3
AM 2028 + Development	0.78	3	0.26	0	0.68	3
PM 2017	0.46	1	0.09	0	0.62	2
PM 2023	0.55	1	0.14	0	0.79	5
PM 2023 + Development	0.56	1	0.16	0	0.8	5
PM 2028	0.6	1	0.17	0	0.86	7
PM 2028 + Development	0.61	2	0.2	0	0.88	8

Furnham Road/Thorndun Park Drive

	Thorndun Prk – Furnham Rd N		Thorndun Prk – Furnham Rd S		Furnham Rd N	
	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0.13	0	0.1	0	0.15	0
AM 2023	0.16	0	0.12	0	0.18	0
AM 2023 + Development	0.26	0	0.23	0	0.21	0
AM 2028	0.17	0	0.15	0	0.19	0
AM 2028 + Development	0.28	0	0.26	0	0.22	0
PM 2017	0.19	0	0.34	1	0.18	0
PM 2023	0.23	0	0.44	1	0.21	0
PM 2023 + Development	0.31	0	0.54	1	0.31	0
PM 2028	0.26	0	0.5	1	0.23	0
PM 2028 + Development	0.37	1	0.63	2	0.33	0

Thorndun Park Drive/Site Access

	Site Access		Thorndun Prk	
	RFC	Queue	RFC	Queue
AM 2017	0.01	0	0.01	0
AM 2023	0.01	0	0.02	0
AM 2023 + Development	0.28	0	0.07	0
AM 2028	0.01	0	0.02	0
AM 2028 + Development	0.28	0	0.07	0
PM 2017	0.03	0	0.01	0
PM 2023	0.03	0	0.02	0
PM 2023 + Development	0.24	0	0.16	0
PM 2028	0.03	0	0.02	0
PM 2028 + Development	0.24	0	0.16	0

Furnham Road/Victoria Ave

	Victoria Ave – Furnham Rd S		Victoria Ave – Furnham Rd N		Furnham Rd S	
	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0.31	0	0.6	1	0.37	1
AM 2023	0.45	1	0.76	3	0.45	1
AM 2023 + Development	0.48	1	0.79	3	0.46	2
AM 2028	0.74	2	0.88	5	0.51	2
AM 2028 + Development	0.91	5	0.91	6	0.52	2
PM 2017	0.46	1	0.76	3	0.41	1
PM 2023	1.02	9	1.01	11	0.51	2
PM 2023 + Development	1.09	12	1.08	16	0.52	2
PM 2028	1.2	18	1.19	24	0.59	3
PM 2028 + Development	1.28	22	1.26	33	0.59	3

Mount Hindrance, Chard

Junction Modelling Results Summary

Furnham Road/Victoria Ave - Signal Controlled Opton

	Furnham Rd S		Link Rd - Southbound		Victoria Ave		Furnham Rd N		Coker Way (B&Q)		Link Road Northbound	
	% Sat	MMQ	% Sat	MMQ	% Sat	MMQ	% Sat	MMQ	% Sat	MMQ	% Sat	MMQ
AM 2028 +Development	60.4	15	35.8	4	61.8	11	50.6	12	30.9	2	41.9	3
PM 2028 +Development	73.1	18	44.2	4	72.6	14	67.4	19	30.9	1.8	42.8	5

Church Street/Holyrood Street

	Holyrood St - Church St N		Holyrood St - Church St S		Church St N	
	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0.31	0	0.6	2	0.37	1
AM 2023	0.45	1	0.76	3	0.45	1
AM 2023 + Development	0.48	1	0.79	3	0.46	2
AM 2028	0.74	2	0.88	5	0.51	2
AM 2028 + Development	0.91	5	0.91	6	0.52	2
PM 2017	0.46	1	0.76	3	0.41	1
PM 2023	1.02	9	1.01	11	0.51	2
PM 2023 + Development	1.09	12	1.08	16	0.52	2
PM 2028	1.2	18	1.19	25	0.59	3
PM 2028 + Development	1.28	22	1.26	33	0.59	3

A30 Roundabout

	Victoria Ave		Crewkerne Rd		Tapstone Rd		East Street	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
AM 2017	0.23	0	0.3	0	0.14	0	0.4	1
AM 2023	0.27	0	0.35	1	0.16	0	0.46	1
AM 2023 + Development	0.29	0	0.35	1	0.16	0	0.48	1
AM 2028	0.29	0	0.38	1	0.17	0	0.5	1
AM 2028 + Development	0.31	0	0.38	1	0.17	0	0.5	1
PM 2017	0.27	0	0.36	1	0.34	1	0.46	1
PM 2023	0.32	0	0.41	1	0.39	1	0.54	1
PM 2023 + Development	0.33	0	0.42	1	0.4	1	0.54	1
PM 2028	0.35	1	0.43	1	0.43	1	0.59	1
PM 2028 + Development	0.36	1	0.46	1	0.44	1	0.6	1

Convent Road Signals

	Fore Street		Furnham Road		East Street		Silver Street	
	% Sat	MMQ	% Sat	MMQ	% Sat	MMQ	% Sat	MMQ
AM 2017	84.6	13.0	84.9	15.0	87.3	15.0	86.0	16.0
AM 2023	97.4	21.0	97.2	23.0	98.8	23.0	97.1	25.0
AM 2023+ Development	97.9	21.0	98.4	25.0	98.8	23.0	100.7	31.0
AM 2028	103.5	29.0	103.8	33.0	105.3	33.0	103.8	40.0
AM 2028 +Development	104.3	30.0	104.9	37.0	105.3	33.0	107.3	48.0
PM 2017	75.2	13.0	92.3	19.0	94.0	21.0	93.3	18.0
PM 2023	82.9	15.0	103.3	32.0	104.4	38.0	102.9	33.0
PM 2023+ Development	87.0	16.0	106.9	41.0	107.6	44.0	109.0	47.0
PM 2028	91.5	19.0	112.0	54.0	115.2	64.0	113.6	59.0
PM 2028 +Development	93.0	20.0	114.4	60.0	115.2	64.0	116.5	67.0

Thorndun Park Drive/Glynswood

	Thorndun Prk		Glynswood	
	RFC	Queue	RFC	Queue
AM 2017	0.34	1	0.04	0
AM 2023	0.4	1	0.05	0
AM 2023 + Development	0.48	1	0.05	0
AM 2028	0.43	1	0.06	0
AM 2028 + Development	0.51	1	0.07	0
PM 2017	0.6	1	0.16	0
PM 2023	0.71	2	0.18	0
PM 2023 + Development	0.77	3	0.23	0
PM 2028	0.78	3	0.2	0
PM 2028 + Development	0.84	5	0.26	1

vectos.

Contact

London
Network Building,
97 Tottenham Court Road,
London W1T 4TP.
Tel: 020 7580 7373

Bristol
5th Floor, 4 Colston Avenue,
Bristol BS1 4ST
Tel: 0117 203 5240

Cardiff
Helmont House, Churchill Way,
Cardiff CF10 2HE
Tel: 029 2072 0860

Exeter
6 Victory House,
Dean Clarke Gardens,
Exeter EX2 4AA
Tel: 01392 422 315

Birmingham
Great Charles Street,
Birmingham B3 3JY
Tel: 0121 2895 624

Manchester
Oxford Place, 61 Oxford Street,
Manchester M1 6EQ.
Tel: 0161 228 1008

Leeds
7 Park Row, Leeds LS1 5HD
Tel: 0113 512 0293

Bonn
Stockenstrasse 5, 53113,
Bonn, Germany
Tel: +49 176 8609 1360
www.vectos.eu

Registered Office
Vectos (South) Limited
Network Building,
97 Tottenham Court Road,
London W1T 4TP
Company no. 7591661