

## Appendix F 39209-5534-TN001 Bus Service Business Case

# TECHNICAL NOTE

**Job Name:** Land West of Park Farm, Thornbury  
**Job No:** 39209  
**Note No:** 5534 001  
**Date:** 16 July 2019  
**Prepared By:** Dave Harrison  
**Subject:** **BUS SERVICE BUSINESS CASE**

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## 1. Introduction

- 1.1. Peter Brett Associates LLP (PBA) has been appointed by Barwood Development Securities Ltd & North West Thornbury Landowner Consortium to provide transport advice in relation to a residential development on land West of Park Farm, Thornbury, South Gloucestershire.
- 1.2. The development comprises up to 630 residential dwellings, land for a neighbourhood hub, two vehicle access points from Oldbury Lane and a sustainable transport link for buses, cyclists and pedestrians through to the adjacent consented Park Farm development.
- 1.3. As part of the development, public transport access can be secured to maximise the sustainability of the site and to enable mode shift from the private car to the provision of bus services. The PBA *Transport Assessment Addendum* dated May 2019 contained details of the potential options for bus services on the site, including the preferred scenario of extension of service T1.
- 1.4. This Technical Note:
  - outlines the current position with regards to provision of bus services to the Park Farm site;
  - summarises the discussions held to date with local bus operators and South Gloucestershire Council;
  - considers the operational implications of a scenario where service T1 is extended into both the Park Farm and West of Park Farm developments; and
  - considers the financial implications of this scenario to inform a potential Section 106 obligation (subject to overall viability considerations).

## DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
39209/5534/001	-	16.07.19	D.Harrison	A.Mackie	K.Stock	M.Parkinson

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### 2. Current Position

- 2.1. Thornbury is well served by public transport services to Bristol city centre, Gloucester, Dursley, Yate and the North Fringe, and is therefore a highly suitable location for development. In particular, three bus services – 77, T1 and T2 – provide four buses per hour (one in the evenings and two on Sundays) to Bristol city centre; service T1 operates on a direct route via Bradley Stoke and the M32, service T2 operates via Cribbs Causeway and the A38 corridor, and service 77 operates on a convoluted route via the North Fringe and Southmead Hospital.
- 2.2. The Park Farm development, which is currently under construction, has a Section 106 commitment for bus services as follows (from Schedule 4, paragraph 2.1):

*“The Owner will pay to the Council the sum of £487,500 (...) (...) as a contribution solely towards the extension of 2 (...) bus services to serve the Development split as to £362,500 (...) towards the extension of the 309/310 bus service and £125,000 (...) towards the extension of the 615 bus service.”*
- 2.3. Services 309/310 and 615 no longer exist. In their place, service T1 offers the highest level of service and the opportunity for a fast, direct route to Bristol city centre; this service operates up to twice per hour on Mondays to Saturdays, is the most frequent bus route in Thornbury and operates close to the site on Gloucester Road.
- 2.4. It is understood that SGC have not yet utilised the funding from the Park Farm development as a suitable bus route through the site has not yet been established. The authority intends to offer the two main operators in Thornbury the opportunity to provide a proposal for use of the funds to augment their existing operations in the town, once a suitable bus link has been provided to Alexandra Way. SGC acknowledge that there is currently no timescale for this to take place.
- 2.5. Both First (the operators of services T1 and T2) and Stagecoach (the operators of service 77 and other routes to the north) have confirmed they would be interested in submitting a proposal for the provision of services to the development.

### 3. Bus Service Business Case

- 3.1. A business case has been prepared for the potential extension of service T1 to both the Park Farm development and the West of Park Farm development.
- 3.2. The intention of the business case is to:
  - identify the operational implications of the extension in terms of vehicles, driver resources and running time; and
  - identify the financial implications of this extension in terms of cost and potential revenue from the West of Park Farm development.
- 3.3. PBA utilise a timetable, cost and revenue model which has been developed using data from industry contacts, national statistics and planning documents to provide a robust assessment of the supply and demand elements in relation to the provision of bus services. The standard elements of the model are contained in **Appendix A**.
- 3.4. Three scenarios have been assessed:
  - *Baseline*: the current T1 service pattern and journey times (timetable only);

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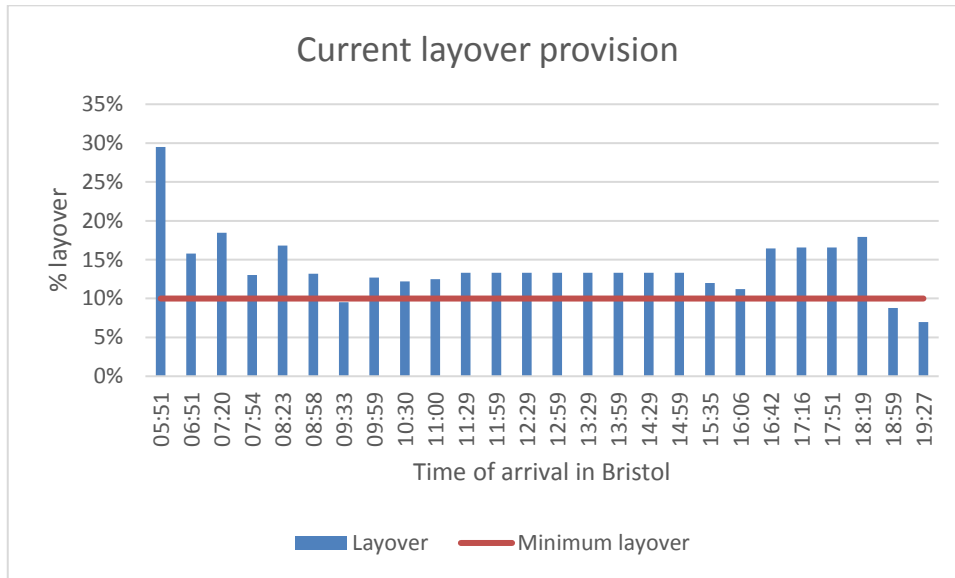
- *Park Farm*: the current T1 service pattern with an extension to the Park Farm development only; and
  - *Both Developments*: the current T1 service pattern with an extension to both the Park Farm and West of Park Farm development sites.
- 3.5. All three scenarios envisage the provision of two buses per hour on Monday to Saturday daytimes, aligning with the current T1 service pattern.
- 3.6. In this business case, a number of terms will be frequently used and these are defined below:
- *Cycle time*: the number of minutes taken by one bus from leaving point A on one trip to leaving point A on its next trip, i.e. the journey time on the whole route, in both directions, plus the layover taken on its return;
  - *Layover*: the number of minutes between the bus arriving at point A and departing from point A on its next trip; and
  - *Peak Vehicle Requirement (PVR)*: the number of buses required to operate the service at its busiest time.
- 3.7. Ideally, layover will be a minimum of 10% of cycle time. Bus services in Bristol are subject to significant and unpredictable traffic conditions which vary by time of day and day of week; therefore, it is important that buses have sufficient recovery time so that a late arriving journey does not have a knock-on effect on the next departing bus.
- 3.8. Insufficient layover can result in delays to the service which may be compounded over time and cause significant disruption to the route. Poor punctuality and reliability can make a service unattractive to users and potential users, leading to a loss of patronage and endangering its long-term viability.

### Baseline

- 3.9. The current timetable for service T1 is shown in **Appendix B**. In general, two buses per hour are offered during Monday to Saturday daytimes with some variations in the peak periods to allow for extended running times due to congestion in Bristol.
- 3.10. The service operates a one-way anticlockwise loop around Thornbury, from the town centre via Gillingstool, Streamleaze, Avon Way, Morton Way, Severn View Road, Eastland Road and Gloucester Road. Service T2 operates on the southern half of this loop in a clockwise direction.
- 3.11. The current PVR for service T1 is four and these vehicles are utilised all day on Mondays to Saturdays. The vehicle requirement for Sundays and public holidays is two.
- 3.12. The baseline timetable in **Appendix B** shows that the amount of layover taken by each journey on Mondays to Fridays varies between 7% and 29%, but that most journeys in the off-peak period have 13% layover which is taken in Bristol city centre. The layover for each weekday arrival in Bristol is shown in **Figure 1** below.

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Figure 1: Current layover provision (Mondays to Fridays)



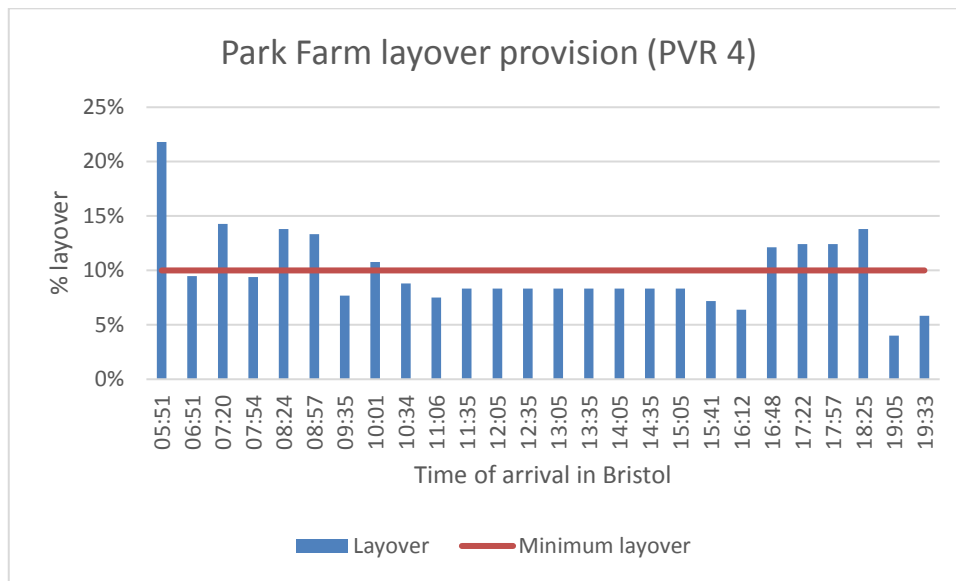
- 3.13. **Figure 1** indicates that all but two journeys on service T1 currently satisfy the requirements for minimum layover. The two final arrivals in Bristol at 18:59 and 19:27 do not, having 9% and 7% respectively; however, these journeys are making their last departures of the day from Bristol city centre.
- 3.14. **Appendix B** contains modelled details of the financial cost of these services, considering the number of buses required, the distance travelled and the hours of operation for each vehicle. The model indicates that the total annual cost of operation for the services, including a desired 15% profit margin, is £756,000 – equivalent to £189,000 per vehicle. This is considered to be robust given that the service starts at 05:00, finishes at after 20:00 and operates on Sundays.
- 3.15. The subsequent sections of this note show how the ‘Park Farm’ and ‘Both Developments’ scenarios impact the total cost of providing the service in terms of the number of vehicles required and the costs of operation.

### Park Farm

- 3.16. In this scenario, service T1 is diverted from its current route at the end of Morton Way to continue via Butt Lane, Barley Fields, the Park Farm development, the bus link to Alexandra Way, Alexandra Way, Whitfield Road and Gloucester Road to rejoin the current route at Severn View Road.
- 3.17. This diversion adds 1.74km to the route length. At an average speed of 20kph (12.4mph), this adds six minutes to the journey time for the route and the new timetable is contained in **Appendix C1**. When cycle time and PVR remain constant, this has the consequent effect of reducing the amount of layover that can be taken between each journey.
- 3.18. **Figure 2** below demonstrates the impact this has on layover times for service T1.

## TECHNICAL NOTE

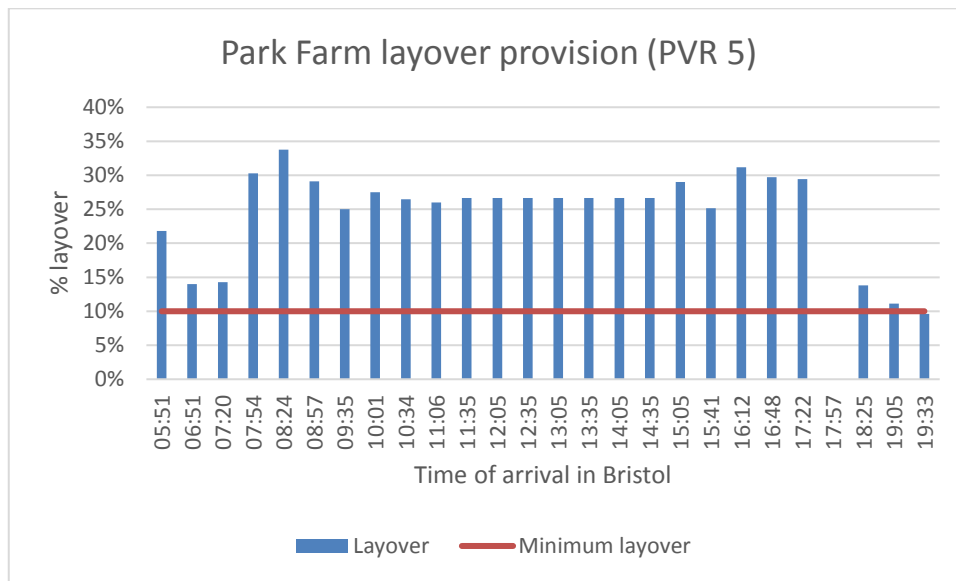
Figure 2: Park Farm diversion layover provision – PVR 4 (Mondays to Fridays)



- 3.19. **Figure 2** demonstrates that the majority of journeys no longer meet the minimum 10% layover threshold, with the layover on the average off-peak journey now 8% of total cycle time. Only journeys in the AM and PM peak hours now have layover periods in excess of the threshold.
- 3.20. Due to the unpredictable nature of traffic conditions in and around Bristol, delays encountered in the off-peak period may still occur and have a knock-on effect in the PM peak where layover is theoretically increased. As a result, it is considered that the service may become unreliable with potential consequences for its long-term commercial sustainability.
- 3.21. In order to maintain the reliability of service T1 it is considered that an additional vehicle will be necessary, which will increase the PVR of the route to five. **Appendix C2** contains a potential timetable for this option with details of the revised cycle times and layovers included – the actual times are unchanged from the PVR 4 variation but the differential impact on the operations are also shown.
- 3.22. The effect of the additional vehicle is to increase the cycle time to an average of 150 minutes, from 120 minutes in the PVR 4 option. As a result, average layover times increase to 40 minutes or 27% of cycle time.
- 3.23. The principal disadvantage of this is that vehicle utilisation reduces significantly, which is the main impact of additional resources becoming necessary without a consequent enhancement to service frequency. However, there may be an opportunity for First to interwork the service T1 vehicles with those on another route which would also increase layover on another service elsewhere; if not, the service should not suffer from delays as a result and the consequent reliability benefits will be welcomed by passengers.
- 3.24. **Figure 3** below indicates the revised layover provision when service T1 has a PVR of five, with all other variables remaining constant.

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Figure 3: Park Farm diversion layover provision – PVR 5 (Mondays to Fridays)



- 3.25. **Figure 3** indicates that all journeys on service T1 would meet or exceed the minimum layover threshold. Two early morning journeys and three evening journeys are the only trips with under 15% layover provision; the 17:57 journey has no layover time as it operates dead to depot after arrival in Bristol city centre.
- 3.26. It is therefore considered that an additional vehicle would be necessary to secure an extension of service T1 into Park Farm.
- 3.27. **Appendix C2** identifies the financial implications of this option, considering the additional number of buses required, the distance travelled and the hours of operation for each vehicle. The model indicates that the total annual cost of operation for the services, including a desired 15% profit margin, is £869,000 – equivalent to £173,800 per vehicle.
- 3.28. This implies that the additional cost of delivering a service to Park Farm is £113,000 per annum. This is a lower figure than for an average vehicle, which is because:
- the additional vehicle is only required between 0730 and 1815 on Mondays to Fridays, rather than the longer hours and seven days per week provision for two vehicles and six days per week for two others;
  - no additional journeys overall are being operated;
  - overall mileage only increases as a result of the diversion; and
  - the four existing vehicles are doing fewer journeys than at present.
- 3.29. On this basis, the Park Farm Section 106 contribution of £487,500 would fund four years of operation without any provision for revenue. However, PBA’s review of the Park Farm Transport Assessment has identified that some revenue would be expected to accrue from the development once the bus service has been introduced.
- 3.30. Table 1 below summarises the outputs of the Park Farm revenue model; full details are contained in **Appendix C2**.

## TECHNICAL NOTE

Table 1: Park Farm revenue model (summary)

Total development (units)	500
Population	1,180
Bus mode share	1.9%

### *Completed development*

Annual bus trips	21,860
Average fare	£2.12
TOTAL REVENUE	£46,343

- 3.31. Data for the revenue model is obtained from a variety of sources including National Statistics/ National Travel Survey information on household composition, trip rates and bus ticket types, local bus fare information and build-out rates for the development (which have been assumed at 100 dwellings per annum).
- 3.32. As the build-out period is assumed at five years and some dwellings on the development are already completed and occupied, the four years of assumed funding should be sufficient to continue the bus service provision beyond completion of the development.
- 3.33. The revenue model indicates that as a result of the relatively low mode share for bus travel in South Gloucestershire, the extended service (provided at a cost of £113,000 per annum) would not generate sufficient revenue on its own to become commercially sustainable (with final annual revenue of £46,343, this results in a shortfall of £66,657 per annum).
- 3.34. Consequently, further development on the route of service T1 in the vicinity of Park Farm would assist in ensuring that the already consented site remains accessible by bus services in the future.

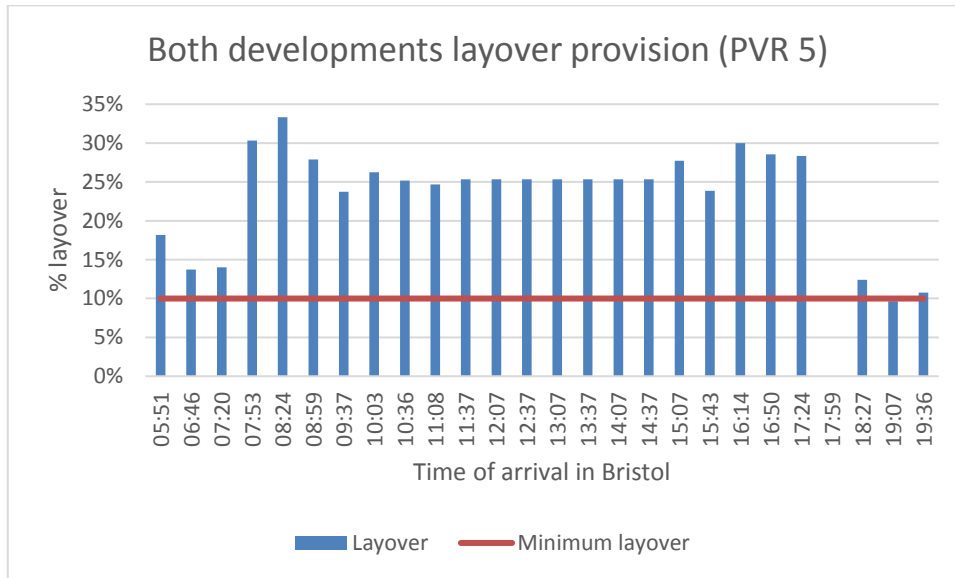
### Both Developments

- 3.35. The Park Farm option would result in the diversion of service T1 via Butt Lane instead of Gloucester Road south of Morton Way. In the event that the service was further diverted to serve the West of Park Farm development, instead of turning into Barley Fields the service would continue onto Oldbury Lane before utilising the first access point into the development and then the sustainable transport link into the Park Farm development. Once the service had rejoined the Park Farm development route, it would continue as before to the existing route at Severn View Road.
- 3.36. This route would mean that the eastern section of route through the Park Farm development would no longer be served by route T1, but this area of the site would still be within easy reach of bus stops on the new route. The additional distance of the West of Park Farm route is 650 metres, which at an average speed of 20kph (12.4mph) adds a further two minutes to the cycle time.
- 3.37. In total, therefore, the route including both developments is 2.4km longer than the existing route, which equates to an additional eight minutes of journey time. It has already been established that this would not be possible with the current route PVR of four and that an additional vehicle is required to service the Park Farm development; it is assumed, therefore, that this would still be in place for a further extension into the West of Park Farm site.
- 3.38. The revised timetable for this scenario is shown in **Appendix D**. The impact of the additional route length on the layover provision is shown in **Figure 4** below.



## TECHNICAL NOTE

Figure 4: Both developments diversion layover provision – PVR 5 (Mondays to Fridays)



- 3.39. **Figure 4** shows that broadly the layover position from the Park Farm PVR 5 option has been maintained, although the arrival times in Bristol are now slightly later. The last journey has increased layover provision as a result of the final departure from Bristol leaving five minutes later. Most journeys have 25% layover provision on a cycle time of 150 minutes, although there are five journeys with layover provision between 10% and 15% in the AM and PM peak periods.
- 3.40. As per the previous scenario, there is no layover identified for the 17:59 arrival as this vehicle is no longer required on service T1 and can return dead to depot unless it is otherwise required on other routes.
- 3.41. **Appendix D** shows the financial implications of this scenario. There are relatively few changes from the Park Farm scenario, with the only alterations being the impact of slightly increased mileage on operating costs. The model indicates that the total annual cost of operation for the services, including a desired 15% profit margin, is £871,000 – equivalent to £174,200 per vehicle.
- 3.42. This implies that the additional cost of serving the West of Park Farm development, in addition to already diverting to serve Park Farm, is £2,000 per annum. In total, this is £115,000 per annum more than the baseline scenario. It is considered that this can adequately be provided for with the existing Section 106 contributions accrued from Park Farm; however, if necessary, a contribution of £10,000 can be offered to meet this additional cost for five years.
- 3.43. It has already been identified that given the low level of bus use in South Gloucestershire, anticipated revenue from Park Farm would be significantly lower than the additional cost of operation. This may leave the development at risk of being removed from the public transport network once the pump-priming period has expired.
- 3.44. However, development at West of Park Farm would contribute additional revenue to the service for a very small surplus cost. **Appendix D** contains the full revenue details, but **Table 2** below summarises the outputs.

## TECHNICAL NOTE

Table 2: West of Park Farm revenue model (summary)

Total development (units)	630
Population	1,487
Bus mode share	2.5%

*Completed development*

Annual bus trips	36,241
Average fare	£2.12
TOTAL REVENUE	£76,831

- 3.45. **Table 2** indicates that total revenue from the West of Park Farm site would be £76,831 per annum. As per the Park Farm site, this is insufficient to meet the additional annual operating costs of £115,000 per annum in isolation. The annual shortfall in revenue from the site would be £38,169.
- 3.46. However, **Table 3** below summarises total revenue from the two adjacent developments and compares this to the total identified additional annual cost of the service T1 diversion.

Table 3: Both Developments scenario total revenue (summary)

	PF	WoPF	Total
Total development (units)	500	630	1,130
Population	1,180	1,487	2,667
Bus mode share	1.9%	2.5%	

*Completed development*

Annual bus trips	21,860	36,241	58,101
Average fare	£2.12	£2.12	
TOTAL REVENUE	£46,343	£76,831	£123,174

Total Additional Annual Cost	£115,000
Annual Surplus	£8,174

- 3.47. **Table 3** indicates that on completion of the two developments, sufficient revenue is generated to secure commercial viability of the service extension. A total of £123,174 annual revenue is forecast from both sites as compared to £115,000 annual costs, a surplus of £8,174.
- 3.48. In order to identify whether the funds from Park Farm would be likely to be exhausted prior to sufficient revenue being obtained from West of Park Farm, the revenue model has been used to undertake an assessment of the build-out rates and the likely funds that would be necessary to subsidise the service extension.
- 3.49. **Table 4** below contains this assessment. The assumptions that have been made in this table are that:
- the service extension to Park Farm commences in 2021 and that there are 250 mid-year occupations on the site at that time;
  - build-out rates are equal at 100 per annum for both sites; and
  - the further service extension to West of Park Farm commences in 2023.

## TECHNICAL NOTE

Table 4: Schedule of revenue generation and S.106 funds 2021-2029

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029
Occupations: Park Farm	250	350	450	500	500	500	500	500	500
Occupations: West of Park Farm	0	0	50	150	250	350	450	550	600
Annual cost of extension	£113,000	£113,000	£115,000	£115,000	£115,000	£115,000	£115,000	£115,000	£115,000
Revenue: Park Farm	£23,000	£32,000	£42,000	£46,000	£46,000	£46,000	£46,000	£46,000	£46,000
Revenue: West of Park Farm	£0	£0	£6,000	£18,000	£30,000	£43,000	£55,000	£67,000	£75,000
Total revenue	£23,000	£32,000	£48,000	£64,000	£76,000	£89,000	£101,000	£113,000	£121,000
S106 funds drawdown: Park Farm	£90,000	£81,000	£67,000	£51,000	£39,000	£26,000	£14,000	£2,000	£0
Funds from West of Park Farm	£0	£0	£0	£0	£0	£0	£0	£0	£0

3.50. **Table 4** indicates that the drawdown of funds from the Park Farm Section 106 agreement (totalling £370,000 to 2028) would not be complete by the time sufficient completions on the West of Park Farm site enable commercial sustainability of the service. As a result, West of Park Farm is not required to make any additional contribution to the service extension – although, as stated above, if necessary a contribution of £10,000 can be made to cover five years of the additional cost which would enable the Park Farm contribution to be utilised over a longer period of time.

3.51. In summary therefore, the West of Park Farm site is:

- an ideal location for sustainable development, as it requires minimal additional cost to provide a good level of public transport services;
- necessary to ensure the long-term sustainability of the already consented Park Farm site, as revenue expected to be accrued from this development alone is insufficient to provide for long-term commercial viability;
- likely to make a significant contribution to ensuring the viability and attractiveness of high-quality public transport links between Thornbury and Bristol;
- a site which is not required to fund additional public transport resources given its major contribution to ensuring that existing commitments are commercially sustainable.

## 4. Conclusions

4.1. This Technical Note has:

- outlined the current position with regards to provision of bus services to the Park Farm site;
- summarised the discussions held to date with local bus operators and South Gloucestershire Council;
- considered the operational implications of a scenario where service T1 is extended into both the Park Farm and West of Park Farm developments; and
- considered the financial implications of this scenario.

4.2. The Park Farm development has made a Section 106 contribution of £487,500 for the provision of bus services but these have not yet been delivered due to the lack of suitable access and egress from the site. At the appropriate time, it is anticipated that SGC will approach both First and Stagecoach with the opportunity to make a proposal for use of the funds to provide a service to the development.

## TECHNICAL NOTE

- 4.3. It is the opinion of PBA that First are best placed to deliver an attractive service to the development by extension of their service T1 which operates up to two buses per hour on a fast, direct route between Thornbury, Bradley Stoke and Bristol city centre. Stagecoach's current services in Thornbury currently operate either to the rural north or on a very convoluted route to Bristol.
- 4.4. First have confirmed that both developments can, in principle based on the current service pattern, be served by the provision of one additional vehicle subject to the appropriate infrastructure being in place. Email correspondence from First is included in **Appendix E**.
- 4.5. A business case has been developed for extension of service T1 into both the Park Farm and West of Park Farm developments, with the intention of demonstrating the operational and financial implications of each. Three scenarios have been considered: Baseline, Park Farm and Both Developments.
- 4.6. The business case has utilised PBA's industry costing and revenue model, which contains inputs from National Statistics, National Travel Survey, industry knowledge/data and material from planning documents. It has assessed the cost of each scenario and the likely long-term commercial sustainability of the scenarios.
- 4.7. The conclusions of this business case are that:
- the current T1 service has a PVR of four, which has a modelled annual cost of £756,000 per annum and layover provision on the service is currently 13%;
  - in the Park Farm scenario, an additional 1.74km of route length is added which increases journey times by six minutes and reduces layover provision to 8%;
  - in order to maintain the reliability and attractiveness of service T1 in this case, an additional vehicle would need to be provided on Mondays to Fridays at an additional cost of £113,000 per annum;
  - revenue from Park Farm (£46,343) is insufficient to secure commercial viability in isolation, meaning that Park Farm could be left with no bus service in the longer term if further development does not take place;
  - further extension of service T1 to West of Park Farm adds 650 metres and two minutes to the new route length and journey time at an additional cost of £2,000 per annum (making £115,000 per annum additional cost in total);
  - revenue from the combined developments (£123,174) would be sufficient to fund the additional vehicle in the long term, securing commercial viability for both sites;
  - the long-term commercial viability of a frequent bus service at Park Farm cannot be guaranteed and only further development at West of Park Farm can assist in maintaining public transport services to this area of Thornbury in the longer term; and
  - Section 106 funds from Park Farm should be sufficient to fund the bus service and no further contributions are required from West of Park Farm to make the service sustainable, although if required a contribution of £10,000 can be made to offset the additional cost.
- 4.8. SGC should therefore give significant weight to the inability of the consented Park Farm development to achieve a commercially sustainable bus service in isolation when considering the West of Park Farm application and the sustainable transport benefits it can offer.

# TECHNICAL NOTE

## Appendix A

PBA Industry Cost Model

# TECHNICAL NOTE

WEST OF PARK FARM, THORNBURY  
Costings

Viability Model  
12.07.19 v1.1

## Variable Costs

	DESCRIPTION	RATE	SOURCE
DRIVER	Hourly Rate	£ 11.50	
	NI Rate above Threshold	13.8%	1
	NI Threshold	£162	1
	Effective NI Rate	9.5%	
	Pension	5.0%	2
	Holidays	12%	
	Sickness	2.0%	3
	DCPC Training	0.4%	4
	Duty Efficiency	90%	5
	Driver Cost Per Hour		£ 15.97
MAINTENANCE	Maintenance Cost per Hour	£ 1.50	6
FUEL	Pump Price	£ 1.22	
	VAT	20.0%	
	BSOG	£ 0.35	7
	ITSO smartcard	£ 0.03	7
	AVL	£ 0.01	7
	Cost/litre	£ 0.66	
	Consumption (mpg)	6.30	
	Consumption (l/100km)	45.09	
	Fuel Cost Per Km		£ 0.30
TYRES	Tyre Cost Per Km	£ 0.02	

## Semi Variable Costs

	DESCRIPTION	RATE	SOURCE
CAPITAL	Vehicle Type	ADL E400MMC	
	Purchase Price	£ 200,000	
	Vehicle Life	10	
	Residual Value	£ 20,000	
	ETM	£ 500	8
	Depreciation Charge		£18,500
FINANCE	Interest Rate	8%	
	Deposit	20%	
	Loan Period (years)	5	
	Interest (Year 1)	£ 12,800	
	Interest (Year 2)	£ 10,618	
	Interest (Year 3)	£ 8,262	
	Interest (Year 4)	£ 5,717	
	Interest (Year 5)	£ 2,968	
	Total Interest	£ 40,365	
Finance Cost		£ 4,037	
OPERATING	Insurance	£ 1,800	2
	Licences	£ 500	10
	Maintenance per PVR	£ 7,200	2
	Cleaning	£ 1,500	
	SV Operating Cost		£ 11,000

## Fixed Costs

	DESCRIPTION	RATE	SOURCE
SUPERVISION	Manager	£ 35,000	
	Engineering Supervisor	£ 25,000	
	Inspectors/Supervisors	£ 25,000	
	Admin Assistant	£ 15,000	
	MARKETING	Launch Budget	£ 2,000
	Annual Budget	£ 2,000	
OVERHEADS		5%	8
CONTRIBUTION	Target Rate	15.0%	

## Sources

- |   |                                       |
|---|---------------------------------------|
| 1 From HMRC 2018-19   | 6 Operator discussions, November 2015 |
| 2 Operator discussions, November 2015                         | 7 Updated 01.04.12                    |
| 3 From XpertHR sickness absence rates survey 2015 (transport) | 8 Operator discussions, February 2018 |
| 4 1 day per year  | 9 Operator discussions, November 2015 |
| 5 Default value 90% (Blackpool Transport)                     | 10 V149, July 2019                    |

# TECHNICAL NOTE

## Appendix B

Baseline Scenario: Timetable and Model Outputs

# TECHNICAL NOTE

T1 Thornbury > Bristol																												Current				
Mondays to Fridays (except Public Holidays)																												July 2019				
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1				
Vehicle	1	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2		
BRISTOL, The Centre C14	...	...	...	06:14	...	07:06	07:39	08:09	08:42	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:50	16:20	17:05	17:40	18:15	18:45	19:10	19:35		
Bristol, Broadmead B1	...	...	...	06:16	...	07:09	07:41	08:11	08:44	09:17	09:48	10:18	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:19	15:54	16:24	17:09	17:44	18:18	18:48	19:12	19:37		
Harry Stoke	...	05:31	05:56	06:26	06:49	07:22	07:56	08:26	08:59	09:32	10:01	10:31	11:01	11:31	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:35	16:10	16:40	17:25	18:00	18:32	19:00	19:23	19:48		
Bradley Stoke, Willow Brook	...	05:37	06:02	06:32	06:55	07:29	08:03	08:33	09:06	09:39	10:08	10:38	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:09	15:43	16:18	16:48	17:33	18:08	18:39	19:07	19:29	19:54		
Almondsbury, The Swan	...	05:44	06:09	06:39	07:02	07:37	08:13	08:43	09:16	09:47	10:16	10:46	11:16	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:20	15:54	16:29	16:59	17:44	18:16	18:46	19:14	19:36	20:01		
Thornbury, Rock Street	04:56	05:56	06:21	06:51	07:15	07:51	08:27	08:57	09:30	10:00	10:29	10:59	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:35	16:09	16:44	17:14	17:59	18:29	18:59	19:26	19:47	20:12		
THORNBURY, Health Centre	05:08	06:08	06:33	07:03	07:28	08:02	08:38	09:08	09:43	10:13	10:42	11:12	11:42	12:12	12:42	13:12	13:42	14:12	14:42	15:12	15:48	16:22	16:57	17:27	18:12	18:41	19:11	19:36	19:57	20:22		
THORNBURY, Health Centre	05:10	06:10	06:35	07:05	07:30	08:05	08:40	09:10	09:45	10:15	10:44	11:14	11:44	12:14	12:44	13:14	13:44	14:14	14:44	15:14	15:50	16:24	16:59	17:29	18:14	18:43	19:13	19:38	20:24			
Thornbury, The Plain	05:13	06:13	06:38	07:08	07:34	08:09	08:44	09:14	09:48	10:18	10:47	11:17	11:47	12:17	12:47	13:17	13:47	14:17	14:47	15:18	15:54	16:28	17:03	17:33	18:17	18:46	19:16	19:41	20:27			
Almondsbury, The Swan	05:25	06:25	06:50	07:21	07:48	08:23	08:58	09:28	10:01	10:31	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:31	16:07	16:41	17:16	17:46	18:30	18:59	19:26	19:51	20:37			
Bradley Stoke, Willow Brook	05:33	06:33	06:58	07:28	07:57	08:32	09:07	09:37	10:08	10:38	11:07	11:37	12:07	12:37	13:07	13:37	14:07	14:37	15:09	15:40	16:16	16:50	17:25	17:55	18:37	19:06	19:32	19:57	20:42			
Harry Stoke	05:39	06:39	07:04	07:34	08:03	08:38	09:13	09:43	10:14	10:44	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:17	15:48	16:24	16:58	17:33	18:03	18:43	19:12	19:37	20:02	20:47			
Kingsdown, Bristol Royal Infirmary	05:49	06:49	07:17	07:51	08:20	08:55	09:30	09:56	10:27	10:57	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:32	16:03	16:39	17:13	17:48	18:16	18:56	19:24	19:49	20:14	20:59			
BRISTOL, The Centre C14	05:51	06:51	07:20	07:54	08:23	08:58	09:33	09:59	10:30	11:00	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:35	16:06	16:42	17:16	17:51	18:19	18:59	19:27	19:52	20:17	21:02			
Cycle time	01:18	01:35	01:43	01:55	01:53	02:09	02:06	02:06	02:03	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:05	02:05	02:20	02:25	02:25	02:05	01:55	01:37	01:32	00:47	01:27			
Layover time	00:23	00:15	00:19	00:15	00:19	00:17	00:12	00:16	00:15	00:15	00:16	00:16	00:16	00:16	00:16	00:16	00:16	00:16	00:15	00:14	00:23	00:24	00:24	00:11	00:08	...	...	...	...			
% layover	29%	16%	18%	13%	17%	13%	10%	13%	12%	13%	13%	13%	13%	13%	13%	13%	13%	13%	12%	11%	16%	17%	17%	18%	9%	7%	...	...	...	...	14%	



# TECHNICAL NOTE

T1 Thornbury > Bristol																							Current	
Saturdays (except Public Holidays)																							July 2019	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		
Vehicle	2	4	2	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>BRISTOL, The Centre C14</b>	...	...	07:21	08:19	08:49	09:18	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:15	16:45	17:15	17:45	18:15
Bristol, Broadmead B1	...	...	07:23	08:21	08:51	09:20	09:47	10:17	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:18	15:48	16:18	16:48	17:18	17:48	18:18
Harry Stoke	05:37	06:37	07:33	08:32	09:02	09:31	09:58	10:28	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30
Bradley Stoke, Willow Brook	05:43	06:43	07:39	08:38	09:08	09:37	10:04	10:34	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:36	16:06	16:36	17:06	17:36	18:06	18:36
Almondsbury, The Swan	05:49	06:49	07:46	08:45	09:15	09:44	10:11	10:41	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:12	15:42	16:12	16:42	17:12	17:42	18:13	18:43
Thornbury, Rock Street	06:00	07:00	07:58	08:57	09:27	09:56	10:23	10:54	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:25	15:55	16:25	16:55	17:25	17:55	18:26	18:56
<b>THORNBURY, Health Centre</b>	06:12	07:12	08:10	09:09	09:39	10:08	10:35	11:06	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:08	15:36	16:06	16:36	17:06	17:36	18:06	18:38	19:08
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1
Vehicle	2	4	2	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>THORNBURY, Health Centre</b>	06:14	07:14	08:12	09:11	09:41	10:10	10:37	11:08	11:40	12:10	12:40	13:10	13:40	14:10	14:40	15:10	15:38	16:08	16:38	17:08	17:38	18:08	18:40	19:10
Thornbury, The Plain	06:17	07:17	08:15	09:14	09:44	10:13	10:40	11:11	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:13	15:41	16:11	16:41	17:11	17:41	18:11	18:43	19:13
Almondsbury, The Swan	06:28	07:28	08:27	09:26	09:56	10:25	10:52	11:23	11:55	12:25	12:55	13:25	13:55	14:25	14:55	15:25	15:53	16:23	16:53	17:23	17:53	18:23	18:55	19:23
Bradley Stoke, Willow Brook	06:34	07:34	08:33	09:32	10:02	10:31	10:59	11:30	12:02	12:32	13:02	13:32	14:02	14:32	15:02	15:31	15:59	16:29	16:59	17:29	17:59	18:30	19:02	19:29
Harry Stoke	06:39	07:39	08:38	09:37	10:07	10:38	11:06	11:37	12:09	12:39	13:09	13:39	14:09	14:39	15:08	15:37	16:05	16:35	17:05	17:35	18:05	18:37	19:07	19:34
Kingsdown, Bristol Royal Infirmary	06:49	07:50	08:49	09:48	10:18	10:50	11:18	11:49	12:21	12:51	13:21	13:51	14:21	14:51	15:20	15:49	16:17	16:47	17:17	17:47	18:17	18:49	19:19	19:46
<b>BRISTOL, The Centre C14</b>	06:51	07:53	08:52	09:51	10:21	10:53	11:21	11:52	12:24	12:54	13:24	13:54	14:24	14:54	15:23	15:52	16:20	16:50	17:20	17:50	18:20	18:52	19:22	19:49

T1 Thornbury > Bristol													Current
Sundays and Public Holidays													July 2019
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	1	2	1	2	1	2	1	2	1	2	
<b>BRISTOL, The Centre C14</b>	...	...	09:12	10:12	11:12	12:12	13:12	14:12	15:12	16:12	17:12		
Bristol, Broadmead B1	...	...	09:15	10:15	11:15	12:15	13:15	14:15	15:15	16:15	17:15		
Harry Stoke	07:18	08:23	09:27	10:27	11:27	12:27	13:27	14:27	15:27	16:27	17:27		
Bradley Stoke, Willow Brook	07:23	08:28	09:33	10:33	11:33	12:33	13:33	14:33	15:33	16:33	17:33		
Almondsbury, The Swan	07:28	08:33	09:40	10:40	11:40	12:40	13:40	14:40	15:40	16:40	17:40		
Thornbury, Rock Street	07:39	08:44	09:51	10:51	11:53	12:53	13:53	14:53	15:53	16:51	17:51		
<b>THORNBURY, Health Centre</b>	07:50	08:56	10:03	11:03	12:05	13:05	14:05	15:05	16:05	17:03	18:03		
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	1	2	1	2	1	2	1	2	1	2	
<b>THORNBURY, Health Centre</b>	07:52	08:58	10:05	11:05	12:07	13:07	14:07	15:07	16:07	17:05	18:05		
Thornbury, The Plain	07:54	09:01	10:08	11:08	12:10	13:10	14:10	15:10	16:10	17:08	18:08		
Almondsbury, The Swan	08:05	09:13	10:20	11:20	12:22	13:22	14:22	15:22	16:22	17:20	18:20		
Bradley Stoke, Willow Brook	08:11	09:20	10:27	11:27	12:29	13:29	14:29	15:29	16:29	17:27	18:27		
Harry Stoke	08:16	09:26	10:33	11:33	12:36	13:36	14:36	15:36	16:36	17:33	18:34		
Kingsdown, Bristol Royal Infirmary	08:26	09:36	10:43	11:45	12:48	13:48	14:48	15:48	16:48	17:45	18:46		
<b>BRISTOL, The Centre C14</b>	08:28	09:39	10:46	11:48	12:51	13:51	14:51	15:51	16:51	17:48	18:49		

## TECHNICAL NOTE

### WEST OF PARK FARM, THORBURY

#### Viability Model

#### EXISTING RESOURCES

12.07.19

v1.1

#### Annualisation Factors

Mon-Fri	253
Sat	52
Sun	59

Spare Veh Holding	
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Route km	53
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Mon-Fri	Bus	Start	Finish	Hours	Journeys	Km
	1	04:26	20:32	16:06	7.5	397.5
	2	05:01	21:17	16:16	8	424
	3	05:26	20:07	14:41	7	371
	4	06:19	20:12	13:53	6.5	344.5
<b>Total</b>				<b>60:56</b>		<b>1537</b>

Sat	Bus	Start	Finish	Hours	Journeys	Km
	1	08:19	18:35	10:16	5	265
	2	05:07	19:07	14:00	7	371
	3	09:15	19:37	10:22	5	265
	4	06:07	20:04	13:57	7	371
<b>Total</b>				<b>48:35</b>		<b>1272</b>

Sun	Bus	Start	Finish	Hours	Journeys	Km
	1	06:48	19:04	12:16	6	318
	2	07:53	18:03	10:10	5	265
<b>Total</b>				<b>22:26</b>		<b>583</b>

Annual Hours	19,266
Annual Km	489,402
PVR	4

# TECHNICAL NOTE

**WEST OF PARK FARM, THORNBURY**  
**Viability Model**  
**EXISTING SERVICE**

12.07.19

v1.1

Year	1	2	3	4	5	6	7	8	9	10
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**COSTS (£'000)**

*Variable Costs*

Driver payroll	308	308	308	308	308	308	308	308	308	308
Fuel	145	145	145	145	145	145	145	145	145	145
Tyres	10	10	10	10	10	10	10	10	10	10
Maintenance materials	29	29	29	29	29	29	29	29	29	29
<b>Sub Total: Variable Costs</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>	<b>492</b>

*Semi Variable Costs*

Depreciation	74	74	74	74	74	74	74	74	74	74
Insurance	7	7	7	7	7	7	7	7	7	7
Finance	16	16	16	16	16	16	16	16	16	16
Licences	2	2	2	2	2	2	2	2	2	2
Maintenance labour	29	29	29	29	29	29	29	29	29	29
Cleaning	6	6	6	6	6	6	6	6	6	6
<b>Sub Total: Semi Variable Costs</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>	<b>134</b>

*Fixed Costs*

Marketing and Promotion	0	0	0	0	0	0	0	0	0	0
Management and Supervision	0	0	0	0	0	0	0	0	0	0
Overheads	31	31	31	31	31	31	31	31	31	31
<b>Total Fixed Costs</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>

<b>TOTAL COSTS (exc. Profit)</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>	<b>657</b>
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*Profit Margin*

Target Profit	99	99	99	99	99	99	99	99	99	99
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<b>TOTAL COSTS (inc. Profit)</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>	<b>756</b>
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<b>Average Cost per Vehicle</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>	<b>189</b>
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# TECHNICAL NOTE

## Appendix C

Park Farm Scenario

Appendix C1 PVR 4: Timetable

Appendix C2 PVR 5: Timetable and Model Outputs

# TECHNICAL NOTE

## APPENDIX C1

T1 Thornbury > Bristol																												Park Farm			
Mondays to Fridays (except Public Holidays)																												PVR 4			
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1			
Vehicle	1	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	
<b>BRISTOL, The Centre C14</b>	...	...	...	06:08	...	07:00	07:35	08:05	08:40	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:50	16:20	17:05	17:40	18:15	18:45	19:10	19:40	
Bristol, Broadmead B1	...	...	...	06:10	...	07:03	07:37	08:07	08:42	09:17	09:48	10:18	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:19	15:54	16:24	17:09	17:44	18:18	18:48	19:12	19:42	
Harry Stoke	...	05:25	05:50	06:20	06:44	07:16	07:52	08:22	08:57	09:32	10:01	10:31	11:01	11:31	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:35	16:10	16:40	17:25	18:00	18:32	19:00	19:23	19:53	
Bradley Stoke, Willow Brook	...	05:31	05:56	06:26	06:50	07:23	07:59	08:29	09:04	09:39	10:08	10:38	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:09	15:43	16:18	16:48	17:33	18:08	18:39	19:07	19:29	19:59	
Almondsbury, The Swan	...	05:38	06:03	06:33	06:57	07:31	08:09	08:39	09:14	09:47	10:16	10:46	11:16	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:20	15:54	16:29	16:59	17:44	18:16	18:46	19:14	19:36	20:06	
Thornbury, Rock Street	04:50	05:50	06:15	06:45	07:10	07:45	08:23	08:53	09:28	10:00	10:29	10:59	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:35	16:09	16:44	17:14	17:59	18:29	18:59	19:26	19:47	20:17	
Thornbury, Park Farm	05:03	06:03	06:28	06:58	07:24	07:57	08:35	09:05	09:42	10:14	10:43	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:13	15:49	16:23	16:58	17:28	18:13	18:42	19:12	19:37	19:58	20:28	
<b>THORNBURY, Health Centre</b>	<b>05:08</b>	<b>06:08</b>	<b>06:33</b>	<b>07:03</b>	<b>07:29</b>	<b>08:02</b>	<b>08:40</b>	<b>09:10</b>	<b>09:47</b>	<b>10:19</b>	<b>10:48</b>	<b>11:18</b>	<b>11:48</b>	<b>12:18</b>	<b>12:48</b>	<b>13:18</b>	<b>13:48</b>	<b>14:18</b>	<b>14:48</b>	<b>15:18</b>	<b>15:54</b>	<b>16:28</b>	<b>17:03</b>	<b>17:33</b>	<b>18:18</b>	<b>18:47</b>	<b>19:17</b>	<b>19:42</b>	<b>20:03</b>	<b>20:33</b>	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		
Vehicle	1	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	3	1	4	2	
<b>THORNBURY, Health Centre</b>	05:10	06:10	06:35	07:05	07:31	08:04	08:42	09:12	09:49	10:21	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:56	16:30	17:05	17:35	18:20	18:49	19:19	19:44	20:35		
Thornbury, The Plain	05:13	06:13	06:38	07:08	07:35	08:08	08:46	09:16	09:52	10:24	10:53	11:23	11:53	12:23	12:53	13:23	13:53	14:23	14:53	15:24	16:00	16:34	17:09	17:39	18:23	18:52	19:22	19:47	20:38		
Almondsbury, The Swan	05:25	06:25	06:50	07:21	07:49	08:22	09:00	09:30	10:05	10:37	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:37	16:13	16:47	17:22	17:52	18:36	19:05	19:32	19:57	20:48		
Bradley Stoke, Willow Brook	05:33	06:33	06:58	07:28	07:58	08:31	09:09	09:39	10:12	10:44	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:15	15:46	16:22	16:56	17:31	18:01	18:43	19:12	19:38	20:03	20:53		
Harry Stoke	05:39	06:39	07:04	07:34	08:04	08:37	09:15	09:45	10:18	10:50	11:19	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:23	15:54	16:30	17:04	17:39	18:09	18:49	19:18	19:43	20:08	20:58		
Kingsdown, Bristol Royal Infirmary	05:49	06:49	07:17	07:51	08:21	08:54	09:32	09:58	10:31	11:03	11:32	12:02	12:32	13:02	13:32	14:02	14:32	15:02	15:38	16:09	16:45	17:19	17:54	18:22	19:02	19:30	19:55	20:20	21:10		
<b>BRISTOL, The Centre C14</b>	<b>05:51</b>	<b>06:51</b>	<b>07:20</b>	<b>07:54</b>	<b>08:24</b>	<b>08:57</b>	<b>09:35</b>	<b>10:01</b>	<b>10:34</b>	<b>11:06</b>	<b>11:35</b>	<b>12:05</b>	<b>12:35</b>	<b>13:05</b>	<b>13:35</b>	<b>14:05</b>	<b>14:35</b>	<b>15:05</b>	<b>15:41</b>	<b>16:12</b>	<b>16:48</b>	<b>17:22</b>	<b>17:57</b>	<b>18:25</b>	<b>19:05</b>	<b>19:33</b>	<b>19:58</b>	<b>20:23</b>	<b>21:13</b>		
Cycle time	01:18	01:35	01:45	01:57	01:56	02:15	02:10	02:10	02:05	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:00	02:05	02:05	02:20	02:25	02:25	02:05	02:00						
Layover time	00:17	00:09	00:15	00:11	00:16	00:18	00:10	00:14	00:11	00:09	00:10	00:10	00:10	00:10	00:10	00:10	00:10	00:10	00:09	00:08	00:17	00:18	00:18	00:20	00:05	00:07					
% layover	22%	9%	14%	9%	14%	13%	8%	11%	9%	7%	8%	8%	8%	8%	8%	8%	8%	8%	7%	6%	12%	12%	12%	14%	4%	6%	10%				

# TECHNICAL NOTE

T1 Thornbury > Bristol																							Park Farm	
Saturdays (except Public Holidays)																							PVR 4	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		
Vehicle	2	4	2	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BRISTOL, The Centre C14	...	...	07:15	08:15	08:45	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:15	16:45	17:15	17:45	18:15
Bristol, Broadmead B1	...	...	07:17	08:17	08:47	09:17	09:47	10:17	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:18	15:48	16:18	16:48	17:18	17:48	18:18
Harry Stoke	05:31	06:31	07:27	08:28	08:58	09:28	09:58	10:28	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30
Bradley Stoke, Willow Brook	05:37	06:37	07:33	08:34	09:04	09:34	10:04	10:34	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:36	16:06	16:36	17:06	17:36	18:06	18:36
Almondsbury, The Swan	05:43	06:43	07:40	08:41	09:11	09:41	10:11	10:41	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:12	15:42	16:12	16:42	17:12	17:42	18:13	18:43
Thornbury, Rock Street	05:54	06:54	07:52	08:53	09:23	09:53	10:23	10:54	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:25	15:55	16:25	16:55	17:25	17:55	18:26	18:56
Thornbury, Park Farm	06:07	07:07	08:05	09:06	09:36	10:06	10:36	11:07	11:39	12:09	12:39	13:09	13:39	14:09	14:39	15:09	15:37	16:07	16:37	17:07	17:37	18:07	18:39	19:09
THORNBURY, Health Centre	06:12	07:12	08:10	09:11	09:41	10:11	10:41	11:12	11:44	12:14	12:44	13:14	13:44	14:14	14:44	15:14	15:42	16:12	16:42	17:12	17:42	18:12	18:44	19:14
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1
Vehicle	2	4	2	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
THORNBURY, Health Centre	06:14	07:14	08:12	09:13	09:43	10:13	10:43	11:14	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:16	15:44	16:14	16:44	17:14	17:44	18:14	18:46	19:16
Thornbury, The Plain	06:17	07:17	08:15	09:16	09:46	10:16	10:46	11:17	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:19	15:47	16:17	16:47	17:17	17:47	18:17	18:49	19:19
Almondsbury, The Swan	06:28	07:28	08:27	09:28	09:58	10:28	10:58	11:29	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:31	15:59	16:29	16:59	17:29	17:59	18:29	19:01	19:29
Bradley Stoke, Willow Brook	06:34	07:34	08:33	09:34	10:04	10:34	11:05	11:36	12:08	12:38	13:08	13:38	14:08	14:38	15:08	15:37	16:05	16:35	17:05	17:35	18:05	18:36	19:08	19:35
Harry Stoke	06:39	07:39	08:38	09:39	10:09	10:41	11:12	11:43	12:15	12:45	13:15	13:45	14:15	14:45	15:14	15:43	16:11	16:41	17:11	17:41	18:11	18:43	19:13	19:40
Kingsdown, Bristol Royal Infirmary	06:49	07:50	08:49	09:50	10:20	10:53	11:24	11:55	12:27	12:57	13:27	13:57	14:27	14:57	15:26	15:55	16:23	16:53	17:23	17:53	18:23	18:55	19:25	19:52
BRISTOL, The Centre C14	06:51	07:53	08:52	09:53	10:23	10:56	11:27	11:58	12:30	13:00	13:30	14:00	14:30	15:00	15:29	15:58	16:26	16:56	17:26	17:56	18:26	18:58	19:28	19:55

T1 Thornbury > Bristol													Park Farm
Sundays and Public Holidays													PVR 4
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	1	2	1	2	1	2	1	2	1	2	
BRISTOL, The Centre C14	...	...	09:10	10:10	11:10	12:10	13:10	14:10	15:10	16:10	17:10	17:10	
Bristol, Broadmead B1	...	...	09:13	10:13	11:13	12:13	13:13	14:13	15:13	16:13	17:13	17:13	
Harry Stoke	07:15	08:15	09:25	10:25	11:25	12:25	13:25	14:25	15:25	16:25	17:25	17:25	
Bradley Stoke, Willow Brook	07:20	08:20	09:31	10:31	11:31	12:31	13:31	14:31	15:31	16:31	17:31	17:31	
Almondsbury, The Swan	07:25	08:25	09:38	10:38	11:38	12:38	13:38	14:38	15:38	16:38	17:38	17:38	
Thornbury, Rock Street	07:36	08:36	09:49	10:49	11:51	12:51	13:51	14:51	15:51	16:49	17:49	17:49	
Thornbury, Park Farm	07:48	08:49	10:02	11:02	12:04	13:04	14:04	15:04	16:04	17:02	18:02	18:02	
THORNBURY, Health Centre	07:53	08:54	10:07	11:07	12:09	13:09	14:09	15:09	16:09	17:07	18:07	18:07	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	1	2	1	2	1	2	1	2	1	2	
THORNBURY, Health Centre	07:55	08:56	10:09	11:09	12:11	13:11	14:11	15:11	16:11	17:09	18:09	18:09	
Thornbury, The Plain	07:57	08:59	10:12	11:12	12:14	13:14	14:14	15:14	16:14	17:12	18:12	18:12	
Almondsbury, The Swan	08:08	09:11	10:24	11:24	12:26	13:26	14:26	15:26	16:26	17:24	18:24	18:24	
Bradley Stoke, Willow Brook	08:14	09:18	10:31	11:31	12:33	13:33	14:33	15:33	16:33	17:31	18:31	18:31	
Harry Stoke	08:19	09:24	10:37	11:37	12:40	13:40	14:40	15:40	16:40	17:37	18:38	18:38	
Kingsdown, Bristol Royal Infirmary	08:29	09:34	10:47	11:49	12:52	13:52	14:52	15:52	16:52	17:49	18:50	18:50	
BRISTOL, The Centre C14	08:31	09:37	10:50	11:52	12:55	13:55	14:55	15:55	16:55	17:52	18:53	18:53	

# TECHNICAL NOTE

## APPENDIX C2

T1 Thornbury > Bristol																												Park Farm			
Mondays to Fridays (except Public Holidays)																												PVR 5			
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1			
Vehicle	1	2	3	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	1	4	2	
<b>BRISTOL, The Centre C14</b>	...	...	...	06:08	...	07:00	07:35	08:05	08:40	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:50	16:20	17:05	17:40	18:15	18:45	19:20	19:45	
Bristol, Broadmead B1	...	...	...	06:10	...	07:03	07:37	08:07	08:42	09:17	09:48	10:18	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:19	15:54	16:24	17:09	17:44	18:18	18:48	19:22	19:47	
Harry Stoke	...	05:20	05:50	06:20	06:44	07:16	07:52	08:22	08:57	09:32	10:01	10:31	11:01	11:31	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:35	16:10	16:40	17:25	18:00	18:32	19:00	19:33	19:58	
Bradley Stoke, Willow Brook	...	05:26	05:56	06:26	06:50	07:23	07:59	08:29	09:04	09:39	10:08	10:38	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:09	15:43	16:18	16:48	17:33	18:08	18:39	19:07	19:39	20:04	
Almondsbury, The Swan	...	05:33	06:03	06:33	06:57	07:31	08:09	08:39	09:14	09:47	10:16	10:46	11:16	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:20	15:54	16:29	16:59	17:44	18:16	18:46	19:14	19:46	20:11	
Thornbury, Rock Street	04:50	05:45	06:15	06:45	07:10	07:45	08:23	08:53	09:28	10:00	10:29	10:59	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:35	16:09	16:44	17:14	17:59	18:29	18:59	19:26	19:57	20:22	
Thornbury, Park Farm	05:03	05:58	06:28	06:58	07:24	07:57	08:35	09:05	09:42	10:14	10:43	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:13	15:49	16:23	16:58	17:28	18:13	18:42	19:12	19:37	20:08	20:33	
<b>THORNBURY, Health Centre</b>	<b>05:08</b>	<b>06:03</b>	<b>06:33</b>	<b>07:03</b>	<b>07:29</b>	<b>08:02</b>	<b>08:40</b>	<b>09:10</b>	<b>09:47</b>	<b>10:19</b>	<b>10:48</b>	<b>11:18</b>	<b>11:48</b>	<b>12:18</b>	<b>12:48</b>	<b>13:18</b>	<b>13:48</b>	<b>14:18</b>	<b>14:48</b>	<b>15:18</b>	<b>15:54</b>	<b>16:28</b>	<b>17:03</b>	<b>17:33</b>	<b>18:18</b>	<b>18:47</b>	<b>19:17</b>	<b>19:42</b>	<b>20:13</b>	<b>20:38</b>	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		
Vehicle	1	2	3	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	1	4	2	
<b>THORNBURY, Health Centre</b>	05:10	06:05	06:35	07:05	07:31	08:04	08:42	09:12	09:49	10:21	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:56	16:30	17:05	17:35	18:20	18:49	19:19	19:44	20:40		
Thornbury, The Plain	05:13	06:08	06:38	07:08	07:35	08:08	08:46	09:16	09:52	10:24	10:53	11:23	11:53	12:23	12:53	13:23	13:53	14:23	14:53	15:24	16:00	16:34	17:09	17:39	18:23	18:52	19:22	19:47	20:43		
Almondsbury, The Swan	05:25	06:20	06:50	07:21	07:49	08:22	09:00	09:30	10:05	10:37	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:37	16:13	16:47	17:22	17:52	18:36	19:05	19:32	19:57	20:53		
Bradley Stoke, Willow Brook	05:33	06:28	06:58	07:28	07:58	08:31	09:09	09:39	10:12	10:44	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:15	15:46	16:22	16:56	17:31	18:01	18:43	19:12	19:38	20:03	20:58		
Harry Stoke	05:39	06:34	07:04	07:34	08:04	08:37	09:15	09:45	10:18	10:50	11:19	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:23	15:54	16:30	17:04	17:39	18:09	18:49	19:18	19:43	20:08	21:03		
Kingsdown, Bristol Royal Infirmary	05:49	06:44	07:17	07:51	08:21	08:54	09:32	09:58	10:31	11:03	11:32	12:02	12:32	13:02	13:32	14:02	14:32	15:02	15:38	16:09	16:45	17:19	17:54	18:22	19:02	19:30	19:55	20:20	21:15		
<b>BRISTOL, The Centre C14</b>	<b>05:51</b>	<b>06:46</b>	<b>07:20</b>	<b>07:54</b>	<b>08:24</b>	<b>08:57</b>	<b>09:35</b>	<b>10:01</b>	<b>10:34</b>	<b>11:06</b>	<b>11:35</b>	<b>12:05</b>	<b>12:35</b>	<b>13:05</b>	<b>13:35</b>	<b>14:05</b>	<b>14:35</b>	<b>15:05</b>	<b>15:41</b>	<b>16:12</b>	<b>16:48</b>	<b>17:22</b>	<b>17:57</b>	<b>18:25</b>	<b>19:05</b>	<b>19:33</b>	<b>19:58</b>	<b>20:23</b>	<b>21:18</b>		
<i>Cycle time</i>	01:18	01:40	01:45	02:32	02:31	02:45	02:40	02:40	02:35	02:30	02:30	02:30	02:30	02:30	02:30	02:30	02:30	02:35	02:35	02:50	02:55	03:00	02:07	02:25	02:15	02:05	01:43	01:38	00:53	01:33	
<i>Layover time</i>	00:17	00:14	00:15	00:46	00:51	00:48	00:40	00:44	00:41	00:39	00:40	00:40	00:40	00:40	00:40	00:40	00:40	00:45	00:39	00:53	00:52	00:53	...	00:20	00:15	00:12	...	...	...	...	
<i>% layover</i>	22%	14%	14%	30%	34%	29%	25%	28%	26%	26%	27%	27%	27%	27%	27%	27%	27%	29%	25%	31%	30%	29%	...	14%	11%	10%	...	...	...	25%	

# TECHNICAL NOTE

T1 Thornbury > Bristol																							Park Farm	
Saturdays (except Public Holidays)																							PVR 5	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		
Vehicle	2	4	2	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BRISTOL, The Centre C14	...	...	07:15	08:15	08:45	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:15	16:45	17:15	17:45	18:15
Bristol, Broadmead B1	...	...	07:17	08:17	08:47	09:17	09:47	10:17	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:18	15:48	16:18	16:48	17:18	17:48	18:18
Harry Stoke	05:31	06:31	07:27	08:28	08:58	09:28	09:58	10:28	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30
Bradley Stoke, Willow Brook	05:37	06:37	07:33	08:34	09:04	09:34	10:04	10:34	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:36	16:06	16:36	17:06	17:36	18:06	18:36
Almondsbury, The Swan	05:43	06:43	07:40	08:41	09:11	09:41	10:11	10:41	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:12	15:42	16:12	16:42	17:12	17:42	18:13	18:43
Thornbury, Rock Street	05:54	06:54	07:52	08:53	09:23	09:53	10:23	10:54	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:25	15:55	16:25	16:55	17:25	17:55	18:26	18:56
Thornbury, Park Farm	06:07	07:07	08:05	09:06	09:36	10:06	10:36	11:07	11:39	12:09	12:39	13:09	13:39	14:09	14:39	15:09	15:37	16:07	16:37	17:07	17:37	18:07	18:39	19:09
THORNBURY, Health Centre	06:12	07:12	08:10	09:11	09:41	10:11	10:41	11:12	11:44	12:14	12:44	13:14	13:44	14:14	14:44	15:14	15:42	16:12	16:42	17:12	17:42	18:12	18:44	19:14
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1
Vehicle	2	4	2	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
THORNBURY, Health Centre	06:14	07:14	08:12	09:13	09:43	10:13	10:43	11:14	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:16	15:44	16:14	16:44	17:14	17:44	18:14	18:46	19:16
Thornbury, The Plain	06:17	07:17	08:15	09:16	09:46	10:16	10:46	11:17	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:19	15:47	16:17	16:47	17:17	17:47	18:17	18:49	19:19
Almondsbury, The Swan	06:28	07:28	08:27	09:28	09:58	10:28	10:58	11:29	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:31	15:59	16:29	16:59	17:29	17:59	18:29	19:01	19:29
Bradley Stoke, Willow Brook	06:34	07:34	08:33	09:34	10:04	10:34	11:05	11:36	12:08	12:38	13:08	13:38	14:08	14:38	15:08	15:37	16:05	16:35	17:05	17:35	18:05	18:36	19:08	19:35
Harry Stoke	06:39	07:39	08:38	09:39	10:09	10:41	11:12	11:43	12:15	12:45	13:15	13:45	14:15	14:45	15:14	15:43	16:11	16:41	17:11	17:41	18:11	18:43	19:13	19:40
Kingsdown, Bristol Royal Infirmary	06:49	07:50	08:49	09:50	10:20	10:53	11:24	11:55	12:27	12:57	13:27	13:57	14:27	14:57	15:26	15:55	16:23	16:53	17:23	17:53	18:23	18:55	19:25	19:52
BRISTOL, The Centre C14	06:51	07:53	08:52	09:53	10:23	10:56	11:27	11:58	12:30	13:00	13:30	14:00	14:30	15:00	15:29	15:58	16:26	16:56	17:26	17:56	18:26	18:58	19:28	19:55

T1 Thornbury > Bristol													Park Farm
Sundays and Public Holidays													PVR 5
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	1	2	1	2	1	2	1	2	1	2	
BRISTOL, The Centre C14	...	...	09:10	10:10	11:10	12:10	13:10	14:10	15:10	16:10	17:10	18:10	
Bristol, Broadmead B1	...	...	09:13	10:13	11:13	12:13	13:13	14:13	15:13	16:13	17:13	18:13	
Harry Stoke	07:15	08:15	09:25	10:25	11:25	12:25	13:25	14:25	15:25	16:25	17:25	18:25	
Bradley Stoke, Willow Brook	07:20	08:20	09:31	10:31	11:31	12:31	13:31	14:31	15:31	16:31	17:31	18:31	
Almondsbury, The Swan	07:25	08:25	09:38	10:38	11:38	12:38	13:38	14:38	15:38	16:38	17:38	18:38	
Thornbury, Rock Street	07:36	08:36	09:49	10:49	11:51	12:51	13:51	14:51	15:51	16:49	17:49	18:49	
Thornbury, Park Farm	07:48	08:49	10:02	11:02	12:04	13:04	14:04	15:04	16:04	17:02	18:02	19:02	
THORNBURY, Health Centre	07:53	08:54	10:07	11:07	12:09	13:09	14:09	15:09	16:09	17:07	18:07	19:07	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	1	2	1	2	1	2	1	2	1	2	
THORNBURY, Health Centre	07:55	08:56	10:09	11:09	12:11	13:11	14:11	15:11	16:11	17:09	18:09	19:09	
Thornbury, The Plain	07:57	08:59	10:12	11:12	12:14	13:14	14:14	15:14	16:14	17:12	18:12	19:12	
Almondsbury, The Swan	08:08	09:11	10:24	11:24	12:26	13:26	14:26	15:26	16:26	17:24	18:24	19:24	
Bradley Stoke, Willow Brook	08:14	09:18	10:31	11:31	12:33	13:33	14:33	15:33	16:33	17:31	18:31	19:31	
Harry Stoke	08:19	09:24	10:37	11:37	12:40	13:40	14:40	15:40	16:40	17:37	18:38	19:38	
Kingsdown, Bristol Royal Infirmary	08:29	09:34	10:47	11:49	12:52	13:52	14:52	15:52	16:52	17:49	18:50	19:50	
BRISTOL, The Centre C14	08:31	09:37	10:50	11:52	12:55	13:55	14:55	15:55	16:55	17:52	18:53	19:53	



# TECHNICAL NOTE

**WEST OF PARK FARM, THORNBURY**  
**Viability Model**  
**NEW RESOURCES**

12.07.19 v1.1

*Annualisation Factors*

Mon-Fri	253
Sat	52
Sun	59

Spare Veh Holding	
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Route km	54.7
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Mon-Fri	Bus	Start	Finish	Hours	Journeys	Km
	1	04:20	20:38	16:18	6.5	355.55
	2	04:50	21:33	16:43	7	382.9
	3	05:20	20:13	14:53	6	328.2
	4	06:14	20:28	14:14	5.5	300.85
	5	07:35	18:12	10:37	4	218.8
				00:00		0
				00:00		0
				00:00		0
<b>Total</b>				<b>72:45</b>		<b>1586.3</b>

Sat	Bus	Start	Finish	Hours	Journeys	Km
	1	08:15	18:41	10:26	5	273.5
	2	05:01	19:13	14:12	7	382.9
	3	09:15	19:43	10:28	5	273.5
	4	06:01	20:10	14:09	7	382.9
				00:00		0
				00:00		0
				00:00		0
				00:00		0
<b>Total</b>				<b>49:15</b>		<b>1312.8</b>

Sun	Bus	Start	Finish	Hours	Journeys	Km
	1	06:45	19:08	12:23	6	328.2
	2	07:45	18:07	10:22	5	273.5
				00:00		0
				00:00		0
				00:00		0
				00:00		0
<b>Total</b>				<b>22:45</b>		<b>601.7</b>

Annual Hours	22,309
Annual Km	505,100
PVR	5
Fleet	5

# TECHNICAL NOTE

**WEST OF PARK FARM, THORNBURY**  
**Park Farm Viability Model**  
**NEW SERVICE**

12.07.19

v1.1

Year	1	2	3	4	5	6	7	8	9	10
<b>COSTS (£'000)</b>										
<i>Variable Costs</i>										
Driver payroll	356	356	356	356	356	356	356	356	356	356
Fuel	150	150	150	150	150	150	150	150	150	150
Tyres	10	10	10	10	10	10	10	10	10	10
Maintenance materials	33	33	33	33	33	33	33	33	33	33
<b>Sub Total: Variable Costs</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>	<b>550</b>
<i>Semi Variable Costs</i>										
Depreciation	93	93	93	93	93	93	93	93	93	93
Insurance	9	9	9	9	9	9	9	9	9	9
Finance	20	20	20	20	20	20	20	20	20	20
Licences	3	3	3	3	3	3	3	3	3	3
Maintenance labour	36	36	36	36	36	36	36	36	36	36
Cleaning	8	8	8	8	8	8	8	8	8	8
<b>Sub Total: Semi Variable Costs</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>
<i>Fixed Costs</i>										
Marketing and Promotion	2	2	2	2	2	2	2	2	2	2
Management and Supervision	0	0	0	0	0	0	0	0	0	0
Overheads	36	36	36	36	36	36	36	36	36	36
<b>Total Fixed Costs</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>
<b>TOTAL COSTS (exc. Profit)</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>	<b>755</b>
<i>Profit Margin</i>										
<b>Target Profit</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>	<b>113</b>
<b>TOTAL COSTS (inc. Profit)</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>	<b>869</b>
<b>Average Cost per Vehicle</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>

# TECHNICAL NOTE

## WEST OF PARK FARM, THORNBURY Park Farm Scenario Viability Model Demand

12.07.19

v1.1

### New Residential

DESCRIPTION	FACTOR	SOURCE
Total Development (units)	500	
Build Out Rate (units)	100	
Household Occupation	2.4	1
Annual Trip Rate	975	2
Adult population (>16)	1,180	
Annual Total Trips	1,150,500	
Residential Bus Mode Share	2%	3

### New Residential

Year	1	2	3	4	5	6	7	8	9	10
Total houses built at yr end	100	200	300	400	500	500	500	500	500	500
Average no of houses	50	150	250	350	450	500	500	500	500	500
Population	118	354	590	826	1,062	1,180	1,180	1,180	1,180	1,180
Annual Total Trips	115,050	345,150	575,250	805,350	1,035,450	1,150,500	1,150,500	1,150,500	1,150,500	1,150,500
Annual Bus Trips	2,186	6,558	10,930	15,302	19,674	21,860	21,860	21,860	21,860	21,860

### Sources

- 1 From ONS "Households and Household Composition in England and Wales: 2001-11", Table 1
- 2 From NTS 2017, Table 0303
- 3 From the Park Farm Transport Assessment

### Ticket Sales Breakdown

Ticket Type	Sales %	SOURCE
Adult Single	18%	1
Adult Return/Day Ticket	13%	
Adult Weekly	20%	
Child	14%	
Concession	35%	

### Concession Reimbursement

ENCTS rate		SOURCE
	73.4%	2

### Local Fares

	Fare	Price/trip	NTS Sales	SOURCE
Adult				3
Single	£2.50	£2.50	18%	
Return	£5.00	£2.50	13%	
10 Journey	£26.00	£2.60	20%	
Child				
Single	£1.30	£1.30	7%	
Return	£2.60	£1.30	7%	
Concession				
Operator reimbursement	£1.84	£1.84	35%	
<b>Average Fare</b>		£2.12		
<b>Commercial Fare</b>		£2.60		

### Sources

- 1 From National Travel Survey: Use of Public Buses Personal Travel Factsheet - March 2010
- 2 <http://passtrans.co.uk/content/index.php/blog/1847-time-for-a-rethink-on-concessions-reimbursement>
- 3 Local First company published information, July 2019

# TECHNICAL NOTE

## Appendix D

Both Developments Scenario: Timetable and Model Outputs

# TECHNICAL NOTE

T1 Thornbury > Bristol																											Both			
Mondays to Fridays (except Public Holidays)																														
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1			
Vehicle	1	2	3	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3			
<b>BRISTOL, The Centre C14</b>	...	...	...	06:05	...	07:00	07:35	08:05	08:40	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:50	16:20	17:05	17:40	18:15	18:45	19:20	19:50
Bristol, Broadmead B1	...	...	...	06:07	...	07:03	07:37	08:07	08:42	09:17	09:48	10:18	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:19	15:54	16:24	17:09	17:44	18:18	18:48	19:22	19:52
Harry Stoke	...	05:18	05:48	06:17	06:42	07:16	07:52	08:22	08:57	09:32	10:01	10:31	11:01	11:31	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:35	16:10	16:40	17:25	18:00	18:32	19:00	19:33	20:03
Bradley Stoke, Willow Brook	...	05:24	05:54	06:23	06:48	07:23	07:59	08:29	09:04	09:39	10:08	10:38	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:09	15:43	16:18	16:48	17:33	18:08	18:39	19:07	19:39	20:09
Almondsbury, The Swan	...	05:31	06:01	06:30	06:55	07:31	08:09	08:39	09:14	09:47	10:16	10:46	11:16	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:20	15:54	16:29	16:59	17:44	18:16	18:46	19:14	19:46	20:16
Thornbury, Rock Street	04:48	05:43	06:13	06:42	07:08	07:45	08:23	08:53	09:28	10:00	10:29	10:59	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:35	16:09	16:44	17:14	17:59	18:29	18:59	19:26	19:57	20:27
Thornbury, Park Farm	05:03	05:58	06:28	06:57	07:24	07:59	08:37	09:07	09:44	10:16	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:51	16:25	17:00	17:30	18:15	18:45	19:14	19:39	20:10	20:40
<b>THORNBURY, Health Centre</b>	05:08	06:03	06:33	07:02	07:29	08:04	08:42	09:12	09:49	10:21	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:56	16:30	17:05	17:35	18:20	18:50	19:19	19:44	20:15	20:45
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle	1	2	3	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	5	1	4	2	3	1	2	
<b>THORNBURY, Health Centre</b>	05:10	06:05	06:35	07:04	07:31	08:06	08:44	09:14	09:51	10:23	10:52	11:22	11:52	12:22	12:52	13:22	13:52	14:22	14:52	15:22	15:58	16:32	17:07	17:37	18:22	18:52	19:21	19:46	20:47	
Thornbury, The Plain	05:13	06:08	06:38	07:07	07:35	08:10	08:48	09:18	09:54	10:26	10:55	11:25	11:55	12:25	12:55	13:25	13:55	14:25	14:55	15:26	16:02	16:36	17:11	17:41	18:25	18:55	19:24	19:49	20:50	
Almondsbury, The Swan	05:25	06:20	06:50	07:20	07:49	08:24	09:02	09:32	10:07	10:39	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:08	15:39	16:15	16:49	17:24	17:54	18:38	19:08	19:34	19:59	21:00	
Bradley Stoke, Willow Brook	05:33	06:28	06:58	07:27	07:58	08:33	09:11	09:41	10:14	10:46	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:17	15:48	16:24	16:58	17:33	18:03	18:45	19:15	19:40	20:05	21:05	
Harry Stoke	05:39	06:34	07:04	07:33	08:04	08:39	09:17	09:47	10:20	10:52	11:21	11:51	12:21	12:51	13:21	13:51	14:21	14:51	15:25	15:56	16:32	17:06	17:41	18:11	18:51	19:21	19:45	20:10	21:10	
Kingsdown, Bristol Royal Infirmary	05:49	06:44	07:17	07:50	08:21	08:56	09:34	10:00	10:33	11:05	11:34	12:04	12:34	13:04	13:34	14:04	14:34	15:04	15:40	16:11	16:47	17:21	17:56	18:24	19:04	19:33	19:57	20:22	21:22	
<b>BRISTOL, The Centre C14</b>	05:51	06:46	07:20	07:53	08:24	08:59	09:37	10:03	10:36	11:08	11:37	12:07	12:37	13:07	13:37	14:07	14:37	15:07	15:43	16:14	16:50	17:24	17:59	18:27	19:07	19:36	20:00	20:25	21:25	
<i>Cycle time</i>	01:17	01:42	01:47	02:35	02:33	02:45	02:40	02:40	02:35	02:30	02:30	02:30	02:30	02:30	02:30	02:30	02:30	02:35	02:35	02:50	02:55	03:00	02:09	02:25	02:15	02:10	01:45	01:40	00:55	01:35
<i>Layover time</i>	00:14	00:14	00:15	00:47	00:51	00:46	00:38	00:42	00:39	00:37	00:38	00:38	00:38	00:38	00:38	00:38	00:38	00:43	00:37	00:51	00:50	00:51	...	00:18	00:13	00:14	...	...	...	...
<i>% layover</i>	18%	14%	14%	30%	33%	28%	24%	26%	25%	25%	25%	25%	25%	25%	25%	25%	25%	28%	24%	30%	29%	28%	...	12%	10%	11%	...	...	...	23%

# TECHNICAL NOTE

T1 Thornbury > Bristol																							Both		
Saturdays (except Public Holidays)																									
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1			
Vehicle																									
BRISTOL, The Centre C14	...	...	07:15	08:15	08:45	09:15	09:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:15	16:45	17:15	17:45	18:15	
Bristol, Broadmead B1	...	...	07:17	08:17	08:47	09:17	09:47	10:17	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:18	15:48	16:18	16:48	17:18	17:48	18:18	
Harry Stoke	05:29	06:29	07:27	08:28	08:58	09:28	09:58	10:28	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	
Bradley Stoke, Willow Brook	05:35	06:35	07:33	08:34	09:04	09:34	10:04	10:34	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:36	16:06	16:36	17:06	17:36	18:06	18:36	
Almondsbury, The Swan	05:41	06:41	07:40	08:41	09:11	09:41	10:11	10:41	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:12	15:42	16:12	16:42	17:12	17:42	18:13	18:43	
Thornbury, Rock Street	05:52	06:52	07:52	08:53	09:23	09:53	10:23	10:54	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:25	15:55	16:25	16:55	17:25	17:55	18:26	18:56	
Thornbury, Park Farm	06:07	07:07	08:07	09:08	09:38	10:08	10:38	11:09	11:41	12:11	12:41	13:11	13:41	14:11	14:41	15:11	15:39	16:09	16:39	17:09	17:39	18:09	18:41	19:11	
THORNBURY, Health Centre	06:12	07:12	08:12	09:13	09:43	10:13	10:43	11:14	11:46	12:16	12:46	13:16	13:46	14:16	14:46	15:16	15:44	16:14	16:44	17:14	17:44	18:14	18:46	19:16	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle																									
THORNBURY, Health Centre	06:14	07:14	08:14	09:15	09:45	10:15	10:45	11:16	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:18	15:46	16:16	16:46	17:16	17:46	18:16	18:48	19:18	
Thornbury, The Plain	06:17	07:17	08:17	09:18	09:48	10:18	10:48	11:19	11:51	12:21	12:51	13:21	13:51	14:21	14:51	15:21	15:49	16:19	16:49	17:19	17:49	18:19	18:51	19:21	
Almondsbury, The Swan	06:28	07:28	08:29	09:30	10:00	10:30	11:00	11:31	12:03	12:33	13:03	13:33	14:03	14:33	15:03	15:33	16:01	16:31	17:01	17:31	18:01	18:31	19:03	19:31	
Bradley Stoke, Willow Brook	06:34	07:34	08:35	09:36	10:06	10:36	11:07	11:38	12:10	12:40	13:10	13:40	14:10	14:40	15:10	15:39	16:07	16:37	17:07	17:37	18:07	18:38	19:10	19:37	
Harry Stoke	06:39	07:39	08:40	09:41	10:11	10:43	11:14	11:45	12:17	12:47	13:17	13:47	14:17	14:47	15:16	15:45	16:13	16:43	17:13	17:43	18:13	18:45	19:15	19:42	
Kingsdown, Bristol Royal Infirmary	06:49	07:50	08:51	09:52	10:22	10:55	11:26	11:57	12:29	12:59	13:29	13:59	14:29	14:59	15:28	15:57	16:25	16:55	17:25	17:55	18:25	18:57	19:27	19:54	
BRISTOL, The Centre C14	06:51	07:53	08:54	09:55	10:25	10:58	11:29	12:00	12:32	13:02	13:32	14:02	14:32	15:02	15:31	16:00	16:28	16:58	17:28	17:58	18:28	19:00	19:30	19:57	

T1 Thornbury > Bristol												Both
Sundays and Public Holidays												
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle												
BRISTOL, The Centre C14	...	...	09:10	10:10	11:10	12:10	13:10	14:10	15:10	16:10	17:10	
Bristol, Broadmead B1	...	...	09:13	10:13	11:13	12:13	13:13	14:13	15:13	16:13	17:13	
Harry Stoke	07:15	08:15	09:25	10:25	11:25	12:25	13:25	14:25	15:25	16:25	17:25	
Bradley Stoke, Willow Brook	07:20	08:20	09:31	10:31	11:31	12:31	13:31	14:31	15:31	16:31	17:31	
Almondsbury, The Swan	07:25	08:25	09:38	10:38	11:38	12:38	13:38	14:38	15:38	16:38	17:38	
Thornbury, Rock Street	07:36	08:36	09:49	10:49	11:51	12:51	13:51	14:51	15:51	16:49	17:49	
Thornbury, Park Farm	07:50	08:51	10:04	11:04	12:06	13:06	14:06	15:06	16:06	17:04	18:04	
THORNBURY, Health Centre	07:55	08:56	10:09	11:09	12:11	13:11	14:11	15:11	16:11	17:09	18:09	
Service Number	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	
Vehicle												
THORNBURY, Health Centre	07:57	08:58	10:11	11:11	12:13	13:13	14:13	15:13	16:13	17:11	18:11	
Thornbury, The Plain	07:59	09:01	10:14	11:14	12:16	13:16	14:16	15:16	16:16	17:14	18:14	
Almondsbury, The Swan	08:10	09:13	10:26	11:26	12:28	13:28	14:28	15:28	16:28	17:26	18:26	
Bradley Stoke, Willow Brook	08:16	09:20	10:33	11:33	12:35	13:35	14:35	15:35	16:35	17:33	18:33	
Harry Stoke	08:21	09:26	10:39	11:39	12:42	13:42	14:42	15:42	16:42	17:39	18:40	
Kingsdown, Bristol Royal Infirmary	08:31	09:36	10:49	11:51	12:54	13:54	14:54	15:54	16:54	17:51	18:52	
BRISTOL, The Centre C14	08:33	09:39	10:52	11:54	12:57	13:57	14:57	15:57	16:57	17:54	18:55	

# TECHNICAL NOTE

**WEST OF PARK FARM, THORNBURY**  
**Both Developments Viability Model**  
**NEW RESOURCES**

12.07.19 v1.1

*Annualisation Factors*

Mon-Fri	253
Sat	52
Sun	59

Spare Veh Holding	
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Route km	55.4
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Mon-Fri	Bus	Start	Finish	Hours	Journeys	Km
	1	04:20	20:38	16:18	6.5	360.1
	2	04:50	21:33	16:43	7	387.8
	3	05:20	20:13	14:53	6	332.4
	4	06:14	20:28	14:14	5.5	304.7
	5	07:35	18:12	10:37	4	221.6
<b>Total</b>				<b>72:45</b>		<b>1606.6</b>

Sat	Bus	Start	Finish	Hours	Journeys	Km
	1	08:15	18:41	10:26	5	277
	2	05:01	19:13	14:12	7	387.8
	3	09:15	19:43	10:28	5	277
	4	06:01	20:10	14:09	7	387.8
<b>Total</b>				<b>49:15</b>		<b>1329.6</b>

Sun	Bus	Start	Finish	Hours	Journeys	Km
	1	06:45	19:08	12:23	6	332.4
	2	07:45	18:07	10:22	5	277
<b>Total</b>				<b>22:45</b>		<b>609.4</b>

Annual Hours	22,309
Annual Km	511,564
PVR	5
Fleet	5

## TECHNICAL NOTE

### WEST OF PARK FARM, THORNBURY Both Developments Viability Model NEW SERVICE

12.07.19

v1.1

Year	1	2	3	4	5	6	7	8	9	10
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#### COSTS (£'000)

##### Variable Costs

Driver payroll	356	356	356	356	356	356	356	356	356	356
Fuel	152	152	152	152	152	152	152	152	152	152
Tyres	10	10	10	10	10	10	10	10	10	10
Maintenance materials	33	33	33	33	33	33	33	33	33	33
<b>Sub Total: Variable Costs</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>	<b>552</b>

##### Semi Variable Costs

Depreciation	93	93	93	93	93	93	93	93	93	93
Insurance	9	9	9	9	9	9	9	9	9	9
Finance	20	20	20	20	20	20	20	20	20	20
Licences	3	3	3	3	3	3	3	3	3	3
Maintenance labour	36	36	36	36	36	36	36	36	36	36
Cleaning	8	8	8	8	8	8	8	8	8	8
<b>Sub Total: Semi Variable Costs</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>

##### Fixed Costs

Marketing and Promotion	2	2	2	2	2	2	2	2	2	2
Management and Supervision	0	0	0	0	0	0	0	0	0	0
Overheads	36	36	36	36	36	36	36	36	36	36
<b>Total Fixed Costs</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>

<b>TOTAL COSTS (exc. Profit)</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>	<b>758</b>
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##### Profit Margin

Target Profit	114	114	114	114	114	114	114	114	114	114
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<b>TOTAL COSTS (inc. Profit)</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>	<b>871</b>
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<b>Average Cost per Vehicle</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>
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# TECHNICAL NOTE

## WEST OF PARK FARM, THORBURY Both Developments Viability Model Demand

12.07.19

v1.1

### New Residential

DESCRIPTION	FACTOR	SOURCE
Total Development (units)	630	
Build Out Rate (units)	100	
Household Occupation	2.4	1
Annual Trip Rate	975	2
Adult population (>16)	1,487	
Annual Total Trips	1,449,630	
Residential Bus Mode Share	3%	3

Year	1	2	3	4	5	6	7	8	9	10
Total houses built at yr end	100	200	300	400	500	600	630	630	630	630
Average no of houses	50	150	250	350	450	550	615	630	630	630
Population	118	354	590	826	1,062	1,298	1,451	1,487	1,487	1,487
Annual Total Trips	115,050	345,150	575,250	805,350	1,035,450	1,265,550	1,415,115	1,449,630	1,449,630	1,449,630
Annual Bus Trips	2,876	8,629	14,381	20,134	25,886	31,639	35,378	36,241	36,241	36,241

### Sources

- 1 From ONS "Households and Household Composition in England and Wales: 2001-11", Table 1
- 2 From NTS 2017, Table 0303
- 3 From the West of Park Farm Transport Assessment

### Ticket Sales Breakdown

Ticket Type	Sales %	SOURCE
Adult Single	18%	1
Adult Return/Day Ticket	13%	
Adult Weekly	20%	
Child	14%	
Concession	35%	

### Concession Reimbursement

ENCTS rate		SOURCE
	73.4%	2

### Local Fares

	Fare	Price/trip	NTS Sales	SOURCE
Adult				3
Single	£2.50	£2.50	18%	
Return	£5.00	£2.50	13%	
10 Journey	£26.00	£2.60	20%	
Child				
Single	£1.30	£1.30	7%	
Return	£2.60	£1.30	7%	
Concession				
Operator reimbursement	£1.84	£1.84	35%	
<b>Average Fare</b>		£2.12		
<b>Commercial Fare</b>		£2.60		

### Sources

- 1 From National Travel Survey: Use of Public Buses Personal Travel Factsheet - March 2010
- 2 <http://passtrans.co.uk/content/index.php/blog/1847-time-for-a-rethink-on-concessions-reimbursement>
- 3 Local First company published information, July 2019

# TECHNICAL NOTE

## Appendix E


Correspondence from First

## TECHNICAL NOTE

RE: 39209 Land West of Park Farm, Thornbury



Simon Ford <Simon.Ford@firstgroup.com>

To  Harrison, Dave

Cc  Stock, Katie

Retention Policy Full Mailbox - Never Delete (Never)

Expires Never

 You replied to this message on 18/07/2019 09:24.

[Click here to download pictures.](#) To help protect your privacy, Outlook prevented automatic download of some pictures in this message.



Wed 17/07/2019 19:36

Hi Dave

Thanks for your email.

As previously stated, First is always prepared to look at changes to routes to serve new developments, where the route is appropriate for the vehicles allocated, reliability and punctuality is not compromised, there is no negative impact on existing customers and the changes are commercially viable.

It is accepted that an additional vehicle allocated to Service T1 would provide a reasonable amount of time within schedules to extend the route. From what you have stated, it would appear that there would be scope to serve both developments. This is of course subject to suitable infrastructure.

Our network is continually developing and changing and therefore we need to be mindful that what is possible at the moment, may not be possible in the future.

Kind Regards

Simon Ford  
Commercial Manager

Mobile – 07989 424439

Email - [simon.ford@firstgroup.com](mailto:simon.ford@firstgroup.com)

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Appendix E