Appendix L VISSIM Modelling

now part of

Land West of Park Farm, Thornbury

Highways England Post-Application Technical Response

On behalf of **Barwood Development Securities Ltd & North West Thornbury Landowner Consortium**

Project Ref: 39209/5519 | Rev: AA | Date: June 2019

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN
T: +44 (0)118 950 0761 E: reading@peterbrett.com

Document Control Sheet

Project Name: **Land West of Park Farm, Thornbury**

Project Ref: **39209-5519**

Report Title: **Highways England Post-Application Technical Response**

Doc Ref: **5519-PBA-ZZ-XX-RP-TP-0002**

Date: **June 2019**

	Name	Position	Signature	Date
Prepared by:	Dave Cope/Stuart Gardner	Principal Transport Planner	DC/SG	29/05/2019
Reviewed by:	Rob Holloway	Senior Associate	RH	31/05/2019
Approved by:	Neil Thorne/Michael Parkinson	Director	NT	04/06/2019
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved

Contents

Figures

Tables

Appendices

Appendix A Framework Travel Plan

1 Introduction

1.1 Overview

1.1.1 Peter Brett Associates (PBA), now part of Stantec, has produced this Technical Note in response to Highways England (HE) comments following submission of the Transport Assessment (TA) (PBA ref 39209-5501-004B, dated Nov 2018) and Framework Travel Plan (PBA ref 39209-5501-002B, dated Nov 2018) for the proposed development of Land West of Park Farm, Thornbury.

1.1.2 This Note follows the Highway England Planning Response (HEPR 16-01), which identified two key points of interest, the modelling of M5 Junction 14 and the Framework Travel Plan. PBA provided the modelling to HE as requested and comments from their consultants, Jacobs, were provided on 13th February 2019.

1.1.3 This note therefore sets out the results of remodelling, having amended the model to address Jacob's comments, and further clarity on the Framework Travel Plan.

1.1.4 For clarity, the HEPR provided the following key points to be addressed:

> *"Highways England has undertaken a review of the PBA TA and has requested that a copy of the VISSIM modelling for review. The model is needed to ensure development scenarios have been coded correctly and to determine how development traffic impacts affect the Highways England Planning Response (HEPR 16-01) January 2016 operation and safety of M5 J14. Highways England has already contacted PBA for this data and the modelling has been provided. We will now review this and prepare a follow up response.*
>
> *Highways England also requests clarification on the travel planning measures that will be provided to justify the use of advantageous residential trip rates, and a review on how these measures will negate some vehicle trips from travelling through SRN junctions.*
>
> *With a number of points outstanding at this time, Highway England is unable to conclude its recommendation to the Local Planning Authority."*

1.2 South Gloucestershire Council Context

1.2.1 Following submission of the TA, South Gloucestershire Council (SGC) requested that changes be made to the residential trip assignment, as they considered that the level of trips distributed internally to Thornbury was too high. Specifically, SGC required changes to the distribution of trips to and from employment, leisure, health and retail uses.

1.2.2 The following changes were made:

- The residential to employment trips were originally assigned using a gravity model which identifies the likely commuter destinations based on 2011 Census data and TEMPro predicted Thornbury job and household data. Following comments received from SGC, the gravity model has been updated with a reduction of employment trips remaining within Thornbury to 23 percent, with 77 percent being external. This was requested by SGC as there has been a loss of employment areas within Thornbury which the TEMPro employee data did not account for. Also, SGC confirmed that there has been no future employment development proposals that would increase the number of jobs available within Thornbury for residents of the proposed development.

- The residential to 'other' (retail/leisure/personal business) trips have been revised in discussion with SGC. As a result, 70% of these trips have been distributed between the various facilities on offer within Thornbury; including retail such as supermarkets and the High Street; health such as Thornbury Hospital and Health Centre; and leisure such as Thornbury Leisure Centre; the remaining 30% have been distributed evenly to Bristol and Gloucester/Stroud, and through the M5 Junction 14. Previously, all of these trips were distributed within Thornbury.

1.2.3 The updated gravity model distribution has been issued to, and agreed with, SGC and HE and is set out within a Transport Assessment Addendum (May 2019), formally submitted to SGC on 30th May 2019. The revised development trips at the junction have been agreed with Jacobs (on behalf of HE) in their email dated 10th May 2019.

1.2.4 This Technical Note incorporates the revised development trips at this junction within the VISSIM model.

1.3 Format of this Report

1.3.1 In response to HE's comments, this report is structured as follows:

- **Chapter 2: Travel Plan** – sets out our response to comments raised on the Travel Plan and provides clarity on the measures identified to reduce impact on the Strategic Road Network (SRN).
- **Chapter 3: VISSIM Model Updates** – identifies the changes made to the VISSIM Model at Highways England's Request.
- **Chapter 4: VISSIM Modelling Results** – provides commentary on the results of the revised VISSIM modelling, which takes on board HEs modelling comments and incorporates SGC's revised trip assignment. This section therefore deals with the question of impact on capacity and safety on the SRN.
- **Chapter 5: Summary and Conclusions** – provides a summary of the work set out in Chapters 2 to 3 and sets out our conclusion on the impact on the SRN.

2 Framework Travel Plan

2.1.1 HE agreed in their HEPR to the trip rates set out within the Transport Assessment, on the basis that the mode shift targets will help to mitigate SRN impact. Following submission of the Travel Plan, HE stated:

> *"Whilst no mode shift is considered in the TA, Highways England requested confirmation of the FTP measures that would be provided to off-set some journeys that would otherwise use the SRN, and this was accepted in the trip rates agreed. Highways England requests clarification on these measures and anticipated success or may need to advise on revised trip rates being considered for SRN development traffic impact."*

2.1.2 In answer to this point the development proposals and Framework Travel Plan (FTP) provide the following measures to mitigate the impact of vehicle trips on the Strategic Road Network:

- The FTP includes commitment to the provision of a bus service through the site with bus stops provided within 400m walk of all residents. Conversations are ongoing between SGC and bus operators, as it is not yet clear what bus service will serve the neighbouring Park Farm development and which will therefore be extended into the West of Park Farm site. Our position is that the most appropriate route to serve the site is the T1, which has a half hour frequency to Bristol, and will therefore directly mitigate strategic car trips which may otherwise have used the M5. First Bus agree with this position, so we expect this service to be the one to serve the site. Discussions remain on-going but the site will be served by bus, and if not by the direct Bristol service, this remains accessible to residents who can walk or cycle to the existing route;

- To encourage the use of sustainable modes of travel, including bus links to Bristol, a sustainable travel corridor will be provided, which will link the site with the Park Farm development and beyond (utilising the sustainable travel corridor to Alexandra Way being delivered as part of that development) to central Thornbury. The corridor will provide for direct pedestrian, cycle and bus movement towards the town centre, with priority and journey time benefits over the private car and will therefore facilitate excellent bus connectivity, thereby helping to mitigate strategic car trips;

- The development will also provide sustainable travel vouchers for residents which can be used in local services or at local facilities, such as pre-paid bus tickets or cycle vouchers. This will make the use of sustainable travel more accessible and attractive, thereby helping to mitigate strategic car trips; and

- The FTP also sets out the role of the TP Co-ordinator who will be responsible for implementing the measures set out, including the production of a Travel Information Pack to be issued to all new residents. This will also include details of TravelWest's car sharing website and offer Personalised Travel Planning (PTP) to all households, all of which will help to mitigate strategic car trips.

2.1.3 The Framework Travel Plan has also been updated following comments from SGC, this has resulted in additional travel planning measures to encourage sustainable transport, including public transport and cycling, which will therefore mitigate strategic car trips further. These additional measures include:

- Measures to encourage cycling including Bicycle User Group, Dr Bike sessions and a Bike Buddy Scheme;

- A bespoke Development Travel Information Guide as part of the Residential Travel Information Pack;

- Development specific website; and
- PTP to be offered within one month of occupation.

2.1.4 The FTP provides targets to reduce the number of single vehicle occupancy trips associated with the proposed development. The FTP includes an Action Plan and identifies that remedial measures will be introduced if the targets are not met. This updated FTP (Ref 39209-5501-002C dated May 2019) has been included as **Appendix A** of this Technical Note.

2.1.5 As a result of the above, we conclude that the Framework Travel Plan has a range of measures to reduce impact on both the local road network and the SRN, that the Framework Travel Plan provides a commitment to monitoring, achieving Targets and remedial measures, where necessary. We therefore consider that HE are now in a position to agree to the content of the Framework Travel Plan.

3 VISSIM Model Updates

3.1 VISSIM Model Updates Context

3.1.1 Jacobs (on behalf of HE) requested that PBA make a number of amendments to the VISSIM modelling previously submitted. Whilst we consider that these changes would have a negligible impact on the outcomes of the modelling and were not therefore necessary, HE have requested that these be incorporated into updated modelling. This section therefore sets out the changes made to the model. Jacobs requested that we:

- Run the Model a greater number of times
- Revisit the Trip Matrices to remove any rounding errors; and
- Consider the impact of development in the peak shoulders

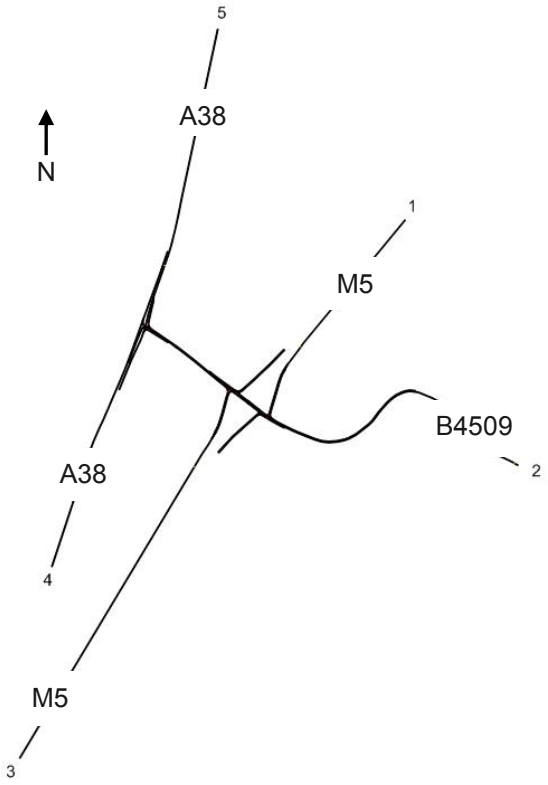
3.1.2 Each of these points is considered in sections 3.3. to 3.5. First, in **Section 3.2**, we explain the changes to the model as a result of SGC's request for development traffic to be reassigned as this is important context for the VISSIM modelling.

3.2 Revised Forecast Flows

3.2.1 The revised modelling was undertaken within the network previously provided to PBA by Jacobs. This utilises PTV VISSIM 8 micro-simulation software and includes connections with PC MOVA and associated add-ons for VISSIM. The model network covers the links shown within Figure 3-1 below.

3.2.2 The model has been revalidated to a base year of 2017, with the validation and calibration statistics being summarised within the CH2M (now part of Jacobs) report '679475 ST 16 14 05_M5 J4 VISSIM Nov 2016 Update LMCR_Mar2017_V5'.

Figure 3.1: M5 Junction 14 VISSIM Model Extents



3.2.3 No amendments have been made to the model received from Jacobs, apart from the inclusion of the forecast Reference Case and Test Case matrices, which have been subsequently updated based on comments made by Jacobs and SGC. These matrices have been agreed with HE.

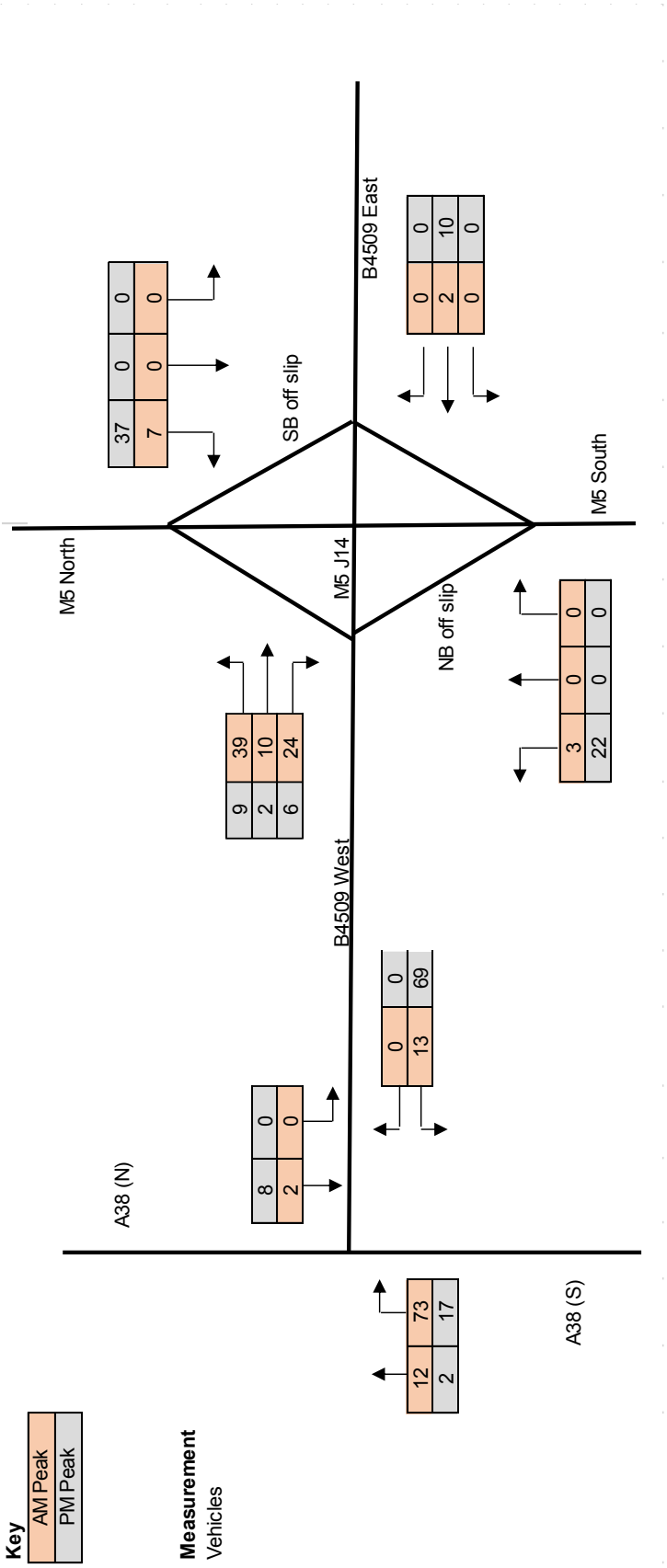
3.2.4 Prior to any amendment of the flows, the model was accepted by Jacobs as suitable for use, only the matrix has been amended to take into account revised development trip distribution.

3.2.5 Jacobs have undertaken a review of the revised trip generation and provided PBA with confirmation on the 10th May 2019 provided below;

> *"We have reviewed the various emails and attachments and believe the traffic flows are now suitable and reflect the previously agreed trip generation and new trip distribution parameters. The updated results now show slightly more development traffic travelling through M5 J14, compared to what was previously identified / agreed."*

3.2.6 **Figure 3.2** below illustrates the flow distribution to and from the development at M5 J14 during the AM and PM peak periods, these flows have been applied on top of the reference case flows for both the 2021 and 2028 models.

Figure 3.2: Development Flow Distribution – M5 J14



3.3 Number of Model Runs

3.3.1 HE reviewed the VISSIM model and provided their response in their email dated 13th February 2019 and identified that to improve accuracy of the model outputs additional runs should be undertaken.

> *"The Modelling Report states that the assessment results are based on 10 random seed model runs. Given the degree of congestion in the 2021 and 2028 forecast years, and the likely resulting increase in the degree of variability in the model outputs, a greater number of random seed runs should be carried out."*

3.3.2 PBA undertook an assessment to identify the optimum number of runs that would be required to address the point outlined above. It was subsequently identified that due to the level of congestion at this junction it was identified that a total of 20 model runs would be sufficient to provide a more reliable understanding of the impact of the development at Land West of Park Farm.

3.3.3 In total 20 model runs were undertaken starting at a random seed of 42 with an increment of 1 after each run. The seed used represents the point in time a vehicle enters the network. Increasing the seed by 1 each run means that vehicles will not enter the network at the same time, therefore ensuring each model run is random.

3.3.4 Through further analysis it was identified that as a result of the additional 10 runs, only Route 5 (A38 nb to RT) during the 2021 PM Reference Case, Test Case and 2028 PM Reference Case fell out of the criteria, as shown within **Table 3.1**.

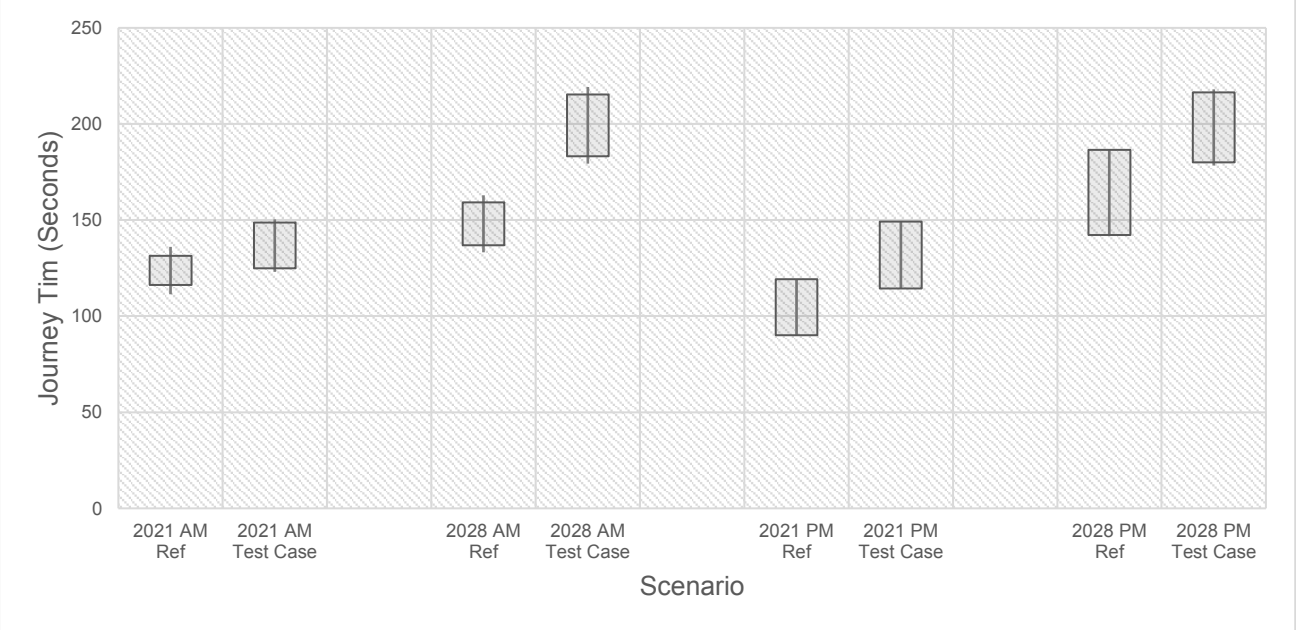
Table 3.1: VISSIM Model - Confidence Interval between 10% of Mean With Sample size of 20

ROUTE	2021 AM Ref	2021 AM Test Case	2028 AM Ref	2028 AM Test Case	2021 PM Ref	2021 PM Test Case	2028 PM Ref	2028 PM Test Case
1: M5 sb off slip	✓	✓	✓	✓	✓	✓	✓	✓
2: B4509 wb to J14	✓	✓	✓	✓	✓	✓	✓	✓
3: M5 nb off slip	✓	✓	✓	✓	✓	✓	✓	✓
4: A38 sb to LT	✓	✓	✓	✓	✓	✓	✓	✓
5: A38 nb to RT	✓	✓	✓	✓	×	×	×	✓
6: A38 to M5 J14	✓	✓	✓	✓	✓	✓	✓	✓
7: M5 J14 to A38	✓	✓	✓	✓	✓	✓	✓	✓
8: A38 N to M5 S	✓	✓	✓	✓	✓	✓	✓	✓
9: A38 S to M5 N	✓	✓	✓	✓	✓	✓	✓	✓
10: B4509 E to M5 N	✓	✓	✓	✓	✓	✓	✓	✓

ROUTE	2021 AM Ref	2021 AM Test Case	2028 AM Ref	2028 AM Test Case	2021 PM Ref	2021 PM Test Case	2028 PM Ref	2028 PM Test Case
11: M5 N to A38 S	✓	✓	✓	✓	✓	✓	✓	✓
12: B4509 E to A38 N	✓	✓	✓	✓	✓	✓	✓	✓
13: M5 S to B4509 E	✓	✓	✓	✓	✓	✓	✓	✓
14: A38 N to A38 S	✓	✓	✓	✓	✓	✓	✓	✓
15: A38 S to A38 N	✓	✓	✓	✓	✓	✓	✓	✓

3.3.5 However, undertaking a review of this route, as shown within **Figure 3.3**, demonstrates that the 10% higher and lower mean (represented by the line) remain within the 96% higher and lower confidence intervals (represented by the box), therefore demonstrating that the impact of this is not significant and is consistent between the scenarios.

Figure 3.3: Journey Time Route 5 Confidence Interval



3.4 Matrix Updates

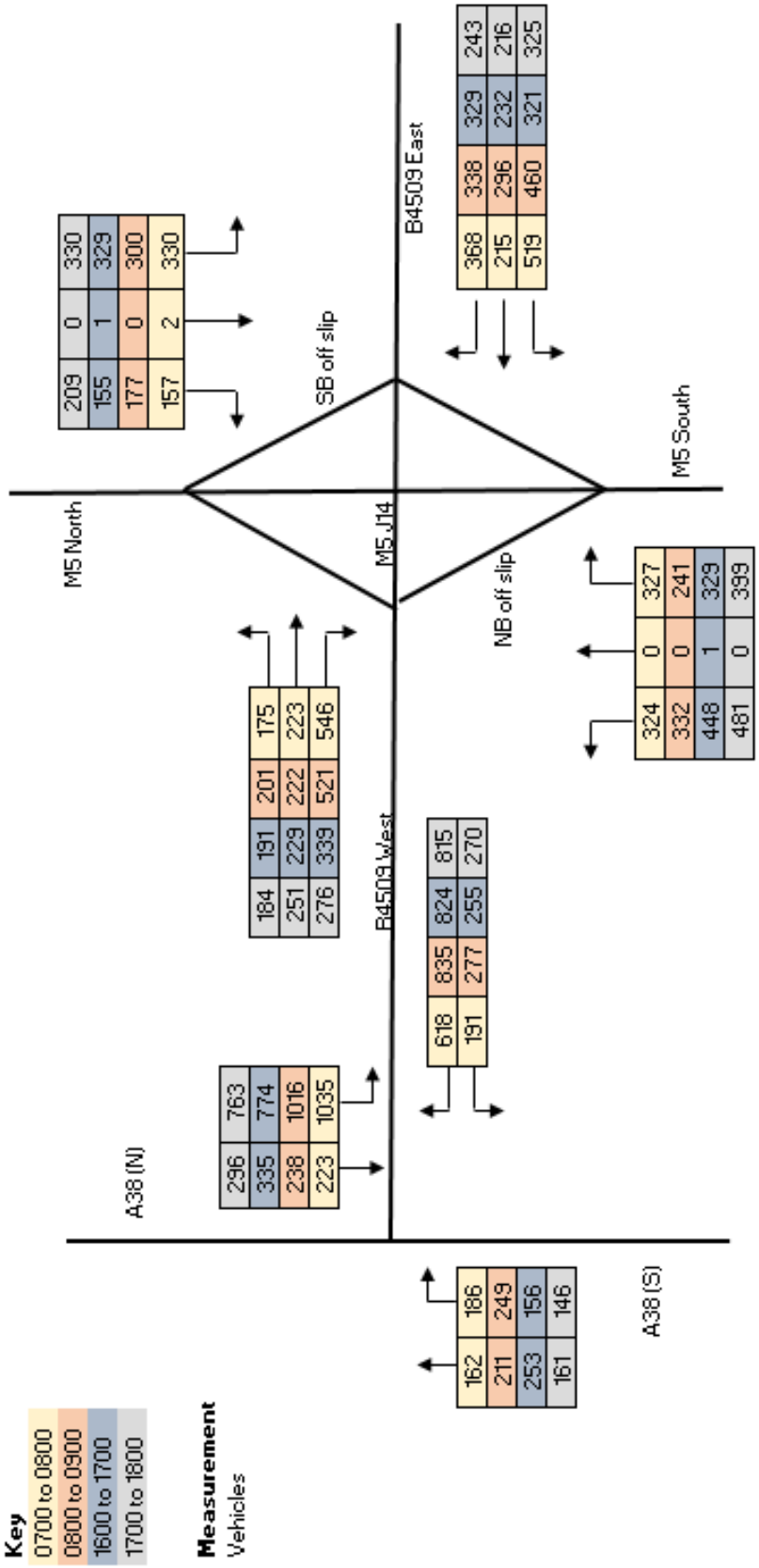
3.4.1 With regard to the original model, HE stated;

> *"a comparison of the development traffic flow distribution in Figure 2.1… with the Development Trip matrices, highlights a number of inconsistencies. The Development matrices need to be checked and corrected to be consistent with the predicted flow in the Modelling Report"'*

3.4.2 In addition to the revised development trip generation required by SGC, the trip matrix spreadsheet was updated to remove any issue with inconsistencies between the flow distribution and trip matrices, the same spreadsheet was utilised for the re-generation of the reference case flows and was subsequently agreed by Jacobs on the 10th April 2019;

3.4.3 **Figure 3.4** illustrates the 2021 Reference Case flows at the junction.

Figure 3.4: 2021 Committed Development Reference Case Junction Movements



3.5 Shoulder Peak Hour Consideration

3.5.1 The original model included the development trips for the AM (0730 – 0830) and PM (1645 – 1745) peak hours only, which due to the relatively low development trips, we considered as being appropriate for the modelling. However, HE requested that development trips within the model warm up and cool down periods before and after the peak hour assessments are also included. HE stated:

> *"the Development Trip matrices cover the periods from 7:30 to 8:30am and 4:45 to 5:45pm, although the model periods are 7:00-9:00am and 4:00-6:00pm. Whilst development traffic during the shoulder periods is likely to be lower, development traffic throughout the entirety of the simulated model periods should be included and modelled, as it will have an impact on operational conditions including those during the 'core' assessment period."*

3.5.2 As requested by HE, this has been included within this model. To determine the development generated traffic for the warm up pre assessment hour and cool down periods, the profile of the MCC traffic survey of the Morton Way/Badger Road junction was reviewed. This junction services the Morton Way residential development and will therefore have a similar profile to the proposed development at West of Park Farm, SGC has therefore requested that this be used as a proxy for determining the West of Park Farm trip generation. The survey results were in 15 minute periods, and so the total vehicles surveyed could be factored against the peak hour period to provide a profile for the periods before and after.

3.5.3 The survey results determined that in the AM peak the half hour warm up period would be 38% of the peak hour trips and the cool down half hour after the modelled period would be 23%.

3.5.4 For the PM peak, the warm up 45 minute period would be 61% of the peak hour and the cool down 15 minute period would be 20% of the peak hour. **Table 3.2** below shows the matrix totals for each time segment of the extended AM and PM peak period models. The survey results are were supplied to SGC by email dated 7th January 2019.

Table 3.2: Warm Up and Cool Down Proportions

Matrix Segment	AM Peak Factor	PM Peak Factor
1	0.18	0.22
2	0.20	0.22
3	0.25	0.17
4	0.25	0.25
5	0.25	0.25
6	0.25	0.25
7	0.13	0.25
8	0.10	0.20

3.5.5 These proportions were used within the updated modelling to better reflect the impact of the development within the highway network over the assessed modelled period.

4 VISSIM Modelling Results

4.1 Overview

4.1.1 Having undertaken additional modelling to respond to the comments received, outlined in **Section 3**, this section summarises the results from the modelling of the M5 Junction 14 for the 'Reference' and 'Test Case' scenarios. A total of 20 model runs were undertaken starting at a random seed of 42 with an increment of 1 after each run. Given the degree of congestion in both forecast years and the resulting increase in the degree of variability in the model outputs, an assessment of the model runs was undertaken to identify where the model results met or were very close to achieving the 95% Confidence Interval is less than 10% of the mean on all journey time routes.

4.1.2 The key performance indicators used to assess the impact of the development on the junctions include the recording of latent demand, queues at specific locations and journey times for routes already defined as part of the base model development.

4.1.3 The analysis focusses on the 2021 assessment year as the development opening year, in line with the DfT Circular 02/2013 The Strategic Road Network and the Delivery of Sustainable Development. It also considers the 2028 test period as 10 years after opening, and as agreed with SGC for the year of assessment.

4.2 Network Performance Results – Latent Demand

4.2.1 Latent demand is the term used to explain the number of vehicles that are left in the network that aren't able to complete their journeys as a result of congestion and delay. **Table 4.1** below summarises the latent demand for each modelled scenario.

Table 4.1: Network Performance Latent Demand (Values in Vehicles)

Scenario	Ref Case Demand	Ref Case Latent Demand	Difference	Percentage Latent Demand	Test Case Demand	Test Case Latent Demand	Difference	Percentage Latent Demand	Change between the Ref and Test Case Latent Demand
2021 AM	4,164	818	3,346	20%	4,263	888	3,375	21%	1%
2021 PM	3,674	270	3,404	7%	3,770	277	3,493	7%	0%
2028 AM	4,539	1292	3,247	29%	4,638	1422	3,216	31%	2%
2028 PM	4,007	597	3,410	15%	4,103	671	3,432	16%	1%

4.2.2 An assessment has been undertaken for future years of 2021 and 2028 with committed development 'Reference Case' and with committed and proposed development 'Test Case' scenarios. From the table above, the impact of the development is negligible in terms of latent demand, with the increase in vehicles unable to exit the model after the assessed period in 2021 being 1% in the AM peak and 0% in the PM. During 2028, this is 2% and 1%, respectively.

4.2.3 As such the slight increase in latent demand is not significant and the increase shown demonstrates the effect of peak spreading, this is specifically notable within the 2028 AM peak period.

4.2.4 The latent demand is dependent on the operation of the signals, which run on MOVA or priority rule interactions downstream of the junction. With the additional random seed being included within each run, a slight variation between each model run could result in the small overall variations between each scenario, however, as shown within the table above, the change between the latent demand in the 'Reference Case' and that in the 'Test Case' is shown to be negligible.

4.3 Journey Time

4.3.1 The journey time routes which have been assessed for the scenarios have not been amended since the base model was provided to PBA for this assessment. The journey routes are provided within the CH2M LMVR '481795.HM.01.39_M5 J14 VISSIM LMVR_LT_Aug 2016_v3'. **Tables 4.2** and **4.3** below summarise the travel time results for those used within the LMVR of the base model for the AM and PM peak hours assessed for the scenarios.

Table 4.2: AM Peak Total Travel Time (Seconds)

Route	2021 AM Ref	2021 AM Test Case	2028 AM Ref	2028 AM Test Case
Route 1 - M5 s/b off-slip	17	18	18	18
Route 2 - M5 n/b off-slip	189	193	209	205
Route 3 - A38 (N) to M5 (S)	590	639	769	816
Route 4 - A38 (S) to M5 (N)	276	286	338	380
Route 5 - B4509 (E) to M5 (N)	109	111	107	108
Route 6 - M5 (N) to A38 (S)	88	87	86	88
Route 7 - B4509 (E) to A38 (N)	147	149	147	150
Route 8 - M5 (S) to B4509 (E)	430	441	463	459
Route 9 - A38 (N) to A38 (S)	322	358	436	479
Route 10 - A38 (S) to A38 (N)	86	95	102	145

4.3.2 In 2021, Route 3 (A38 (N) to M5 (S)), is predicted to see the largest increase in travel time. During the AM peak, the difference between the 2021 Refence and Tests cases show an increase of 49 seconds. On Route 9 (A38 (N) to A38 (S)), there is an increase of 36 seconds in 2021.

4.3.3 In 2028, Route 9 is predicted to increase in travel time by 42 seconds, and for Routes 4 (A38 (S) to M5 (N)) and 10 (A38 (S) to A38 (N)), there is an increase of 43 and 42 seconds respectively; this demonstrates there is negligible impact of the development in terms of travel time through the modelled network.

4.3.4 Importantly, for the M5 off-slips, there is predicted to be only a 1 second increase in 2021 on Route 1 (M5 s/b off-slip) and 4 second increase on Route 2 (M5 n/b off-slip). In 2028, there is predicted to be no increase in travel time on Route 1, and an improvement of 4 seconds with development (Test case) on Route 2.

Table 4.3: PM Peak Total Travel Time (Seconds)

Route	2021 PM Ref	2021 PM Test Case	2028 PM Ref	2028 PM Test Case
Route 1 - M5 s/b off-slip	50	51	53	55
Route 2 - M5 n/b off-slip	47	48	49	50
Route 3 - A38 (N) to M5 (S)	439	456	487	509
Route 4 - A38 (S) to M5 (N)	292	323	362	401
Route 5 - B4509 (E) to M5 (N)	445	463	554	560
Route 6 - M5 (N) to A38 (S)	120	119	122	123
Route 7 - B4509 (E) to A38 (N)	488	506	593	596
Route 8 - M5 (S) to B4509 (E)	90	90	91	91
Route 9 - A38 (N) to A38 (S)	221	235	248	264
Route 10 - A38 (S) to A38 (N)	71	75	84	100

4.3.5 In 2021, Route 4 is predicted to see the largest increase in travel times, with an increase of 31 seconds between the 'Reference Case' and 'Test Case'.

4.3.6 In 2028, Route 4 is predicted to increase in travel time by 39 seconds, and Route 3 shows an increase of 22 seconds during the 'Reference Case' and 'Test Case', whilst the other routes show minimal changes.

4.3.7 Importantly, for the M5 off-slips, there is predicted to be only a 1 second increase in 2021 on Route 1 and 1 second increase on Route 2. In 2028, there is predicted to be a 2 second increase in journey time on Route 1, and a 2 second increase on Route 2.

4.3.8 The analysis identified above demonstrates that there is negligible impact on journey times as a result of including development traffic flows.

4.4 Queues and Impact on Safety

4.4.1 Queue counters have been positioned within the network at give way lines or at signal stop lines; in VISSIM queues are counted from this point upstream until the end of the queue or link, whichever is greater. The locations of these have not been amended and have been retained from the base model, as developed by Jacobs.

4.4.2 **Tables 4.4** and **4.5** below summarise the queues in the modelled network for each scenario and for the AM and PM peaks, respectively.

Table 4.4: AM Peak Maximum Queue Length (metres)

LOCATION	2021 AM Ref	2021 AM Test Case	Difference	2028 AM Ref	2028 AM Test Case	Difference
A38 SB to B4509 EB	1072	1072	0	1073	1073	0
A38 SB Ahead	27	26	-1	25	23	-2
B4509 WB Junction with A38	98	94	-4	96	107	11
A38 NB Ahead	69	92	23	107	199	92
A38 NB to B4509 EB	97	133	36	128	229	101
M5 SB Off-Slip to B4509 EB	20	22	2	24	24	0
M5 SB Off-Slip to B4509 WB	20	22	2	24	24	0
B4509 WB M5 Junction - M5 SB	16	28	12	36	26	-10
B4509 EB Ahead at M5 SB Off-Slip	0	0	0	0	0	0
B4509 EB to M5 SB	136	136	0	137	136	-1
B4509 WB Ahead at M5 NB Off-Slip	77	81	4	78	80	2
B4509 WB to M5 NB	67	73	6	70	73	3
M5 NB Off-Slip	1155	1206	51	1410	1409	-1
B4509 EB M5 Junction - M5 NB	394	396	2	396	398	2

4.4.3 In line with HE Policy, the core assessment is the comparison of the (year of opening) 2021 Reference and Test cases. Also in line with HE Policy, the Test Case includes the full development to identify the impact of this on the already committed development included within the Reference Case; although it is recognised that in reality the full development would not be completed by 2021. The 2028 forecast year scenarios are, in line with HE Policy, provided for information such that HE can better plan the management of their own network.

4.4.4 Comparing the 2021 Reference and Test cases during the AM peak, the model indicates that the largest predicted increase in maximum queue length on the SRN, is on the M5 northbound approach to the junction with the B4509, where queuing increases by 51m.

4.4.5 The existing off slip has an approximate length of 360m. In the 2021 Reference Case it is forecast there will be a queue of approximately 1.16 km. In the Reference Case it is therefore already predicted that queuing will extend beyond the slip road onto the M5 mainline carriageway by approximately 800m. With the additional traffic generated as a result of the development, the queue length is expected to increase by 51m to a maximum of 1.21 km, the

equivalent of approximately 9 vehicles. In the 2028 Reference and Test cases, there will be no increase in queue lengths on the southbound off-slip, and a decrease of 1m on the northbound off-slip. The proposed development will therefore have a negligible impact on the operation of the M5 in the AM peak in 2028.

4.4.6 It is clear that this queue will already extend beyond the slip road onto the mainline carriageway without the addition of development trips. This is on a straight section of the M5, with long forward visibility on the approach to the junction and back of the queue, mainline queuing is anticipated to increase from 800m to approximately 850m. In this context we consider that this small increase in queue length will be negligible and will not make a discernible difference over the Reference Case conditions, we therefore conclude that the development will not result in any additional safety issue in the AM peak hour.

4.4.7 In addition, people would adjust their travel behaviour in response, by travelling earlier or later (supported by more flexible working hours), route choice or by using alternative modes of transport.

4.4.8 It should also be noted that the above figures are based on the revised development trip distribution as requested by SGC. Our original trip distribution, which HE and PBA agreed was suitable for assessment, resulted in additional queueing on the M5 northbound off-slip of approximately 10m, the equivalent of approximately only 3 vehicles.

4.4.9 Whilst we conclude that the impact using SGCs traffic distribution remains negligible, it is clear that this is a particularly robust assessment and in reality we would expect the impact to be lower than that shown in this updated assessment.

4.4.10 During 2021 the modelling also indicates that the A38 northbound ahead queue will increase by 23 metres, approximately 4 vehicles on top of the existing queue of approximately 14 vehicles as a result of the development. PBA therefore consider that the proposed development will not have a significant impact on the operation of the M5 Junction 14 in the AM Peak on top of the already high levels of congestion identified within the 2021 Reference Case.

Table 4.5: PM Peak Maximum Queue Length (metres)

LOCATION	2021 PM Ref	2021 PM Test Case	Difference	2028 PM Ref	2028 PM Test Case	Difference
A38 SB to B4509 EB	1048	1065	17	1071	1071	0
A38 SB Ahead	663	846	183	911	910	-1
B4509 WB Junction with A38	128	136	8	141	153	12
A38 NB Ahead	36	40	4	56	79	23
A38 NB to B4509 EB	46	61	15	73	96	23
M5 Off-Slip to B4509 EB	84	84	0	93	94	1
M5 Off-Slip to B4509 WB	83	83	0	92	94	2
B4509 WB M5 Junction - M5 SB	957	991	34	1073	1073	0

LOCATION	2021 PM Ref	2021 PM Test Case	Difference	2028 PM Ref	2028 PM Test Case	Difference
B4509 EB Ahead at M5 SB Off-Slip	92	91	-1	108	111	3
B4509 EB to M5 SB	100	98	-2	108	108	0
B4509 WB Ahead at M5 NB Off-Slip	128	131	3	137	139	2
B4509 WB to M5 NB	113	115	2	122	123	1
M5 NB Off-Slip	124	133	9	144	152	8
B4509 EB M5 Junction - M5 NB	390	389	-1	389	390	1

4.4.11 During the 2021 PM peak, impacts on the SRN as a result of development traffic are very limited, with an increase of 9m, approximately 2 vehicles, on the northbound off-slip and no increase on the southbound off-slip. Queueing on the northbound off-slip is fully accommodated within the slip road extent and does not extend on to the M5 mainline carriageway, in both the Refence and Test Cases. There is therefore no impact on the safe operation of this junction in 2021 in the PM peak.

4.4.12 During the 2021 PM peak period, the largest increase in maximum queue is on the A38 southbound, which shows an increase of 183 metres between the Test Case and Reference Case scenario, which is approximately 32 vehicles.

4.4.13 As set out within the previous modelling note (5519-001 Thornbury TA – Forecast VISSIM Modelling), this level of queuing increase is disproportionate to the modest level of impact which would be expected from this development. We have therefore considered the nature of the model in general and considering the level of saturation identified. We consider that the modelling in this instance therefore likely does not present an accurate reflection of what may occur in the real world, as PTV VISSIM FAQs states:

> *'In a saturated network, minor changes may lead to big consequences. For instance, due to a slight variation of green time, the number of vehicles passing through may be one vehicle less per cycle. This vehicle might be the critical one which leads to a queue that builds up continuously during the simulation whereas in the other case, the green time was just sufficient to accommodate the entire demand. These effects can also be seen on the field, where normal day-to-day changes may lead to different traffic situations.*
>
> *A minor change (e.g. in lane change) can also lead to different results within the typical statistical boundaries. Generally speaking, a network which is not operating at capacity will react less to changes of the random seed.'*[1]

4.4.14 This model also does not consider that people would adjust their travel behaviour in response, by travelling earlier or later, route choice or by using alternative modes of transport. We therefore consider that the higher queueing shown on the A38 southbound in the PM peak is as a result of the saturated network struggling to accurately represent the true impacts of the modest development trips impacting on the model.

[1] PTV VISSIM FAQs: http://vision-traffic.ptvgroup.com/fr/sav-assistance/support/ptv-vissim/faqs/visfaq/search/

4.5 Modelling Summary

4.5.1 As a result of the analysis presented in this section, which considers latent demand, journey times and queuing, we conclude that the development will have minimal impact on the operation of junction, with no detriment to highway safety.

5 Summary and Conclusions

5.1.1 PBA, now part of Stantec, has produced this Technical Note to set out a response to comments and queries provide by Highways England in response to the application for development at Land West of Park Farm, Thornbury.

5.1.2 HE's comments focussed on the provision of measures within the Framework Travel Plan and on the VISSIM modelling undertaken for M5 Junction 14.

5.2 Travel Plan Summary

5.2.1 In response to HE's queries on the FTP, we set out in this note the measures which will have a direct influence in mitigating impact on the SRN. The FTP has also been updated in response to SGC's comments and therefore now includes further travel planning measures to encourage the use of sustainable transport, the FTP will therefore now have a greater impact on mitigating SRN bound trips than in the previous version. The FTP also provides targets to reduce the number of single occupancy vehicle trips associated with the proposed development along with a programme of monitoring and remedial actions, where necessary. We therefore consider that HE's queries with regards to the FTP have been suitably addressed and will now be in a position to agree to the FTP. A copy of the revised document is attached in Appendix A for information.

5.3 M5 Junction 14 VISSIM Modelling Summary

5.3.1 As a result of comments provided by Highways England's consultants Jacobs, and comments regarding the trip distribution of the development by South Gloucestershire Council, a revision of the VISSIM modelling has been undertaken. In this note we have outlined the specific comments related to the modelling and what amendments have been made. We have also summarised the key performance indicators as a result of the re-assessed junction modelling.

5.3.2 For the purpose of this note the 2021 scenarios provide evidence regarding the impact of the completed development on top of forecast growth in the opening year of 2021. The output of modelling in 2028, 10 years after application, is provided for information in line with HE policy. The impact of development has been considered against key performance indicators as follows:

- **Latent Demand** - The 'Test Case' modelling outputs shows that the latent demand when compared within the 'Reference Case' is predicted to increase by only 1% during the 2021 AM peak, and changes very little during the PM peak of the same forecast year. In 2028 the increase is 2% and 1% for the AM and PM peaks respectively. As such, for both forecast years, the inclusion of the development within the modelling is deemed to be negligible in its magnitude of latent demand.

- **Journey Time** - The modelling shows that the development is predicted to result in a negligible increase in travel time between the Reference and Test Cases, in both peak periods. On the M5 off-slips, which are the focus of HE's concerns at this junction, journey times are only predicted to increase by between 1 and 4 seconds in both 2021 and 2028, with an improvement predicted on the northbound off-slip during 2028 AM peak.

- **Queuing** - The modelling shows that development is predicted to only impact on the SRN in the 2021 AM peak hour, by increasing queues on the mainline, originating from the M5 north-bound off-slip. Queues are predicted to increase by approximately 51 meters, or 9 vehicles, over the Reference Case. However, as the queue length of 1.16 km forecast within the Reference Case extends beyond the slip-road on to the M5 mainline carriageway by approximately 800m, we consider that an increase of 51m, to 851m of

mainline queuing, would be indiscernible in any practical sense from the Reference Case conditions.

5.3.3 When reviewing the results of the modelling exercise there are a number of other important factors to consider;

- the mainline queuing takes place on a straight section of carriageway with long forward visibility to both the junction and full extent of the predicted queue;
- development trip generation is based on a proxy site in Thornbury, at SGC's request. This site has particularly high trip rates and there is no evidence of the site's Travel Plan strongly mitigating vehicle trips and therefore we would fully expect our proposals to have a lower vehicle trip rate when fully operational;
- the level of development traffic assessed in the modelling is higher than previously agreed between PBA and HE, due to SGCs very robust position on traffic assignment, we therefore consider that development trips through the model would be considerably lower than modelled;
- the modelling does not allow for any peak spreading, and instead attempts to load all trips within the peak hour. In reality, if the junction were to be operating over capacity we would fully expect future residents to moderate their behaviour to either change mode, chose not to travel or make their journey at a different time.

5.3.4 As such, based on the evidence provided above, it is PBA's position that the development at Land West of Park Farm, Thornbury will have a negligible impact on the operation and safety of the Strategic Road Network. The modelling demonstrates that the additional traffic will result in a 4% increase in queuing on the mainline in 2021, with no difference identified within the 2028 forecast model as a result of the already congested network. It is also important to note that the queuing on the M5 is very variable and as such PBA believe this to be negligible in its magnitude.

5.4 Conclusion

5.4.1 We have provided further clarity on the Framework Travel Plan and have re-run the VISSIM modelling taking on board HEs comments. The Framework Travel Plan is shown to have a number of measures which will mitigate traffic impact on the SRN. The modelling shows that development will have a negligible impact on operation of the SRN and there are a number of factors which mean that this impact will, in reality, be even lower.

5.4.2 As a result of the further analysis set out in this note we therefore conclude that the development would not result in a severe impact on operation, or an unacceptable impact on highway safety, on the SRN and that Highways England will now be in a position to reach a position of no objections on the application.

Appendix A Framework Travel Plan

now part of

Stantec

Land West of Park Farm, Thornbury

Framework Travel Plan

On behalf of **Barwood Development Securities Ltd & North West Thornbury Landowner Consortium**

Project Ref: 39209/5505 | Rev: C | Date: May 2019

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: 10 Queen Square, Bristol, BS1 4NT
T: +44 (0)117 332 7840 E: bristol@peterbrett.com

Document Control Sheet

Project Name: **West of Park Farm, Thornbury**
Project Ref: **39209/5505**
Report Title: **Framework Travel Plan**
Doc Ref: **003**
Date: **May 2019**

	Name	Position	Signature	Date
Prepared by:	Andi Adams	Apprentice Transport Planner	AA	02/07/18
Reviewed by:	Liz Keen / Rob Holloway	Engineer / Senior Associate	LK/RH	02/07/18
Approved by:	Michael Parkinson	Director	MP	7/11/18
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
A	Aug 2018	Team Comments	SEG	SEG	RH
B	16/11/18	Team comments	SG	SEG	RH
C	28/05/19	SGC Comments	KS	SEG	

Contents

Figures

Tables

Appendices

1 Introduction

1.1 Introduction

1.1.1 Peter Brett Associates LLP (PBA) has been commissioned by Barwood Development Securities Ltd & North West Thornbury Landowner Consortium (the Developer) to provide highway and transport advice in support of a mixed use residential-led development on Land West of Park Farm, Thornbury.

1.1.2 This Framework Travel Plan (FTP) has been prepared in accordance with the Planning Practice Guidance (PPG) and therefore provides an overview of the proposed development, sets out an assessment of the transport issues associated with the site, and identifies a package of transport measures aimed at encouraging sustainable travel, managing the existing transport networks and mitigating the residual transport impacts of the development.

1.1.3 This FTP is prepared in the context of outline planning permission for up to 630 dwellings and a retail/community hub on approximately 36Ha of land to the north west of Thornbury. There is also potential for a 1 Form Entry Primary School including early years provision to be developed on site in the future. The FTP primarily relates to the residential element on site, but provides a framework within which other uses on site will be required to operate.

1.1.4 This Report should be read in conjunction with the Transport Assessment (TA) that has also been prepared by PBA in support of the planning application.

1.2 Site Location and Development Proposals

1.2.1 The development site is located on approximately 36Ha of land to the north west of Thornbury. The site is bound by Oldbury Lane to the north, agricultural fields to the west and south, and a new development currently under construction to the east, known as Park Farm. The proposals comprise the following:

- Up to 630 residential dwellings;
- Land for a Neighbourhood Hub (to include up to 700sqm of retail and community uses);
- Two vehicular access junctions from Oldbury Lane; and
- A sustainable travel corridor, including bus, cycle and pedestrian links, south east through to the Park Farm development.

1.2.2 A copy of the illustrative masterplan of the proposed development is contained at **Appendix A**.

1.3 Type, Aims and Objectives of this Travel Plan

1.3.1 This Travel Plan constitutes a Framework Travel Plan. At this outline planning stage, the exact details of the site remain flexible and subject to change through the detailed design process. In accordance with best practice for mixed-use sites and travel plans for outline applications, a Framework Travel Plan (FTP) is the most appropriate type of travel plan.

1.3.2 This FTP will set out a holistic package of measures designed to reduce single occupancy car use associated with the proposed development, by supporting and providing alternative forms of transport. These measures will be integrated into the design, marketing, and occupation of the site. Therefore, the broad aims and objectives of the Travel Plan are to:

- Reduce reliance on the private car, with a strategy of mode shift away from single occupancy private car trips;
- Build upon good urban design principles that maximise the permeability of the development for promoting alternative sustainable modes of travel such as walking, cycling, public transport use and car-sharing; and
- Reduce road traffic congestion and damage to the environment through mitigating the impact of additional traffic generation through the use of sustainable transport measures, in line with the approach advocated by Government policy.

1.3.3 This FTP constitutes a working document that will be regularly reviewed and updated as part of a commitment to ensuring traffic impacts from the development are minimised.

1.4 Content of FTP Report

1.4.1 This report includes the following sections:

- Policy Review;
- Existing Transport Conditions;
- Proposed Travel Plan Measures; and
- Implementation, Monitoring and Targets;

2 Policy Review

2.1 Introduction

2.1.1 A review has been undertaken of both national and local transport policy documents in order to inform the development proposals. This section of the report sets out the key relevant policies and demonstrates how the development proposals accord and comply with these policies.

2.2 National Planning and Transport Policy Context

National Planning Policy Framework (NNPF) -2018

2.2.1 The revised National Planning Policy Framework (NPPF) came into force in July 2018 and replaced the 2012 edition of the NPPF. The presumption in favour of sustainable development remains the core objective of the NPPF (paragraph 10 states that "*So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development*").

2.2.2 To promote sustainable transport, paragraph 108 states that "In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a. appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b. safe and suitable access to the site can be achieved for all users; and

c. any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

2.2.3 Additionally, paragraph 111 of the NPPF states "All developments that generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."

2.2.4 In Section 9 'Promoting sustainable transport', paragraph 102 states that "Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

a. the potential impacts of development on transport networks can be addressed;

b. opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;

c. opportunities to promote walking, cycling and public transport use are identified and pursued;

d. the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

e. patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places."

2.2.5 Paragraph 109 of the NPPF states "Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe

Planning Practice Guidance

2.2.6 With particular relevance to this FTP, the Government's web-based Planning Practice Guidance (PPG) on *"Travel plans, transport assessments and statements in decision-taking"* has been reviewed.

2.2.7 This guidance note sets out section dedicated to *"Why [are] Travel Plans, Transport Assessment and Statements important"*, citing the following points:

- *Encouraging sustainable travel;*
- *Lessening traffic generation and its detrimental impacts;*
- *Reducing carbon emissions and climate impacts;*
- *Creating accessible, connected, inclusive communities;*
- *Improving health outcomes and quality of life;*
- *Improving road safety; and*
- *Reducing the need for new development to increase existing road capacity or provide new roads.*

2.2.8 The note specifies that it is linked directly to Paragraphs 17 (bullet point 11), 39 and 40 of the NPPF and explains that planning should actively manage patterns of growth in order to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are, or can be made, sustainable.

2.2.9 Under the section *"What key principles should be taken into account in preparing a Travel Plan, Transport Assessment or Statement?"* the note states that *'Travel Plans, Transport Assessments and Statements should be:*

- *Proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;*
- *Established at the earliest practicable possible stage of a development proposal;*
- *Tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and*
- *Brought forward through collaborative ongoing working between the local planning authority/Transport Authority, transport operators, Rail Network Operators, Highways England (formally Highways Agency) where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).'*

2.2.10 The Guidance also sets out the ways in which these documents can be made to be as useful and accessible as possible – by ensuring that any information or assumptions should be set out clearly and be publicly accessible.

2.2.11 Under the section *"When is a Travel Plan Required?"* the note lists considerations that Local Authorities should take when deciding whether a Travel Plan is required for a given site. The following considerations are of relevance to the site:

- *The scale of the proposed development and its potential for additional trip generation;*
- *Existing intensity of transport use and the availability of public transport;*
- *Impact on other priorities / strategies (such as promoting walking and cycling;*
- *The cumulative impacts of multiple developments within a particular area;*
- *Whether there are particular types of impacts around which to focus the Travel Plan (e.g. minimising traffic generated at peak times); and*
- *Relevant national policies, including the decision to abolish maximum parking standards for both residential and non-residential development.*

DfT Circular 02/13: The Strategic Road Network and the Delivery of Sustainable Development'

2.2.12 This document sets out the way in which Highways England (formally Highways Agency) will engage with communities and the development industry to deliver sustainable development whilst safeguarding the primary function and purpose of the strategic road network. With regards to Travel Plans, the Circular states in para 28:

- *"The preparation and implementation of a robust travel plan that promotes use of sustainable transport modes such as walking, cycling and public transport is an effective means of managing the impact of development on the road network, and reducing the need for major transport infrastructure."*

2.3 Local Planning and Transport Policy

West of England, Joint Local Transport Plan 3 (2011-2026)

2.3.1 The Joint Local Transport Plan 3 (JLTP3) sets out the policy framework for the period between 2011 up to 2026. The JLTP3 was formally adopted by South Gloucestershire Council, Bristol City Council, North Somerset Council and Bath and North East Somerset Council in 2011.

2.3.2 Its vision is for a transport system that strengthens the local economy, improves access, ensures alternatives to the car are a realistic first choice as well as being affordable, safe, secure, reliable, simple to use and available to all. To deliver the JLTP3, South Gloucestershire Council are working with the other WoE authorities, the WoE Local Enterprise Partnership, Highways England, Network Rail and public transport operators.

2.3.3 The JLTP3 mentions the importance of travel planning in addressing travel to work and states, at Section 5.2, that the WoE authorities are seeking to reduce carbon emissions by focussing on travel plans, personalised travel planning, improvements to walking and cycling, public transport enhancements and the integration of travel modes.

South Gloucestershire Core Strategy (2006 - 2027)

2.3.4 The South Gloucestershire Development Plan comprises three documents, one of which is the Core Strategy 2006-2027 which was adopted on 11th December 2013. The Core Strategy is the key document forming the strategic vision for South Gloucestershire. It sets out the vision for the area based on evidence, community objectives and the detailed spatial strategy for future development in South Gloucestershire to 2027.

2.3.5 The Core Strategy sets out the general location of development, its type and scale, as well as the strategy for protecting what is valued about the area.

2.3.6 Policy CS8 – Improving Accessibility – states the following with regards to promoting sustainable travel options:

'3. Provision and Promotion of sustainable travel options. All new development proposals of a sufficient scale will be encouraged to reduce greenhouse gas emissions, travel demand and support travel by means other than the private car, particularly to significant destinations such as educational establishments, hospitals, rail stations, bus interchanges and employment areas. This will be achieved through

- *the provision of, and integration of walking, cycling and public transport infrastructure into the local network;*
- *providing mixed use developments in appropriate locations;*
- *the active promotion of a Green Travel Plan approved by the Council;*
- *the provision of shower and changing facilities for use by staff in commercial and business premises;*
- *contributions to bus services, and other initiatives such as commuter and car clubs and community transport projects, as appropriate;*
- *access to high speed broadband and installation of electrical sockets, storage and sufficient space in dwellings such that allows homeworking;*
- *provision of facilities for charging plug-in or other ultra low emission vehicles.*

The Council will expect early implementation of sustainable travel infrastructure and initiatives in the construction and occupation of major schemes'

2.3.7 The priority of this Policy is to provide '*users of new development with a range of travel options other than the private car*'.

2.3.8 Section 15 of the Core Strategy looks specifically at Thornbury. The policies relating to transport in the vicinity of the proposed site are set out below;

Policy CS32 – Thornbury:

"9. maximise opportunities for sustainable travel by improving the legibility and publicity of bus routes through the town and enhancing opportunities for walking and cycling to, from and within the town and town centre"

South Gloucester Policies, Sites, and Places Plan (adopted November 2017)

2.3.9 The South Gloucestershire Policies, Sites and Places Plan Development Plan Document (DPD) (adopted November 2017) also forms part of the South Gloucestershire Development Plan. The DPD guides future planning decisions in the district.

2.3.10 The Policies, Sites and Places Plan DPD list 46 Development Management policies. With reference to travel planning, Policy PSP11 – Transport Impact Management states that development proposals will be acceptable where:

…9. Potentially significant transportation impacts are accompanied by an appropriate Transport Assessment and where necessary a Travel Plan."

2.3.11 Paragraph 7.28 states that:

"…developments over 5,000m2 will be required to submit a Transport Assessment and Travel Plan."

2.3.12 Paragraph 7.29 states:

"All developments that fall into the following thresholds will be required to submit an appropriate Transport Assessment or Statement (and a Travel Plan, where necessary):

a) 30 or more two-way vehicle movements in any hour;

b) 100 or more two-way vehicle movements per day;

c) 100 or more parking spaces;

g) is a development likely to increase accidents or conflicts among motorised users and non-motorised users, particularly vulnerable road users such as children, disabled and elderly people, which will be required to submit a Travel Plan, in addition to a Transport Assessment."

2.3.13 Policy PSP11 relates to the management traffic from development proposals including appropriate walking and cycling distances, and requires that for developments*:*

"where some key services and facilities are not accessible by walking and cycling, are located on safe, useable walking routes, that are an appropriate distance to a suitable bus stop facility, served by an appropriate public transport service(s), which connects to destination(s) containing the remaining key services and facilities; and…

Potentially significant transportation impact are accompanied by an appropriate Transport Assessment and where necessary a Travel Plan."

2.3.14 The appropriate walking and cycling distances as defined by PSP11 are replicated in **Table 2.1**.

Table 2.1: Proximity to key service and facilities

Key services and facilities (PSP11)	Appropriate walking and cycling distances (PSP11)
Retail (comparison) shops and services and/or Market towns and Town Centres (CS14 of Core Strategy)	1,200 metres
(Weekly) Superstore or supermarket	
(Day to Day) Smaller food (convenience) shops	
Local health services	800 metres
Pharmacy	800 metres
Dedicated community centres (defined by SGC)	800 metres
Post office	800 metres
Public House	800 metres
Secondary school	3 miles
Primary school	2 miles
Major employers. Designated Town Centres and Safeguarded Employment Areas (CS12 of Core Strategy)	2,000 metres

West of England Joint Transport Study (2017)

2.3.15 The WoE Joint Transport Study (JTS, 2017) was prepared to provide a direction for long-term development of the transport system in the WoE to 2036 and beyond.

2.3.16 The WoE Transport Vision, set out within the JTS, identifies a new MetroBus and strategic cycling route on the A38 corridor to improve connectivity between Bristol and Thornbury.

2.3.17 In addition, improvements to M5 J14 are identified as part of a package of enhancement measures along the M5 motorway, and a new Park and Ride is proposed on the A38 between Thornbury and Almondsbury.

2.3.18 Developer funding, via S106 agreements and/or CIL are listed within the potential funding sources for these schemes.

Draft West of England Joint Spatial Plan

2.3.19 The WoE Joint Spatial Plan (JSP) has been prepared in parallel with the JTS. The Draft Plan was submitted to Examination in April 2018; with the Examination in Public anticipated on the Submission document to take place in Spring/Summer 2019.

2.3.20 The proposed vision within the JSP for the WoE is:

"By 2036 the WoE will be one of Europe's fastest growing and most prosperous city regions with the gap between disadvantaged and other communities closed and a rising quality of life for all… Patterns of development and transport will facilitate healthy and sustainable lifestyles. Provision of a range of housing types, will be of high quality and more affordable. Existing and new communities will be well integrated, attractive and desirable places and supported by the necessary infrastructure. New development will be designed to be resilient to, and reduce the impacts of climate change."

2.4 Relevance to the proposed development

This FTP has been developed with consideration of the travel planning policies identified above.

3 Existing Transport Conditions

3.1 Introduction

3.1.1 This section considers the existing transport conditions in the vicinity of the development site. It provides details of the site's location, its proximity to local facilities and amenities and its accessibility by walking, cycling and public transport, as well as providing an overview of the operation of the local highway network.

3.2 Site Location and Description

3.2.1 The site is located to the north west of Thornbury, which is approximately 19km north of Bristol city centre, in South Gloucestershire.

3.2.2 Thornbury is a market town with access to the A38, a north-south strategic corridor connecting to Bristol to the south and Gloucester to the north.

3.2.3 The site is presently agricultural fields, adjacent to a housing development currently under construction to the east, Park Farm. The site is south of Oldbury Lane and is bound on the western and southern sides by further agricultural fields.

3.2.4 The site's location in the context of the local and strategic highway network is illustrated in **Figure 3.1**.

3.3 Local Facilities and Amenities

3.3.1 Thornbury is a busy market town on the edge of the Cotswolds and Greater Bristol. As discussed above, the town has good access to both the M4 and M5 motorways and the A38. **Figure 3.2** demonstrates the accessibility of the site to key facilities and amenities. The following paragraphs summaries the facilities and amenities in the local area which are accessible to potential future residents.

3.3.2 In line with the local policy requirements set out within SGC's 'The Policies, Sites and Places Plan (PSP Plan, November 2017) the distances used here are 'as the crow flies' distances. As requested by SGC during scoping discussions distances have been provided from the nearest and furthest parts of the proposed site, and hence the range in figures quoted.

Amenities

The nearest convenience shops are located in Thornbury Town Centre, the edge of which is 1.4-2.0km walking distance from the site. The town centre includes Aldi supermarket and other convenience and comparison stores. The nearest public house, Anchor Inn, is also 1.0-1.6km to the east of the site, on Gloucester Road.

Employment

3.3.3 Thornbury Town Centre, 1.4-2.0km southeast of the site, hosts many independent and chain shops, cafes and services. These facilities provide good opportunity for local employment. In addition, the Safeguard Employment Area at the north of the Town Centre is 2.3-2.9km from the site Further south of the Town Centre is a large industrial estate, accessed from Midland Way, which hosts various businesses. The edge of the industrial estate is 2.0-2.6km from the site.

3.3.4 Outside Thornbury, Greater Bristol is to the south and Gloucester to the north. Both areas have a wide range of employment opportunities.

Education

3.3.5 The nearest primary school to the site is Manorbrook Primary School, which accommodates children from 5 – 11 years old and is located approximately 0.8-1.5km walking distance. The nearest secondary school is The Castle School, which is a 0.8-1.4km walking distance south of the site. The school accommodates pupils from 11 – 18 years of age.

Health

3.3.6 Thornbury Hospital is located 1.2-1.8km south east of the site. The Hospital includes an in-patient rehabilitation ward, and outpatient department and physiotherapy suite. Adjacent to the Hospital is the Thornbury Health Centre.

Community Centres

3.3.7 There are three identified Community Centres in Thornbury; Armstrong Hall, Turnberrie's and The Chantry, the closest of which is 1.1km from the application site.

Leisure

3.3.8 Opposite the site, on Oldbury Lane, is Oak Leaf Nurseries, a plant nursery which has a wide variety of garden shrubs for sale. Thornbury also has a local Rugby/Football club located 1.0-1.8km to the north on Gloucester Road. Thornbury Leisure Centre sits 2.3-2.9km south of the site. The Centre hosts many different fitness classes and contains a swimming pool, a gym, squash courts and Bowls Hall.

Walking Distances Guidance

3.3.9 **Table 3.1** lists key services and facilities and their appropriate walking and cycling distances as defined by the PSP Plan (PSP11). The corresponding distance from Land West of Park Farm site is provided for comparison. As previously stated, these are 'as the crow flies' distances for consistency with the PSP Plan.

3.3.10 As above, distances have been provided from the nearest and furthest parts of the proposed site.

Table 3.1: Proximity to key service and facilities

<table>
<tr><th rowspan="2">Key services and facilities (PSP11)</th><th rowspan="2">Appropriate walking and cycling distances (PSP11)</th><th colspan="2">Distance from Land West of Park Farm</th></tr>
<tr><th>Nearest residential area</th><th>Furthest residential area</th></tr>
<tr><td>Retail (comparison) shops and services and/or Market towns and Town Centres (CS14 of Core Strategy)</td><td rowspan="3">1,200 metres</td><td rowspan="2">1,398 metres to edge of town centre</td><td rowspan="2">1,973 metres to edge of Town Centre</td></tr>
<tr><td>(Weekly) Superstore or supermarket</td></tr>
<tr><td>(Day to Day) Smaller food (convenience) shops</td><td colspan="2">Potential convenience shop(s) on-site – within 530m of whole site.</td></tr>
<tr><td>Local health services</td><td>800 metres</td><td colspan="2">Potential facility on-site - within 530m of whole site.</td></tr>
</table>

Key services and facilities (PSP11)	Appropriate walking and cycling distances (PSP11)	Distance from Land West of Park Farm	
		Nearest residential area	Furthest residential area
Pharmacy	800 metres	1,355 metres (Eastland Road)	1,995 metres (Eastland Road)
Dedicated community centres	800 metres	Potential for community centre on site - within 530m of whole site.	
Post office	800 metres	1,447 metres	2,020 metres
Public House	800 metres	1,029 metres	1,646 metres
Secondary school	3 miles	0.49 miles (803 metres)	0.88 miles to entrance (1,443 metres)
Primary school	2 miles	0.25 miles (832 metres)	0.92 miles (1,509 metres)
Major employers. Designated Town Centres and Safeguarded Employment Areas Thornbury Town Centre and Safeguarded Employment Site Thornbury Industrial Estate	2,000 metres	1,398 – 1,975 metres	1,973 – 2,600 metres

3.3.11 **Table 3.2** shows that education and some employment facilities are within the appropriate walking and cycling distances defined by the PSP Plan. It also highlights the need for additional facilities and amenities to be provided at part of the proposed site.

3.3.12 In addition to local level policy, the proximity of facilities and amenities can be considered at the national level. In this regard, the most recent transport statistics are set out within the DfT's 'National Travel Survey: 2016' (NTS).

3.3.13 This indicates that 25% of all journeys and 80% of journeys under one mile (1.6km) are made by foot. Table NTS0306 within the NTS also indicates that the average walking trip length is 0.7miles (1.3km).

3.3.14 In addition, national guidance on this issue is provided by Manual for Streets (MfS) which, at Para 4.4.1, states that:

"Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' [up to about 800m] walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPG13 states that walking offers the greatest potential to replace short car trips, particularly those under 2km.'

3.3.15 Whilst MfS suggests that the greatest potential to replace short car trips is for those under 2km, this is not a maximum distance to which pedestrians are willing to walk. The NTS (at Table NTS0308) also identifies that 26% of walking trips are over 1 mile (1.6km) and 4% over 2 miles (3.2km) in length.

3.3.16 The Local Transport Note (LTN) 1/04 – Policy, Planning and Design for Walking and Cycling provides further guidance stating that:

"There are limits to the distances generally considered acceptable for utility walking and cycling. The mean average length for walking journeys is approximately 1 km (0.6 miles) and for cycling, it is 4 km (2.4 miles), although journeys of up to three times these distances are not uncommon for regular commuters. The distances people are prepared to walk or cycle depend on their fitness and physical ability, journey purpose, settlement size, and walking/cycling conditions".

3.3.17 Again, this is reiterated and substantiated in the recent NTS, which identifies that the average trip length by bicycle is 3.1 miles (5.0km). Furthermore, Table NTS0308 identifies that 86% of all cycle trips are over 1 mile (1.6km) and 57% over 2 miles (3.2km). A total of 79% of all cycle journeys are made over distances less than 5 miles (8km).

3.3.18 Together, these statistics demonstrate that 81% of all trips under 1 mile (1.6km) are by walking and cycling, and indeed, over half (61%) of all trips under 2 miles are by walking and cycling.

3.3.19 As set out in **Table 3.2**, all identified services and facilities are within 1.6km of the nearest residential area. Considering the distances to local facilities detailed above, in light of these national statistics, suggests that the great majority of facilities within Thornbury could be accessed on foot or by cycle, and by the majority of people, wtihin the proposed development.

3.4 Walking and Cycling Links

3.4.1 The site is located on the edge of the existing built-area of Thornbury, such that there is little existing provision for pedestrians and cyclists. Oldbury Lane has no dedicated pedestrian or cycle facilities; however, footways are provided along Butt Lane, throughout the existing residential areas of Thornbury and as part of the adjacent Park Farm site.

3.4.2 As shown in **Figure 3.2** there are two Public Rights of Way (PRoW) through the site. OTH/13 crosses the site west to east and connects to the existing residential area in north Thornbury. OTH/18 crosses the northeast corner of the site and runs north-south through the adjacent Park Farm development. The wider PRoW network connects OTH/18 to the Castle Secondary School via its playing fields. The PRoW runs through the school's playing fields and becomes a surfaced, lit footpath running between residential properties and the school, with a 1.5m width, with access onto Park Road. Along the footway on Park Road, pedestrians can access the Castle School.

3.4.3 There is a wider network of footpaths throughout the existing residential area in north Thornbury. Three footpaths are shown on **Figure 3.2** which facilitate pedestrian movement from northwest Thornbury to the Town Centre. These are formal routes which are lit, of generous width at 1.5-2.0m wide, and are generally of good quality, with some localised unevenness. These footpaths are not adjacent to highway, running between residential streets or through wooded areas. Where the footpaths meet the carriageway, dropped kerbs are provided to facilitate crossing.

3.4.4 A number of predominantly informal pedestrian crossing points are provided along Gloucester Road between Butt Lane and town centre. A zebra crossing is also provided on Gloucester Road between the aforementioned footpath and Thornbury Hospital, health centre and pharmacy.

3.4.5 Cyclists are generally required to travel on-carriageway in Thornbury. There are cycle symbols on the carriageway, in the vicinity of The Castle Secondary School and Manorbrook Primary School which is the route of National Cycle Route (NCR) 410 (Avon Cycleway), but little in the way of dedicated cycle infrastructure. NCR 410 is well sign-posted.

3.4.6 In addition to NCR 410, NCR 41 and a Local Cycle Route (Thornbury Loop) lie within 1km of the centre of the site. These routes connect Thornbury to Bristol and Gloucester and are a combination of on- and off-road.

3.5 Public Transport

Bus

3.5.1 The nearest existing bus stop to the site is situated within an 800m walk distance on Manor Walk, off Parkland Way, and is served by bus service 77 four times a day in each direction. The bus stop is equipped with a flag and pole and timetable information. The next nearest stop for service 77, which operates throughout the day, is within 1300m on Morton Way, which is served at an hourly frequency Monday – Saturday. Bus service 77 provides access to Thornbury Town Centre and Bristol City Centre.

3.5.2 Bus services 60 and 622 serve bus stops on Park Road, off Alexandra Way, approximately 1km from the site. The services provide access to Cribbs Causeway, Gloucester, Chipping Sodbury and Dursley. The 60 bus has six services Monday to Saturday, between 07:15 and 17:30. The 622 has eight services per day between 07:44 and 18:34, Monday to Friday, with seven services on a Saturday and three on a Sunday. The bus stops are equipped with a flag and pole and timetable information.

3.5.3 First in Bristol Bath & The West began operating two new services, T1 and T2, on 27th May 2018. Both services operate from Thornbury Health Centre, within 1500m of the proposed development, to Thornbury Town Centre. The T1 then routes to Bristol City Centre, via Bradley Stoke and M32, while the T2 routes to Bristol City Centre via Filton Airfield and A38 Gloucester Road. The combined frequency of these routes is 3 per hour, with T1 operating half hourly and T2 operating hourly Monday - Sunday. The current journey times from Thornbury Health Centre on the T1 is 4 minutes to Thornbury Town Centre and 55 minutes to Bristol City Centre.

3.5.4 The bus services operating in the vicinity of the site are summarised in **Table 3.2** below and shown in **Figure 3.3**.

Table 3.2: Local Bus Services and Frequencies

Operator	Service	Route	Frequency		
			Mon - Fri	Sat	Sun and Bank Holiday
Stagecoach West	77	Bristol City Centre – Westbury – Southmead Hospital – Bristol Parkway Station - Thornbury	Every 60 mins (06:15 – 18:02) (4 services per direction to Manor Walk)	Every 60 mins (06:25 – 18:00) (4 services per direction to Manor Walk)	No service
Stagecoach West	60	Gloucester – Dursley – Wotton-under-Edge – Thornbury	Six per day (07:15 – 17:30)	Six per day (07:15 – 17:30)	No service
Stagecoach West	622	Chipping Sodbury – Yate - Thornbury –- Cribbs Causeway	Eight per day (07:44 – 18:34)	Seven per day (08:01 – 17:11)	Three per day (11:06 – 16:16)

Operator	Service	Route	Frequency		
			Mon - Fri	Sat	Sun and Bank Holiday
First Bristol, Bath & The West	T1	Thornbury – Bradley Stoke – Aztec West - Bristol City Centre (Colston Street)	Every 30 minutes (06:08 – 20:12)	Every 30 minutes (06:12 – 19:08)	Every 60 minutes (07:50 – 18:03)
First Bristol, Bath & The West	T2	Thornbury – Filton Airfield – Cribbs Causeway –- Bristol Bus Station	Every 60 minutes (05:30 – 00:38)	Every 60 minutes (05:30 – 00:38)	Every 60 minutes (07:10 – 00:38)

Source: Travelline South West (http://www.travelinesw.com/)
Note: Bus routes and frequencies correct as at November 2018.

3.5.5 **Table 3.2** indicates that the local area is served by a number of bus routes which together provide four services per hour to Bristol City Centre, 1-2 services per hour to Cribbs Causeway, one service per hour to Southmead Hospital, and access to Gloucester and Chipping Sodbury every 1.5 – 2 hours during the weekday daytime. Buses can also be used to make internal connections within Thornbury for facilities further away from the site, such as the Leisure Centre.

3.5.6 SGC's Local Plan Policy PSP11 sets out an appropriate distance to a suitable bus stop and appropriate frequencies for public transport services connecting to destinations containing key services, facilities and employment opportunities. These are:

- Appropriate distance to a bus stop of 400m; and
- Appropriate service of:

  i. Individual or combined services, total journey time under 1 hour; and
  ii. at least 5 services a day during the week, 3 at weekends, to and from the destination; and
  iii. during the week; one service arriving at the destination before 9am, and one leaving after 5pm.

3.5.7 A comparison of **Table 3.2** and **Figure 3.3** against PSP11 highlights the need for an appropriate bus service within 400 metres of the proposed development. The existing T1 service, satisfies the service frequency set out within PSP11, however the nearest stop is currently approximately 800m walk distance on Manor Walk 1500m from the proposed development.

3.5.8 There are two committed bus improvement schemes in Thornbury which have associated infrastructure and public transport commitments. The following commitments are pertinent to the proposed development.

- Bus service extension through the Park Farm development (PT11/1442/O) connecting to the existing highway at Butt Lane and Alexandra Way (see next bullet). The Park Farm Section 106 Agreement listed routes 309/301 and 615 to be routed through the site; these routes have subsequently been amended and are replaced by T1/T2 and 77.
- Construction of a bus only link between the southern boundary of Park Farm and Alexandra Way; secured through a legal agreement between the developers of Park Farm, SGC and relevant landowners (dated 24th March 2015)

3.5.9 It is unclear at the time of writing exactly which bus service(s) will be extended to serve Park Farm as the routes listed at the time of planning permission (309/301, 615) now go under different route numbers (T1/T2 and 77). From discussions with local bus operator First in June 2018, it is considered that the T1 would be the more appropriate route to extend to Park Farm given its most direct routing to Bristol City Centre.

3.5.10 The proposed route would mean that part of the Park Farm development will no longer be served in the same circular way as currently planned, as some of the committed Park Farm route would be bypassed. The bus stops within the Park Farm site not within the proposed route would be relocated such that all of the development in both sites would remain within 400m of the proposed route, which is the typical desirable distance to a bus stop.

Rail

3.5.11 There are several Rail Stations located within 12.5km of the site. Bristol Parkway Station is located 12.3km south of the site, the rail station can be accessed by bus service 77 from Manor Way which provides direct access to the Rail Station and connections to destinations further afield. Rail services at the Station are provided by Great Western Railway who provide most of the services available. Services are provided to a wide variety of destinations including London Paddington, Plymouth, Aberdeen, Cardiff, Manchester and a range of local destinations.

3.5.12 In addition, Yate and Pilning are located under 11.5km to south east and south west of the site, respectively. Yate Rail Station can be accessed by bus service 622 from Alexandra Walk which provides access to Yate town centre, within a short walk of the Rail Station. Rail services at Yate Rail Station are provided by Great Western Railway. Services from Yate Rail Station are provided to a wide variety of destinations including Weymouth, Westbury, Bath, Bristol Temple Meads, Gloucester, Brighton and Frome.

3.6 Local Highway Network

3.6.1 The site has direct frontage onto Oldbury Lane which is a single carriageway road with grassed verges on either side and is not street lit. The road is rural in nature, but large sections are kerbed with highway drainage. Several private dwellings and small businesses take access from Oldbury Lane, however there is no footway provision. Oldbury Lane is currently subject to the national speed limit.

3.6.2 Oldbury Lane provides a connection from the north of Thornbury to the small village of Oldbury on Severn, running in an east west direction.

3.6.3 To the east of the site, Oldbury Lane leads to Butt Lane, which is also a single carriageway road with one lane in each direction. The speed limit reduces to 30mph at the Oldbury Lane end of Butt Lane. New residential developments, and more established residential areas, have access off Butt Lane which forms a staggered priority junction with Gloucester Road.

3.6.4 Gloucester Road is an urban road, with a 30mph speed limit, which extends from the centre of Thornbury, and meets the A38, north east of Thornbury, near the village of Whitfield. Gloucester Road has dwellings directly fronting onto the carriageway and is street lit between Butt Lane and the centre of Thornbury.

3.6.5 To the east and south east of Thornbury, the town connects to the A38 at two further locations, via signalised junctions, the A38/B4061 junction at Alveston, and A38 / Grovesend Road / Tytherington Road junction. The A38 is a strategic A road, with varying speed restrictions, which runs from Devon to the Midlands, providing access to Bristol.

3.6.6 To the east of the A38 is the M5. Thornbury residents can access the M5 at Junction 14, near Falfield to the north, or at Junction 16 near the M4 / M5 interchange to the south. The M5 runs between Exeter and Birmingham, it therefore provides an alternative route to Bristol south of the site and Gloucester to the north.

4 Proposed Travel Plan Measures

4.1 Introduction

4.1.1 The Travel Plan measures proposed are consistent with initiatives contained in the National and Local travel planning policy and guidance and draw upon the Department for Transport's Guidance on Best Practice Guidelines for Travel Plans.

4.1.2 The objective of this FTP is to reduce single occupancy car use originating from the development by providing for, and promoting, alternative forms of transport. The FTP seeks to encourage residents to travel by sustainable modes by providing a comprehensive travel awareness package to make residents aware of the sustainable travel opportunities available to them.

4.1.3 The following section sets out the package of potential measures to accompany the development proposals, some of which could be implemented prior to occupation and others upon occupation. A Travel Plan Co-ordinator (TPC) will be appointed to manage and deliver all aspects of the Travel Plan. The role of the TPC is discussed in more detail in **Section 5.3**.

4.2 Encouraging Residents to Make Journeys by Non-Car Modes

Sustainable Travel Vouchers

4.2.1 The TPC will review the potential to provide Sustainable Travel tickets or vouchers. Under such a scheme each dwelling on the site would be eligible to apply for tickets or vouchers for use on local services or at local facilities; the sum of which would be determined through liaison with South Gloucestershire Council (SGC). The choice of options would allow residents to identify the sustainable mode or modes of travel that they are most likely to use or to split the money between different members of the household; thereby assisting in encouraging modal shift away from the private car.

4.2.2 Sustainable Travel Vouchers (STV) can be used to purchase items that encourage and support residents to make sustainable travel choices including, but not limited to, bus tickets, rail tickets, waterproof clothing and bicycles. The complete list will be agreed with SGC in advance during preparation of the Residents Travel Information Pack and will be reviewed on an annual basis.

4.2.3 Examples of potential provision are as follows:

- Pre-paid bus tickets – the Travel Plan Co-ordinator would provide a list of all bus ticket options that will be available to residents;
- Cycle vouchers – these would be provided in the form of a gift voucher for use at a list of agreed shops and will enable residents to make payment towards a bicycle or safety equipment; and/or
- Walking vouchers – these would be provided for use at a list of agreed shops and will enable residents to make payment towards waterproof clothing or walking shoes.

4.2.4 Residents would need to complete an application form (which could be provided within their Residents' Travel Information Pack, which is covered in more detail later in the report, or via an electronic alternative), setting out their required voucher mix. Their vouchers will be delivered to their home by the Travel Plan Coordinator within one month of submitting the approved application form. For the walking and cycling vouchers, where possible, the Travel Plan Coordinator could make arrangements with a number of retailers within the local area

that are accessible by walking, cycling or by public transport (to avoid the need for residents to drive to access these shops and to support local facilities).

4.2.5 The exact process for delivering the STV Scheme will be agreed with SGC in advance. However, this could be administered in the following way:

1. Residents review the list of eligible items (agreed with SGC in advance and included in the Travel Information Pack)
2. Residents make contact with the TP Co-ordinator if they require something not on the list.
3. TP Co-ordinator decides whether to support that item using a decision-making Matrix (to be agreed in advance with SGC).
4. Resident then purchases the items to the value of the STV for their dwelling, competes the STV Application form (agreed in advance with SGC and included in the Travel Information Pack) and submits a copy of the Receipt.
5. The TP Co-ordinator then provides a refund for the amount within 4 weeks of submission of Voucher Claim.

4.2.6 Residents will be asked to complete a short travel survey when they apply for their STV in order to record their selection and monitor any changes in travel as a result.

4.2.7 In addition to the above, a question in the annual travel survey (see **Section 5**) could ask about which modes of travel residents would prefer to receive vouchers for – the intention being, to tailor future travel offers to meet future residents' needs (i.e. residents of later phases) and to break down barriers to sustainable travel.

Provision of Secure Cycle Storage and Parking

4.2.8 Cycle parking will be provided in accordance with SGC's cycle parking standards as set out in PSP16 of SGC Local Plan: Policies, Sites and Places Plan (November 2017). The cycle parking requirements for which are set out in the PSP16, are summarised in **Table 4.1**; these are minimum parking standards. Where provided cycle parking will be secure and covered.

Table 4.1: Cycle Parking Standards (PSP16 Schedule A)

Type of land use	Per	Proposed cycle parking standards (minimum)
Newly built dwellings with garage (C3)	1 bed space / bedroom unit	1 (provided garage design accommodation both car and cycle storage). Otherwise 1 secure, undercover space
	2 or more bedrooms	2 secure, undercover spaces
Newly built dwellings without garage	1 bed space / bedroom unit	1 secure, undercover space
	2 or more bedrooms	2 secure, undercover spaces
Flats (C3)	unit	1 secure, undercover space

4.2.9 Cycle parking for any community or retail uses on site, will also be provided in line with the standards set out within PSP16 Schedule A.

4.2.10 The provision of cycle storage and parking will be delivered as part of future detailed reserved matter applications. Lockers and changing facilities will be provided, where appropriate.

Sustainable Travel Corridor

4.2.11 A Sustainable Travel Corridor will be provided in the south east corner of the proposed development; the closest point of the site to the facilities within Thornbury. The Corridor will provide a bus only access into the development, with a shared foot/cycleway adjacent to the northern carriageway. The Corridor will link the proposed development to adjacent committed development, Park Farm and through this scheme to existing connections in the town.

4.2.12 The Sustainable Travel Corridor comprises a bus only carriageway which is 6.5m in width, to allow for two-way bus movement in the future as appropriate, and a 3.0m shared footway / cycleway on the northern side, which connects into the committed carriageway and footway on Park Farm. The design speed of the link is 20mph which is enforced by a priority pinch point.

Provision of Continuous and Safe Walking and Cycling Links

4.2.13 Footways will be provided adjacent to all roads within the site, other than where highway is designed to support equal priority to all road users i.e. such as in courtyards or at the culmination of Cul de Sacs. The exact layout on-site will be determined through the reserved matters process.

4.2.14 The site will provide safe, well-designed onwards walking and cycling connections. As described above, a 3.0m shared foot / cycleway will be provided as part of the Sustainable Travel Corridor, connecting into the adjacent committed development Park Farm. From Park Farm, users of the proposed development will be able to access the full range of key facilities and services in the local area, including those in the Town Centre. Although the exact details of the route will be confirmed through the reserved matters process, it is envisaged that the route will be lit and surfaced with a bound material.

Public Transport Improvements

4.2.15 As previously set out in **Section 3.5**, the site is accessible by bus with existing services offering connections to key destinations such as Thornbury Town Centre, Cribbs Causeway, Southmead Hospital, Bristol City Centre. The nearest existing bus stops to the site are between 800 – 1500m of the proposed development. This exceeds the typical desired distance to a bus stop of 400m, as set out in SGC's Local Plan Policy PSP11. The committed extension of bus services through the Park Farm development will ensure that bus stops can be provided within 400m walk of the site.

4.2.16 First in Bristol Bath & The West service T1 operates a half hourly frequency (Monday-Saturday) from Thornbury Health Centre to Thornbury Town Centre before routing to Bristol City Centre, via Bradley Stoke and M32. The current journey time from Thornbury Health Centre is 4 minutes to Thornbury Town Centre and 55 minutes to Bristol City Centre. This service currently satisfies the appropriate service requirements of PSP11 (detailed in full **Section 3.6**), however the neatest stop is located within 1500m of the proposed development.

4.2.17 There is a need, under PSP11, to provide an appropriate public transport service from the proposed development to key facilities and services, namely comparison retail, and a supermarket, pharmacy, post office and public house.

4.2.18 As detailed further in the TA, a bus service extension is committed through the Park Farm development (PT11/1442/O) connecting to the existing highway at Butt Lane and Alexandra Way. It is unclear at the time of writing exactly which bus service(s) will be extended to serve Park Farm as the routes listed at the time of planning permission (309/301, 615) now go under different route numbers (T1/T2 and 77). From discussions with local bus operator First in June

2018, it is considered that the T1 would be the more appropriate route to extend to Park Farm given its most direct routing to Bristol City Centre. The following public transport strategy has been developed on this basis.

4.2.19 In this context, two public transport strategies have been developed, the Proposed Strategy includes reliance on the committed Alexandra Way bus link connection. We have also developed an Alternative Strategy which would facilitate the development coming forward in advance of the Alexandra Way bus link being completed, if this proves necessary.

Proposed Strategy 1 – With the Alexandra Way bus-only link

4.2.20 As set out above, bus movement will be facilitated via the Sustainable Travel Corridor which provides a 6.5m bus-only link connecting into the adjacent Park Farm development. Discussions have been held between PBA and First as the local bus operator for potential bus improvements within Thornbury including extending services through the Park Farm site.

4.2.21 A bus contribution will be provided to extend the existing T1, or whichever bus service will serve the Park Farm development. The proposed routing assuming the T1 will be extended is shown at **Figure 4.1**. The proposals are for a one-way bus loop to be formed to include Park Farm and Land West of Park Farm, however, a 6.5m wide accesses have been designed, and 6.5m corridor allowed for within the masterplan, to accommodate two-way bus movements should that be required in the future. The extension of the T1 service has been discussed with First who agree that this is the best service option for this site.

4.2.22 The proposed strategy is for the T1 service to route along Butt Lane and Oldbury Lane, accessing Land West of Park Farm via the western site access on Oldbury Lane. It would then route through the proposed development, exiting via the Sustainable Travel Link, routing through the southern part of Park Farm and the bus link at Alexandra Way. It would operate along Park Road to Gloucester Road to re-join the existing route.

4.2.23 The proposed route would mean that part of the Park Farm development will no longer be served in the same way as currently planned, as some of the committed Park Farm route would be bypassed. However, as demonstrated at **Figure 4.1**, bus stops within Park Farm could be relocated such that all of the development would remain within 400m of the proposed route which is the typical desirable distance to a bus stop. This is supported by Local Plan Policy (PSP11).

4.2.24 The proposed anti-clockwise routing would also mean a reversal of the direction of the committed service extension to Park Farm as set out within its Transport Assessment (FMW, 2011); however, we understand from recent discussions with First that they would now expect the extension to Park Farm be delivered in an anti-clockwise direction regardless of the proposed development coming forward.

4.2.25 The actual routing is to be agreed with SGC and First and based on service viability calculations. However, the proposed routing will connect future residents of the proposed development with the key facilities and services dictated by PSP11 i.e. to comparison retail, supermarkets, pharmacies, post office and public houses. This will also provide an alternative sustainable transport option to those facilities which residents will also be able to access via appropriate walking and cycling distances.

4.2.26 In line with SGC's Local Plan Policy PSP11 new bus stops will be provided so that each part of the development is within 400m of the service. The bus stops will also meet the Council's adopted Bus Shelter Design and Procurement Process protocol.

4.2.27 It is important to ensure that the proposed development will support and encourage sustainable transport. In addition to the bus service extension a contribution could therefore be provided for better waiting facilities for bus passengers in the centre of Town in line with the locally identified need, as set out within SGC's PSP Plan Appendix 3 'Thornbury'.

4.2.28 The contribution could be for the provision of an improved bus shelter on Rock Street and new shelter/improved facilities on the High Street bus stop. These facilities would include bus timetable and real time information. These facilities would make the overall bus use more attractive for residents of the proposed development travelling to and from the town centre, as well as those connecting to additional bus services.

4.2.29 The provision of new or improved Town Centre bus facilities will therefore help to increase bus patronage for residents from the proposed development, as well as within Thornbury itself, reducing the number of vehicle movements on the local highway network. This contribution would be in addition to the bus facilities required as part of the proposed development.

4.2.30 The potential MetroBus extension to Thornbury would improve the public transport offer and facilitate sustainable travel to Bristol. The Sustainable Travel Link will allow more direct access by bus/walk/cycle to the centre of Thornbury and the likely location of the MetroBus route. It should also be noted that additional development at Thornbury would be expected to result in increased patronage for Metrobus and thereby increase the viability of this new strategic infrastructure.

Alternative Strategy 2 – Without the Alexandra Way bus-only link

4.2.31 The provision of the Alexandra Way bus link was included as part of the Alexandra Way proposed development (PT13/0870/O) approved in August 2014. It is understood that this application has since lapsed, and it is unclear when this bus link will be provided. A second Strategy has therefore been considered to demonstrate the deliverability of the site and which could be implemented in the interim, prior to the Alexandra Way bus link being operational.

4.2.32 A Sustainable Travel Corridor will be provided connecting to the Park Farm site as in Proposed Strategy 1 however it will no longer connect the development to the Alexandra Way development.

4.2.33 From discussions with SGC, it is considered likely that, should the Alexandra Way bus link not be delivered, the extension to Park Farm (prior to the addition of the proposed development) will be in the form of a loop accessing and exiting Park Farm via the Butt Lane access.

4.2.34 In this scenario, a bus contribution will be provided to extend the T1, or whichever bus service will serve the Park Farm development, with a proposed routing shown at **Figure 4.2**. The proposed route would be along Butt Lane and Oldbury Lane, accessing Land West of Park Farm via the western site access on Oldbury Lane. It would then route through the proposed development, exiting via the Sustainable Travel Link, routing through the northern part of Park Farm and re-join the Park Farm routing at Butt Lane.

4.2.35 As in Proposed Strategy 1, in line with SGC's Local Plan Policy PSP11 new bus stops will be provided so that each part of the development is within 400m of the service. The bus stops will also meet the Council's adopted Bus Shelter Design and Procurement Process protocol.

4.2.36 The appropriateness of this route extension will need to be agreed with the bus operators. There is the potential to provide funding for a single bus service between Land West of Park Farm, the Park Farm development and Thornbury Town Centre if necessary. Services to other destinations including Bristol are then accessible from the Town Centre. The viability of these options would require further investigation and approval with SGC and First.

4.2.37 All other elements of the Strategy would be the same as in Proposed Strategy 1.

Promotion of Sustainable Travel to Schools

4.2.38 The site TPC will seek to liaise with SGC and the local primary and secondary schools, and work alongside their TPCs to promote sustainable travel to these sites by walking and cycling.

This may utilise school assemblies, packs for the children to take home, free incentives (reflectors, high-vis bag covers, time tables, car-sharing buddy sessions) and prizes.

4.2.39 Where walking and cycling is not possible, the TPC could set up a Car Share Buddy system, whereby households with school-age children are invited to meet up with other families within the site and car-share. Cost and time saving benefits will be explained to those eligible.

4.2.40 A Walking Bus system could also be set up for the on-site primary school, where younger children can walk to school together, overseen by parent volunteers or school volunteers.

Encouraging Cycling

Adult Cycle Training

4.2.41 SGC currently provide one hour's free cycle training for adults who live or work in the South Gloucestershire area. The training is run on a one-to-one basis and an instructor can tailor the training to the adult's cycling ability. The instructor will discuss a time and place that is suitable and safe for the adult to train.

4.2.42 An Adult Cycle Training Form may be obtained by emailing the SGC Bikeability team. The SGC Bikeability team can be contacted by emailing cycle.training@southglos.gov.uk . Information about this cycle training will be advertised by the TPC and included in the Residential Travel Information Pack (see below).

Measures to Encourage Cycling

4.2.43 Additional measures that could be implemented by the TPC, in liaison with SGC, to encourage cycling include:

- Set up a Bicycle User Group (BUG) – to promote cycling and identify any issues to the TPC.
- Dr Bike sessions – providing free bicycle maintenance and advice on site.
- Set up a Bike Buddy Scheme – putting inexperienced cyclists in touch with more confident cyclist who can ride with them to help build their confidence.
- Promotional Events and Competitions.

Residential Travel Information Packs

4.2.44 A Travel Information Pack will be prepared by the TPC and issued to each household upon occupation of each dwelling. The packs could include the following information:

- A letter detailing the purpose of the Travel Plan;
- Contact details of the Travel Plan Co-ordinator;
- Walking and cycling maps showing local walking and cycling routes to local facilities such as local shops, health centres, primary and secondary schools, hospitals etc. These will be supplemented by approximate walking and cycling times to these facilities;
- Public transport information with a map showing routes, bus stop locations and timetable information, with particular focus on those routes serving Thornbury Town Centre, Bristol City Centre, Southmead Hospital, Cribbs Causeway and Gloucester.

- A separate school travel leaflet, detailing the bus services serving the nearest schools and other information such as that regarding any Walking Bus and Car Share Buddy schemes, along with safety tips for cycling to school;
- The Sustainable Travel Voucher Application form with explanation of total available funds (amount to be determined with SGC) and explanation of how the voucher system will work, e.g. how the total amount can be split as required to redeem against a choice of sustainable travel uses;
- Information on smart Phone apps which can be used to help plan travel more effectively;
- Details on car sharing, including the cost benefits associated with it and how to sign up to the car-sharing schemes. The details of TravelWest's car sharing page will be included: http://travelwest.info/drive/car-sharing (link accurate as of 19.06.18), which in turn provides links to different car-sharing websites;
- Promotion of national events such as Walk to Work Week, National Bike Week;
- Information on health, financial and environmental benefits of walking and cycling;
- Information on alternative working arrangements and their benefits;
- Details on any local home delivery services; and
- Details of travel planning information websites such as Traveline's online journey planner.

4.2.45 Much of the above information could be included in a bespoke Development Travel Information Guide. The content of the Travel Information Pack and Guide will be agreed with SGC prior to distribution to residents.

Travel Information Notice Board / Social Media Group

4.2.46 A Travel Information Notice Board could be provided on site, which will contain walking and cycling maps for the area (highlighting the routes to take to the nearest primary and secondary schools), as well as public transport information. The Travel Plan Co-ordinator will be responsible for updating this information as appropriate.

4.2.47 Alternatively, if considered more appropriate at the time of occupation, travel information could be disseminated to residents/users of the site via social media such as a private facebook group. The same information could be included as on the Notice Board, but this form would facilitate better engagement and enable information to be kept up-to-date more easily.

4.2.48 A Development specific website will be set up where residents can access online versions of their Travel Information Guides, Packs and STVs. It is noted that SGC currently provide this information for a number of developments through the http://aroundyourway.org/# website. This approach will be discussed with SGC.

Online Travel Planning Tools

4.2.49 Details about, and a link to the following online journey planning tools will be included in the residential travel information packs:

- http://www.traveline.info (link accurate as of 02/04/19).
- http://travelwest.info (link accurate as of 02/04/19).

Personalised Travel Planning

4.2.50 Personalised Travel Planning (PTP) will be offered to all households within one month of occupation.

4.2.51 Individual journey plans will be provided to residents to help them understand the travel choices available and provide them with the necessary information to make a journey that may have otherwise been by car.

4.2.52 The exact services to be provided as part of PTP at the site will be agreed with SGC in advance of implementation.

4.3 Opportunities for More Sustainable Car Usage and Reducing the Need to Travel

Car Sharing

4.3.1 Residents will be encouraged to register with a Car Sharing database which can be accessed via TravelWest's car sharing website. Details of TravelWest's car sharing page, of what car sharing is, and its benefits, will be included within the Residential Travel Information Packs. The TPC will be available to answer any questions regarding car sharing. Details on car sharing will also be included on the Travel Information Notice Board/Social Media Group.

4.3.2 If there is demand identified through the travel surveys, the TPC could set up a car sharing buddy scheme / database and encourage new residents to meet up with others in the neighbourhood that are travelling to similar locations (e.g. for school or work travel) and encourage residents to consider car sharing.

Electric Vehicle Charging Points

4.3.3 The provision of electric vehicle charging points for private dwellings will be considered in consultation with commercial providers in due course. The provision of charging sockets will be subject to appropriate feasibility studies relating to network capacity in due course.

Car Club

4.3.4 The implementation of a car club at the site will be considered in conjunction with local providers.

4.3.5 Subject to confirmation of the site's suitability for a car club, appropriate measures such as discounted membership for residents can be considered further in due course.

Alternative Working Arrangements

4.3.6 Residents will be informed of all the benefits of working from home, working non-standard working hours (i.e. working 8am to 4.30pm) and of working condensed working weeks (e.g. working 8am to 6.30pm Monday to Thursday and then not working Fridays). Information on these different working practices as well as advice on how to speak with employers about this will be provided within the Residential Travel Information Packs.

Home Deliveries

4.3.7 Information about online shopping and home deliveries, including the benefits to time and to carbon emissions, will be provided within the Residential Travel Information Packs.

Internet Infrastructure

4.3.8 Infrastructure for broadband access will be provided to facilitate remote home working, home shopping and home entertainment.

4.4 Travel Marketing

Sales Staff Training

4.4.1 In order to ensure that potential residents of the site are informed about the FTP and its goals from the earliest stage, the FTP will have a significant presence within the sales suite of the development at the point of sale, which should include a display outlining the sustainable travel options for the site.

4.4.2 The sales staff will receive regular training to promote the Travel Plan as an asset and a significant selling point of the development. Information and promotion of the Travel Plan from the outset ensures greater buy-in from future residents who will see it as an opportunity to plan changes in their lifestyle.

Residents' Travel Newsletter

4.4.3 A resident's travel newsletter could be disseminated for the life of the travel plan, to each household, detailing the progress of the FTP and the results of monitoring.

4.4.4 Newsletters could be provided quarterly, with copies also provided to marketing suites and posted online.

4.4.5 This newsletter would also act as a promotional tool for the FTP by publicising any new measures, national sustainable travel campaigns, improvements to sustainable travel facilities in the local area and any advances in technology which are offering the potential for more sustainable travel.

5 Implementation, Monitoring and Targets

5.1 Introduction

5.1.1 The previous section set out the suggested package of measures that will form the Travel Plan. This section looks at how these initiatives will be implemented and their performance monitored.

5.2 Travel Plan Delivery

5.2.1 This Framework Travel Plan primarily relates to the residential element on site. The Applicant will fund the preparation, implementation and operation of the travel plan process, together with the monitoring and review, which shall be undertaken in association with SGC.

5.2.2 The Applicant will also fund the implementation and management of physical measures, the promotion of sustainable travel throughout the delivery period of the proposed development, and the coordination of the monitoring and review process.

5.2.3 The timescales for delivery of the Travel Plan will be agreed with SGC in advance and a detailed Travel Plan will be submitted and approved with SGC before first occupation of the development.

5.2.4 The lifetime of the travel plan will extend to a point 2 years after occupation of the last dwelling.

5.2.5 With regards to any other uses on site (the exact details of which are unknown at this outline planning stage) the Developer will include a covenant in appropriate future tenancy agreements / leases on site which require that their tenants observe and adhere to this FTP.

5.2.6 As part of this, they will need to produce a specific Travel Plan for their operation if their workforce is of a size which SGC consider necessitates an individual Travel Plan. It will be required that specific Travel Plan(s) be produced within a timeframe set by SGC. The TPC will be available to assist in the preparation of any use-specific travel plans if required. Due to the scale of other land uses on site, it is likely that they will benefit from the measures being implemented as part of the wider development and not require their own Travel Plans.

Stakeholder Group

5.2.7 A Travel Plan Working Group will be set up by the TPC to provide updates and obtain feedback on the Travel Plan.

5.2.8 The Group should include representatives from SGC, the Developer, residents and local interest groups.

5.2.9 The TPC will work with the Group throughout the lifetime of the Travel Plan, with the ultimate aim of handing over the Travel Plan to the Group for continued implementation once the TPC role ceases on site.

5.3 The Travel Plan Coordinator Role and Responsibilities

5.3.1 The role of the Travel Plan Coordinator (TPC) can be described as the principal point of contact for residents interested in the Travel Plan or travel opportunities at the site and will promote the Travel Plan to this audience.

5.3.2 It is important that the TPC is familiar with the site. The TPC will visit the site regularly, set a good example and be easily contactable by everyone the FTP applies to.

5.3.3 The TPC will be appointed for the lifetime of the Travel Plan (to a point 2 years after occupation of the final dwelling), and will promote, implement and monitor the FTP. Once the TPC has been appointed, the individual's contact details will be made available to all residents through the Travel Information Packs and other promotional materials. It is envisaged that the TPC role will take 1 day per month for 5 years and this will be reviewed as part of the monitoring process.

5.3.4 The TPC's responsibilities will include:

- Collating and distributing Residential Travel Information Packs and STVs (including monitoring their uptake);
- Keeping all the transport information up-to-date on the Travel Information Notice Board/Social Media Group and material contained within the Residential Travel Information Packs;
- Keeping up-to-date on SGC's transport initiatives;
- Assisting in the preparation of any land use specific travel plans, and a School Travel Plan, if required;
- Implementing the various Travel Plan measures, including PTP;
- Managing the Travel Plan budget;
- Liaising with public transport operators and car clubs, where necessary;
- Acting as a point of contact for residents requiring information on local travel;
- Organising adult cycle training as and when required; and
- Monitoring and reviewing the FTP, and submitting annual monitoring reports to SGC setting out the progress of the FTP.

5.4 Monitoring and Performance

5.4.1 Travel Plans are living documents that need to be updated regularly. Implementing a Travel Plan involves a continuous process for improving, monitoring, reviewing and adjusting the measures in the plan to reflect changing circumstances. Monitoring the FTP is essential in gauging the success of the measures adopted at meeting the targets.

5.4.2 Travel Plans should be monitored regularly to ensure the measures agreed in the Action Plan / planning permission are being implemented, that it is delivering the modal shift required by the targets and that it is up-to-date and remains effective as situations change and new opportunities emerge.

5.4.3 It is anticipated that monitoring could be undertaken as set out below, with the exact details to be agreed with SGC prior to occupation.

5.4.4 Baseline travel surveys could be undertaken within 3-6 months of the development achieving 25% occupation, that is, on occupation of the 157th dwelling. A minimum response rate should be agreed with SGC before the baseline survey is undertaken. If necessary, an incentive could be offered to encourage responses.

5.4.5 The results of the travel survey should be reviewed and an initial target for the reduction of single car occupancy journeys set (see more in **Section 5.6** below).

5.4.6 The surveys should then be repeated annually for a period to be agreed with SGC. The resultant mode share, measures and targets should be reviewed accordingly. The surveys should be undertaken at the same time of the year to allow for more reliable monitoring and comparison.

5.4.7 In addition to the surveys, the uptake of incentives should be monitored. The need for Automatic Traffic Count (ATC) surveys to monitor vehicle trips to and from the site will be reviewed with SGC.

5.4.8 The results of the Travel Plan monitoring process should be submitted by the TPC to SGC in the form of a Monitoring Report within one month of the travel surveys being undertaken. The reports should set out a review of the survey data, provide information on the measures and initiatives undertaken, identify any problems encountered in implementing the Travel Plan and any proposed changes and corrective interventions to the Travel Plan to bring performance back in line with initial targets where necessary. The report should also identify whether targets should be updated to reflect uptake of various modes/incentives.

5.4.9 The Travel Plan Coordinator will be responsible for preparing monitoring reports. The content of the report will be agreed with SGC, but could include the following:

- **Introduction and Background**: This provides information on the site to which the report relates and provide details on the site's residents;
- **Results of the Surveys**: This details the results of the surveys that have been undertaken and target levels, including identification of abnormal results (see below);
- **Initiatives Undertaken**: This provides details on the measures and initiatives undertaken over the year;
- **Problems and Issues**: This highlights any problems encountered in implementing the Travel Plan and clarify any issues which remain unresolved and / or require additional attention;
- **Specific Measures from the Travel Plan**: This details how all the Travel Plan measures have been implemented, along with a summary of the demand, uptake and use of the Sustainable Transport Vouchers by residents;
- **Travel Plan Amendments**: This section proposes changes to the Travel Plan where appropriate and provide justification for these changes, for agreement with SGC; and
- **Next Steps**: This summarises the findings of the surveys and set out an implementation plan for the next monitoring period.

5.4.10 The TPC will also be responsible for preparing a summary of the Monitoring Report, including any changes being made to the Travel Plan, and this information will be disseminated to residents at the site in the Travel Newsletter.

5.5 Provisional Baseline Mode Share and Targets

5.5.1 The baseline mode share for the development has been estimated using the 2011 Census mode share for MSOA South Gloucestershire 001 (E02003090) which includes the Land West of Park Farm, Thornbury. The targets have been set with reference to the Travel Plan measures set out in Section 4. This mode split is shown in **Table 5.1**:

Table 5.1: Modal Share (2011 Census) and Targets

Mode	%	Target Mode Share (%)	% Change
Car Driver	75.4%	70%	-6%
Car Passengers	5.1%	6.1%	20%
Cyclists	2.8%	3.9%	+40%
Pedestrians	11.7%	13.4%	+15%
Public Transport	2.5%	4%	+60%
Other	2.6%	2.6%	-
Total	100%	100%	-

5.5.2 The baseline mode share shown in **Table 5.1** will be reviewed using baseline travel surveys as detailed further in **5.4** above.

5.5.3 Revised mode share targets will be set once baseline travel surveys have been undertaken, when the development is 25% occupied or at another level of occupation to be agreed with SGC.

5.5.4 It should be recognised that until a baseline survey has been undertaken it will not be possible to set a bespoke mode share target, and that as many of the measures will be implemented prior to and during occupation, the effect of the Travel Plan will already be accounted for to some degree in the initial survey. It is therefore envisaged that the surveyed mode share be compared with Census mode share data to give an indication of the early success of the Travel Plan and to set a realistic target which takes this into consideration.

5.5.5 In order to promote sustainable travel, a target response rate for the completion of travel surveys and target for the uptake of the STV has been set at a minimum of 75% of households.

5.6 Remedial Measures If Targets Are Not Met

5.6.1 It is intended that the agreed trip reduction target will be achieved during the lifespan of the FTP (to be agreed with SGC). The annual monitoring and reporting exercise will therefore be used to track progress towards achievement of the target and remedial measures introduced as appropriate.

5.7 Travel Plan Provisional “Action Plan”

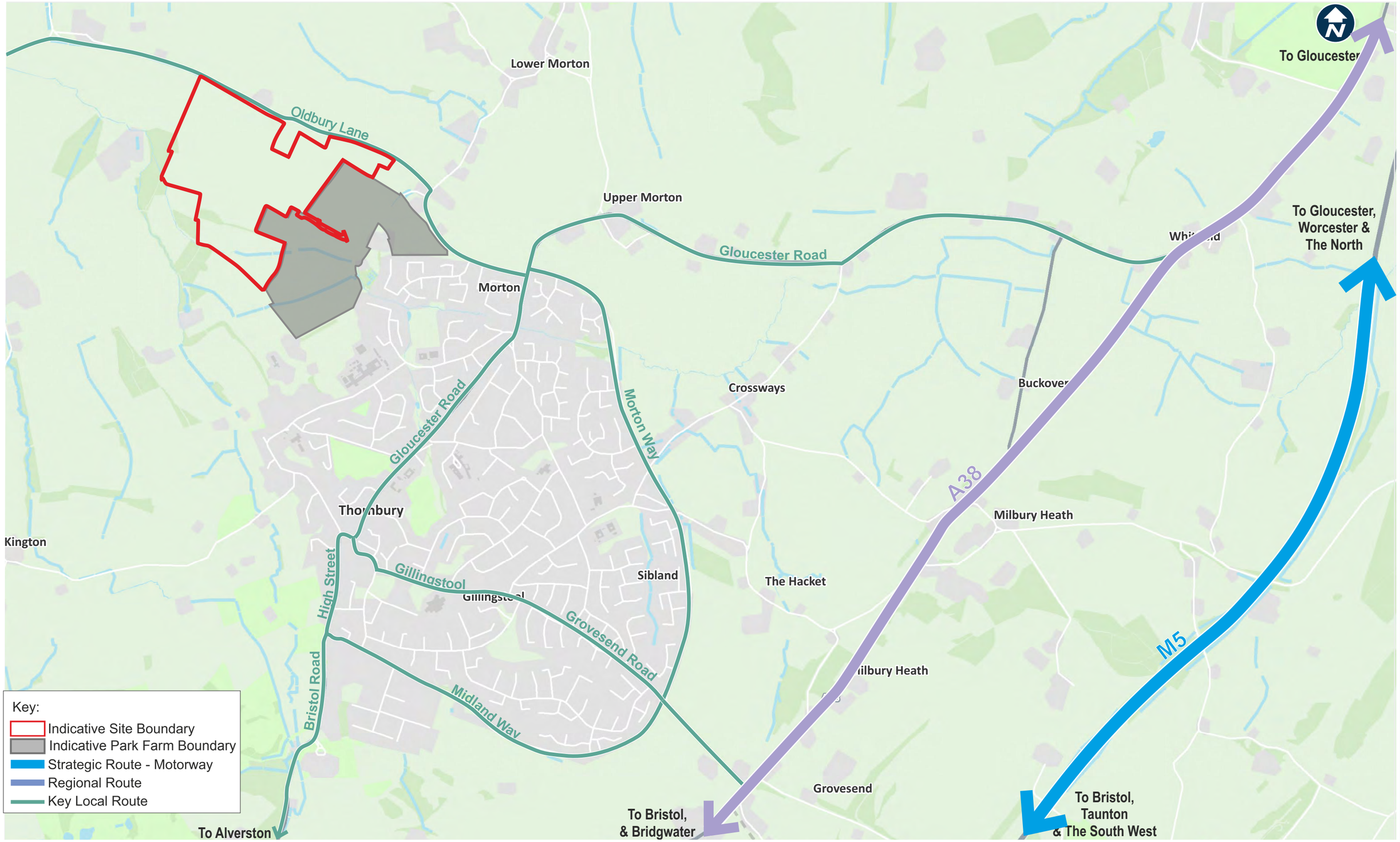
5.7.1 **Table 5.2** below summarises the potential measures and sets out the provisional timescales. Exact measures and timescales are to be determined through liaison with SGC.

Table 5.2: Travel Plan Provisional Action Plan

Reference	Potential Measure	Provisional Timescale
1	Travel Plan Co-ordinator	Appoint at least 3 months prior to first occupation. Employed for the lifetime of the Travel Plan (2 years following final occupation, unless targets are not met in which case this may be extended)
2	Residents Travel Information Packs	Provided upon Occupation
3	Sustainable Travel Vouchers	Offered upon occupation and provided within one month of application form submission
4	Personalised Travel Planning	Provided within one month of Occupation
5	Provision of Secure Cycle Storage and Parking	Prior to occupation
6	Adult Cycle Training	Following occupation, as required
7	Promotion of sustainable travel to schools through liaison with local school TPCs	Prior to and upon occupation
8	Provision of car sharing buddy scheme and walking bus buddy scheme	Prior to and upon occupation
9	Travel Information Notice Boards / Social Media Group	Upon occupation
10	Encourage Residents to register with Car Share website	Upon occupation
11	Sales Staff Training	Sales Staff to be trained by TPC prior to sale commencement; sales staff to implement training at each sale on an ongoing basis
12	Annual Residents' Travel Newsletter	One year after first occupation and then annually thereafter
13	Broadband Provision	Infrastructure for broadband access will be provided to facilitate remote home working, home shopping & home entertainment
14	Provision of a Sustainable Travel Corridor connecting to Park Farm	To be agreed with SGC

Reference	Potential Measure	Provisional Timescale
15	Provide a financial contribution to extend existing bus service T1	To be agreed with SGC
16	Provide new bus stops on site / relocate bus stops within Park Farm	To be agreed with SGC
17	Provide new or improved bus stop facilities on High Street and Rock Street in Thornbury Town Centre	To be agreed with SGC

Figures



peterbrett
Offices throughout the UK and Europe
www.peterbrett.com

Client BARWOOD DEVELOPMENT SECURITIES LTD

LAND WEST OF PARK FARM, THORNBURY

TRANSPORT ASSESSMENT

EXISTING LOCAL AND STRATEGIC HIGHWAY NETWORK

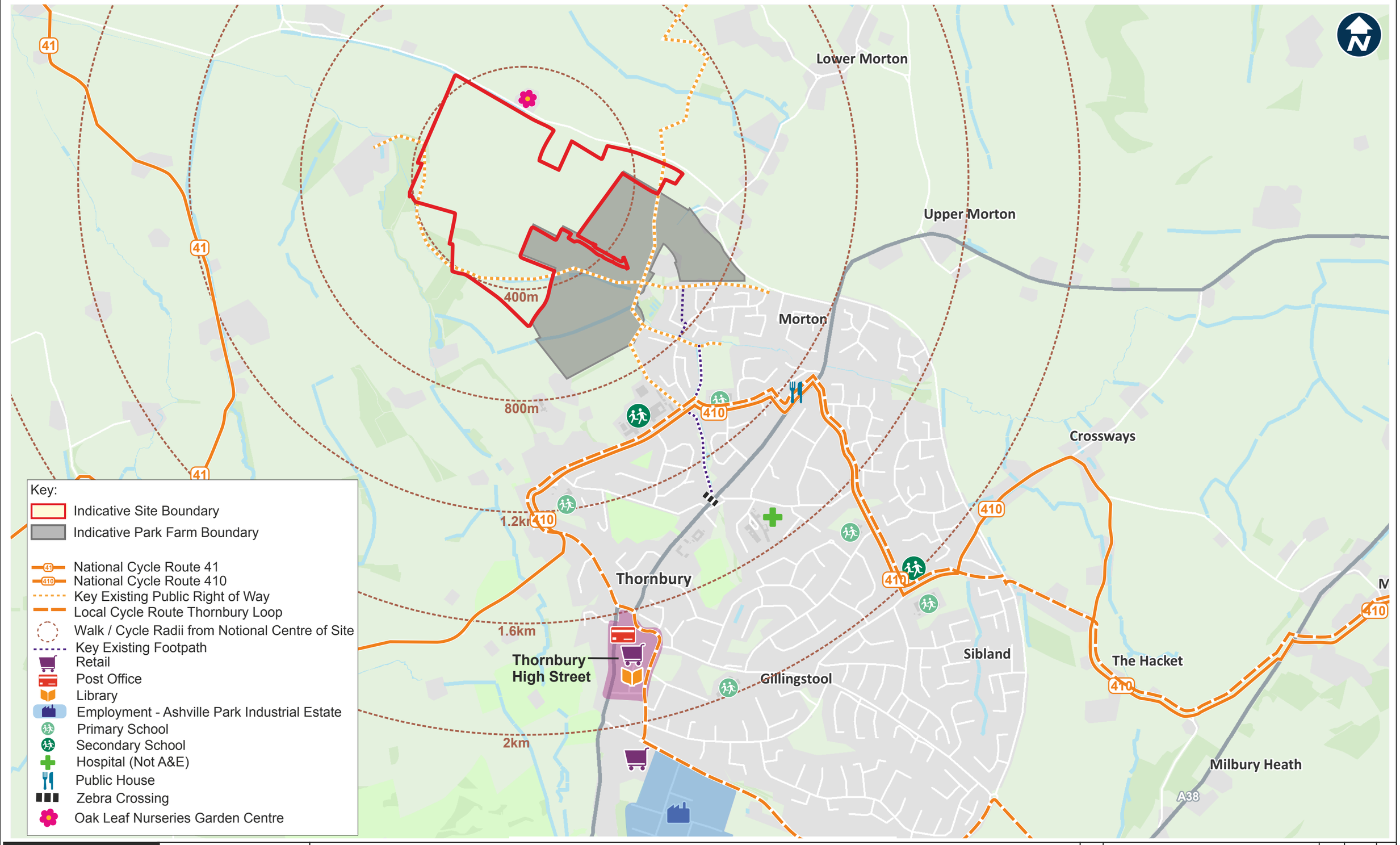
Mark	Revision	Drawn	Date	Chkd

Date	08/06/2018
Scale	A3 - N.T.S
Drawn by	AA
Checked by	Jsa

FIGURE 3.1 A

A

J:\39209 West of Park Farm, Thornbury\Technical\Corel\Transport Assessment\Figure 3.1 - Local Movement.cdr



peterbrett
Offices throughout the UK and Europe
www.peterbrett.com

Client
BARWOOD DEVELOPMENT SECURITIES LTD

LAND WEST OF PARK FARM, THORNBURY

FRAMEWORK TRAVEL PLAN

EXISTING WALKING AND CYCLING PROVISION

Mark	Revision	Drawn	Date	Chkd

Date	08/06/2018
Scale	A3 - N.T.S
Drawn by	AA
Checked by	Jsa

FIGURE 3.2

-

J:\39209 West of Park Farm, Thornbury\Technical\Corel\Travel Plan\Figure 3.2 - Walk & Cycle.cdr